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STANDARD APPLICATION FOR A CERTIFICATE OF CONVENIENCE AND NECESSITY FOR A PROPOSED TRANSMISSION LINE

DOCKET NO. 54733

Submit seven (7) copies of the application and all attachments supporting the application. If the application is being filed pursuant to 16 Tex. Admin. Code §25.101(b)(3)(D) (TAC) or 16 TAC §25.174, include in the application all direct testimony. The application and other necessary documents shall be submitted to:

Public Utility Commission of Texas
Attn: Filing Clerk
1701 N. Congress Ave.
Austin, Texas 78711-3326

March 23, 2023

Standard Application for a Certificate of Convenience and Necessity for a Proposed Transmission Line
and
Application for a Certificate of Convenience and Necessity for a Proposed Transmission Line Pursuant To 16 TAC §25.174

Note: As used herein, the term "joint application" refers to an application for proposed transmission facilities for which ownership will be divided. All applications for such facilities should be filed jointly by the proposed owners of the facilities.

1. Applicant (Utility) Name:

For joint applications, provide all information for each applicant.

Applicant (Utility) Name:	Oncor Electric Delivery Company LLC ("Oncor")
Certificate Number:	30043
Street Address:	1616 Woodall Rodgers Freeway Dallas, Texas 75202
Mailing Address:	1616 Woodall Rodgers Freeway Dallas, Texas 75202-1234

2. Please identify all entities that will hold an ownership interest or an investment interest in the proposed project but which are not subject to the Commission's jurisdiction.

Oncor will hold the sole ownership interest in the Keller Wall Price – Keller Magnolia 138 kV Transmission Line Project and the Keller Wall Price – Roanoke 138 kV Rebuild Project (collectively, the "Proposed Transmission Line Project").

3.	**Person to Contact:**	Michael Moore
	Title/Position:	Regulatory Manager II
	Phone Number:	(214) 486-2093
	Mailing Address:	1616 Woodall Rodgers Fwy, Suite 6A-015 Dallas, Texas 75202-1234
	Email Address:	Michael.Moore@oncor.com
3a.	**Alternate Contact:**	Thomas Yamin
	Title/Position:	Director of Regulatory, Transmission & Planning
	Phone Number:	(214) 486-3512
	Mailing Address:	1616 Woodall Rodgers Fwy, Suite 6B-005 Dallas, Texas 75202-1234
	Email Address:	Thomas.Yamin@oncor.com

3b. Legal Counsel:

Jaren A. Taylor
Jared M. Jones
Phone Number: (214) 220-7754
Mailing Address: Vinson & Elkins LLP
Trammell Crow Center
2001 Ross Avenue, Suite 3900
Dallas, Texas 75201
Email Address: jarentaylor@velaw.com
jjones@velaw.com

Please contact Jaren Taylor with any inquiries regarding the project.

4. Project Description:

Provide a general description of the project, including the design voltage rating (kV), the operating voltage (kV), the CREZ Zone(s) (if any) where the project is located (all or in part), any substations and/or substation reactive compensation constructed as part of the project, and any series elements such as sectionalizing switching devices, series line compensation, etc. For HVDC transmission lines, the converter stations should be considered to be project components and should be addressed in the project description.

If the project will be owned by more than one party, briefly explain the ownership arrangements between the parties and provide a description of the portion(s) that will be owned by each party. Provide a description of the responsibilities of each party for implementing the project (design, Right-Of-Way acquisition, material procurement, construction, etc.).

If applicable, identify and explain any deviation in transmission project components from the original transmission specifications as previously approved by the Commission or recommended by a PURA §39.151 organization.

Name or Designation of Project: Keller Wall Price – Keller Magnolia 138 kV Transmission Line Project ("KWP-KM") and Keller Wall Price – Roanoke 138 kV Rebuild Project ("KWP-R")

Design Voltage Rating (kV): 138 kV

Operating Voltage Rating (kV): 138 kV

Normal Peak Operating Current (A): 3,121 A

Oncor proposes to re-build an existing double-circuit 138 kV transmission line segment and construct a new double-circuit 138 kV transmission line segment, all within Oncor's existing easement area. The rebuilt transmission line segment (KWP-R) will begin at the existing Keller Wall Price Substation, located west of United States Highway ("US") 377, northeast of and adjacent to the intersection of Chisolm Trail and King Trail in Keller, and

extend approximately 0.3 mile to the northwest to the current location of the Keller Magnolia Tap. The new transmission line segment (KWP-KM) will begin at the new Keller Wall Price Switch, located directly adjacent to and south of the existing Keller Wall Price Substation, and will parallel the existing transmission line for 0.3 mile to the proposed project's endpoint at the current location of the Keller Magnolia Tap. The new double-circuit transmission line segment and the rebuilt double-circuit transmission line segment will each be constructed on new monopole structures. Collectively, these two transmission line segments, along with work to establish the Keller Wall Price Switch, compose and define the Proposed Transmission Line Project.

As stated previously, the Proposed Transmission Line Project includes rebuilding an existing 138 kV transmission line segment and constructing a new 138 kV transmission line segment. Although the existing transmission line rebuild is a CCN-exempt project pursuant to 16 Texas Administrative Code § 25.101(c)(5)(B), Oncor includes that aspect of the Proposed Transmission Line Project in the Application out of an abundance of caution due to the interrelated nature of the work on KWP-KM and KWP-R and to provide maximum disclosure to landowners whose properties are already crossed by Oncor's existing transmission line easement.

The Proposed Transmission Line Project's route is approximately 0.3 mile in length.

The KWP-KM transmission line segment will terminate into the proposed Keller Wall Price Switch, which will be located directly adjacent to and south of the existing Keller Wall Price Substation, entirely on Oncor fee-owned property.

5. Conductor and Structures:

Conductor Size and Type:	1926.9 kcmil Cumberland ACSS/TW/HS/E3X*
Number of conductors per phase:	1
Continuous Summer Static Current Rating (A):	3,121 A
Continuous Summer Static Line Capacity at Operating Voltage (MVA):	746 MVA
Continuous Summer Static Line Capacity at Design Voltage (MVA):	746 MVA
Type and composition of Structures:	Double-Circuit Steel Monopole
Height of Typical Structures:	110 – 120 feet**

* Aluminum conductor steel supported, trapezoidal-shaped wire, high-strength Cumberland conductor with E3X coating.

** This number reflects the approximate visible height of the structure from ground to structure top. Please see the drawing of the typical structures in Figure 1-2, page 1-7, of the *Environmental Assessment for Oncor Electric Delivery Company LLC's Proposed Keller Wall Price – Keller Magnolia 138 kV Transmission Line Project and Keller Wall Price – Roanoke 138 kV Rebuild Project in Tarrant County, Texas* ("Environmental Assessment"), prepared by Halff and included as Attachment No. 1.

Explain why these structures were selected; include such factors as landowner preference, engineering considerations, and costs comparisons to alternate structures that were considered.

For joint applications, provide and separately identify the above-required information regarding structures for the portion(s) of the project owned by each applicant.

Oncor selected the double-circuit 138 kV steel monopoles for numerous reasons including costs, technical specifications, structure footprint, ROW requirements of the existing easement, and the prior use of this type of structure for the existing transmission line. This structure type is also Oncor's current standard for new single- and double-circuit 138 kV construction.

Provide dimensional drawings of the typical structures to be used in the project.

A drawing of the typical structure is shown in Figure 1-2, page 1-7, of the Environmental Assessment included as Attachment No. 1.

6. **Right-of-way:**

For joint applications, provide and separately identify the above-required information for each route for the portion(s) of the project owned by each applicant.

Miles of Right-of-Way	Approximately 0.3 mile
Miles of Circuit	Approximately 1.2 miles (KWP-KM circuits – 0.6 miles and KWP-R circuits – 0.6 miles)
Width of Right-of-Way	100 feet
Percent of Right-of-Way Acquired	100%*

*The Proposed Transmission Line Project will be constructed within Oncor's existing ROW area

Provide a brief description of the area traversed by the transmission line. Include a description of the general land uses in the area and the type of terrain crossed by the line.

The study area is centered along the existing transmission line corridor in a relatively urban area in the City of Keller within Tarrant County, Texas. The endpoints of the Proposed Transmission Line Project are situated within the High Chaparral Addition, Phase I and II Subdivision within an easement that extends across residential lots along neighborhood side streets. Oncor and its predecessors have operated a transmission line in this right-of-way since at least the 1950s, and the existing transmission line pre-dates the surrounding residential development. Many houses and other structures associated with residential development are located in close proximity to the existing transmission line. Land use beneath or near the existing transmission line is common "backyard" use, including, but not limited to, storage sheds, playground equipment, and swimming pools.

A network of neighborhood streets facilitate transportation within the study area. US 377 is located east of the study area and represents the major thoroughfare that provides the primary point of access to these local streets. Union Pacific Railroad parallels US 377 to the west along the easternmost limits of the study area.

Specific discussion regarding natural, human, and cultural resources in the project area is set forth in Sections 3.1 through 3.8, pages 3-1 through 3-55, of the Environmental Assessment, included as Attachment No. 1.

7. Substations or Switching Stations:

List the name of all existing HVDC converter stations, substations or switching stations that will be associated with the new transmission line. Provide documentation showing that the owner(s) of the existing HVDC converter stations, substations and/or switching stations have agreed to the installation of the required project facilities.

Keller Wall Price Substation

The dimensions of Oncor's Keller Wall Price Substation are approximately 354 feet by 338 feet. Rebuilding the KWP-R transmission line segment will not change the current dimensions of the Keller Wall Price Substation and will not require any station work at the Keller Wall Price Substation. The new KWP-KM transmission line will require modifications near the Keller Wall Price Substation, including removing one 138 kV air switch and adding two 138 kV H-frame dead-end structures to connect the new Keller Wall Price Switch. A diagram showing the dimensions and additional details regarding the existing layout of the Keller Wall Price Substation is included as Attachment No. 2.

List the name of all new HVDC converter stations, substations or switching stations that will be associated with the new transmission line. Provide documentation showing that the owner(s) of the new HVDC converter stations, substations and/or switching stations have agreed to the installation of the required project facilities.

Keller Wall Price Switch

The KWP-KM transmission line segment will terminate into the proposed Keller Wall Price Switch, which will be located directly adjacent to and south of the existing Keller Wall Price Substation, entirely on Oncor's fee-owned property. The dimensions of the proposed Keller Wall Price Switch will be approximately 354 feet by 200 feet. New facilities will include six 138 kV circuit breakers, associated terminal equipment arranged in a 6-breaker ring bus configuration, and a control center. A diagram showing the dimensions and additional details regarding the proposed layout of the Keller Wall Price Switch is included as Attachment No. 2.

8. Estimated Schedule:

Estimated Dates of:	Start*	Completion*
Right-of-way and Land Acquisition	09/2023**	05/2024**
Engineering and Design	03/2023	11/2023
Material and Equipment Procurement	04/2023	12/2023
Construction of Facilities	01/2024	05/2024
Energize Facilities	05/2024	05/2024

*Dates are based on 180-day CCN process due to ERCOT critical designation.
**Dates reflect coordination with landowners during the design and construction phases of the project. Does not reflect dates for acquiring new land/ROW because the Proposed Transmission Line Project will be built entirely within Oncor's existing ROW area.

9. Counties:

For each route, list all counties in which the route is to be constructed.

Tarrant County

10. Municipalities:

For each route, list all municipalities in which the route is to be constructed.

The Proposed Transmission Line Project will be constructed entirely within the city limits of the City of Keller.

For each applicant, attach a copy of the franchise, permit or other evidence of the city's consent held by the utility, if necessary or applicable. If franchise, permit, or other evidence of the city's consent has been previously filed, provide only the docket number of the application in which the consent was filed. Each applicant should provide this information only for the portion(s) of the project which will be owned by the applicant.

Evidence of consent for service in this area is publicly available and previously filed in PUCT Docket No. 45.

11. Affected Utilities:

Identify any other electric utility served by or connected to facilities in this application.

No other electric utility will be served by or connected to the Proposed Transmission Line Project.

Describe how any other electric utility will be affected and the extent of the other utilities' involvement in the construction of this project. Include any other electric utilities whose existing facilities will be utilized for the project (vacant circuit positions, ROW, substation

sites and/or equipment, etc.) and provide documentation showing that the owner(s) of the existing facilities have agreed to the installation of the required project facilities.

No other electric utility will be involved in the construction of the Proposed Transmission Line Project, and no other electric utility's existing facilities will be utilized. The Proposed Transmission Line Project will be constructed within existing Oncor right-of-way area and will connect Oncor-owned stations.

Existing Tri-County Electric Cooperative distribution lines are located adjacent to the existing transmission line corridor to the north and south. Oncor will coordinate with Tri-County Electric Cooperative during construction of the Proposed Transmission Line Project.

12. Financing:

Describe the method of financing this project. For each applicant that is to be reimbursed for all or a portion of this project, identify the source and amount of the reimbursement (actual amount if known, estimated amount otherwise) and the portion(s) of the project for which the reimbursement will be made.

Oncor proposes to finance the facilities included in the Proposed Transmission Line Project with a combination of debt and equity in compliance with its authorized capital structure, which is similar to the means used for previous construction projects. Oncor plans to utilize internally generated funds (equity) and proceeds received from the issuance of securities. Oncor will typically obtain short-term borrowings as needed for interim financing of its construction expenditures in excess of funds generated internally. These borrowings are then repaid through the issuance of long-term debt securities, the type and amount of which are as of yet undetermined.

Oncor is the sole applicant and, therefore, no other party will be reimbursed for any portion of the Proposed Transmission Line Project.

13. Estimated Costs:

Provide cost estimates for each route of the proposed project using the following table. Provide a breakdown of "Other" costs by major cost category and amount. Provide the information for each route in an attachment to this application.

Transmission Facilities		**Station Facilities**
KWP-KM	KWP-R	Keller Wall Price Switch

Right-of-way and Land Acquisition	$17,000	$0	$0
Engineering and Design (Utility)	$30,000	$30,000	$0
Engineering and Design (Contract)	$1,079,000	$229,000	$275,000
Procurement of Material and Equipment (including stores)	$880,000	$647,000	$3,290,000
Construction of Facilities (Utility)	$0	$0	$250,000
Construction of Facilities (Contract)	$1,376,000	$1,370,000	$2,545,000
Other (all costs not included in the above categories)	$0	$0	$0
Estimated Total Cost	**$3,382,000**	**$2,276,000**	**$6,360,000**
Total Estimated Cost of the Proposed Transmission Line Project	**$12,018,000**		

For joint applications, provide and separately identify the above-required information for the portion(s) of the project owned by each applicant.

Not applicable.

14. Need for the Proposed Project:

For a standard application, describe the need for the construction and state how the proposed project will address the need. Describe the existing transmission system and conditions addressed by this application. For projects that are planned to accommodate load growth, provide historical load data and load projections for at least five years. For projects to accommodate load growth or to address reliability issues, provide a description of the steady state load flow analysis that justifies the project. For interconnection projects, provide any documentation from a transmission service customer, generator, transmission service provider, or other entity to establish that the proposed facilities are needed. For projects related to a Competitive Renewable Energy Zone, the foregoing requirements are not necessary; the applicant need only provide a specific reference to the pertinent portion(s) of an appropriate commission order specifying that the facilities are needed. For all projects, provide any documentation of the review and recommendation of a PURA §39.151 organization.

Overview

The Proposed Transmission Line Project is needed to address reliability issues identified in post-contingency conditions. ERCOT designated this project as "critical to reliability" under 16 TAC § 25.101(b)(3)(D).

The Roanoke area, located approximately 15 miles north of Fort Worth, is one of the highest growth areas in the DFW Metroplex. The 345 kV transmission system in this area is part of a high-power transfer corridor connecting generation in the Panhandle to the DFW load center. The power transfer and load-serving capabilities of the system in this area depend on facilities developed as part of the Competitive Renewable Energy Zone, many of which are approaching their operating limits at current demand levels. Capacity limitations in the area are already limiting the development of new large-point loads. In the last 18 months, Oncor received several requests for interconnection in this area that it was limited in its ability to fulfill due to autotransformer and line overloads. Growth in the area will continue to increase demand and strain the transmission system.

Oncor performed power flow studies and contingency analysis in accordance with NERC Reliability Standard TPL-001-4 and the ERCOT Planning Guide. This analysis identified post-contingency system performance issues beginning in summer 2023, including thermal overloads, loading limitations, and voltage criteria exceedances.

The Proposed Transmission Line Project is the first in a series of projects, collectively called the Roanoke Area Upgrades Project, that will address the identified reliability issues and provide additional operational flexibility on the area transmission system in the Roanoke area. ERCOT reviewed the Roanoke Area Upgrades Project, including the Proposed Transmission Line Project, and endorsed it as a Tier 1 transmission projects that are critical to the reliability of the ERCOT system.

Thermal Overloads

Starting in summer 2023, the 345/138 kV autotransformers at Hicks and Roanoke and the Roanoke – Hicks 345 kV transmission line will exceed their emergency ratings under contingency conditions. Tables 1 and 2 below summarize the current configuration and resulting thermal overloads under N-1 and N-1-1 contingency events, as respectively defined in NERC TPL-001-4 Reliability Standard and the ERCOT Planning Guide. Overloading is shown as a percentage of an element's emergency rating. These tables were created using ERCOT's 2021 Regional Transmission Plan for the North and North Central weather zones ("2021 RTP NNC Cases") and 2021 Steady State Working Group ("SSWG") cases.

Monitored Element	**Worst Contingency (N-1)**	**Worst Contingency Loading (% of Emergency Rating)**					
		2021 RTP NNC Cases			**2021 SSWG Cases**		
		2023	**2024**	**2026**	**2027**	**2024**	**2028**
Roanoke 345/138 kV Autotransformer #1	Roanoke 345/138 kV Autotransformer #2 (P1.3)	92	94	96	96	101	110
Roanoke 345/138 kV Autotransformer #2	Roanoke 345/138 kV Autotransformer #1 (P1.3)	94	95	98	98	101	110

Roanoke – Hicks 345 kV double-circuit line	Loss of either Roanoke – Hicks 345 kV circuit (P1.2)	89	87	91	93	99	107

Table 1 – Pre-project post N-1 contingency loading

Monitored Element	Worst Contingency (N-1-1)	Worst Contingency Loading (% of Emergency Rating)					
		2021 RTP NNC Cases			2021 SSWG Cases		
		2023	2024	2026	2027	2024	2028
Roanoke 345/138 kV Autotransformer #1	Roanoke 345/138 kV Autotransformer + Roanoke – West Denton/Lewisville 345 kV double-circuit line (ERCOT Requirement)	111	110	114	114	124	135
Roanoke 345/138 kV Autotransformer #2		111	110	114	114	124	135
Hicks 345/138 kV Autotransformer #1	Hicks 345/138 kV Autotransformer + Hicks – Alliance/Roanoke 345 kV double-circuit line (ERCOT Requirement)	99	98	101	102	113	123
Hicks 345/138 kV Autotransformer #2		100	99	102	104	113	123
Hicks – Roanoke 345 kV line	Panda Sherman Train and either Hicks – Roanoke 345 kV circuit (P3.2)	95	93	97	99	104	113

Table 2 – Pre-project post N-1-1 contingency loading

Line Loading Limitations

Under peak load conditions, the Roanoke – Deen/Euless 138 kV double-circuit transmission line currently serves nearly 1,000 MW of load, as shown in Table 3. Planning criteria exceedances were observed following a NERC P2.1 contingency, where (1) the loss of the Euless Switch – Bedford Woodson Tap 138 kV line section, which is a portion of the overall Roanoke – Deen/Euless transmission line, results in the Roanoke – Park Vista line section (east circuit) loading to 102% of its operating limit in the 2021 SSWG 2024 summer peak case, and (2) the loss of the Deen Switch – Watauga 138 kV line section, which is a portion of the overall Roanoke – Deen/Euless transmission line, results in Roanoke – Park Vista line section (west circuit) loading to 102% of its operating limit in the 2021 SSWG 2027 summer peak case. This double circuit line is approaching its loadability limit which will restrict Oncor's ability to serve projected load growth in this area in the coming years. The coincident peak load in the Roanoke area between 2017 and 2020 has grown at an annual rate of ~3.1%, which is about double the annual growth rate of Oncor's overall coincident peak during this same period. Table 3 lists forecasted load on the Roanoke – Deen/Euless double circuit transmission line through 2028.

Line	2022	2023	2024	2025	2026	2027	2028
Roanoke – Deen	471	478	494	500	504	517	527
Roanoke – Euless	474	481	509	516	523	536	546
Total	945	959	1003	1016	1027	1053	1073

Table 3 – Forecasted load on Roanoke – Deen/Euless double-circuit line (MW)

Voltage Criteria Exceedances

Starting in 2028, with the loss of Handley Unit #5 followed by the Roanoke – Park Vista 138 kV line section, several buses on the Roanoke – Deen 138 kV transmission line experience voltages at or outside their emergency limits as shown in Table 4 (emergency limits for all listed elements are <0.90 or <0.95).

Bus Number	Bus Name	Post Contingency Voltage (in p.u.)
15100	PARKVISTA1_8	0.890
2058	CIRCLET_P8	0.892
559	HERITAGE	0.893
12033	HRTAG1_T8	0.893
2036	KELLER2_T8	0.894
33565	KELLER2	0.894
2033	KLR_MAG1_T8	0.895
2037	WPKELLR1_8	0.899
566	CHERRYGROV	0.900
2035	BEARCK3_8	0.902
12028	CLYVIL2_8	0.905
2028	CLYVIL2_T8	0.906

Table 4 – Post Contingency Voltage Criteria Exceedances

To address these reliability issues, Oncor recommended the Roanoke Area Upgrades Project to the ERCOT Regional Planning Group ("RPG"). ERCOT conducted an independent review, which also identified reliability issues in the area, including thermal overloads and voltage violations. Tables 5 and 6 below summarize ERCOT's findings.

NERC Contingency Category	Overloaded Element	Voltage Level (kV)	Length (miles)	Loading %
P1: N-1	Roanoke Transformer #1 and #2	345/138	-	101.68
P6: (X-1 + N-1)	Roanoke Transformer #1 and #2	345/138	-	117.27
P6: (X-1 + N-1)	Hicks Transformer #1 and #2	345/138	-	100.00
P3: (G-1 + N-1)	Hicks to Roanoke	345	9.6	100.73

P3: (G-1 + N-1)	Hicks to Alliance	345	5.8	100.28
P6: (X-1 + N-1)	Kennedale to Century	345	10.5	100.69
P6: (X-1 + N-1)	Randol Mill Tap East to Randol Mill	138	2.2	100.63
P6: (X-1 + N-1)	Liggett Switch to DFW E East	138	3.0	100.96
P6: (X-1 + N-1)	Liggett Switch to Irving Valley View	138	1.5	104.96

Table 5 – Thermal Overloads Observed in the Study Area for 2026 Summer Peak

NERC Contingency Category	Substation	Voltage Level (kV)	Post-Contingency Voltage (pu)
P3: (G-1 + N-1)	Park Vista	138	0.89
P3: (G-1 + N-1)	Keller Tap	138	0.90
P3: (G-1 + N-1)	Keller Magnolia Tap	138	0.90
P6: (X-1 + N-1)	Heritage	138	0.90
P3: (G-1 + N-1)	Cherry Grove	138	0.90

Table 6 – Voltage Violations Observed in the Study Area for 2026 Summer Peak

After conducting an independent review, ERCOT's RPG, Technical Advisory Committee, and Board of Directors approved the Roanoke Area Upgrades Project, which includes the following:

1. Construct a new Ramhorn Hill 345 kV switching station in a 10-breaker, breaker-and-a-half arrangement tapped into the existing double-circuit Hicks to Willow Creek 345 kV line. The existing Hicks and Willow Creek substations are owned by Oncor.

2. Construct a new Dunham 345 kV switching station in a 10-breaker, breaker-and-a-half arrangement tapped into the existing Lewisville to Krum West and Lewisville to Roanoke 345 kV lines. The existing Lewisville Substation is owned by Brazos Electric Cooperative. The existing Krum West and Roanoke Substations are owned by Oncor.

3. Construct two new Ramhorn Hill to Dunham 345 kV transmission lines, with conductor rated to at least 2987 MVA, in a new (estimated 18.4-mile) right-of-way, installed on new triple-circuit towers leaving one vacant 138 kV position.

4. Rebuild Exchange to Roanoke 345 kV double-circuit lines, upgrading both with conductors rated to at least 2987 MVA, using separate double-circuit capable structures for each line. The line ratings will be 1912/1912 MVA, limited by terminal equipment at Roanoke.

5. Construct a new Exchange to Roanoke 138 kV circuit, with conductor rated to at least 764 MVA, using one of the Exchange to Roanoke 345 kV line double-circuit capable structures.

6. Construct a new Exchange 345/138 kV Switching Station, adjacent to the Alliance 345 kV substation, with two new 600 MVA (nameplate) transformers in an 8-breaker, 345 kV breaker-and-a-half bus arrangement and a 9-breaker, 138 kV breaker-and-a-half arrangement. The normal/emergency ratings of the new transformers will be 700/750 MVA. Exchange will be connected to Hicks and Roanoke with 345 kV lines and connected to the converted Alliance Substation with 138 kV lines. The existing Alliance and Hicks Substations are owned by Oncor.

7. Convert the existing Alliance 345 kV load-serving substation to 138 kV load-serving operation.

8. Construct a new Exchange to Alliance 138 kV double-circuit line with conductors rated to at least 746 MVA.

9. Construct a new Alliance to Keller Magnolia and Alliance to Heritage 138 kV double-circuit line with conductors rated to at least 746 MVA in a new (estimated 1.4-mile) right-of-way. The existing Keller Magnolia and Heritage Substations are owned by Oncor.

10. Upgrade the existing Keller Magnolia to Heritage 138 kV line with conductor rated to at least 746 MVA to be installed on the Alliance to Keller Magnolia and Alliance to Heritage 138 kV double-circuit structures.

11. Upgrade the existing Heritage to Keller Magnolia Tap double-circuit lines with conductors rated to at least 746 MVA.

12. Construct a new 138 kV switching station at Keller Wall Price in a 6-breaker ring bus arrangement.

13. Disconnect the double-circuit Heritage to Keller Magnolia Tap lines at Keller Magnolia Tap and terminate both at Keller Wall Price by constructing two new 0.3-mile, 138 kV transmission lines added to the existing Keller Magnolia Tap to Keller Wall Price right-of-way with both new line conductors rated to at least 746 MVA. The existing Keller Magnolia Tap and Keller Wall Price Substation are owned by Oncor.

14. Retire the Keller Magnolia Tap.

The Proposed Transmission Line Project includes components 12, 13, and 14 of the overall Roanoke Area Upgrades Project, as listed above. Oncor will file separate CCN applications for other components of the Roanoke Area Upgrades Project as required by the Public Utility Commission of Texas.

The complete ERCOT Independent Review, dated July 19, 2022, is included as Attachment No. 3 to the Application. A system map showing all of the recommended Roanoke upgrades is included as Attachment No. 4.

15. Alternatives to Project:

For a standard application, describe alternatives to the construction of this project (not routing options). Include an analysis of distribution alternatives, upgrading voltage or bundling of conductors of existing facilities, adding transformers, and for utilities that have not unbundled, distributed generation as alternatives to the project. Explain how the project overcomes the insufficiencies of the other options that were considered.

Oncor Review

Oncor evaluated 3 alternatives to address the identified reliability concerns:

Oncor Option #1 (O1):

- Establish the Exchange 345/138 kV Switching Station, adjacent to Alliance 345 kV Substation, with two 600 MVA Autotransformers in a 8-breaker 345 kV breaker-and-a-half bus arrangement and a 9-breaker 138 kV breaker-and-a-half arrangement
- Convert the existing Alliance 345 kV load-serving substation to 138 kV operation
- Establish the Exchange – Keller Wall Price 138 kV double-circuit line using a conductor rated at least 3121 A or greater with the following upgrades:
- Construct the Exchange – Keller Magnolia 138 kV double-circuit line
- Upgrade the Keller Magnolia – Keller Wall Price Switch 138 kV line using double-circuit capable structures
- Establish a new 138 kV switching station at Keller Wall Price in a 6-breaker ring bus arrangement
- Disconnect the Keller Magnolia Tap – Heritage/Keller Magnolia line at Keller Magnolia Tap and terminate at Keller Wall Price by constructing a new 0.3-mile double-circuit 138 kV transmission line
- Establish the Ramhorn Hill 345 kV switching station in a 10-breaker, breaker-and-a-half arrangement
- Establish Dunham 345 kV switching station with in a 10-breaker, breaker-and-a-half arrangement
- Construct an estimated 18.4-mile triple-circuit line between Ramhorn Hill and Dunham with:
    - Two 345 kV circuits using conductor rated at least 5000 A
    - A vacant position for a future 138 kV circuit to support future load serving substations in growth areas

- Rebuild Exchange – Roanoke 345 kV double-circuit line using separate double-circuit capable structures for each line with conductor rated at least 5000 A and establish the Exchange – Roanoke 138 kV circuit using one of the Exchange – Roanoke 345 kV line double-circuit capable structures rated at least 3200 A
- Ensure all new 345 kV terminals at Exchange, Ramhorn Hill, and Dunham are rated 5000 A and 138 kV terminals at Exchange, Keller Wall Price, and Roanoke are rated 3200 A

Oncor Option #2 (O2):

- Establish Dunham 345 kV switching station in an 8-breaker, breaker-and-a-half arrangement
- Establish Dunham 138 kV switching station in a 5-breaker, breaker-and-a-half arrangement
- Establish two new 345/138 kV autotransformers at the proposed Dunham 345 kV switching station
- Construct an estimated 1-mile, 138 kV double-circuit line from Dunham to Cross Timbers with conductor rated 3200 A or greater

Oncor Option #3 (O3):

- Establish the Ramhorn Hill 345 kV switching station in a 10-breaker, breaker-and-a-half arrangement
- Establish Dunham 345 kV switching station in an 11-breaker, breaker-and-a-half arrangement
- Construct an estimated 18.4-mile, 345 kV double-circuit line from Ramhorn Hill to Dunham with conductor rated 5000 A or greater
- Establish Dunham 138 kV switching station in a 5-breaker, breaker-and-a-half arrangement
- Establish two new 345/138 kV autotransformers at the proposed Dunham 345 kV switching station
- Construct an estimated 1-mile, 138 kV double-circuit line from Dunham to Cross Timbers with conductor rated 3200 A or greater

Of the alternatives Oncor reviewed, Option #1 best addressed the identified reliability issues. While both Option #2 and Option #3 reduce some post-contingency thermal overloads, the steady-state analysis clearly demonstrates that Option #1 more effectively addresses thermal overloads, resolving overloads across all case years. Oncor's Option #1 also resolves load-serving limitations and voltage criteria exceedances on the Roanoke – Euless/Deen double-circuit transmission line, whereas Options #2 and #3 do not. The results of Oncor's analysis are summarized in Tables 7, 8, and 9 below.

Element	Worst Contingency Loading (% of Emergency Rating)
	2021 RTP NNC Cases

	2023 Summer				2024 Summer				2026 Summer				2027 Summer			
	Base	O1	O2	O3	Base	O1	O2	O3	Base	O1	O2	O3	Base	O1	O2	O3
Roanoke 345/138 kV Autotransformer #1	111	74	107	84	110	73	106	88	114	75	109	91	114	75	109	91
Roanoke 345/138 kV Autotransformer #2	111	74	108	84	110	73	106	88	114	75	109	91	114	75	109	91
Hicks 345/138 kV Autotransformer #1	99	66	96	72	98	65	95	71	101	66	98	72	102	66	99	72
Hicks 345/138 kV Autotransformer #2	100	66	98	72	99	66	96	72	102	67	99	73	104	67	101	73
Roanoke – Hicks 345 kV line	95	71	97	57	93	71	95	56	97	73	98	58	99	75	100	59
Performance Requirements Met		Yes	No	Yes		Yes	No	Yes		Yes	No	Yes		Yes	No	Yes

Table 7 – Post Contingency Loading Comparison using RTP NNC Cases

Element	Worst Contingency Loading (% of Emergency Rating) in 2021 SSWG Cases							
	2024 Summer				2028 Summer			
	Base	O1	O2	O3	Base	O1	O2	O3
Roanoke 345/138 kV Autotransformer #1	124	82	121	95	135	89	131	103
Roanoke 345/138 kV Autotransformer #2	124	82	121	95	135	89	131	103
Hicks 345/138 kV Autotransformer #1	113	74	110	80	123	79	120	85
Hicks 345/138 kV Autotransformer #2	113	74	110	80	123	79	120	85
Roanoke – Hicks 345 kV line	104	79	105	62	113	86	114	67
Performance Requirements Met		Yes	No	Yes		Yes	No	No

Table 8 – Post Contingency Loading Comparison using 2021 SSWG Cases

Bus Number	Bus Name	Worst Contingency Voltage Results (in p.u.) 2028 Summer (2021 SSWG Case)			
		Base	O1	O2	O3
15100	PARKVISTA1_8	0.890	>0.95	0.893	0.897
2058	CIRCLET_P8	0.892	>0.95	0.895	0.898
559	HERITAGE	0.893	>0.95	0.896	0.900
12033	HRTAG1_T8	0.893	>0.95	0.896	0.900
2036	KELLER2_T8	0.894	>0.95	0.897	0.901

33565	KELLER2	0.894	>0.95	0.897	0.901
2033	KLR_MAG1_T8	0.895	>0.95	0.899	0.902
2037	WPKELLR1_8	0.899	>0.95	0.903	0.906
566	CHERRYGROV	0.900	>0.95	0.903	0.906
2035	BEARCK3_8	0.902	>0.95	0.905	0.909
12028	CLYVIL2_8	0.905	>0.95	0.908	0.911
2028	CLYVIL2_T8	0.906	>0.95	0.909	0.912
Performance Requirements Met			Yes	No	No

Table 9 – Post Contingency Voltage Comparison using 2021 SSWG Case

After identifying Oncor's Option #1 as the superior option, Oncor prepared a submittal to ERCOT RPG recommending Option #1 as its preferred alternative.

ERCOT Review

In connection with evaluating Oncor's submittal, ERCOT's independent review initially evaluated four system improvement options to address the observed reliability issues. Table 10 shows the components of the four initial options. (Note that the numbering of the options reviewed by ERCOT does not correspond to the numbering of the options reviewed by Oncor.)

Transmission Upgrade	**Approx. Length of Line (miles)**	**Normal / Emergency Rating (MVA)**	***Options***			
			1	***2****	***3***	***4***
Construct a new Ramhorn Hill 345-kV switching station in a 10-breaker breaker-and-a-half arrangement tapped into existing double-circuit Hicks to Willow Creek 345-kV lines				✓	✓	✓
Construct a new Dunham 345-kV switching station in a 10-breaker breaker-and-a-half arrangement tapped into existing Lewisville to Krum West and Lewisville to Roanoke 345-kV lines				✓	✓	✓
Construct two new Ramhorn Hill to Dunham 345-kV transmission lines, with conductor rated to at least 2987 MVA, in a new (estimated 18.4-mile) right-of-way installed on new triple-circuit towers leaving one 138-kV vacant position	18.4	2987/2987		✓	✓	✓
Upgrade Hicks to Exchange 345-kV double-circuit line with conductors rated to at least 2987 MVA	5.8	2987/2987	✓			
Rebuild Exchange to Roanoke 345-kV double-circuit lines, upgrading both with conductors rated to at least 2987 MVA, using separate double-circuit capable structures for each line	3.6	1912/1912**		✓		

Construct a new Exchange to Roanoke 138-kV circuit, with conductor rated to at least 764 MVA, using one of the Exchange to Roanoke 345-kV line double-circuit capable structures	3.8	764/764		✓		
Upgrade Exchange to Roanoke 345-kV double-circuit lines with conductor rating to at least 2987 MVA	3.6	1912/1912**	✓		✓	
Construct a new Exchange 345/138-kV Switching Station, adjacent to Alliance 345-kV substation, with two new 600 MVA transformers (nameplate) in an 8-breaker 345-kV breaker-and-a-half bus arrangement and a 9-breaker 138-kV breaker-and-a-half arrangement		700/750	✓	✓	✓	✓
Convert the existing Alliance 345-kV load serving substation to 138-kV load serving operation			✓	✓	✓	✓
Construct a new Exchange to Alliance 138-kV double-circuit line with conductors rated to at least 746 MVA	0.1	746/746	✓	✓	✓	✓
Construct a new Alliance to Keller Magnolia and Alliance to Heritage 138-kV double-circuit line with conductors rated to at least 746 MVA	1.4 Keller Magnolia 2.5 Heritage	746/746	✓	✓	✓	✓
Upgrade the existing Keller Magnolia to Heritage 138-kV line with conductor rated to at least 746 MVA to be installed on the Alliance to Keller Magnolia and Alliance to Heritage 138-kV double-circuit towers	1.0	746/746	✓	✓	✓	✓
Upgrade the existing Heritage to Keller Magnolia Tap double-circuit lines with conductors rated to at least 746 MVA	1.3	746/746	✓	✓	✓	✓
Construct a new 138-kV switching station at Keller Wall Price in a 6-breaker ring bus arrangement			✓	✓	✓	✓
Disconnect the double-circuit Heritage to Keller Magnolia Tap lines at Keller Magnolia Tap and terminate both at Keller Wall Price by constructing two new 0.3-mile 138-kV transmission lines added to the existing Keller Magnolia Tap to Keller Wall Price right-of-way with both new line conductors rated to at least 746 MVA	0.3	746/746	✓	✓	✓	✓
Retire the Keller Magnolia Tap			✓	✓	✓	✓

Table 10 – Components of the Four Initial Options Studied by ERCOT
*ERCOT's Option 2 is substantially the same as the option Oncor recommended after its internal review.
**Exchange to Roanoke 345-kV conductor will be capable of 2987/2987 MVA, however terminal equipment at Roanoke will limit the line ratings to 1912/1912 MVA.

ERCOT performed reliability assessments on the four initial options based on NERC Reliability Standard TPL-001-4, the applicable ERCOT Nodal Protocols, and Planning Criteria. ERCOT's initial reliability assessment identified thermal overload violations under ERCOT Option 1, resulting in it being eliminated from further evaluation. No reliability criteria violations were identified for ERCOT Options 2, 3, and 4, so ERCOT short-listed these options for further assessment.

To evaluate the operational flexibility of the short-listed options, ERCOT developed an off-peak scenario for planned maintenance outage (N-1-1) analysis. ERCOT first conducted an N-1-1 contingency analysis based on selected single-circuit prior outages, as well as based on selected double-circuit common tower prior outages for each short-listed option. As shown in Table 11 below, the performance was similar for each of the three short-listed options.

	Planned Maintenance Single Circuit Prior Outage		**Planned Maintenance Double Circuit Common Tower Prior Outage**	
	Thermal Overloads	**Voltage Instability**	**Thermal Overloads**	**Voltage Instability**
Option 2	No	No	No	No
Option 3	No	No	No	No
Option 4	No	No	No	No

Table 11 – Results of Planned Maintenance Outage Analysis

To further evaluate the operational flexibility provided by the short-listed options, ERCOT conducted an additional prior outage maintenance scenario based on input from Oncor. As shown in Table 12 below, ERCOT's Option 2 performed better under this scenario as it was the only short-listed option that did not show a Roanoke 345/138 kV transformer overload.

	Planned Maintenance TSP Requested Scenario (X-1 + Double-Circuit Line Segment)	
	Thermal Overloads	**Voltage Stability**
Option 2	No	Ok
Option 3	Yes	Ok
Option 4	Yes	Ok

Table 12 – Results of TSP Requested Planned Maintenance Outage Analysis

To estimate and compare the long-term load-serving capabilities of the three short-listed options, ERCOT adjusted load-up in the substations identified in the Roanoke area in Oncor's submittal to RPG. To balance power, ERCOT adjusted down conforming load outside of the North Central weather zone and simulated N-1 contingencies.

Because ERCOT Option 2 offers better long-term load serving capability, better operational flexibility during transformer prior outage conditions, and better flexibility for future utilization associated with transmission between Exchange and Roanoke, ERCOT selected Option 2 as its preferred option.

ERCOT's analysis revealed that six 138 kV and one 345 kV transmission line thermal overloads would need to be addressed for all three of the short-listed options to increase long-term load serving capability. In addition, Options 3 and 4 would require additional

transmission improvements to address overloading on the two existing 345/138 kV transformers at Roanoke to further increase load serving capability. Because Option 2 did not require these additional major transmission improvements, ERCOT selected Option 2 as the most favorable path for increasing long-term load serving capability.

A comparison of the three short listed options is shown in Table 13 below.

	Option 2	Option 3	Option 4
Met ERCOT and NERC Reliability Criteria	Yes	Yes	Yes
Improved Operational Flexibility	Better	Yes	Yes
Long-term Load Serving Performance	Better	Yes	Yes
Capital Cost Estimates	$286 M	$264 M	$254 M

Table 13 - Comparison of Short-Listed Options

ERCOT endorsed Option 2, including the Proposed Transmission Line Project, as a Tier 1 transmission project that is critical to the reliability of the ERCOT system pursuant to 16 TAC § 25.101(b)(3)(D).

Distribution alternatives will not resolve the identified reliability issues on the transmission system.

Bundling or upgrading conductor, adding transformers, or upgrading voltages alone will not address the identified reliability issues or provide the necessary level of service to meet electric demand in the Roanoke-Alliance area.

16. Schematic or Diagram:

For a standard application, provide a schematic or diagram of the applicant's transmission system in the proximate area of the project. Show the location and voltage of existing transmission lines and substations, and the location of the construction. Locate any taps, ties, meter points, or other facilities involving other utilities on the system schematic.

A schematic of the transmission system in the proximate area of the Roanoke Area Upgrades Project, including the Proposed Transmission Line Project, is shown in Attachment No. 5. The location and voltage of existing transmission lines, substations, taps, ties, meter points or other facilities involving other utilities in relation to the Proposed Transmission Line Project are included. A map of the project area can be found in Figure 3-1 in Appendix D of the Environmental Assessment included as Attachment No. 1.

17. Routing Study:

Provide a brief summary of the routing study that includes a description of the process of selecting the study area, identifying routing constraints, selecting potential line segments, and the selection of the routes. Provide a copy of the complete routing study conducted by

the utility or consultant. State which route the applicant believes best addresses the requirements of PURA and P.U.C. Substantive Rules.

Oncor retained Halff to prepare the Environmental Assessment. The objective of the Environmental Assessment was to provide information in support of this Application in addressing the requirements of Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, the Public Utility Commission ("PUC" or "Commission") CCN Application form, and 16 Texas Administrative Code ("TAC") § 25.101 as these apply to the Proposed Transmission Line Project. By examining existing environmental conditions, including the human and natural resources that are located in the project area, the Environmental Assessment appraises the environmental effects that could result from the construction, operation, and maintenance of the Proposed Transmission Line Project. The Environmental Assessment may also be used in support of any additional local, state, or federal permitting activities that may be required for the Proposed Transmission Line Project.

To assist Halff in its evaluation, Oncor provided information regarding the project endpoints and route, the need for the project, engineering and design requirements, construction practices, and ROW requirements.

The Proposed Transmission Line Project includes a single proposed route, for which all necessary ROW has been acquired, and which addresses the requirements of PURA and the PUC's Substantive Rules.

Specific discussion regarding selection of a study area, identification of constraints, and assessment of the proposed route is set forth in the Environmental Assessment. *See* Attachment No. 1.

18. Public Meeting or Public Open House:

Provide the date and location for each public meeting or public open house that was held in accordance with 16 TAC §22.52. Provide a summary of each public meeting or public open house including the approximate number of attendants, and a copy of any survey provided to attendants and a summary of the responses received. For each public meeting or public open house provide a description of the method of notice, a copy of any notices, and the number of notices that were mailed and/or published.

Oncor hosted one public participation meeting in accordance with 16 TAC § 22.52. It was attended by personnel from Oncor, Halff, and Integra Realty Resources ("Integra"), a contractor assisting Oncor in property abstracting. The public participation meeting was held on November 29, 2022, from 4:00 p.m. to 7:00 p.m., at the Suites of Keller Conference Center in Keller, Texas.

Oncor mailed a total of 99 individual written notices of the meeting to owners of property within 300 feet of the centerlines of KWP-KM and KWP-R in accordance with 16 TAC

§ 22.52. In consideration of horizontal accuracy limitations as it relates to appraisal district data and aerial photography interpretation, notification to property owners was over-inclusive, including properties crossed by or within 320 feet of the Proposed Transmission Line Project route centerlines. Public notices were published on November 16, 2022, in the *Fort Worth Star-Telegram* announcing the location, time, and purpose of the meeting. Oncor provided notice of the public meeting to the Department of Defense Siting Clearinghouse in accordance with 16 TAC § 22.52(a)(4).

The meeting was designed to solicit comments and input from residents, landowners, public officials, and other interested parties concerning the Proposed Transmission Line Project. The objectives of the meeting included promoting an understanding of the Proposed Transmission Line Project, including the purpose, need, and potential benefits and impacts; informing and educating the public with regard to the CCN certification process and schedule; and gathering information about the values and concerns of the public and community leaders.

The meeting was configured in an informal information station format rather than a formal speaker/audience format, with each station assigned to a particular aspect of the project or routing process and staffed with representatives from Oncor, Halff, and/or Integra. Each station had exhibits, maps, illustrations, aerial photography, or other information describing certain project aspects and subject matter information. Attendees were encouraged at the meeting's outset to visit each station in order, so the entire process could be explained in the general sequence of project development. Oncor has found this meeting format valuable due to its informality, which allows attendees to gather information most important to them and spend as much time as necessary with those particular project aspects. Additionally, individual discussions allow for and encourage more interaction from attendees who otherwise might be hesitant to participate in a more formal setting.

One individual signed in as attending the public participation meeting. No questionnaire was returned at the meeting or received by Oncor or Halff via mail, email, or phone at a later date.

Additional discussion concerning the public involvement program and specific information regarding the public participation meeting may be found in Section 2.4, pages 2-8 through 2-9, and Section 4.0, page 4-1, of the Environmental Assessment included as Attachment No. 1. A representative copy of the notice that was provided to property owners and a copy of the questionnaire provided to the meeting attendee is included in Appendix B of the Environmental Assessment.

19. Routing Maps:

Base maps should be a full scale (one inch = not more than one mile) highway map of the county or counties involved, or other maps of comparable scale denoting sufficient cultural and natural features to permit location of all routes in the field. Provide a map (or maps) showing the study area, routing constraints, and all routes or line segments that were considered prior to the selection of the routes. Identify the routes and any existing facilities to be interconnected or coordinated with the project. Identify any taps, ties, meter points, or other facilities involving other utilities on the routing map. Show all existing transmission facilities located in the study area. Include the locations of radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites (subject to the instructions in Question 27), and any environmentally sensitive areas (subject to the instructions in Question 29).

A one inch = 200 feet map (Figure 3-1) is included in the Appendix D map pocket of the Environmental Assessment included as Attachment No. 1. This base map includes sufficient cultural and natural features to identify the location of the route in the field. This map delineates the study area and proposed route for the Proposed Transmission Line Project. The map depicts existing facilities in the area of the Proposed Transmission Line Project, including taps, ties, meter points, or other utility facilities, as applicable, including the existing facilities that will interconnect with the Proposed Transmission Line Project. The map also depicts the approximate locations of radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites, and environmentally sensitive areas, if any.

Provide aerial photographs of the study area displaying the date that the photographs were taken or maps that show (1) the location of each route with each route segment identified, (2) the locations of all major public roads including, as a minimum, all federal and state roadways, (3) the locations of all known habitable structures or groups of habitable structures (see Question 19 below) on properties directly affected by any route, and (4) the boundaries (approximate or estimated according to best available information if required) of all properties directly affected by any route.

Figure 3-1 in Appendix D depicts on an aerial photograph, as applicable: (1) the location of the proposed route for the KWP-KM and KWP-R transmission line segments; (2) the locations of all major public roads, including all federal and state roadways; (3) the locations of all known habitable structures on properties directly affected by the route; and (4) the boundaries (approximate or estimated according to best available information) of all properties directly affected by the route. In addition, the locations of radio transmitters and other electronic installations, airstrips, irrigated pasture or cropland, parks and recreational areas, historical and archeological sites, and any environmentally sensitive areas are depicted, if any.

For each route, cross-reference each habitable structure (or group of habitable structures) and directly affected property identified on the maps or photographs with a list of

corresponding landowner names and addresses and indicate which route segment affects each structure/group or property.

Attachment No. 6 is a table that cross references each habitable structure and directly affected property identified in Figure 3-1 (Appendix D map pocket) of the Environmental Assessment; the cross reference table includes corresponding landowner names and addresses. The ROW area in which the Proposed Transmission Line Project will be located has already been acquired.

20. Permits:

List any and all permits and/or approvals required by other governmental agencies for the construction of the proposed project. Indicate whether each permit has been obtained.

The following permits/approvals will be obtained after PUC approval of the CCN and prior to beginning construction, if necessary:

1. Texas Department of Transportation ("TxDOT") permit(s) for crossing a state-maintained roadway.
2. A Storm Water Pollution Prevention Plan ("SWPPP") will be prepared and a Notice of Intent will be submitted to the Texas Commission on Environmental Quality under the Texas Pollutant Discharge Elimination System ("TPDES") program.
3. A cultural resources survey plan will be developed with the Texas Historical Commission ("THC") for the proposed project.
4. Consultation with the U.S. Army Corps of Engineers will occur following the Commission's approval of this Application to determine appropriate requirements under Section 404/Section 10 Permit criteria.
5. Consultation with the U.S. Fish and Wildlife Service will occur following the Commission's approval of this Application to determine appropriate requirements under the Endangered Species Act.

21. Habitable structures:

For each route list all single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis within 300 feet of the centerline if the proposed project will be constructed for operation at 230kV or less, or within 500 feet of the centerline if the proposed project will be constructed for operation at greater than 230kV. Provide a general description of each habitable structure and its distance from the centerline of the route. In cities, towns or rural subdivisions, houses can be identified in groups. Provide the number of habitable structures in each group and list the distance from the centerline of the route to the closest and the farthest habitable structure in the group. Locate all listed habitable structures or groups of structures on the routing map.

A listing of all habitable structures located within 300 feet of the proposed routes, along with a general description of each habitable structure and its distance from the centerlines of the proposed routes, is provided in the table in Attachment No. 7.

Figure 3-1 (Appendix D map pocket) of the Environmental Assessment depicts the locations of all known habitable structures directly affected by the proposed routes.

22. Electronic Installations:

For each route, list all commercial AM radio transmitters located within 10,000 feet of the center line of the route, and all FM radio transmitters, microwave relay stations, or other similar electronic installations located within 2,000 of the center line of the route. Provide a general description of each installation and its distance from the center line of the route. Locate all listed installations on a routing map.

There are no known AM radio transmitters located within 10,000 feet of the proposed route centerlines and no known FM radio transmitters located within 2,000 feet of the proposed route centerlines. There are no other communication towers or similar electronic installations located within 2,000 feet of the proposed route centerlines.

Please refer to Section 3.7.7, pages 3-46 through 3-47, and Section 5.7.6, page 5-13, of the Environmental Assessment included as Attachment No. 1.

23. Airstrips:

For each route, list all known private airstrips within 10,000 feet of the center line of the project. List all airports registered with the Federal Aviation Administration (FAA) with at least one runway more than 3,200 feet in length that are located within 20,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 100:1 horizontal slope (one foot in height for each 100 feet in distance) from the closest point of the closest runway. List all listed airports registered with the FAA having no runway more than 3,200 feet in length that are located within 10,000 feet of the center line of any route. For each such airport, indicate whether any transmission structures will exceed a 50:1 horizontal slope from the closest point of the closest runway. List all heliports located within 5,000 feet of the center line of any route. For each such heliport, indicate whether any transmission structures will exceed a 25:1 horizontal slope from the closest point of the closest landing and takeoff area of the heliport. Provide a general description of each listed private airstrip, registered airport, and heliport; and state the distance of each from the center line of each route. Locate and identify all listed airstrips, airports, and heliports on a routing map.

Halff's review of federal and state aviation/airport maps and directories, aerial photo interpretation, and reconnaissance survey identified: no FAA-registered airports with a runway greater than 3,200 feet in length within 20,000 feet of the proposed routes; no FAA-registered airport without a runway greater than 3,200 feet in length within 10,000

feet of the proposed routes; no heliports within 5,000 feet of the proposed routes; and no private airstrips within 10,000 feet of the proposed routes.

Please refer to Section 3.7.6, pages 3-46 through 3-58, and Section 5.7.5, pages 5-12 through 5-13, of the Environmental Assessment included as Attachment No. 1.

24. Irrigation Systems:

For each route identify any pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) that will be traversed by the route. Provide a description of the irrigated land and state how it will be affected by each route (number and type of structures etc.). Locate any such irrigated pasture or cropland on a routing map.

Results of aerial photography interpretation and a field reconnaissance survey did not identify any agricultural land irrigated by traveling irrigation systems (rolling or pivot type) that will be traversed by the routes of the Proposed Transmission Line Project.

Please refer to Section 3.7.3, page 3-44; Section 5.7.3, page 5-11; and Table 5-1, page 5-16, of the Environmental Assessment included as Attachment No. 1.

25. Notice:

Notice is to be provided in accordance with 16 TAC §22.52.

A. Provide a copy of the written direct notice to owners of directly affected land. Attach a list of the names and addresses of the owners of directly affected land receiving notice.

A copy of the written direct notice, with attached map, that will be provided via first-class mail to the owners of land that will be "directly affected" by the Proposed Transmission Line Project, as that term is used in 16 TAC § 22.52(a)(3), is included as Attachment No. 8. The names and addresses of the directly affected landowners to whom notice will be mailed are included as Attachment No. 6. The list in Attachment No. 6 consists of landowner data obtained via the Tarrant County Tax Office and Tarrant County Appraisal District, and when necessary, via deed research.

B. Provide a copy of the written notice to utilities that are located within five miles of the routes.

A copy of the written direct notice, with attached map, that will be provided to utilities that are located within five miles of the routes is included as Attachment No. 9.

C. Provide a copy of the written notice to county and municipal authorities, and the Department of Defense Siting Clearinghouse. Notice to the DoD Siting

Clearinghouse should be provided at the email address found at http://www.acq.osd.mil/dodsc/.

osd.dod-siting-clearinghouse@mail.mil

A representative copy of the written notice, with attached map, that will be provided to county authorities is included as Attachment No. 9. The following county authorities will be provided the requisite notice on or before the filing date as required by Commission rules:

Tarrant County, County Judge
Tarrant County, County Commissioners
Tarrant County, County Administrator
Tarrant County, County Historical Commission

A representative copy of the written notice, with attached map, that will be provided to municipal authorities is included as Attachment No. 9. The following municipal authorities will be provided the requisite notice on or before the filing date, as required by Commission rules:

- City of Keller: Mayor, Mayor Pro Tem, Council Members, City Manager, City Secretary, Economic Development Manager
- Keller Independent School District
- City of Colleyville: Mayor, Mayor Pro Tem, Council Members, City Manager, Assistant City Manager, City Secretary
- City of Fort Worth: Mayor, Council Members, City Manager, Assistant City Manager, City Secretary
- City of Haltom City: Mayor, Mayor Pro Tem, Council Members, City Manager, Assistant City Manager, City Secretary
- City of Haslet: Mayor, Mayor Pro Tem, Council Members, City Secretary
- City of Hurst: Mayor, Council Members, City Manager, Assistant City Manager, City Secretary
- City of North Richland Hills: Mayor, Council Members, City Manager, Assistant City Manager, Deputy Assistant City Manager, City Secretary
- City of Roanoke: Mayor, Mayor Pro Tem, Council Members, City Manager, City Secretary
- City of Southlake: Mayor, Mayor Pro Tem, Deputy Mayor Pro Tem, Council Members, City Manager, Assistant City Manager, City Secretary
- City of Watauga: Mayor, Mayor Pro Tem, Council Members, City Manager, City Secretary
- City of Westlake: Mayor, Mayor Pro Tem, Council Members, Assistant Town Manager, Town Secretary

A representative copy of the written notice, with attached map, that will be provided to the Department of Defense Siting Clearinghouse at the email address specified above is included as Attachment No. 9. Additionally, notice will be provided to the Department of Defense Siting Clearinghouse, via first-class mail, at the physical address below:

DOD Siting Clearinghouse
3400 Defense Pentagon, Room 5C646
Washington, DC 20301-3400

A copy of the application and all attachments will also be provided to the Texas Office of Public Utility Counsel ("OPUC"). A representative copy of the written notice, with attached map, that will be provided to OPUC is included as Attachment No. 9.

D. Provide a copy of the notice that is to be published in newspapers of general circulation in the counties in which the facilities are to be constructed. Attach a list of the newspapers that will publish the notice for this application. After the notice is published, provide the publisher's affidavits and tear sheets.

Notice for this Application will be published in the *Fort Worth Star-Telegram*, a newspaper of general circulation in Tarrant County. A representative copy of the general public notice to be published is included as Attachment No. 10.

Proof of publication will be provided in the form of publisher's affidavits and tear sheets following publication of this notice.

For a CREZ application, in addition to the requirements of 16 TAC § 22.52 the applicant shall, not less than twenty-one (21) days before the filing of the application, submit to the Commission staff a "generic" copy of each type of alternative published and written notice for review. Staff's comments, if any, regarding the alternative notices will be provided to the applicant not later than seven days after receipt by Staff of the alternative notices, Applicant may take into consideration any comments made by Commission staff before the notices are published or sent by mail.

Not applicable.

26. Parks and Recreation Areas:

For each route, list all parks and recreational areas owned by a governmental body or an organized group, club, or church and located within 1,000 feet of the center line of the route. Provide a general description of each area and its distance from the center line. Identify the owner of the park or recreational area (public agency, church, club, etc.). List the sources used to identify the parks and recreational areas. Locate the listed sites on a routing map.

A review of federal, state, and local websites and maps, as well as field reconnaissance surveys, identified no recreational areas owned by a government body or an organized group, club or church within 1,000 feet of the route centerlines of the Proposed Transmission Line Project.

Please refer to Table 5-1, page 5-16; Section 3.7.2, page 3-44; and Section 5.7.2, page 5-10, of the Environmental Assessment included as Attachment No. 1.

27. Historical and Archeological Sites:

For each route, list all historical and archeological sites known to be within 1,000 feet of the center line of the route. Include a description of each site and its distance from the center line. List the sources (national, state or local commission or societies) used to identify the sites. Locate all historical sites on a routing map. For the protection of the sites, archeological sites need not be shown on maps.

Research and a records review were conducted of the THC Historic Sites Atlas and the THC Archaeological Sites Atlas to locate known cultural resources within 1,000 feet of the proposed route centerlines. THC records indicated no historical sites known to be within 1,000 feet of the proposed route centerlines. THC records indicated no National Register of Historic Places ("NRHP"), State Antiquities Landmarks ("SALs"), or cemeteries recorded within 1,000 feet of the proposed route centerlines. No recorded archaeological sites or historic structures were located within 1,000 feet of the proposed route centerlines.

Please refer to Table 5-1, page 5-16; Section 3.8, pages 3-47 through 3-55; and Section 5.8, pages 5-13 through 5-15, of the Environmental Assessment included as Attachment No. 1.

28. Coastal Management Program:

For each route, indicate whether the route is located, either in whole or in part, within the coastal management program boundary as defined in 31 T.A.C. §503.1. If any route is, either in whole or in part, within the coastal management program boundary, indicate whether any part of the route is seaward of the Coastal Facilities Designation Line as defined in 31 T.A.C. §19.2(a)(21). Using the designations in 31 T.A.C. §501.3(b), identify the type(s) of Coastal Natural Resource Area(s) impacted by any part of the route and/or facilities.

The Proposed Transmission Line Project is not located, either in whole or in part, within the coastal management program boundary as defined in 31 TAC §503.1.

29. Environmental Impact:

Provide copies of any and all environmental impact studies and/or assessments of the project. If no formal study was conducted for this project, explain how the routing and construction of this project will impact the environment. List the sources used to identify

the existence or absence of sensitive environmental areas. Locate any environmentally sensitive areas on a routing map. In some instances, the location of the environmentally sensitive areas or the location of protected or endangered species should not be included on maps to ensure preservation of the areas or species.

The Environmental Assessment prepared by Halff is included as Attachment No. 1.

Within seven days after filing the application for the project, provide a copy of each environmental impact study and/or assessment to the Texas Parks and Wildlife Department (TPWD) for its review at the address below. Include with this application a copy of the letter of transmittal with which the studies/assessments were or will be sent to the TPWD.

Wildlife Habitat Assessment Program
Wildlife Division
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

The applicant shall file an affidavit confirming that the letter of transmittal and studies/assessments were sent to TPWD.

A copy of the Environmental Assessment and Application will be provided to the Texas Parks and Wildlife Department for review within seven days following the filing of the Application for the Proposed Transmission Line Project. Please refer to Attachment No. 12 for a copy of the transmittal letter with which the Environmental Assessment and Application will be sent to the TPWD.

30. Affidavit

Attach a sworn affidavit from a qualified individual authorized by the applicant to verify and affirm that, to the best of their knowledge, all information provided, statements made, and matters set forth in this application and attachments are true and correct.

31. List of Attachments to the CCN Application

Attachment No. 1:	Environmental Assessment
Attachment No. 2:	Layout of the Existing Keller Wall Price Substation with Proposed Modifications and Layout of the Proposed Keller Wall Price Switch
Attachment No. 3:	ERCOT's Independent Review of Oncor Roanoke Area Upgrades Project dated July 19, 2022
Attachment No. 4:	Transmission Area Map showing ERCOT's Recommended Roanoke Area Upgrades
Attachment No. 5:	Schematic of Transmission System in Proximate Area of Project

Attachment No. 6:	List of Directly Affected Landowners for Notice
Attachment No. 7:	Habitable Structures within 300 Feet of the Proposed Routes
Attachment No. 8:	Copy of Notice to Directly Affected Landowners
Attachment No. 9:	Copy of Notice to Department of Defense Siting Clearinghouse, OPUC, Utility, County, and Municipalities
Attachment No. 10:	Copy of Newspaper/Public Notice
Attachment No. 11:	Copy of Courtesy Notice to Pipeline Owners/Operators
Attachment No. 12:	Transmittal Letter to TPWD
Attachment No. 13:	Affidavit

ENVIRONMENTAL ASSESSMENT

for the proposed

Keller Wall Price—Keller Magnolia 138 kV Transmission Line Project and
Keller Wall Price—Roanoke 138 kV Rebuild Project
in Tarrant County, Texas

Oncor Electric Delivery Company LLC
P.O. Box 970
Fort Worth, Texas 76101

By

1201 North Bowser Road
Richardson, Texas 75081

MARCH 2023

ATTACHMENT NO. 1

TABLE OF CONTENTS

APPENDICES

TABLES

FIGURES

ACRONYMS AND ABBREVIATIONS

AD	*Anno Domini* (after Christ)
APLIC	Avian Power Line Interaction Committee
BC	Before Christ
BEG	Bureau of Economic Geology
BMP	Best Management Practice
BP	Before Present
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
Cornell	Cornell Lab of Ornithology
DM	Delisted, Monitored, or Recovered Species
DoD	Department of Defense
e.g.,	*exempli gratia* (for example)
EMST	Ecological Mapping Systems of Texas
EOID	Element Occurrence Identification number
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ESA	Endangered Species Act
et al.	*et alia* (and others)
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FM	Farm-to-Market Road
GIS	Geographic Information System
GCD	Groundwater Conservation District
GLO	Texas General Land Office
Halff	Halff Associates, Inc.
HPA	High Probability Area
i.e.,	*id est* (that is)
Integra	Integra Realty Resources
ISD	Independent School District
IUCN	International Union for Conservation of Nature and Natural Resources
kV	Kilovolt (1,000 Volts)
LRR	Land Resource Region
LT	Federally Listed Threatened Species
MBTA	Migratory Bird Treaty Act
MLRA	Major Land Resource Area
NCTCOG	North Central Texas Council of Governments
NDD	Natural Diversity Database
NETR	Nationwide Environmental Title Research
NGS	National Geographic Society
NHD	National Hydrology Data Set
NRCS	Natural Resources Conservation Service

ACRONYMS AND ABBREVIATIONS

NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
Oncor	Oncor Electric Delivery Company LLC
OTHM	Official Texas Historical Markers
PUCT	Public Utility Commission of Texas
ROW	Right-of-Way
RRC	Railroad Commission of Texas
SAL	State Antiquities Landmark
SCS	Soil Conservation Service (agency was renamed NRCS, see above)
Section 404	Section 404 of the Clean Water Act
SFR	Single Family Residence
SGCN	Species of Greatest Conservation Need
SWPPP	Storm Water Pollution Prevention Plan
T	State Listed Threatened Species
TAC	Texas Administrative Code
TARL	Texas Archeological Research Laboratory
TASA	Texas Archaeological State Atlas
TDA	Texas Department of Agriculture
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TNRIS	Texas Natural Resource Information System
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
U.S.	United States
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNPS	United States National Park Service
var.	Variation

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1.0 PROJECT DESCRIPTION

1.1 Scope of the Project

Oncor Electric Delivery Company LLC (Oncor) proposes to re-build an existing double-circuit 138 kV transmission line segment and construct a new double-circuit 138 kilovolt (kV) transmission line segment, all within Oncor's existing easement area. The rebuilt transmission line segment will begin at the existing Keller Wall Price Substation, located west of United States (US) Highway 377, northeast of and adjacent to the intersection of Chisolm Trail and King Trail in Keller, and extending approximately 0.3 mile to the northwest. The new transmission line segment will begin at the new Keller Wall Price Switch, located directly adjacent to and south of the existing Keller Wall Price Substation, and will parallel the existing transmission line for 0.3 mile to the proposed project's endpoint. The new double-circuit transmission line and the rebuilt double-circuit transmission line will each be constructed on new monopole structures. Collectively, these two transmission line segments compose and define the project. Project endpoints are shown relative to the location of the existing substation and neighborhood cross streets on **Figure 1-1**.

Oncor retained Halff Associates, Inc. (Halff) to prepare this Environmental Assessment to support Oncor's application for a Certificate of Convenience and Necessity (CCN). This report has been prepared to provide information and address the requirements of Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, Public Utility Commission of Texas (PUCT) Procedural Rules Section 22.52(a)(4), PUCT Substantive Rules Section 25.101, and the PUCT CCN application form for a proposed transmission line. This report may also be used in support of local, state, or federal permitting activities that may be required for the proposed project.

To assist Halff in the evaluation of the proposed project, Oncor provided Halff with information regarding the need, construction practices, and right-of-way (ROW) requirements for the proposed project. Oncor also provided information regarding the engineering and design requirements for the environmental assessment.

The following sections include a description of the proposed project (**Section 1.0**), an explanation of the environmental assessment methodology (**Section 2.0**), a description of

the existing environmental and social conditions in the study area (**Section 3.0**), a description of the public involvement process (**Section 4.0**), and an evaluation of expected environmental impacts of the proposed transmission line routes (**Section 5.0**). A list of report preparers (**Section 6.0**) and bibliographical references used in preparing this report (**Section 7.0**) are also provided. The appendices include copies of agency correspondence (**Appendix A**), public participation meeting information (**Appendix B**), proximity to habitable structures data (**Appendix C**), and an environmental and land use constraints map (**Appendix D**).

1.2 Need for the Project

Oncor will provide support for the purpose and need for the proposed project as a part of the CCN application.

1.3 Description of Proposed Construction

1.3.1 Transmission Line Design

For the proposed project, Oncor anticipates the use of a self-supporting, double-circuit steel or concrete pole (**Figure 1-2**). Design criteria will comply with applicable statutes, the appropriate edition of the National Electrical Safety Code, and Oncor's standard design practices. The typical pole height is anticipated to be 110 to 120 feet, but the pole height will vary depending on terrain and subsurface investigations. The results of site-specific geotechnical and engineering studies will be used to determine the appropriate design and placement of the structures.

1.3.2 Right-of-Way Requirements

The existing transmission line easement ROW is 100 feet wide, and the proposed project will be constructed within this existing ROW area. The existing ROW will be utilized in a manner to closely follow the layout of the existing locations of poles within the transmission line easement, to the extent feasible, as shown in **Figure 1-2**.

1.3.3 Clearing and Construction Access Requirements

All brush and undergrowth within the ROW will be removed and maintained without the use of heavy equipment. For areas requiring hand clearing within existing residential properties, vegetation will be cut level with the ground. No stump exceeding 2 inches in

diameter above the ground will remain. Any tree located in a fence line having a diameter greater than 4 inches will be cut even with the top of the fence. Stumps located on uneven ground will be cut where a mowing machine can pass over the ROW without striking any stumps, roots, or snags.

Access through existing privacy fences will be required and will be coordinated with the property owners to secure access during construction and access for future maintenance. Temporary chain link fencing panels will be provided during construction until fences can be replaced with like-kind materials after construction.

Oncor has a process of reviewing obstructions within the ROW during the design process, which includes coordination with property owners. Temporary obstacles within the ROW must be removed by the property owners upon Oncor's request. Clearances to any other existing easement obstructions will be reviewed and coordinated with property owners to ensure obstructions will not impede Oncor's ability to safely construct and maintain the project.

1.3.4 Monopole Structure Assembly and Erection

Foundations for each of the monopole structures will be completed before erecting the structures. For this project, Oncor anticipates using anchor bolted foundations. A hole will be augured into the ground at each structure location, an anchor bolt cage will be placed in addition to steel rebar to reinforce the foundation, and the hole will be filled with concrete. Depth and diameter of the foundation will vary depending on the design of the structure specific to that location.

1.3.5 Conductor Stringing

The conductor stringing phase will begin once the structures have been erected along the transmission line centerlines. Specialized equipment will be attached to properly support and protect the conductor during the pulling, tensioning, and sagging operations. Once conductors and shield wire are in place and tension and sag have been verified, conductor and shield wire hardware will be installed at each suspension point to maintain conductor position. Conductor stringing continues until the transmission line construction is complete. All construction equipment, temporary culverts and fencing, and environmental controls previously installed will be removed after construction is complete and fences restored.

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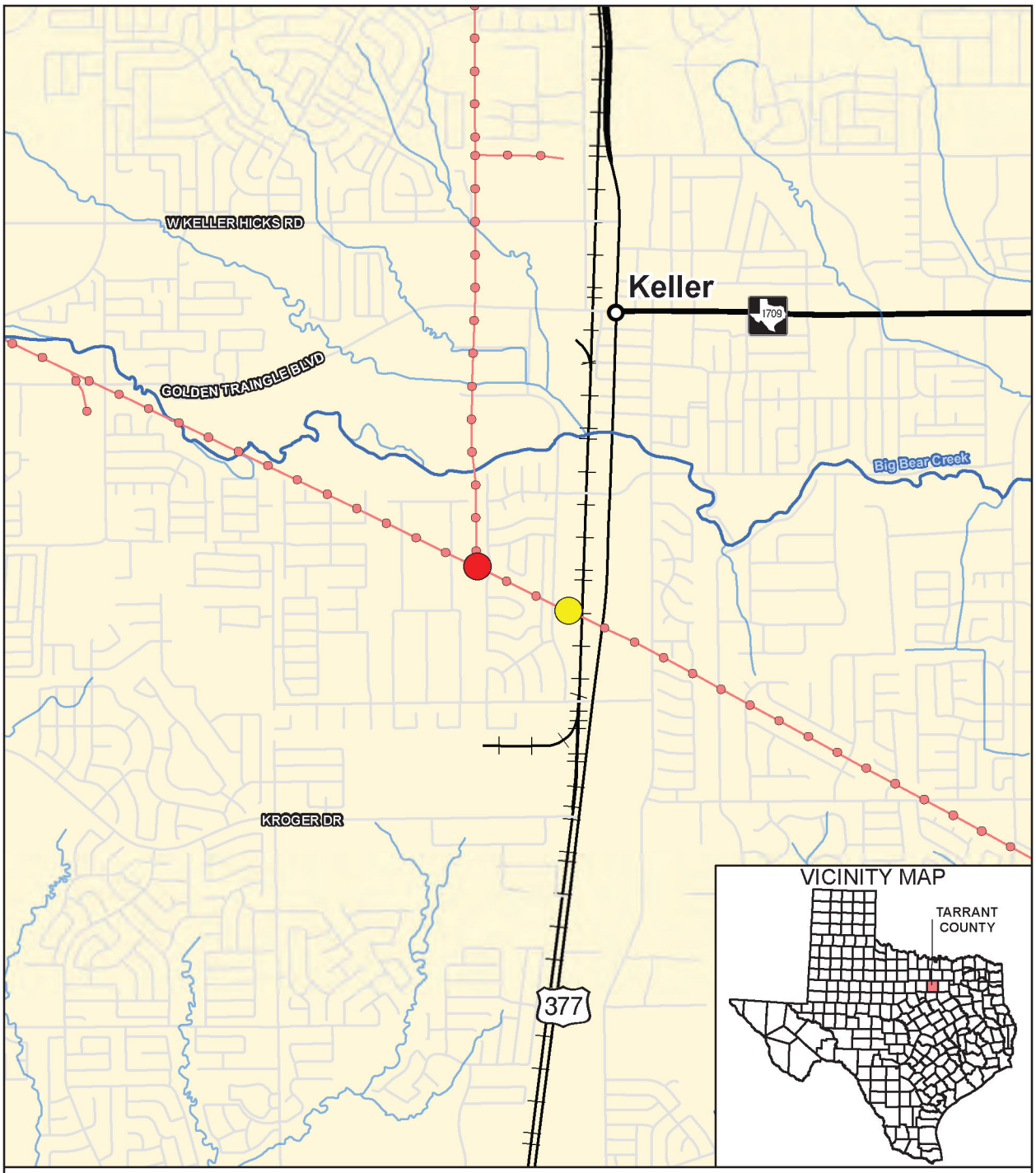

FIGURE 1-1. PROJECT LOCATION MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT
AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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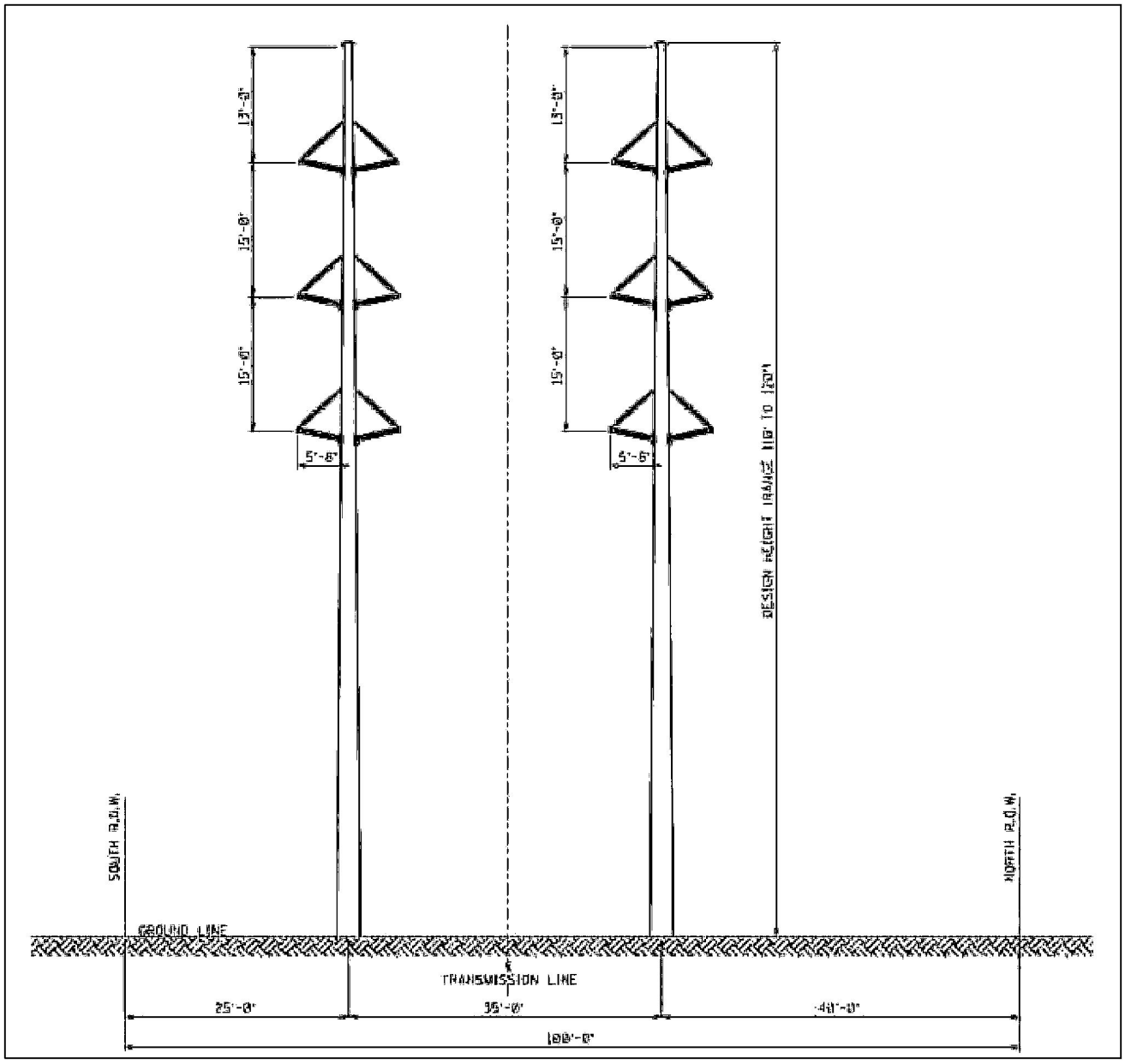

FIGURE 1-2. TYPICAL 138 kV TANGENT DOUBLE-CIRCUIT POLE (FOR EACH LINE)*

KELLER WALL PRICE—KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT AND KELLER WALL PRICE—ROANOKE 138 kV REBUILD PROJECT

— FIGURE NOT TO SCALE —

*138 kV tangent double-circuit two-pole graphic provided by Oncor

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2.0 ENVIRONMENTAL ASSESSMENT METHODOLOGY

The objective of the study is to evaluate the two proposed transmission line segments for the proposed project. Throughout this report, the terms "environment" or "environmental" are used to include both the human and the natural environment. Upon receipt of the proposed transmission line locations from Oncor, Halff utilized a comprehensive methodology to evaluate the proposed project in accordance with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, 16 Texas Administrative Code (TAC) Section 25.101, including the PUCT policy of prudent avoidance, and the PUCT CCN Application Form for a Proposed Transmission Line.

The following subsections provide a description of the evaluation process, including study area delineation, data collection, reconnaissance survey, constraints mapping, and evaluation of the proposed project.

2.1 Study Area Delineation

The first step in the identification of the proposed project was to define a study area. This area needed to encompass both project endpoints and include an area large enough to adequately evaluate the proposed transmission lines in support of the CCN Application. Delineating the study area establishes boundaries and limits for the information gathering process (i.e., identifying environmental and land use constraints) and allows Halff to focus its evaluation within a specific area.

Halff reviewed United States Geological Survey (USGS) 1:24,000 scale topographic maps (USGS, 1981-2016) and aerial photography (Nearmap, 2022) to develop and refine the study area boundary for the proposed project. Halff located and depicted the proposed project endpoints on various maps to identify major features in or near the study area. **Figure 2-1** provides the study area boundary Halff delineated overlain on aerial photography and general constraints resulting from the above-described process.

Figure 2-2 provides a more detailed map of the study area relative to the local road network. The study area is a parallelogram shape rotated and centered along the existing transmission line corridor. **Figure 2-1** shows there are many houses and other structures in close proximity to the existing transmission line. The study area is sufficiently wide and

extends beyond the project endpoints to ensure that these features near the proposed project can be identified and recorded, as appropriate, in the EA.

2.2 Data Collection

2.2.1 Solicitation of Information from Local, State, and Federal Officials and Agencies

Once the study area boundary was identified, Halff initiated a variety of data collection activities. One of the first such activities was the development of a list of officials to whom a consultation letter regarding the proposed project would be mailed. The purpose of the consultation letters was to inform the various officials and agencies of the proposed project, allowing them the opportunity to provide information they may have regarding the study area. Halff utilized regional planning websites and confirmation via telephone calls, if needed, to identify local officials within each city or town. State and federal agencies that may have potential permitting requirements for, or other interests in, the proposed project were also identified. Correspondence was sent to the following federal or state agencies, and local officials and departments. Copies of all correspondence to and from these agencies are included in **Appendix A**.

FEDERAL AGENCIES

- Federal Aviation Administration (FAA) – Southwest Region
- Federal Emergency Management Agency (FEMA) – Region VI
- Natural Resources Conservation Service (NRCS)
- U.S. Army Corps of Engineers (USACE) – Fort Worth Regulatory Office
- U.S. Department of Defense (DoD) – Siting Clearinghouse
- U.S. Fish and Wildlife Service (USFWS) – Arlington Field Office

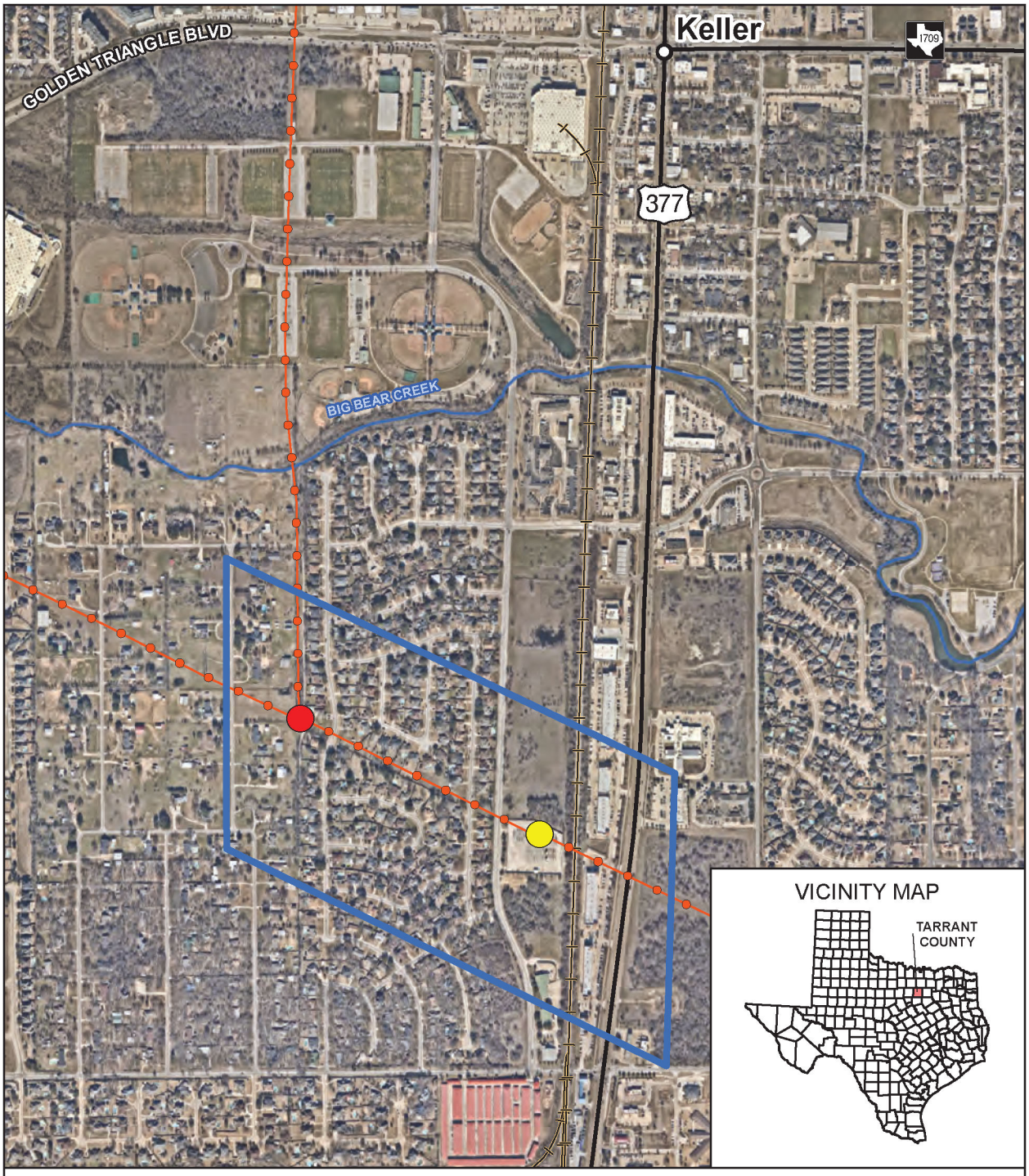

FIGURE 2-1. PROJECT AREA MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT
AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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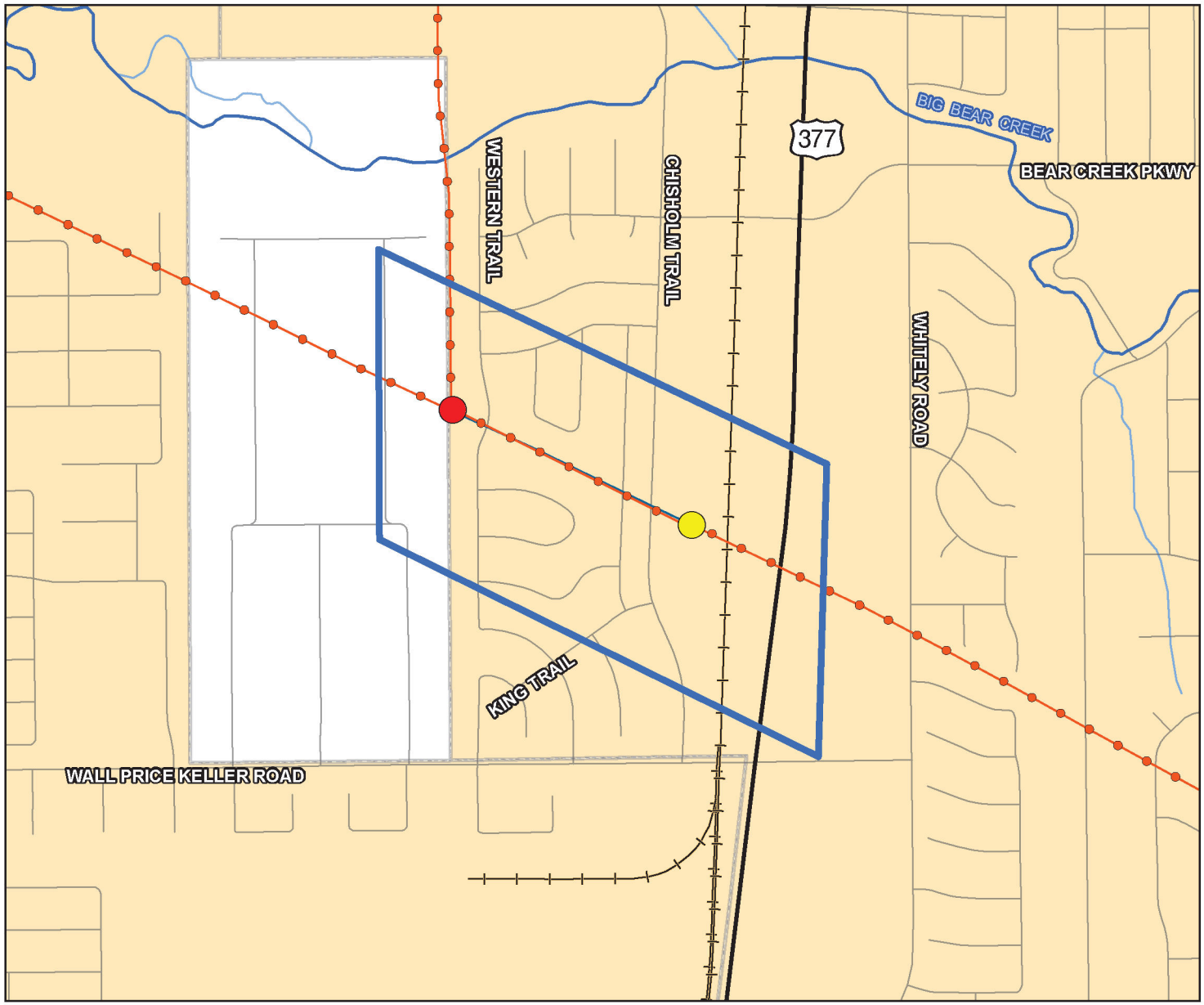

LEGEND

- STUDY AREA
- PROJECT ENDPOINT
- EXISTING KELLER WALL PRICE SUBSTATION
- MAJOR ROADS
- MINOR ROADS
- RAILROADS
- EXISTING TRANSIMISSION LINE
- NAMED TRIBUTARY
- UNNAMED TRIBUTARY

CITY LIMIT BOUNDARIES

- MUNICIPAL
- UNICORPORATED AREAS

SOURCE: TNRIS, 2022

MAP VIEW EXTENT

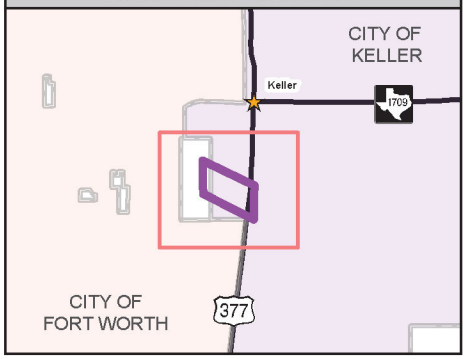

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FIGURE 2-2.

STUDY AREA BOUNDARY MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT

AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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STATE AGENCIES

- Railroad Commission of Texas (RRC)
- Texas Archeological Research Laboratory (TARL)
- Texas Department of Transportation (TxDOT) – Aviation Division, Fort Worth District, and Office of Environmental Affairs
- Texas General Land Office (GLO)
- Texas Historical Commission (THC)
- Texas Parks and Wildlife Department (TPWD)

REGIONAL OR INDEPENDENT AGENCIES

- North Central Texas Council of Governments (NCTCOG)

COUNTY AGENCIES

- Tarrant County Officials (County Judge, County Commissioners)

CITY AGENCIES

- City of Keller (includes council members, city staff, and economic development boards)
- Tarrant County Historic Commission

SCHOOL DISTRICTS

- Keller Independent School District (ISD)

Other data collection activities included a file and record review of various regulatory agency databases, published literature, and a variety of maps. These maps included recent aerial photography (Nearmap, 2022), seamless USGS topographic maps (National Geographic Society [NGS], 2019), county highway maps (TxDOT, 2022a), and county appraisal district land parcel boundary maps (Integra Realty Resources [Integra], 2022). Findings of the data collection activities are detailed in **Section 3.0**.

2.2.2 Reconnaissance Surveys

Halff conducted a reconnaissance survey of the study area to develop and confirm the findings of the above-mentioned research and data collection activities and to identify existing conditions or constraints that may not have been previously noted. A

reconnaissance survey was conducted by visual observation from public roads and public ROW located within the study area. Reconnaissance survey information was noted in the field and geographically referenced to digital aerial photography base maps. Reconnaissance surveys were conducted on November 23 and 29, 2022. Results of the various data collection activities (e.g., solicitation of information from local, state, and federal officials and agencies, file/record review, and visual reconnaissance surveys) are included in **Section 3.0** and **Section 5.0** of this report.

2.3 Constraints Mapping

The data and information collected from the activities outlined above were used to develop an environmental and land use constraints map. The constraints map, public maps, aerial photography, reconnaissance survey, and other research were used to identify and analyze the proposed project within the study area. In this context, constraints are land use or landscape features that may affect or be affected by the location of a transmission line. The geographic locations of different constraints within and adjacent to the study area were located and considered during the impact analysis.

2.4 Public Involvement Program

A public participation meeting was held on November 29, 2022, from 4:00 P.M. to 7:00 P.M. at the Suites of Keller Conference Center in Keller, Texas. The purpose of the public participation meeting was to:

- solicit comments and input from residents, landowners, public officials, and other interested parties concerning the proposed project and the overall transmission line assessment process;
- promote a better understanding of the proposed project including the need, purpose, potential benefits, potential impacts, and the CCN certification process;
- inform the public of the application process, schedule, and the environmental assessment process; and
- identify the values and concerns of the public and community leaders.

Oncor mailed a written notice of the public participation meeting to owners of property crossed by or within 300 feet of the centerline of the proposed project in accordance with PUCT criteria. In consideration of horizontal accuracy limitations as it relates to appraisal

district data and aerial photography interpretation, notification to property owners was overinclusive, including properties crossed by or within 320 feet of the proposed project centerlines. In addition, notice was published on November 16, 2022, in the Fort Worth Star-Telegram announcing the location, time, and purpose of the meeting. A copy of the notice that was sent to the landowners and published in the newspaper can be found in **Appendix B**.

At the public participation meeting, Oncor and Halff set up information stations in the meeting room. Each station was devoted to an aspect of the proposed project and was staffed by Oncor, Integra, and/or Halff representatives. Each station had maps, illustrations, photographs, and/or text explaining each topic. Interested citizens and property owners were encouraged to visit each station so that the entire process could be explained in the general sequence of project development. The information station format is advantageous because it allows attendees a chance to receive the information in a relaxed manner and allows them to focus on their area of interest and ask specific questions. Furthermore, the one-on-one discussions with Oncor, Halff, and the other representatives encouraged more interaction from attendees who might be hesitant to speak out in a speaker/audience forum.

Upon entering, visitors were asked to sign in and were handed an information packet, including an explanation of the proposed project, a map of the proposed project, and a questionnaire. The information packet also included answers to frequently asked questions, a drawing of the proposed typical transmission structures, and a flow chart that detailed the CCN certification process for new transmission lines. The questionnaire solicited comments on the proposed project, as well as an evaluation of the information presented at the public participation meeting. Copies of the information packet and questionnaire can be found in **Appendix B**.

2.5 Evaluation of the Proposed Route

The analysis of the proposed project presented in **Section 5.0** involved the inventory and tabulation of data related to multiple environmental and land use evaluation factors. Many of these factors relate to natural and man-made features that could be crossed by the proposed route (e.g., number of road crossings.). Some of the evaluation factors include counting or measuring the distances from a feature (e.g., habitable structures) to the

proposed project. Other factors included the length of the proposed transmission line route that utilizes existing compatible corridors such as electric transmission lines. The number or amount of each factor was determined primarily by reviewing recent aerial photography within a Geographic Information System (GIS) mapping program and, where possible, verified by visual observations during field reconnaissance.

3.0 ENVIRONMENTAL SETTING OF THE STUDY AREA

3.1 Constraints Mapping

Halff identified environmental and land use constraints within the study area to develop a constraints map. This constraints map depicts the locations of potential environmentally sensitive areas and other land use constraints, which are mapped atop a recent aerial photograph base and shown in **Figure 3-1** (see **Appendix D**). The information obtained and reviewed in completing the route evaluation, as well as the environmental and land use constraints depicted in this figure, are described in detail in the following sections.

3.2 Physiography and Geology

The study area lies in the Grand Prairie Western Timbers, the westernmost subregion of the Gulf Coastal Plains physiographic region (or 'province'). The Grand Prairie Western Timbers serves as a transition between the Blackland Prairies to the east and the North Central Plains to the west, consisting of calcareous bedrock types to the east, and sandier bedrock types to the west (Bureau of Economic Geology [BEG], 1996). The study area consists primarily of only the Grayson Marl and Main Street Limestone undivided unit, a Cretaceous age formation. Consistent with the eastern edge of the physiographic region, the Grayson Marl is a mostly calcareous clay and marl layer that overlays the Marl Limestone which is a mix of marl and chalky calcareous limestone (BEG, 1992; USGS, 2022). The Woodbine Formation is represented in the southeasternmost corner of the study area and is inconsequential in coverage relative to the Grayson Marl and Main Street Limestone unit (**Figure 3-2**).

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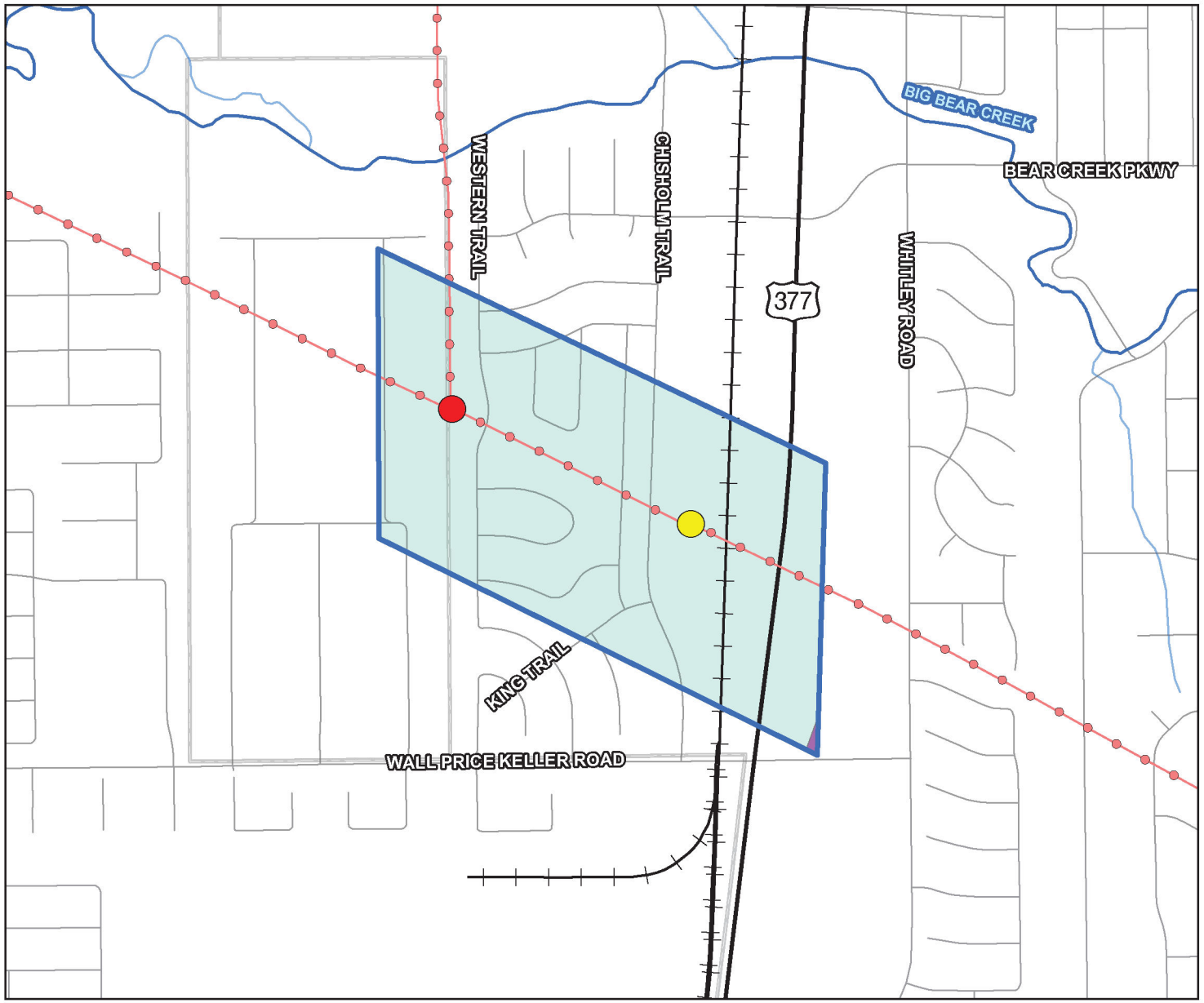

LEGEND

- STUDY AREA
- PROJECT ENDPOINT
- EXISTING KELLER WALL PRICE SUBSTATION
- MAJOR ROADS
- MINOR ROADS
- RAILROADS
- EXISTING TRANSIMISSION LINE
- NAMED TRIBUTARY
- UNNAMED TRIBUTARY
- CITY BOUNDARIES

GEOLOGIC UNIT

- GRAYSON MARL AND MAIN STREET LIMESTONE
- WOODBINE FORMATION

SOURCE: USGS, 2022a

MAP VIEW EXTENT

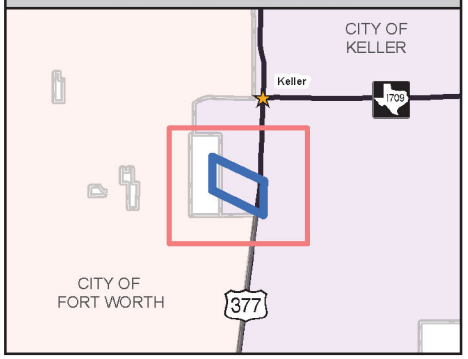

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FIGURE 3-2.

GEOLOGIC ATLAS OF TEXAS MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT

AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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3.3 Soils

Data from the NRCS (formerly the Soil Conservation Service [SCS]) were used to identify and characterize the soils that encompass the study area. In 2006, the NRCS completed its Digital General Soil Map of the United States, which consists of a broad inventory and mapping of general soil association units. Soil associations are main patterns of soils defined and delineated based on criteria, such as soil texture, parent material, slope, characteristics of horizons in the soil profile, and degree of erosion (NRCS, 2019). The NRCS project merged soil association data from the myriad of county soil surveys into a seamless national data set. This soil mapping approach resolved a basic challenge in using individual county soil surveys, which often reflect different soil names for similar soils from one county to the next. A brief description of each soil association's general characteristics is in **Table 3-1**, and **Figure 3-3** shows the NRCS-mapped soil associations within the study area. The soil associations in the seamless NRCS map were compared graphically with the soil associations defined and mapped in the county-level soil surveys for Tarrant County (NRCS, 2019; SCS, 1981). The column on the right side of **Table 3-1** shows the name of the corresponding soil association from the Tarrant County soil survey.

TABLE 3-1. SOIL ASSOCIATION WITHIN THE STUDY AREA.

Soil Association Map Unit Name[1]	Study Area %	Description of Soil Association[2]	County Soil Survey: Soil Association Name[3]
Slidell-Sanger-Ponder	100	Nearly level and gently sloping, deep, loamy and clayey soils on uplands.	Ponder-Sanger-Slidell

Sources: (NRCS, 2019; SCS, 1981)
Notes:
1. Map name corresponds with the name assigned to each association in the 2006 NRCS Digital General Soil Map of the U.S., as shown for the study area in **Figure 3-3**.
2. The description used for the soil association is a composite of the descriptions for the soil associations from individual county soil surveys that correspond geographically with the 2006 NRCS Digital General Soil Map.
3. This column shows the soil association name from the 1981 Tarrant County soil survey that corresponds to the 2006 NRCS Digital General Soil Map.

Only one soil association is mapped within the study area. The surface geology discussed in the previous section is the foundation for the soils found within the study area, and the soil association map bears a general similarity with the geologic map of the study area. Regardless of the type of underlying bedrock, the upland soils in the study area occur over relatively flat terrain with mild sloping in areas of local drainage. Soil textures vary between clays, clay loams, and sandy loams, much of which are associated with an urban land context (NRCS, 2019; SCS, 1981). None of these soils are associated with regional floodplains.

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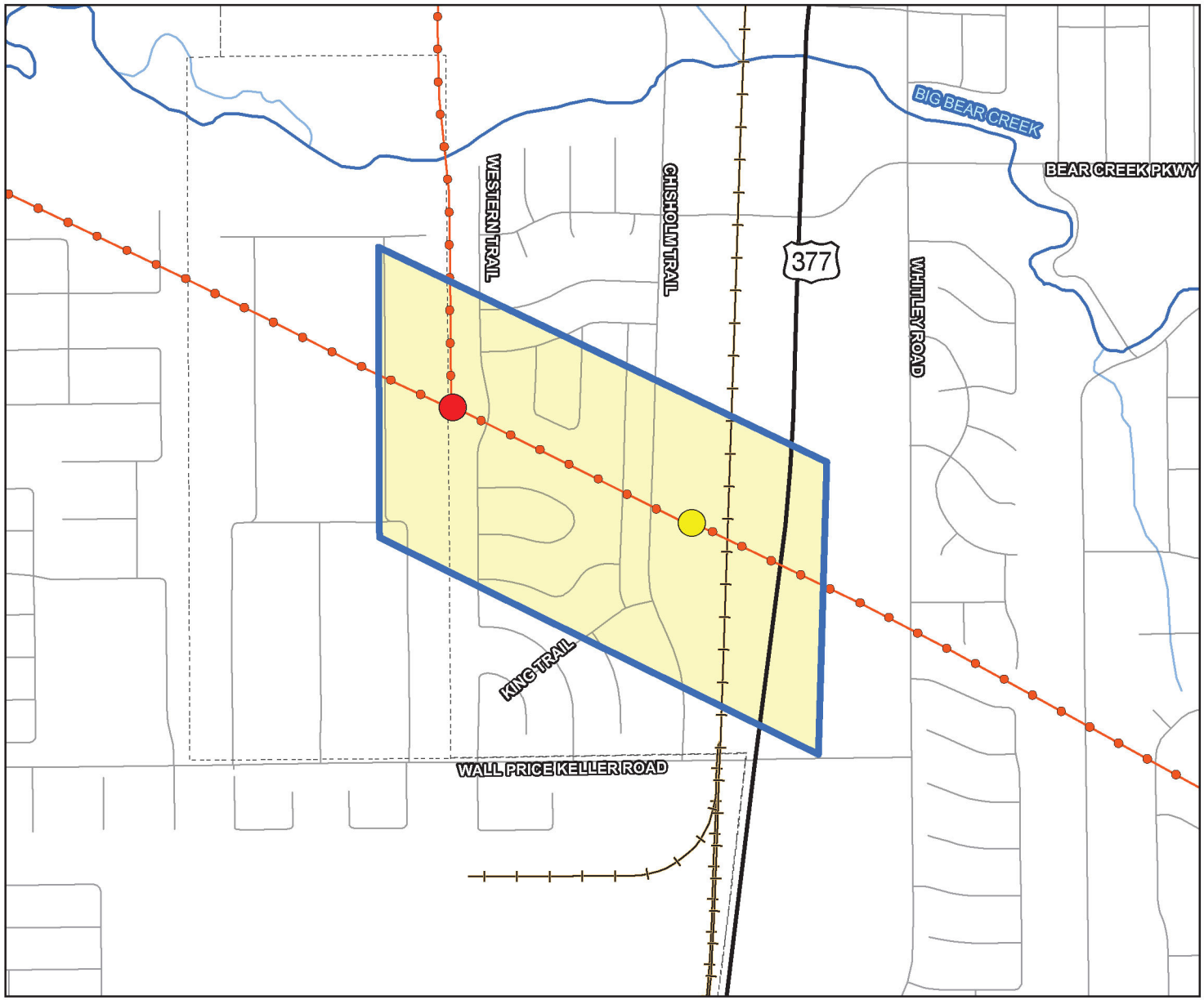

LEGEND

- STUDY AREA
- PROJECT ENDPOINT
- EXISTING KELLER WALL PRICE SUBSTATION
- MAJOR ROADS
- MINOR ROADS
- RAILROADS
- EXISTING TRANSIMISSION LINE
- NAMED TRIBUTARY
- UNNAMED TRIBUTARY
- CITY BOUNDARIES

SOIL ASSOCIATION

- SLIDELL - SANGER - PONDER

SOURCE: NRCS, 2019

MAP VIEW EXTENT

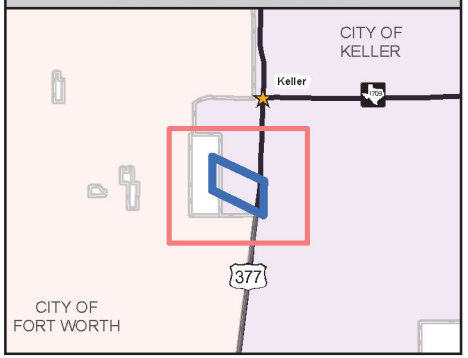

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FIGURE 3-3.

SOIL ASSOCIATION MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT

AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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3.4 Water Resources

3.4.1 Surface Water and Floodplains

The study area lies within the Lower West Fork Trinity Sub-basin (TPWD, 2022a). Given the relatively small size of the study area, no streams were identified on the USGS topographic map or in the National Hydrology Dataset (NHD). As shown in the figures of **Section 3.0**, the nearest mapped feature is Big Bear Creek just north of the study area. Aerial photography suggests the presence of a small man-made pond near the western edge of the study area, and historical aerial imagery sequences show that it is only seasonally inundated.

State legislation in 1997 (see Texas Water Code Section 16.051) modified the state-wide water resources planning process by authorizing regional planning groups to recommend ecologically unique river and stream segments to the Texas State Legislature in regional and state water plans (TWDB, 2017a). A primary purpose for this approach is to ensure that future water impoundments do not destroy stream segments that are considered unique under specified designation criteria (see 31 TAC Section 357.8), which include biologic functions and habitat for threatened and endangered species. State designation as ecologically unique would also prevent state agencies or municipalities from acquiring property or easements that would destroy the ecological values forming the basis for the designation. Part of the process for designating ecologically unique stream segments requires regional water planning groups to coordinate with TPWD about candidate stream segments (Freese and Nichols, Inc. and LBG – Guyton Associates, Inc., 2016; TWDB, 2017a). The project is not near any stream segments designated as ecologically significant under the relevant designation criteria (TPWD, 2002).

The Texas Commission on Environmental Quality (TCEQ) under Section 303(d) of the Clean Water Act lists streams being monitored for impairment or having other water quality concerns (TCEQ, 2014; 2022). Given the absence of stream features in the study area, no stream segments are designated as impaired under the relevant designation criteria. In 2009, FEMA prepared Flood Insurance Rate Maps (FIRM) and a detailed floodplain analysis for Tarrant County. No floodplain is mapped within the study area. The nearest mapped floodplain is the Big Bear Creek regulatory floodway and one-percent annual chance flood hazard (i.e., 100-year floodplain) north of the study area (FEMA, 2022).

3.4.2 Groundwater/Aquifer

After a review of the TWDB databases for major and minor aquifers, Halff determined that no minor aquifers are present within the vicinity of the study area. The only major aquifer within the study area is the Trinity Aquifer (TWDB, 2006; TWDB, 2017b). The Trinity Aquifer extends throughout much of central and northeastern Texas. The Trinity Aquifer consists of limestone, sands, clays, gravels, and conglomerates. The freshwater saturated thickness averages around 600 feet in northern Texas and approximately 1,900 feet in central Texas. Groundwater is fresh with total dissolved solids below 1,000 milligrams per liter in the east and southeast, yet the outcrop region to the west may be very hard with total dissolved solids averaging between 1,000 and 5,000 milligrams per liter (i.e., slightly to moderately saline). Salinity, sulfate, and chloride concentrations generally increase as the depth to the aquifer increases. The Trinity Aquifer discharges to numerous springs throughout the region. In Texas, the Trinity Aquifer is among the most extensive and highly used aquifers, primarily for municipalities, irrigation, livestock, and other domestic purposes. In recent decades, municipalities have relied more on surface water, and the rate of pumping from the Trinity Aquifer has declined (George et al., 2011). Groundwater resources for the study area are located within the TWDB Groundwater Management Area #8, which encompasses eleven Groundwater Conservation Districts (GCD) (TWDB, 2015). Tarrant County is in the Northern Trinity GCD (TWDB, 2019).

3.5 Ecology

3.5.1 Vegetation

The NRCS has studied the characteristics of ecological regions for decades to better understand the biology and management of natural resources. The NRCS published a handbook in 2006 that maps general Land Resource Regions (LRRs) that share similar geology and land physiography, moisture and climate, and soils characteristics. The study area is located within the Southwestern Prairies Cotton and Forage Region LRR. The Southwestern Prairies Cotton and Forage Region LRR extends across much of the southern Great Plains from Kansas to Texas. Within this LRR, annual precipitation ranges from 31 to 44 inches with more frequent rainfall occurring during spring and summer (NRCS, 2022).

As shown on **Figure 3-4**, NRCS soil scientists have further subdivided the LRR within the Major Land Resource Areas (MLRAs). As the criteria used to define both MLRAs and the larger LRRs focus fundamentally on soils and soil-forming factors, the delineation of MLRAs is therefore closely linked to the various soil associations that have been mapped over the past half century. This approach to the study of vegetation focuses on the land's potential for supporting natural vegetation or agricultural practices, rather than simply reporting a snapshot of vegetation as it may exist at a single point in time.

The study area is located within the boundary of the Grand Prairie (85A), very near the boundary of the neighboring East Cross Timbers (84C) to the east. The Grand Prairie is one of three divisions of the Cross Timbers ecosystem. MLRA 85A has an average annual precipitation of 27 to 41 inches throughout most of the range (including the study area), whereas the southern extent of the MLRA averages less than 30 inches of annual rainfall. Most of the rainfall occurs during spring and fall. The growing season averages 260 days, ranging from 235 to 290 days. The physiography of this MLRA is undulating to rolling with steeper slopes along the western margin transition to the West Cross Timbers (84B). Early Cretaceous limestone and calcareous mudstone define the central geology of the Grand Prairie. The more resistant formations form the summits of ridges and hills, with the less resistant forming hillslopes and valleys. In many areas, interbedded limestone and calcareous mudstone (marl) weathered to form hillslopes with a benched or stepped topography. The dominant soil orders in this MLRA are Mollisols, Vertisols, and Inceptisols. The soils are well drained to moderately well drained.

The native vegetation consists of tallgrass prairie. Little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), big bluestem (*Andropogon gerardii*), and switchgrass (*Panicum virgatum*) are typical species on the deeper soils. Texas wintergrass (*Nassella leucotricha*), little bluestem (*Schizachyrium scoparium*), silver bluestem (*Bothriochloa saccharoides*), and sideoats grama (*Bouteloua curtipendula*), as well as Texas red oak (*Quercus buckleyi*), Texas live oak (*Quercus fusiformis*), elm (*Ulmus* sp.), ash (*Fraxinus* sp.), and juniper (*Juniperus* sp.) are the characteristic plant species on shallow soils and on soils below escarpments. Areas of deteriorated rangeland commonly have increased amounts of cool-season grasses, short grasses, annuals, pricklypear (*Opuntia* sp.), elm, honey mesquite (*Prosopis glandulosa*), or juniper.

The Ecoregions of Texas Level III and Level IV maps were prepared by a collaborative effort between the U.S. Environmental Protection Agency (EPA), TCEQ, and the NRCS (Griffith et al., 2007). This classification system analyzes the ecoregions at a finer scale than the MLRAs. While the spatial extent may vary in some areas, this general description of the overall vegetation type, based on NRCS research, is consistent with other regional descriptions of ecological regions in Texas, including the Ecoregions of Texas maps. Under the Ecoregions of Texas Level III classification, the entire study area is located within the Cross Timbers ecoregion. The Cross Timbers ecoregion is a transition area between the historical prairie, now winter wheat growing regions to the west, and the forested hills of east Texas. The region does not possess the arability and suitability for common crops in the region. Transitional Cross Timber communities consisting of little bluestem grassland with scattered blackjack oak (*Quercus marilandica*) and post oak (*Quercus stellata)* is the native vegetation. Rangeland and pastureland comprise the predominant present land cover, with some areas of woodland.

At Level IV, the study area is located entirely within the Grand Prairie ecoregion. It is bounded on the east and west by the sandstones of the Cross Timbers, and its open plains contrast with the Cross Timbers oak woodlands. Although the vegetation of the Grand Prairie is similar to the Northern Blackland Prairie, the limestone of the Grand Prairie is more resistant to weathering, which gives the topography a rougher appearance. The Grand Prairie tends to have thinner soil and less precipitation than the Northern Blackland Prairie, serving as a transition between the wetter climates of east Texas and the drier plains to the west. The original vegetation was tallgrass prairie in the upland areas and elm, pecan (*Carya illinoensis*), and hackberry (*Celtis laevigata*) in riparian and floodplain areas. Invasive species Ashe juniper (*Juniperus ashei*) and honey mesquite have increased since European settlement. Grand Prairie grasses under minimally disturbed conditions include big bluestem, yellow Indiangrass, little bluestem, sideoats grama, and Texas cupgrass (*Eriochloa sericea*). Buffalograss (*Buchloe dactyloides*), Texas wintergrass, and other gramas (*Bouteloua* sp.) tend to increase with intensive grazing.

3.5.1.1 Terrestrial Vegetation

GIS data from the TPWD Ecological Mapping Systems of Texas (EMST) were used to estimate areas of major types of existing vegetation cover within the study area. Data were developed from satellite imagery with ten-meter by ten-meter mapping resolution

collected from 2005 to 2007 and refined with *in situ* data. Using this refined imagery, TPWD created a statewide land cover data set that includes sufficient land cover classes to provide insights for planning and management at a variety of scales (Elliott, 2014; TPWD, 2014). **Figure 3-5** displays the TPWD land cover data by different land/vegetation cover types.

The description of study area terrestrial vegetation is based on field observations, interpretation of recent aerial photography (Nearmap, 2022), and a review of reports and maps produced by NRCS (2022), TPWD (1984; 2011), and TCEQ (Griffith et al., 2007). Over 93% of the study area is classified as urban land complexes of either low or high intensity. The area associated with the Keller Wall Price Substation is classified as high intensity which means it is predominantly impervious cover. Most of the study area is classified as low intensity; much but not all the area consists of impervious cover (e.g., houses, driveways, streets).

There remains a small patch of tallgrass prairie mapped north of the substation. In the Grand Prairie: Tallgrass Prairie class, little bluestem tends to dominate sideoats grama as another significant component. Other grasses that are frequently present include Texas wintergrass, silver bluestem, threeawn (*Aristida* sp.) big bluestem, buffalograss, tall dropseed (*Sporobolus compositus*), hairy grama (*Bouteloua hirsute*), Indiangrass, seep muhly (*Muhlenbergia reverchonii*), tumble windmillgrass (*Chloris verticillata*), and hairy tridens (*Erioneuron pilosum*). Forb species such as heath aster (*Symphyotrichum ericoides*), western ragweed (*Ambrosia psilostachya*), common broomweed (*Amphiachyris dracunculoides*), Texas sage (*Salvia texana*), evening primrose (*Oenothera* sp.), Texas star (*Lindheimera texana*), greenthread (*Thelesperma sp.*), prairie clover (*Dalea* sp.), and scurfpea (*Psoralidium* sp.) may be encountered. Non-native grass King Ranch bluestem (*Bothriochloa ischaemum*) and/or bermudagrass (*Cynodon dactylon*) are also common.

East of US 377, additional communities include small patches classified as Cross Timbers: Post Oak Woodland and Native Invasive: Mesquite Shrubland, with the former dominated by post oak and blackjack oak and other tree species described herein, whereas the latter tends to be dominated exclusively by mesquite.

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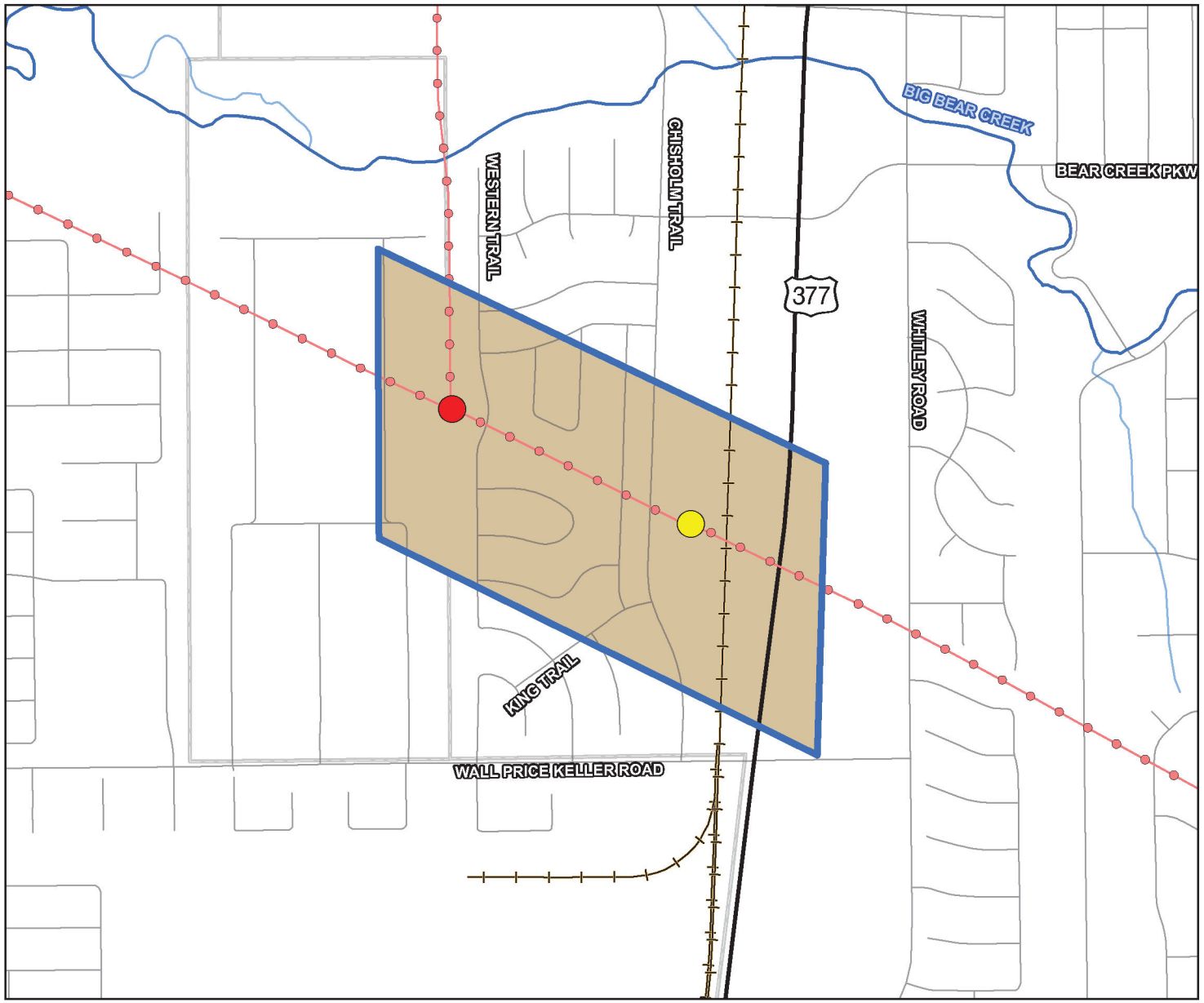

LEGEND

- STUDY AREA
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- MINOR ROADS
- RAILROADS
- EXISTING TRANSIMISSION LINE
- NAMED TRIBUTARY
- UNNAMED TRIBUTARY
- CITY BOUNDARIES

MAJOR LAND RESOURCE AREA

- GRAND PRAIRIE

SOURCE: NRCS, 2019

MAP VIEW EXTENT

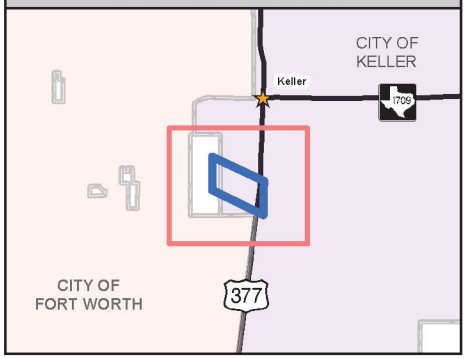

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FIGURE 3-4.

MAJOR LAND RESOURCE AREA MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT

AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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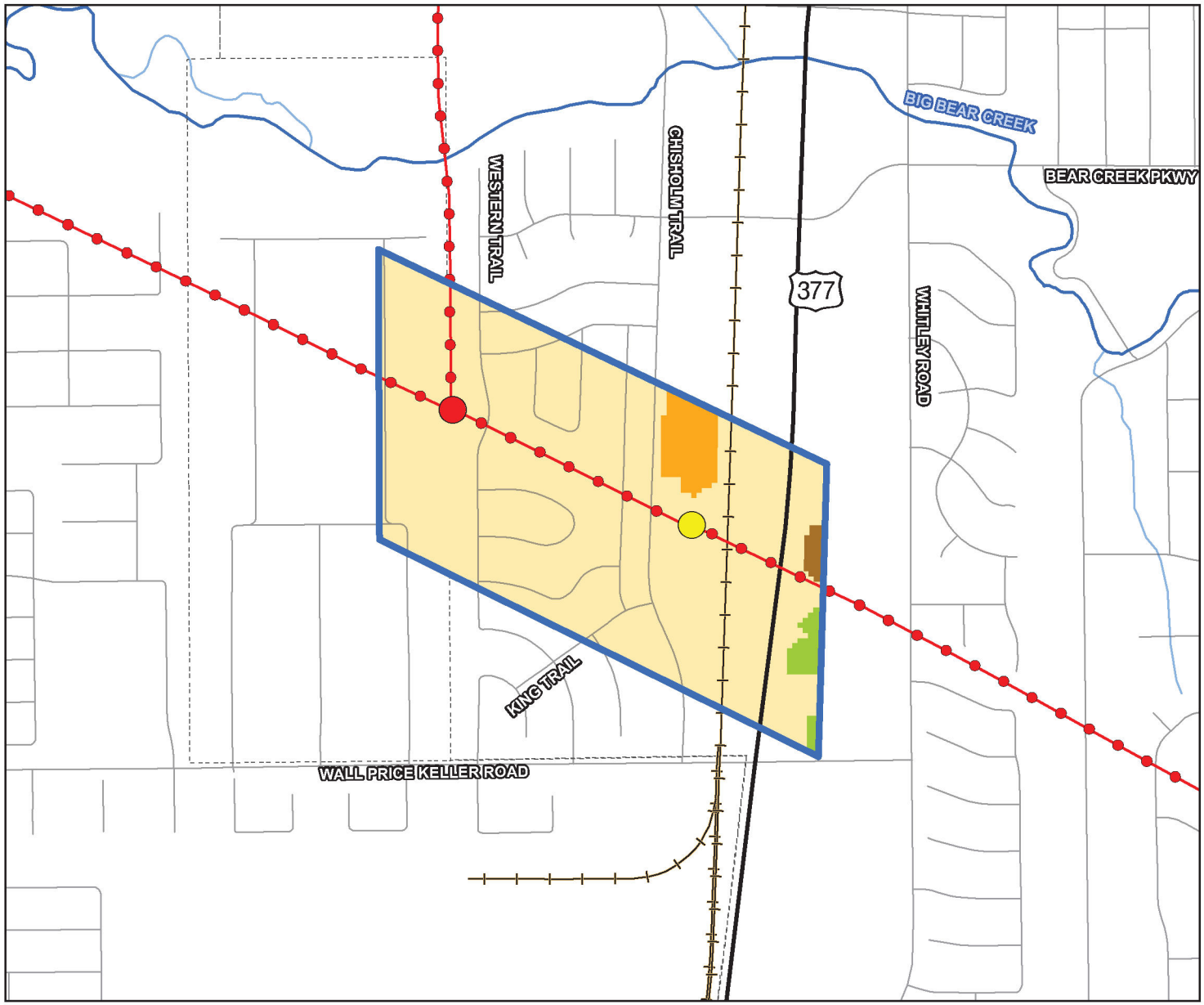

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LAND COVER

- URBAN (93.8%)
- NATIVE INVASIVE: MESQUITE SHRUBLAND (0.8%)
- CROSSTIMBERS: POST OAK WOODLAND (1.6%)
- GRAND PRAIRIE: TALLGRASS PRAIRIE (3.8%)

SOURCE: ELLIOTT ET AL., 2014

MAP VIEW EXTENT

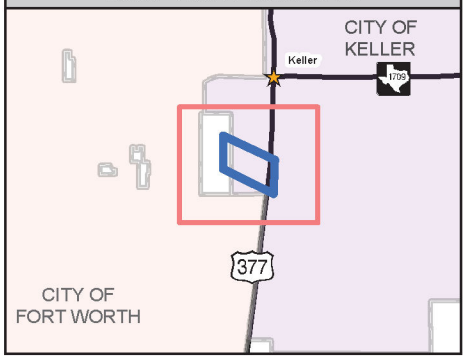

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FIGURE 3-5.

LAND COVER MAP

KELLER WALL PRICE - KELLER MAGNOLIA 138 kV TRANSMISSION LINE PROJECT

AND KELLER WALL PRICE - ROANOKE 138 kV REBUILD PROJECT

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3.5.1.2 Commercially or Recreationally Important Vegetation

Production of crops is absent within the study area and the surrounding areas. None of the study area is suitable for agricultural land, save for individual lots along the western edge that might utilize small areas for grass or hay production.

3.5.1.3 Endangered and Threatened Plant Species

TPWD maintains the Natural Diversity Database (NDD) to track known occurrences of threatened, endangered, and otherwise rare plant and animal species throughout Texas. The NDD provides information about the locations and descriptions of rare habitats and areas managed to achieve high species diversity, as well as provide quality habitat for common and rare wildlife species. Typically, information obtained from the NDD includes a descriptive record with Element Occurrence Identification (EOID) numbers corresponding with mapped locations of all rare habitats within the study area. TPWD and USFWS lists of endangered and threatened species for Tarrant County were also reviewed. Maps and data received from the NDD in August 2022 indicated no recorded observations of any state or federally listed plant species within or near the study area (TPWD, 2022b). It is important to note that, because the NDD is based on the best data available to TPWD regarding rare species, these data cannot provide a definitive statement as to the presence, absence, or condition of specific species, natural communities, or other significant features in any area. Given the small proportion of public versus private land in Texas, the NDD does not include a representative inventory of rare resources in the state. Also, the data is not complete, as there are gaps in coverage due to the lack of access to land or data and a lack of staff and resources to collect and process data on all rare and significant resources.

A review of federal and state listed endangered or threatened plant species was conducted for species whose range may include Tarrant County (USFWS, 2022a; USFWS, 2022b; TPWD, 2022c). Through the Texas Conservation Action Plan, TPWD strives to sustain "species of greatest conservation need" (SGCN), whether terrestrial, freshwater, or marine species, including birds, mammals, reptiles, amphibians, invertebrates, fishes, plants, and plant communities. Species that are uncommon or exhibit declining numbers may be designated as SGCN by TPWD. Often, these designations are placed on species for which little is known as a precautionary measure and to focus attention on gaining insight into the species' life histories before they become

rare. The goal for the Texas Conservation Action Plan is to identify and classify species as SGCN to develop a plan to prevent future listings under the Endangered Species Act (ESA). This designation indicates the agency's awareness of the species but does not signify a regulatory status (TPWD, 2012). Data from the TPWD county lists indicate the following species shown in **Table 3-2** are known to occur in Tarrant County (TPWD, 2022c).

TABLE 3-2. ENDANGERED, THREATENED, OR RARE PLANTS

Common Name	Scientific Name	Listing Status[1, 2]		Potential to Occur within Study Area?
		Federal	State	
Comanche Peak prairie clover	*Dalea reverchonii*	--	SGCN	No
Earleaf false foxglove	*Agalinis auriculata*	--	SGCN	No
Engelmann's bladderpod	*Physaria engelmannii*	--	SGCN	No
Glen Rose yucca	*Yucca necopina*	--	SGCN	No
Hall's prairie clover	*Dalea hallii*	--	SGCN	No
Osage Plains false foxglove	*Agalinis densiflora*	--	SGCN	No
Reverchon's scurf-pea	*Pediomelum reverchonii*	--	SGCN	No
Shinner's sedge	*Carex shinnersii*	--	SGCN	Yes
Sutherland hawthorn	*Crataegus viridis var. glabriuscula*	--	SGCN	Yes
Texas milk vetch	*Astragalus reflexus*	--	SGCN	Yes
Topeka purple-coneflower	*Echinacea atrorubens*	--	SGCN	Yes

Sources: USFWS, 2022a; USFWS, 2022b; TPWD, 2022b; TPWD, 2022c.
Notes:
1. TPWD listing codes: SGCN = Species of Greatest Conservation Need (i.e., rare species with no regulatory listing status)
2. USFWS listing codes: blank = no federal status

Most of the species listed in **Table 3-2** are associated with habitats that are absent from the study area (e.g., limestone outcrops) and, given that most of the study area is maintained as yards (with frequent and regular mowing during the growing season), their potential to occur in the study area is very unlikely. For species listed with a potential to occur in the study area, habitat descriptions are so general (e.g., in ditches; along edge of tree lines and fences; in grasslands with clay substrate) that any of those species could exist in the undeveloped field surrounding the Keller Wall Price Substation (TPWD, 2022c). No NDD records for any of the species in **Table 3-2** are within ten miles of the study area.

3.5.2 Fish and Wildlife

3.5.2.1 Terrestrial Wildlife

A wide variety of vertebrate species including amphibians, reptiles, mammals, and birds occur throughout the study area. These animals are addressed below in two groups: commonly occurring (i.e., "common") species; and species that are considered threatened, endangered, or rare by TPWD or USFWS. The information about common wildlife species presented in **Tables 3-3** through **3-10** is generally based on reference sources that provide species distribution information on a county-by-county basis. Species with specific geographic locations, assumed endemic to montane habitats, or limited ranges isolated from the study area were not included in **Tables 3-3** through **3-10**.

Habitat types for the wildlife discussed below are grouped into seven general categories: woodland; desert; shrubland; open; water; cultivated; and urban. Woodland habitat is home to species that live on or in the ground within forested areas or are arboreal in nature; woodland areas include riparian forest areas found in stream floodplains and can overlap water habitats to some extent. Desert habitats are in arid regions, and may contain a mix of grassland, shrubland, or open habitat. Shrubland habitat is dominated by woody vegetation but is generally low-growing and lacks taller trees. Open habitat includes grasslands or arid/semi-arid rocky areas. Cultivated areas consist of row crops, orchards, or grain fields; hay meadows would be considered grassland habitat. Water habitat is for all aquatic species, as well as those which live exclusively near water (e.g., frogs or wading birds). Urban habitats are favored by those animals which thrive in man-made environments and succeed in disturbed areas.

Amphibians

Amphibian species native to Texas include caudate species (i.e., salamanders and newts) and anuran species (i.e., frogs and toads). Salamanders and newts are restricted to aquatic or moist habitats, but some frogs/toads inhabit more arid environments. All species require water during reproduction, either during the act of mating or for rearing young. Amphibians are ectothermic (i.e., "cold blooded," lacking the ability to internally regulate body temperature) and are particularly vulnerable to pollution because they respire through their skin (Conant and Collins, 1998). Refer to **Table 3-3** for the amphibian species known to occur within Tarrant County.

TABLE 3-3. AMPHIBIAN SPECIES WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat Preference(s)
Order: Anura (frogs and toads)		
American toad	*Anaxyrus americanus*	Water – Woodland
Bronze frog	*Lithobates clamitans*	Water – Woodland
Cajun chorus frog	*Pseudacris fouquettei*	Open – Shrubland – Woodland – Water
Couch's spadefoot toad	*Scaphiopus couchii*	Open
Crawfish frog	*Lithobates areolatus*	Open – Water – Woodland
Cricket frog	*Acris crepitans*	Shrubland – Woodland – Water
Gray treefrog	*Dryophytes versicolor*	Woodland – Water
Great Plains narrow-mouthed toad	*Gastrophryne olivacea*	Open
Green toad	*Anaxyrus debilis*	Open
Hurter's spadefoot	*Scaphiopus hurterii*	Open – Shrubland – Woodland – Water
Plains leopard frog	*Rana blairi*	Open – Water
Red-spotted toad	*Anaxyrus punctatus*	Open
Southern crawfish frog	*Lithobates areolatus areolatus*	Open – Water – Woodland
Southern leopard frog	*Lithobates sphenocephalus*	Water – Woodland – Shrubland
Spotted chorus frog	*Pseudacris clarkii*	Open – Shrubland – Water
Strecker's chorus frog	*Pseudacris streckeri*	Open – Shrubland – Woodland – Water
Texas toad	*Anaxyrus speciosus*	Open – Cultivated
Woodhouse's toad	*Anaxyrus woodhousii*	Open – Water
Order: Caudata (salamanders and newts)		
Small-mouthed salamander	*Ambystoma texanum*	Water – Woodland
Sources: AmphibiaWeb, 2022; Conant and Collins, 1998; International Union for Conservation of Nature and Natural Resources (IUCN), 2022		

Reptiles

Reptile species native to north central Texas include crocodilians, turtles, snakes, and lizards. Reptiles have thick, scaly skin to protect their bodies. Most lay soft, leathery eggs, although some bear live young. Reptiles, like amphibians, are ectothermic. **Table 3-4** presents the reptile species known to occur within Tarrant County.

TABLE 3-4. REPTILE SPECIES WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat Preference(s)
Order: Squamata (snakes and lizards)		
Broadhead skink	*Plestiodon laticeps*	Woodland – Water
Bullsnake	*Pituophis catenifer sayi*	Open – Desert
Central plains milksnake	*Lampropeltis gentilis*	Open – Shrubland – Woodland
Coachwhip	*Masticophis flagellum*	Open – Desert
Collared lizard	*Crotaphytus collaris*	Open
Common kingsnake	*Lampropeltis getula*	Open – Shrubland – Woodland Water
Common lesser earless lizard	*Holbrookia maculata*	Open – Cultivated
Copperhead	*Agkistrodon contortrix*	Woodland – Water
Dusty hognose snake	*Heterodon gloydi*	Open
Eastern hognose snake	*Heterodon platirhinos*	Open – Shrubland – Woodland
Eastern yellowbelly racer	*Coluber constrictor flaviventris*	Open – Shrubland – Woodland
Five-lined skink	*Plestiodon fasciatus*	Woodland – Water
Flathead snake	*Tantilla gracilis*	Open – Shrubland – Woodland
Great Plains ratsnake	*Pantherophis emoryi*	Open
Green anole	*Anolis carolinensis*	Shrubland – Woodland – Water Urban
Ground skink	*Scincella lateralis*	Woodland
Ground snake	*Sonora semiannulata*	Open – Shrubland – Woodland
Lined snake	*Tropidoclonion lineatum*	Open – Urban
Mediterranean house gecko	*Hemidactylus turcicus*	Urban
North American racer	*Coluber constrictor*	Open – Shrubland – Woodland
Plain hog-nosed snake	*Heterodon nasicus*	Open
Prairie lizard	*Sceloporus undulatus*	Open
Prairie racerunner	*Aspidoscelis sexlineata viridis*	Open
Prairie ring-necked snake	*Diadophis punctatus arnyi*	Open
Pygmy rattlesnake	*Sistrurus miliarius*	Woodland – Water
Ring-necked snake	*Diadophis punctatus*	Open
Rough earthsnake	*Virginia striatula*	Open – Shrubland – Woodland
Rough green snake	*Opheodrys aestivus*	Open – Shrubland – Woodland Water
Slender glass lizard	*Ophisaurus attenuates*	Open – Woodland
Smooth earthsnake	*Virginia valeriae*	Open – Woodland
Southern prairie skink	*Plestiodon septentrionalis*	Open – Woodland – Urban
Speckled kingsnake	*Lampropeltis holbrooki*	Open – Shrubland – Woodland Water
Texas blind snake	*Rena dulcis*	Desert – Open
Texas brown snake	*Storeria dekayi texana*	Water – Woodland – Urban
Texas coral snake	*Micrurus tener*	Open – Shrubland – Woodland Water
Texas garter snake	*Thamnophis sirtalis annectens*	Open – Woodland – Urban Water
Texas horned lizard	*Phrynosoma cornutum*	Open
Timber rattlesnake	*Crotalus horridus*	Woodland – Water
Texas ratsnake	*Pantherophis obsoletus*	Open – Shrubland – Woodland Water
Texas spiny lizard	*Sceloporus olivaceus*	Open – Woodland – Urban
Texas spotted whiptail	*Aspidoscelis gularis*	Open -- Shrubland
Variable groundsnake	*Sonora semiannulata semiannulata*	Desert – Open
Western diamondback rattlesnake	*Crotalus atrox*	Open
Yellow-bellied kingsnake	*Lampropeltis calligaster*	Open – Shrubland – Woodland
Order: Testudines (turtles)		
Eastern box turtle	*Terrapene carolina*	Shrubland – Woodland – Water
Eastern mud turtle	*Kinosternon subrubrum*	Shrubland – Woodland – Water
Ornate box turtle	*Terrapene ornata ornata*	Open
Sources: Conant and Collins, 1998; IUCN, 2022; NatureServe Explorer, 2022		

Birds

Birds differ from other animal groups in that feathers cover part or all their bodies, and they lay hard, calcium-rich eggs. The four tables below present bird species, that could occur in the study area at various times throughout the year. They are divided into groups on residency: permanent residents (**Table 3-5**); breeding (i.e., summer) residents (**Table 3-6**); winter residents (**Table 3-7**); and those which migrate through the area between their breeding and winter grounds (**Table 3-8**).

TABLE 3-5. BIRD SPECIES THAT MAY PERMANENTLY RESIDE WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
American crow	*Corvus brachyrhynchos*	Passeriformes	Woodland – Urban
American kestrel	*Falco sparverius*	Falconiformes	Open
American robin	*Turdus migratorius*	Passeriformes	Open – Woodland
Barn owl	*Tyto alba*	Strigiformes	Woodland – Urban
Barred owl	*Strix varia*	Strigiformes	Woodland
Bewick's wren	*Thryomanes bewickii*	Passeriformes	Woodland
Black-bellied whistling-duck	*Dendrocygna autumnalis*	Anseriformes	Water – Woodland
Black vulture	*Coragyps atratus*	Cathartiformes	Open
Blue jay	*Cyanocitta cristata*	Passeriformes	Woodland
Brown-headed cowbird	*Molothrus ater*	Passeriformes	Woodland – Open
Brown thrasher	*Toxostoma rufum*	Passeriformes	Shrubland
Burrowing owl	*Athene cunicularia*	Strigiformes	Open
Carolina chickadee	*Poecile carolinensis*	Passeriformes	Open – Woodland – Urban
Common grackle	*Quiscalus quiscula*	Passeriformes	Open – Urban
Cooper's hawk	*Accipiter cooperii*	Falconiformes	Woodland
Crested caracara	*Caracara cheriway*	Falconiformes	Desert – Open – Shrubland
Downy woodpecker	*Dryobates pubescens*	Piciformes	Woodland
Eastern bluebird	*Sialia sialis*	Passeriformes	Woodland
Eastern meadowlark	*Sturnella magna*	Passeriformes	Open
Eastern phoebe	*Sayornis phoebe*	Passeriformes	Shrubland – Woodland – Urban
Eastern screech-owl	*Megascops asio*	Strigiformes	Woodland
Eurasian-collared dove	*Streptopelia decaocto*	Columbiformes	Urban
European starling	*Sturnus vulgaris*	Passeriformes	Woodland – Urban
Field sparrow	*Spizella pusilla*	Passeriformes	Open
Grasshopper sparrow	*Ammodramus savannarum*	Passeriformes	Open
Greater roadrunner	*Geococcyx californianus*	Cuculiformes	Woodland – Open
Great horned owl	*Bubo virginianus*	Strigiformes	Woodland – Open – Urban
Great-tailed grackle	*Quiscalus mexicanus*	Passeriformes	Open – Urban
Golden-fronted woodpecker	*Melanerpes aurifrons*	Piciformes	Woodland
Hairy woodpecker	*Dryobates villosus*	Piciformes	Woodland
Horned lark	*Eremophila alpestris*	Passeriformes	Open
House finch	*Haemorhous mexicanus*	Passeriformes	Woodland – Open – Urban
House sparrow	*Passer domesticus*	Passeriformes	Urban
Inca dove	*Columbina inca*	Columbiformes	Urban

TABLE 3-5. BIRD SPECIES THAT MAY PERMANENTLY RESIDE WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
Killdeer	*Charadrius vociferus*	Charadriiformes	Open
Ladder-backed woodpecker	*Picoides scalaris*	Piciformes	Shrubland
Lark sparrow	*Chondestes grammacus*	Passeriformes	Open
Loggerhead shrike	*Lanius ludovicianus*	Passeriformes	Open
Monk parakeet	*Myiopsitta monachus*	Psittaciformes	Urban
Mourning dove	*Zenaida macroura*	Columbiformes	Woodland – Open – Urban
Northern bobwhite	*Colinus virginianus*	Galliformes	Open
Northern cardinal	*Cardinalis cardinalis*	Passeriformes	Woodland
Northern flicker	*Colaptes auratus*	Piciformes	Woodland
Northern mockingbird	*Mimus polyglottos*	Passeriformes	Woodland – Open – Urban
Pied-billed grebe	*Podilymbus podiceps*	Podicipediformes	Water
Pileated woodpecker	*Dryocopus pileatus*	Piciformes	Woodland
Red-bellied woodpecker	*Melanerpes carolinus*	Piciformes	Woodland
Red-headed woodpecker	*Melanerpes erythrocephalus*	Piciformes	Woodland
Red-shouldered hawk	*Buteo lineatus*	Accipitriformes	Woodland
Red-tailed hawk	*Buteo jamaicensis*	Falconiformes	Woodland – Open
Red-winged blackbird	*Agelaius phoeniceus*	Passeriformes	Open
Rock dove	*Columba livia*	Columbiformes	Open – Urban
Tufted titmouse	*Baeolophus bicolor*	Passeriformes	Woodland – Urban
Turkey vulture	*Cathartes aura*	Falconiformes	Woodland – Open – Urban
Wild turkey	*Meleagris gallopavo*	Galliformes	Open – Woodland
Wood duck	*Aix sponsa*	Anseriformes	Water – Woodland

Sources: Cornell Lab of Ornithology (Cornell), 2022; eBird, 2022; NatureServe Explorer, 2022; Sibley, 2003

Note: Any species determined to potentially reside within the study area permanently may also breed within the study area.

TABLE 3-6. BIRD SPECIES THAT MAY BREED WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
Acadian flycatcher	*Empidonax virescens*	Passeriformes	Woodland
Baltimore oriole	*Icterus galbula*	Passeriformes	Woodland
Barn swallow	*Hirundo rustica*	Passeriformes	Open – Urban
Bell's vireo	*Vireo bellii*	Passeriformes	Shrubland
Black-and-white warbler	*Mniotilta varia*	Passeriformes	Woodland
Black-headed grosbeak	*Pheucticus melanocephalus*	Passeriformes	Woodland – Shrubland
Black-capped vireo	*Vireo atricapilla*	Passeriformes	Shrubland
Black-chinned hummingbird	*Archilochus alexandri*	Caprimulgiformes	Woodland
Blue-gray gnatcatcher	*Polioptila caerulea*	Passeriformes	Woodland
Blue grosbeak	*Passerina caerulea*	Passeriformes	Woodland
Cattle egret	*Bubulcus ibis*	Pelecaniformes	Open – Water
Cave swallow	*Petrochelidon fulva*	Passeriformes	Open
Chimney swift	*Chaetura pelagica*	Caprimulgiformes	Open – Urban
Chuck-will's-widow	*Antrostomus carolinensis*	Caprimulgiformes	Woodland
Cliff swallow	*Petrochelidon pyrrhonota*	Passeriformes	Open – Water
Common nighthawk	*Chordeiles minor*	Caprimulgiformes	Open
Common poorwill	*Phalaenoptilus nuttallii*	Caprimulgiformes	Shrubland
Common yellowthroat	*Geothlypis trichas*	Passeriformes	Shrubland
Dickcissel	*Spiza americana*	Passeriformes	Open

TABLE 3-6. BIRD SPECIES THAT MAY BREED WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
Eastern kingbird	*Tyrannus tyrannus*	Passeriformes	Open – Woodland
Eastern wood-pewee	*Contopus virens*	Passeriformes	Woodland
Gray catbird	*Dumetella carolinensis*	Passeriformes	Woodland
Great crested flycatcher	*Myiarchus crinitus*	Passeriformes	Woodland
Hooded warbler	*Setophaga citrina*	Passeriformes	Woodland
Indigo bunting	*Passerina cyanea*	Passeriformes	Woodland
Kentucky warbler	*Geothlypis Formosa*	Passeriformes	Woodland
Mississippi kite	*Ictinia mississippiensis*	Accipitriformes	Open – Woodland
Mourning warbler	*Geothlypis philadelphia*	Passeriformes	Woodland
Northern parula	*Setophaga americana*	Passeriformes	Woodland
Northern rough-winged swallow	*Stelgidopteryx serripennis*	Passeriformes	Open – Water
Orchard oriole	*Icterus spurius*	Passeriformes	Woodland
Painted bunting	*Passerina ciris*	Passeriformes	Shrubland
Prairie warbler	*Setophaga discolor*	Passeriformes	Open – Shrubland – Woodland
Prothonotary warbler	*Protonotaria citrea*	Passeriformes	Woodland
Red-eyed vireo	*Vireo olivaceus*	Passeriformes	Woodland
Ruby-throated hummingbird	*Archilochus colubris*	Caprimulgiformes	Woodland – Urban
Scissor-tailed flycatcher	*Tyrannus forficatus*	Passeriformes	Open
Summer tanager	*Piranga rubra*	Passeriformes	Woodland
Swainson's hawk	*Buteo swainsoni*	Accipitriformes	Open
Swainson's warbler	*Limnothlypis swainsoni*	Passeriformes	Woodland
Western kingbird	*Tyrannus verticalis*	Passeriformes	Open
White-eyed vireo	*Vireo griseus*	Passeriformes	Shrubland
White-tailed kite	*Elanus leucurus*	Accipitriformes	Open – Woodland
White-winged dove	*Zenaida asiatica*	Columbiformes	Woodland – Open
Wood thrush	*Hylocichla mustelina*	Passeriformes	Woodland
Yellow-billed cuckoo	*Coccyzus americanus*	Cuculiformes	Woodland
Yellow-breasted chat	*Icteria virens*	Passeriformes	Shrubland
Yellow-throated vireo	*Vireo flavifrons*	Passeriformes	Woodland
Yellow-throated warbler	*Setophaga dominica*	Passeriformes	Woodland

Sources: Cornell, 2022; eBird, 2022; NatureServe Explorer, 2022; Sibley, 2003

Notes:

- Listed species include those that do not permanently reside within the study area but may breed in the study area.
- Look for the list of species that may permanently reside within the study area in **Table 3-5**, as those species may also breed within the study area.

TABLE 3-7. BIRD SPECIES THAT MAY WINTER WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
American goldfinch	*Carduelis tristis*	Passeriformes	Woodland – Open
American pipit	*Anthus rubescens*	Passeriformes	Open
American woodcock	*Scolopax minor*	Charadriiformes	Woodland
Bald eagle	*Haliaetus leucocephalus*	Accipitriformes	Woodland
Bonaparte's gull	*Chroicocephalus philadelphia*	Charadriiformes	Open – Water
Brewer's blackbird	*Euphagus cyanocephalus*	Passeriformes	Urban – Cultivated – Open
Brown creeper	*Certhia americana*	Passeriformes	Woodland
Canada goose	*Branta canadensis*	Anseriformes	Open – Water
Cedar waxwing	*Bombycilla cedrorum*	Passeriformes	Woodland – Open
Chestnut-collared longspur	*Calcarius ornatus*	Passeriformes	Open
Chipping sparrow	*Spizella passerine*	Passeriformes	Woodlands – Open

TABLE 3-7. BIRD SPECIES THAT MAY WINTER WITHIN THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
Dark-eyed junco	*Junco hyemalis*	Passeriformes	Woodland
Eastern towhee	*Pipilo erythrophthalmus*	Passeriformes	Open – Shrubland – Woodland
Fox sparrow	*Passerella iliaca*	Passeriformes	Woodland – Open
Golden-crowned kinglet	*Regulus satrapa*	Passeriformes	Woodland
Greater white-fronted goose	*Anser albifrons*	Anseriformes	Open – Water
Harris's sparrow	*Zonotrichia querula*	Passeriformes	Woodland
Hermit thrush	*Catharus guttatus*	Passeriformes	Woodland – Open
Herring gull	*Larus argentatus*	Charadriiformes	Open – Water
Hooded merganser	*Lophodytes cucullatus*	Anseriformes	Water – Woodland
House wren	*Troglodytes aedon*	Passeriformes	Woodland
Lapland longspur	*Calcarius lapponicus*	Passeriformes	Open
Le Conte's sparrow	*Ammospiza lecontei*	Passeriformes	Open
Lincoln's sparrow	*Melospiza lincolnii*	Passeriformes	Woodland – Open
Long-eared owl	*Asio otus*	Strigiformes	Woodland
Mallard	*Anas platyrhynchos*	Anseriformes	Water – Open
Merlin	*Falco columbarius*	Falconiformes	Open
Northern harrier	*Circus cyaneus*	Falconiformes	Open
Orange-crowned warbler	*Leiothlypis celata*	Passeriformes	Woodland – Water
Pine siskin	*Spinus pinus*	Passeriformes	Woodland – Open
Prairie falcon	*Falco mexicanus*	Falconiformes	Open
Purple finch	*Haemorhous purpureus*	Passeriformes	Woodland
Red-breasted nuthatch	*Sitta canadensis*	Passeriformes	Woodland
Ring-billed gull	*Larus delawarensis*	Charadriiformes	Open – Water
Ross's goose	*Anser rossii*	Anseriformes	Open – Water
Rough-legged hawk	*Buteo lagopus*	Falconiformes	Open
Ruby-crowned kinglet	*Regulus calendula*	Passeriformes	Woodland
Rusty blackbird	*Euphagus carolinus*	Passeriformes	Woodland
Savannah sparrow	*Passerculus sandwichensis*	Passeriformes	Open
Sedge wren	*Cistothorus platensis*	Passeriformes	Open
Sharp-shinned hawk	*Accipiter striatus*	Falconiformes	Woodland
Short-eared owl	*Asio flammeus*	Strigiformes	Open
Smith's longspur	*Calcarius pictus*	Passeriformes	Open
Snow goose	*Chen caerulescens*	Anseriformes	Water
Song sparrow	*Melospiza melodia*	Passeriformes	Woodland
Spotted towhee	*Pipilo maculatus*	Passeriformes	Shrubland
Sprague's pipit	*Anthus spragueii*	Passeriformes	Open
Swamp sparrow	*Melospiza georgiana*	Passeriformes	Open – Water
Vesper sparrow	*Pooecetes gramineus*	Passeriformes	Open
Western meadowlark	*Sturnella neglecta*	Passeriformes	Open
White-crowned sparrow	*Zonotrichia leucophrys*	Passeriformes	Woodland – Open
White-throated sparrow	*Zonotrichia albicollis*	Passeriformes	Woodland
Yellow-bellied sapsucker	*Sphyrapicus varius*	Piciformes	Woodland
Yellow-rumped warbler	*Dendroica coronata*	Passeriformes	Woodland

Sources: Cornell, 2022; eBird, 2022; NatureServe Explorer, 2022; Sibley, 2003

TABLE 3-8. BIRD SPECIES THAT MAY MIGRATE THROUGH THE STUDY AREA

Common Name	Scientific Name	Order	Habitat Preference(s)
Alder flycatcher	*Empidonax alnorum*	Passeriformes	Shrubland
American golden-plover	*Pluvialis dominica*	Charadriiformes	Open – Water
American redstart	*Setophaga ruticilla*	Passeriformes	Woodland
Bank swallow	*Riparia riparia*	Passeriformes	Open – Water
Black-billed cuckoo	*Coccyzus erythropthalmus*	Cuculiformes	Woodland
Blackburnian warbler	*Setophaga fusca*	Passeriformes	Woodland
Black-throated green warbler	*Setophaga virens*	Passeriformes	Woodland
Blue-headed vireo	*Vireo solitarius*	Passeriformes	Woodland
Blue-winged warbler	*Vermivora cyanoptera*	Passeriformes	Shrubland – Woodland
Bobolink	*Dolichonyx oryzivorus*	Passeriformes	Open
Broad-winged hawk	*Buteo platypterus*	Accipitriformes	Woodland
Buff-breasted sandpiper	*Calidris subruficollis*	Charadriiformes	Open
Canada warbler	*Cardellina canadensis*	Passeriformes	Woodland
Caspian tern	*Hydroprogne caspia*	Charadriiformes	Water
Chestnut-sided warbler	*Setophaga pensylvanica*	Passeriformes	Woodland
Clay-colored sparrow	*Spizella pallida*	Passeriformes	Shrubland
Common tern	*Sterna hirundo*	Charadriiformes	Water
Gray-cheeked thrush	*Catharus minimus*	Passeriformes	Woodland
Least flycatcher	*Empidonax minimus*	Passeriformes	Woodland
Magnolia warbler	*Setophaga magnolia*	Passeriformes	Woodland
Nashville warbler	*Oreothlypis ruficapilla*	Passeriformes	Woodland
Nelson's sparrow	*Ammospiza nelsoni*	Passeriformes	Open – Water
Northern waterthrush	*Parkesia noveboracensis*	Passeriformes	Woodland – Water
Olive-sided flycatcher	*Contopus cooperi*	Passeriformes	Woodland
Ovenbird	*Seiurus aurocapilla*	Passeriformes	Woodland
Roseate spoonbill	*Platalea ajaja*	Pelecaniformes	Water – Woodland
Rose-breasted grosbeak	*Pheucticus ludovicianus*	Passeriformes	Woodland
Sandhill crane	*Antigone canadensis*	Gruiformes	Open – Water
Scarlet tanager	*Piranga olivacea*	Passeriformes	Woodland
Semipalmated plover	*Charadrius semipalmatus*	Charadriiformes	Open
Swainson's thrush	*Catharus ustulatus*	Passeriformes	Woodland
Tennessee warbler	*Leiothlypis peregrina*	Passeriformes	Woodland
Tree swallow	*Tachycineta bicolor*	Passeriformes	Woodland
Upland sandpiper	*Bartramia longicauda*	Charadriiformes	Open
Veery	*Catharus fuscescens*	Passeriformes	Water – Woodland
Warbling vireo	*Vireo gilvus*	Passeriformes	Woodland – Open
Whip-poor-will	*Antrostomus vociferus*	Caprimulgiformes	Woodland
Whooping crane	*Grus americana*	Gruiformes	Open – Water
Willow flycatcher	*Empidonax traillii*	Passeriformes	Open
Wilson's warbler	*Cardellina pusilla*	Passeriformes	Woodland
Wood stork	*Mycteria americana*	Ciconiiformes	Water – Woodland
Yellow-bellied flycatcher	*Empidonax flaviventris*	Passeriformes	Woodland
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	Passeriformes	Open
Yellow warbler	*Setophaga petechia*	Passeriformes	Woodland
Sources: Cornell, 2022; eBird, 2022; NatureServe Explorer, 2022; Sibley, 2003			

Mammals

According to Schmidly and Bradley (2016), 202 species of mammals reside in Texas. Mammals are distinct from other groups in that their bodies are covered with hair, and they feed milk to their young. Nearly all mammals in Texas bear live young using a placenta (i.e., Eutherian or "placental" mammals). A notable exception is the Virginia opossum (*Didelphis virginiana*), which is a pouch-rearing mammal (i.e., marsupial). **Table 3-9** presents the mammals that are expected to occur within suitable habitat in the study area.

TABLE 3-9. MAMMAL SPECIES WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat Preference(s)
Order: Carnivora (carnivores)		
Bobcat	*Lynx rufus*	Woodland
Common gray fox	*Urocyon cinereoargenteus*	Woodland
Common raccoon	*Procyon lotor*	Woodland – Water
Coyote	*Canis latrans*	Open
Eastern spotted skunk	*Spilogale putorius*	Open – Woodland
Hog-nosed skunk	*Conepatus leuconotus*	Open – Shrubland – Woodland
Long-tailed weasel	*Mustela frenata*	Open
Ringtail	*Bassariscus astutus*	Woodland – Open
Striped skunk	*Mephitis mephitis*	Woodland – Open
Order: Chiroptera (bats)		
Big brown bat	*Eptesicus fuscus*	Woodland – Urban
Brazilian free-tailed bat	*Tadarida brasiliensis*	Woodland – Urban
Eastern red bat	*Lasiurus borealis*	Woodland
Evening bat	*Nycticeius humeralis*	Woodland – Urban
Hoary bat	*Lasiurus cinereus*	Woodland
Seminole bat	*Lasiurus seminolus*	Woodland
Silver-haired bat	*Lasionycteris noctivagans*	Woodland – Urban
Order: Cingulata (armadillos and allies)		
Nine-banded armadillo	*Dasypus novemcinctus*	Open – Woodland – Urban – Shrubland – Water
Order: Lagomorpha (hares, rabbits, and picas)		
Eastern cottontail	*Sylvilagus floridanus*	Open
Order: Didelphimorphia (opossums and allies)		
Virginia opossum	*Didelphis virginiana*	Woodland – Open – Urban
Order: Rodentia (rodents)		
Black rat	*Rattus rattus*	Urban
Cotton deermouse	*Peromyscus gossypinus*	Woodland
Eastern fox squirrel	*Sciurus niger*	Woodland
Eastern gray squirrel	*Sciurus carolinensis*	Woodland
Eastern woodrat	*Neotoma floridana*	Desert – Open – Woodland
Fulvous harvest mouse	*Reithrodontomys fulvescens*	Desert – Open – Shrubland
Hispid cotton rat	*Sigmodon hispidus*	Open – Urban
Hispid pocket mouse	*Chaetodipus hispidus*	Open
House mouse	*Mus musculus*	Open – Urban
North American deermouse	*Peromyscus maniculatus*	Woodland – Open
Northern pygmy mouse	*Baiomys taylori*	Open – Woodland
Norway rat	*Rattus norvegicus*	Open – Urban
Plains harvest mouse	*Reithrodontomys montanus*	Open
Order: Rodentia (rodents) continued		
Thirteen-lined ground squirrel	*Ictidomys tridecemlineatus*	Open
White-footed mouse	*Peromyscus leucopus*	Woodland
Woodland vole	*Microtus pinetorum*	Woodland

TABLE 3-9. MAMMAL SPECIES WITHIN THE STUDY AREA

Common Name	Scientific Name	Habitat Preference(s)
Order: Soricomorpha (moles and shrews)		
Eastern mole	*Scalopus aquaticus*	Open
Least shrew	*Cryptotis parva*	Open
Southern short-tailed shrew	*Blarina carolinensis*	Woodland
Sources: Schmidly and Bradley, 2016; NatureServe Explorer, 2022		

3.5.2.2 Fish and Aquatic Wildlife

As previously mentioned, stream features or other substantial persistent surface water features are not found in the study area. As a result, habitats in the study area do not support aquatic species, such as fish and mussels. Some amphibians may be adapted to seasonal wet and dry cycles associated with roadside ditches or isolated ponding in remaining open fields around the Keller Wall Price Substation.

3.5.2.3 Commercially or Recreationally Important Wildlife Species

Given the small size of the study area and the general state of development surrounding the study area, commercially or recreationally important wildlife species are considered absent from the study area other than incidental occurrences for bird species that may pass through the study area, or those few game species that are adapted to urban environments (e.g., mourning dove).

3.5.2.4 Endangered and Threatened Wildlife Species

The USFWS has authority under the ESA to list and monitor the status of species whose populations are considered imperiled. USFWS regulations that implement the ESA are codified and regularly updated in 50 Code of Federal Regulations (CFR) Part 17. The federal process identifies potential candidates based upon the species' biological vulnerability. The vulnerability decision is based upon many factors affecting the species within its range and is linked to the best scientific data available to the USFWS at the time. Species listed as threatened or endangered by the USFWS are provided full protection under the ESA including a prohibition of indirect take, such as destruction of known critical habitat (i.e., areas formally designated by USFWS in the Federal Register).

Texas endangered species legislation in 1973 and subsequent amendments have established a state regulatory program for the management and protection of endangered species (i.e., species in danger of extinction) and threatened species (i.e., likely to become endangered within the foreseeable future). Chapters 67 and 68 of the Texas Parks and

Wildlife Code authorize the TPWD to formulate lists of threatened and endangered fish and wildlife species and to regulate the taking or possession of the species. Under this statutory authority, the TPWD regulates the taking, possession, transport, export, processing, selling or offering for sale, and shipping of threatened or endangered species of fish and wildlife (Texas Legislature Online, 2022).

Table 3-10 lists wildlife species that are considered endangered or threatened by the USFWS and/or TPWD, or are designated a SGCN by TPWD, and whose geographic range includes any portion of Tarrant County. It should be noted that inclusion in the table does not imply that a species is known to occur in the study area but only acknowledges the potential for occurrence. An estimate of the likelihood of a species to occur within the study area is based on an analysis of existing habitat that is available and the known habitat preferences for each species. A discussion of each species' habitat follows **Table 3-10**, grouped first by state or federal listed threatened or endangered species, and followed by the SGCN.

TABLE 3-10. ENDANGERED, THREATENED, OR RARE WILDLIFE POTENTIALLY IN THE STUDY AREA

Common Name	Scientific Name	Listing Status [1,4]		Potential to Occur within Study Area?
		Federal	State	
AMPHIBIANS				
Strecker's chorus frog	*Pseudacris streckeri*	--	SGCN	Yes
Woodhouse's toad	*Anaxyrus woodhousii*	--	SGCN	Yes
BIRDS				
Bald eagle	*Haliaeetus leucocephalus*	DM	SGCN	No
Black rail	*Laterallus jamaicensis*	LT	T	No
Chestnut-collared longspur	*Calcarius ornatus*	--	SGCN	Yes
Franklin's gull	*Leucophaeus pipixcan*	--	SGCN	No
Lark bunting	*Calamospiza melanocorys*	--	SGCN	Yes
Mountain plover	*Charadrius montanus*	--	SGCN	Yes[2]
Piping plover[3]	*Charadrius melodus*	LT	T	No
Red knot[3]	*Calidris canutus rufa*	LT	T	No
Sprague's pipit	*Anthus spragueii*	--	SGCN	Yes
Western burrowing owl	*Athene cunicularia hypugaea*	--	SGCN	No
White-faced ibis	*Plegadis chihi*	--	T	No
Whooping crane	*Grus americana*	LE	E	No
FISH				
Mississippi silvery minnow	*Hybognathus nuchalis*	--	SGCN	No
INSECTS				
American bumblebee	*Bombus pensylvanicus*	--	SGCN	No
Comanche harvester ant	*Pogonomyrmex comanche*	--	SGCN	Yes
MAMMALS				
Big brown bat	*Eptesicus fuscus*	--	SGCN	Yes
Big free-tailed bat	*Nyctinomops macrotis*	--	SGCN	Yes

TABLE 3-10. ENDANGERED, THREATENED, OR RARE WILDLIFE POTENTIALLY IN THE STUDY AREA

Common Name	Scientific Name	Listing Status [1,4]		Potential to Occur within Study Area?
		Federal	State	
Black bear	*Ursus americanus*	--	T	No
Black-tailed prairie dog	*Cynomys ludovicianus*	--	SGCN	No
Cave myotis bat	*Myotis velifer*	--	SGCN	No
Eastern red bat	*Lasiurus borealis*	--	SGCN	Yes
Eastern spotted skunk	*Spilogale putorius*	--	SGCN	Yes
Hoary bat	*Lasiurus cinereus*	--	SGCN	Yes
Long-tailed weasel	*Mustela frenata*	--	SGCN	No
Mountain lion	*Puma concolor*	--	SGCN	No
Muskrat	*Ondatra zibethicus*	--	SGCN	No
Swamp rabbit	*Sylvilagus aquaticus*	--	SGCN	No
Tricolored bat	*Perimyotis subflavus*	--	SGCN	Yes
Western hog-nosed skunk	*Conepatus leuconotus*	--	SGCN	Yes
MOLLUSKS				
Louisiana pigtoe	*Pleurobema riddellii*	--	T	No
Sandbank pocketbook	*Lampsilis satura*	--	T	No
Texas heelsplitter	*Potamilus amphichaenus*	--	T	No
REPTILES				
Alligator snapping turtle	*Macrochelys temminckii*	--	T	No
Eastern box turtle	*Terrapene carolina*	--	SGCN	Yes
Prairie skink	*Plestiodon septentrionalis*	--	SGCN	Yes
Slender glass lizard	*Ophisaurus attenuates*	--	SGCN	Yes
Smooth softshell turtle	*Apalone mutica*	--	SGCN	No
Texas garter snake	*Thamnophis sirtalis annectens*	--	SGCN	Yes
Texas horned lizard	*Phrynosoma cornutum*	--	T	Yes
Timber (canebrake) rattlesnake	*Crotalus horridus*	--	SGCN	Yes
Western box turtle	*Terrapene ornata*	--	SGCN	Yes
Western chicken turtle	*Deirochelys reticularia miaria*	--	SGCN	No
Western massasauga	*Sistrurus tergeminus*	--	SGCN	Yes

Sources: TPWD, 2022b; TPWD, 2022c; USFWS, 2022a; USFWS, 2022b

Notes:

1. **USFWS listing codes**: C = Candidate; DM = Recovered, delisted, and being monitored; LE = Federally Listed Endangered Species (i.e., in danger of extinction); LT = Federally Listed Threatened Species (i.e., severely depleted population that may become endangered); PT = Proposed Threatened; blank = no federal status.
   TPWD listing codes: E = State Listed Endangered Species; T = State Listed Threatened Species; SGCN = Species of Greatest Conservation Need (i.e., rare species with no regulatory listing status).
2. Assumed to be a transient species, potentially migrating through the study area, and using suitable habitat for stopovers.
3. According to USFWS Information for Planning and Conservation database, the assessment of these species in the study area is only necessary for wind energy projects.
4. The USFWS list supersedes information provided for federal status in TPWD Annotated County List of Rare Species, in the case of a discrepancy. The species is listed by USFWS for the county but is not expected to occur within the study area.

Listed Threatened or Endangered Species

The discussion that follows describes habitat preferences and other characteristics for the state and federal threatened or endangered species shown in **Table 3-10** (i.e., federally listed as LE, LT, or DM and/or state listed as E or T). Unless otherwise noted, the information below is drawn primarily from TPWD (2022b; 2022c), USFWS (2022a; 2022b), and NatureServe Explorer (2022) online data and publications. Many of the listed threatened or endangered species that may be found in the study area are migratory birds. These species utilize the area primarily as a travel corridor, where suitable habitats are used for resting and feeding stops.

Breeding habitat for the bald eagle is commonly located within two to three miles of a major water source, which can be used for foraging. Primary food sources include fish and waterfowl, most often associated with rivers, lakes, bays, and coastal areas. Bald eagles roost and nest in large trees and often return to the same nest year after year. In Texas, bald eagle nesting typically occurs from October to July. Past threats to the species include reproductive failure due to pesticides, unrestricted taking by humans, and loss of habitat. Recovery efforts have been successful, and the bald eagle populations are currently being monitored. While the NDD database does not have any records of bald eagles near the study area (TPWD, 2022b), there are numerous observations noted on eBird (2022) around Grapevine Lake and a few sightings near the study area of individuals in flight at high elevations (i.e., not using the study area for nesting or feeding). It is likely bald eagles could be observed from the study area, although they would not be expected to use it for stopover habitat (Cornell, 2022; eBird, 2022; Sibley, 2003).

The black rail prefers mesic environments, including salt, brackish, and freshwater marshes, pond margins, wet meadows, and grassy swamps. This elusive species nests in or along the edges of marshes and damp ground. Typically, nests are hidden in dense marsh grass cover over a mat of prior years' dead grass material. Black rails forage on aquatic invertebrates in shallow wetlands. This species is generally difficult to observe and more often identified at night when males call during the breeding season (Cornell, 2022; Sibley, 2003). The use of the study area by the black rail would be unlikely given the lack of suitable stopover habitat.

The piping plover is a compact ground bird that breeds in the Northern Plains. In Texas, it is a migrant that winters along the Gulf Coast at beaches and bayside mud or salt flats. This species is considered migratory through the study area. While piping plovers have been observed and documented at Grapevine Lake, the use of the study area by the piping plover would be unlikely given the lack of suitable stopover habitat (Cornell, 2022; eBird, 2022; Sibley, 2003).

The red knot is a small, plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, with a distinctive and unique pottery orange color. Red knots migrate long distances in flocks northward through the contiguous U.S. mainly from April through June, and southward in July through October. In Texas, this bird winters along the Gulf Coast. The red knot prefers the shoreline of coast and bays and uses mudflats during rare inland encounters. Habitat consists primarily of seacoasts on tidal flats and beaches, herbaceous wetland, and tidal flat/shore. This species is considered migratory through the study area. Only a few observations have been noted along lake shorelines within the Dallas-Fort Worth Metroplex, with none yet recorded at Grapevine Lake. The use of the study area by the red knot would be unlikely given the lack of suitable stopover habitat (Cornell, 2022; eBird, 2022; Sibley, 2003).

The white-faced ibis is a bird that has a long decurved bill and is mainly found in shallow wetlands across western parts of the United States. Along with shallow wetlands, this bird can be found in freshwater marshes and saltwater habitats, and will nest in low trees or on the ground. No observations have been recorded within the study area, but the county distribution for this species includes geographic areas that they may use during migration (Cornell, 2022; eBird, 2022; Sibley, 2003).

The whooping crane prefers small ponds, marshes, and flooded grain fields for both roosting and foraging. Critical habitat in Texas for the whooping crane includes the Aransas National Wildlife Refuge and vicinity in Aransas, Refugio, and Calhoun counties along the Gulf Coast, which is located over 300 miles south of the study area. Migrating populations exhibit strong migratory site fidelity, and one of the primary migration corridors passes through central Texas and through the Great Plains to the north (Cornell, 2022; Sibley, 2003). Recent observations of whooping crane sightings in the Dallas-Fort Worth Metroplex were at Benbrook Lake in Tarrant County, Texas. These recorded sightings are

located over 60 miles southwest of the study area (eBird, 2022). The study area is within the primary whooping crane migration corridor; however, given the absence of any suitable habitat, the whooping crane would not occur in the study area.

In Texas, the black bear is typically found in bottomland hardwoods and large tracts of inaccessible forested areas. The species once was widespread throughout the state; however, the remnant black bear population is largely restricted to remote mountainous areas, nearly impenetrable thickets along watercourses of the Trans-Pecos region, or juniper-oak habitats of the Edwards Plateau. The black bear prefers mixed deciduous-coniferous woodlands and forested wetlands. The NDD database does not include any records of black bears within the vicinity of the study area. Given the absence of any suitable habitat, the black bear would not occur in the study area (Schmidly and Bradley, 2016).

The historical range of the Texas horned lizard included the entire state of Texas in arid and semiarid areas of flat, open terrain with scattered vegetation and sandy or loamy soils. Population declines have been linked to loss of habitat, insecticides, over-collection, and the accidental introduction of the imported fire ant (*Solenopsis invicta*). Despite declines in east and central Texas, the Texas horned lizard is still common in portions of the Rio Grande Plains of south Texas, the Rolling and High Plains of northwest Texas, and the Trans Pecos of far west Texas. Although the horned lizard could be encountered in the area of the project, it is unlikely that the species would be present in the maintained turfgrass habitat of most of the study area. There is limited potential the species could be found in or near the few remaining native habitats around the existing substation (Conant and Collins, 1998; IUCN, 2022).

The Louisiana pigtoe, sandbank pocketbook, and Texas heelsplitter are listed species that are confined to perennial aquatic stream environments. Given that no streams are in the study area, it can be concluded that this group of species would not be found in the study area without any regard to their specific habitat requirements or known ranges/records. The same applies to the alligator snapping turtle, which similarly resides in a variety of perennial aquatic environments, none of which are not found in the study area.

Species of Greatest Conservation Need

The Strecker's chorus frog is a nocturnal amphibian that burrows into the soil, preferably sandy in texture, to shield from predators and heat. This species emerges from burrows after early spring rains to breed in flooded fields, ditches, small ponds, and depressional wetlands. Breeding individuals prefer to attach fertilized eggs onto submerged vegetation (AmphibiaWeb, 2022; IUCN, 2022). Given the developed nature of the study area, any potential for this species to occur in the study area would be limited to seasonally inundated roadside ditches in the eastern portion of the study area.

The Woodhouse's toad utilizes a wide variety of both terrestrial and aquatic habitats. The species may be found among forests, grasslands, and barrier island sand dunes. In some portions of the species range, the Woodhouse's toad is expanding into urbanized areas or degraded riparian corridors and agricultural fields. Between February and July in the Great Plains, the Woodhouse's toad migrates to aquatic environments to breed in ponds, lakes, and rain-fed depressions (AmphibiaWeb, 2022; IUCN, 2022). Given the adaptability of this species to urban settings, it is possible for the Woodhouse's toad to be present within the study area.

The Chestnut-collared longspur is a ground-dwelling bird that utilizes grassy prairies to breed and winters in fields with short grass. On its journey to winter in southern parts of the United States, this bird is often found in flocks mixed with other longspurs. Although no observations have been recorded, there is limited potential for this bird to migrate through the study area (Cornell, 2022; eBird, 2022; Sibley, 2003).

Franklin's gull is a long-distance migrant bird that utilizes a wide variety of riparian to ephemeral wetlands as stopover sites. In Texas, the species is casually found wintering along the coastline, near shores, among tidal flats or shores, and within herbaceous wetlands. Given the absence of these habitats in the study area, it is unlikely the species would occur in or be observed from the study area (Cornell, 2022; eBird, 2022; Sibley, 2003).

The lark bunting is a small sized bird that prefers to inhabit wide open habitats such as plains, prairies, meadows, and sagebrush. They utilize grasslands of low to moderate height as cover and avoid urban areas. Nesting occurs in mixed-grass and shortgrass

areas where sagebrush is dominant. The presence of vegetation cover may be influential in their reproductive success. Various observations of the lark bunting have been recorded in Tarrant County and neighboring counties. This species could potentially be found within the study area wherever suitable habitat is present (Cornell, 2022; eBird, 2022; NatureServe Explorer, 2022).

The Mountain plover is a bird that inhabits open areas with little to no vegetation. It utilizes shortgrass prairies or areas with bare ground to breed. This bird can be found in flocks while it winters on barren fields in southwestern parts of the United States. While no observations have been recorded within the study area, the county distribution for this species includes geographic areas they may use while migrating (Cornell, 2022; eBird, 2022; Sibley, 2003).

The Sprague's pipit is a songbird that is often found hidden in grasses. It breeds on grassy prairies and prefers to winter in open habitats farther south. No observations have been recorded within the study area, but the county distribution for this species includes geographic areas they may use during migration (Cornell, 2022; eBird, 2022; Sibley, 2003).

The western burrowing owl occurs in the western half of North America. Nesting occurs in warmer temperate and sub-tropical regions from southern California to west Texas and south into Mexico. Typical habitat consists of open grasslands, especially prairie, plains, and savanna. Sometimes the burrowing owl is found in open areas, such as vacant lots near human habitation or airports. Preferred habitat is typified by shorter vegetation accompanied by abandoned small mammal burrows, which the owl modifies for its own use. This species rarely creates its own burrows and is thus associated with known habitat for prairie dog, ground squirrel, fox, and similar ground-dwelling mammals. Species decline is primarily due to habitat loss and fragmentation. Given the absence of these habitats in, and the fragmented nature of, the study area, it is unlikely the western burrowing owl could occur within the study area (Cornell, 2022; eBird, 2022; Sibley, 2003).

The American bumblebee occupies open farmland and fields throughout much of the plains, as well as temperate forests in the eastern United States and deserts of the western United States. A colonial breeding species, it typically nests at the surface of the ground

among long grass mixes while occasionally nesting underground. There is limited potential for the American bumblebee to occur within the study area.

There is very little information regarding the Comanche harvester ant, only that several internet sources report that it nests in very deep sandy soils in prairies surrounded by oak forests. From only this basic habitat description, it is possible the species could occur in the study area.

The big brown bat prefers wooded areas or woodlands of central, eastern, and north Texas. The species is not known to occur in the southern part of the state. In west Texas, the bat utilizes riparian corridors. The big brown bat will often utilize attics, building crevices, caves, spaces between rocks, areas under loose bark of dead trees, or tree cavities. The big brown bat emerges early in the evening to forage among the top of the tree canopy. The species migrates in winter to hibernate in caves or buildings. Breeding occurs in the fall and young are born from May to August the following year (Schmidly and Bradley, 2016). There is limited potential for the big brown bat to be present within the study area.

The big free-tailed bat is scattered throughout localities in the Trans-Pecos, Panhandle, and southern areas of Texas. Their preferred roosting sites are any gaps or crevices in high canyon walls, but they have been observed in buildings. There is limited potential for the big free-tailed bat to occur within the study area (Schmidly and Bradley, 2016).

The black-tailed prairie dog is a ground-dwelling squirrel that inhabits short-grass prairies ranging from central to western Texas. Their food is mainly plant material. They are very active during the morning and can be found in colonies with a few more individuals. They spend their summers storing up reserves of fat and may begin hibernating in November. Given the absence of any suitable habitat, the black-tailed prairie dog would not occur within the study area (Schmidly and Bradley, 2016).

The cave myotis bat is a colonial, cave-dwelling bat that typically roosts in clusters numbering into the thousands. They may also roost in old buildings, rock crevices, and under bridges and abandoned cliff swallow nests. The cave myotis is a year-round inhabitant of Texas but hibernates in caves through central Texas during the winter. They

typically mate during the fall with ovulation and fertilization delayed until the spring, and lactation observed in May. While no observations have been recorded in Tarrant County, some have been recorded in Dallas County. Given the general absence of roosting habitats in the study area, it is unlikely this species would occur in the study area (Schmidly and Bradley, 2016).

The eastern red bat is a medium sized bat with a very distinct reddish color. Eastern red bats are forest dwelling and are usually found alone as they prefer to roost in tree foliage or Spanish moss, feeling safe and concealed. They are migratory because they move northward early in the spring and return to the southern parts of their range for the fall. Its distribution is statewide, but it is more common in the eastern and central parts of Texas. Given the general habitat requirements, the eastern red bat could potentially occur within the study area (Schmidly and Bradley, 2016).

The eastern spotted skunk prefers wooded or bushy areas and tallgrass prairies but may also utilize open fields and prairies, croplands, fence rows, farmyards, forest margins, and woodlands. If rocky canyons or outcrops are available, this skunk species will readily den among rock cracks and crevices or burrow under a large rock. Individuals also may den in hollow trees, under buildings, in underground tile drains, in underground burrows, or in attic crawlspaces. Breeding occurs in March through April, although some individuals will breed again in July to August to produce a second litter. Given the general habitat characteristics and recorded observations, there is potential for the eastern spotted skunk to be present within the study area (Schmidly and Bradley, 2016).

The hoary bat is a forest-dwelling, transcontinental species that has been recorded distributed throughout Texas. While males are more common in mountainous regions, females are more abundant in eastern parts of the United States. Hoary bats usually roost in deciduous or coniferous tree foliage but prefer taller and larger trees. The hoary bat is a spring-fall migratory bat but is locally abundant through the state. Given the general habitat characteristics, there is limited potential for the hoary bat to be present within the study area (Schmidly and Bradley, 2016).

The long-tailed weasel may be found residing in a wide range of habitats throughout most of Texas, including shrubland, fencerows, upland and bottomland woods, forest edges,

and rocky desert scrubland. Typically, the species resides alongside pocket gophers and ground squirrels. The long-tailed weasel is a strong swimmer and often lives close to water. This species could potentially be found within the study area wherever suitable habitat is present (Schmidly and Bradley, 2016; IUCN, 2022).

Mountain lion habitat preferences are wide and variable, including swamps, open riparian woodlands, shrubby country, canyons, escarpments, and rimrocks. Riparian corridors with an open understory are important for the mountain lion to travel between habitats. Dense woodlands or thick shrubby areas are usually avoided by this species. Although the mountain lion is often associated with montane and remote areas, TPWD has confirmed two sightings in Dallas and Collin Counties in the last few years (CBS, 2020). Nonetheless, given the urban environment, it is very unlikely that this species would occur within the study area (Schmidly and Bradley, 2016).

The tricolored bat is associated with forested habitats, where it can forage near trees and along waterways and, as such, it is frequently observed foraging among riparian corridors. The tricolored bat appears to prefer woodlands over open habitats, even though it has been occasionally spotted flying among agricultural fields. The current known extent includes most of Texas, excluding the western portions of the state. The tricolored bat may be present within the study area given the general habitat requirements (Schmidly and Bradley, 2016; IUCN, 2022).

The western hog-nosed skunk inhabits a wide range of environments, including woodlands, grasslands, deserts, shrublands, and rocky canyons in mountainous regions. This species prefers to den in rock crevices, hollow logs, underground burrows, caves, mine shafts, or under buildings. As the species utilizes a wide range of habitat, there is potential for the western hog-nosed skunk to be present within the study area (Schmidly and Bradley, 2016; IUCN, 2022).

The eastern box turtle is a terrestrial reptile that prefers forests, fields, and the edge habitats where these conditions meet. Some individuals have been documented to seasonally migrate between open fields in the spring to forests in the summer when they frequent shallow pools. This turtle species will burrow into loose soil, debris, mud, old stump holes in trees, or under leaf litter for protection. (Conant and Collins, 1998). Given

the general habitat requirements, there is limited potential for the eastern box turtle to be present within the study area.

The prairie skink inhabits sandy banks and open, grass-covered rocky hillsides along creeks, but can also be found on forest edges and in woodlands. Their distribution ranges from northern areas in Canada to coastal parts of Texas. There is potential the prairie skink is present within the study area where suitable habitat exists (NatureServe Explorer, 2022).

The slender glass lizard predominantly inhabits open grasslands, prairies, woodland margins, open woodlands, oak savannas, longleaf pine (*Pinus palustris*) flatwoods, scrub-shrub areas, fallow fields, and areas adjacent to streams and ponds. Typically, this species will utilize areas with sandy soil textures (Conant and Collins, 1998; USGS, 2022a). It is likely the slender glass lizard utilizes the study area where suitable habitat exists.

The Texas garter snake inhabits both terrestrial and aquatic ecosystems, including grasslands and modified open areas that are in the vicinity of ponds, streams, or marshes. This subspecies of the common garter snake (*Thamnophis sirtalis*) is found primarily in east-central Texas, southwestern Kansas, Oklahoma, and the Texas panhandle. This snake species may utilize aquatic environments more in the spring when frogs are congregating for breeding among ephemeral pools. The Texas garter snake also prefers areas with permanent sources of water or damp soil that supports abundant earthworm activity. The Texas garter snake may also be abundant in some suburban areas. Due to its wide range of habitat, it is likely for the Texas garter snake to be present within the study area (USGS, 2022a).

The timber rattlesnake utilizes swamps, floodplains, upland pine and deciduous woodlands, riparian corridors, and abandoned farmland. Habitats commonly used are often over limestone bluffs, sandy soils, or black clays. The timber rattlesnake typically prefers dense ground cover. The timber rattlesnake tends to gravitate to rocky retreats with crevices or fissures for overwintering habitat. Given the general habitat requirements, there remains limited potential the species could be found within the study area where suitable habitat exists (Conant and Collins, 1998).