Control Number: 52455

Item Number: 2

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

DOCKET NO. 52455

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

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 Old Country Switch 345 kilovolt ("kV") Tap Transmission Line Project ("Proposed Transmission Line Project").

3.	**Person to Contact:**	Ifeoluwa Adetoro
	Title/Position:	Regulatory Project Manager Sr.
	Phone Number:	(214) 486-4918
	Mailing Address:	1616 Woodall Rodgers Fwy, Suite 6A-014 Dallas, Texas 75202-1234
	Email Address:	Ifeoluwa.Adetoro@oncor.com
3a.	**Alternate Contact:**	Thomas Yamin
	Title/Position:	Director of Regulatory, Transmission and 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: Old Country Switch 345 kV Tap Transmission Line Project
Design Voltage Rating (kV): 345 kV
Operating Voltage Rating (kV): 345 kV

Normal Peak Operating Current (A): 5138 A

The Proposed Transmission Line Project is a new single-circuit, 345 kV transmission line, to be built on double-circuit capable structures, between the proposed Oncor Old Country Switch station and the proposed Oystercatcher Solar Substation, both located in Ellis County. The proposed Oncor Old Country Switch station will be located along the existing Oncor Venus Switch – Navarro Switch 345 kV transmission line approximately

two miles to the west of Interstate Highway 35 East ("I-35E") and approximately 0.3 miles to the east of Farm to Market Road ("FM") 876. The Oystercatcher Solar Substation is located proximal to the intersection of Iola Lane and L R Campbell Road approximately 3.5 miles to the north-northwest of Italy, Texas. The Proposed Transmission Line Project will be approximately 5 miles to the northwest of downtown Italy, Texas.

The length of the overall Proposed Transmission Line Project ranges between approximately 3.2 to 4.9 miles, depending on which route is selected by the Public Utility Commission of Texas ("PUCT" or "Commission").

The Proposed Transmission Line Project includes the construction of the proposed Oncor Old Country Switch station.

5. Conductor and Structures:

Conductor Size and Type:	1926.9 kcmil ACSS/TW
Number of conductors per phase:	2
Continuous Summer Static Current Rating (A):	5138 A
Continuous Summer Static Line Capacity at Operating Voltage (MVA):	3070 MVA
Continuous Summer Static Line Capacity at Design Voltage (MVA):	3070 MVA
Type and composition of Structures:	Tangent Double-Circuit "V" Tower
Height of Typical Structures:	80 – 160 feet*

*This number reflects the approximate visible height of the structure from ground to structure top. Please see the drawing of a typical structure in Figure 1-2, page 1-7, of the *Environmental Assessment and Alternative Route Analysis for the Proposed Old Country Switch 345 kV Tap Transmission Line Project in Ellis County, Texas,* ("Environmental Assessment and Routing Study"), prepared by Freese and Nichols, Inc. ("FNI") 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 345 kV tangent "V" tower for numerous reasons including costs, technical specifications, structure footprint, ROW requirements, the specific characteristics of the study area, and other items.

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 and Alternative Route Analysis 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 3.2 to 4.9 miles
Miles of Circuit	Approximately 3.2 to 4.9 miles
Width of Right-of-Way	Approximately 160 feet
Percent of Right-of-Way Acquired	0%

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 topography of the project area is dominated by gently rolling hills with streams and channels. The elevation of the project area ranges from 450 to 650 feet above mean sea level according to most recent USGS topographic maps for the area. Drainage throughout the project area is primarily toward and occurring within the floodplain of Chambers Creek, which flows through the center of the project area from west to east.

The project area is situated approximately 1.3 miles to the northwest of the City of Italy in Ellis County, Texas. It is located in a rural area and consists of rural residential and agricultural land uses, utility corridors and facilities, and undeveloped lands. Hunting, fishing, and other types of outdoor recreation may be integrated with these primary uses. Additional commercial and residential development is concentrated along the I-35E and United States Highway ("US") 77 corridors between the City of Italy and the town of Forreston on the east side of the project 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 3-62, of the Environmental Assessment and Routing Study, 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.

None. The Proposed Transmission Line Project will tap an existing line and establish two new stations.

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.

Oncor Old Country 345 kV Switch Station
Oystercatcher Solar 345 kV Substation (to be built and owned by Oystercatcher Solar, LLC)

8. Estimated Schedule:

Estimated Dates of:	Start	Completion
Right-of-way and Land Acquisition	08/2022	11/2023
Engineering and Design	08/2022	02/2023
Material and Equipment Procurement	02/2023	11/2023
Construction of Facilities	10/2023	04/2024
Energize Facilities	04/2024	04/2024

9. Counties:

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

Ellis County

10. Municipalities:

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

No route is proposed to be constructed within the city limits or extra-territorial jurisdiction ("ETJ") of any municipality.

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.

Not applicable

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. No other utilities' existing facilities will be utilized.

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 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	**Old Country Switch Facilities**
Right-of-way and Land Acquisition	*	$393,000
Engineering and Design (Utility)	*	$584,000
Engineering and Design (Contract)	*	$370,000

Procurement of Material and Equipment (including stores)	*	$3,491,000
Construction of Facilities (Utility)	*	$351,000
Construction of Facilities (Contract)	*	$2,636,000
Other (all costs not included in the above categories)	*	-
Estimated Total Cost	*	$7,825,000

* Refer to Attachment No. 2 for cost estimates for each alternative route presented in the Application.

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.

The Proposed Transmission Line Project is needed to connect a new solar generating facility to the ERCOT grid. Oncor was approached by Oystercatcher Solar, LLC to provide facilities necessary to interconnect the Oystercatcher Solar generating facilities, with approximately 223 MW capacity, to Oncor's transmission system and the ERCOT grid (*see* Attachment No. 3 – ERCOT Standard Generation Interconnection Request 21INR0362, dated 08/20/2021). Generation of this capacity requires transmission-level facilities to interconnect to the grid.

The planned site for the proposed generating facilities lies approximately 2.7 miles from the nearest transmission line that can accommodate generating facilities of this capacity. Accordingly, Oncor proposes to design and construct a new 345 kV switch,

named Old Country Switch, and an approximately 3.2 to 4.9-mile 345 kV transmission line, depending on the route selected by the PUCT, to provide a connection between the Oystercatcher Solar generating facilities and the ERCOT grid.

The Old Country Switch will be located adjacent to the existing Oncor Venus Switch – Navarro Switch 345 kV double-circuit transmission line in Ellis County, approximately 16 circuit miles from Venus 345 kV Switch (*see* Attachment No. 4). The east circuit of the Venus – Navarro Switch 345 kV transmission line will be looped through the new Old Country Switch. Oystercatcher Solar LLC will construct, own and operate its equipment and facilities, including the Oystercatcher Solar substation.

ERCOT has reviewed the transmission facilities in the area and identified Oncor's Venus Switch – Navarro Switch 345 kV Line as the most efficient means of providing transmission service for the Oystercatcher Solar generating facilities. All necessary Generation Interconnection studies are being performed in accordance with ERCOT requirements, and an ERCOT Standard Generation Interconnection Agreement between Oncor and Oystercatcher Solar is included as Attachment No. 3.

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.

Due to the location of the proposed generation facilities and the current transmission system configuration in the vicinity of these facilities, alternatives to the Proposed Transmission Line Project are limited.

Interconnecting the Oystercatcher Solar generation facilities requires transmission-level service; so distribution alternatives are insufficient. The Venus Switch – Navarro Switch 345 kV double-circuit transmission line is the closest 345 kV transmission line in the area that provides a viable transmission-level solution. The only other transmission line proximal to the proposed generation facility is rated at 69 kV and is not capable of carrying the capacity of the Oystercatcher Solar generating facilities.

ERCOT's 345 kV transmission system is the backbone for the generation fleet. ERCOT's 69 kV transmission is mainly used to serve small loads, and is not generally capable of interconnecting large scale generation. ERCOT's review of all transmission facilities in the area identified Oncor's Venus Switch – Navarro Switch 345 kV Line as the most efficient means of providing transmission service for Oystercatcher Solar generating facilities.

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 Proposed Transmission Line Project is shown in Attachment No. 5. The location and voltage of existing transmission lines are included. There are no existing substations and no taps, ties, meter points, or other facilities involving other utilities in the project area. A map outlining the project area can be found in Figure 3-1 of the Environmental Assessment and Routing Study, 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 FNI to prepare the Environmental Assessment and Routing Study. The objective of the Environmental Assessment and Routing Study 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 PUCT's 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 and Routing Study appraises the environmental effects that could result from the construction, operation, and maintenance of the Proposed Transmission Line Project. The Environmental Assessment and Routing Study 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 FNI in its evaluation, Oncor provided FNI with information regarding the project endpoints, the need for the project, engineering and design requirements, construction practices, and ROW requirements for the Proposed Transmission Line Project.

After considering environmental and geographical data, FNI defined a study area that encompassed the provided endpoints with a sufficient area to identify a diverse set of potential routing alternatives. *See* Section 3.0 of the Environmental Assessment and Routing Study, included as Attachment No. 1, for a discussion of the study area. Routing constraints were identified after collection of area data from many sources

(*e.g.*, governmental agencies, evaluation of aerial photography) and consideration of the criteria established in Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, the PUCT's CCN Application form, and 16 TAC § 25.101.

Potential line segments were identified by evaluating the constraints mapped within the study area and then developing potential areas such as existing corridors and other linear features where constraints were minimal. Corridors were identified and developed into potentially viable routes. Potential impacts to both the human and natural environment were evaluated by FNI for each identified preliminary alternative route.

Oncor then evaluated the alternative routes and selected Route 54 as the route that best addresses the requirements of the Texas Utilities Code and the PUCT's Substantive Rules.

Specific discussions regarding the study area, identification of constraints, selection of potential line segments, and alternative route analysis are set forth in the Environmental Assessment and Routing Study. Specific discussion regarding the evaluation and selection of routes filed with the Application and the route that Oncor believes best complies with the requirements of the Texas Utilities Code and the PUCT's Substantive Rules is contained in an office memorandum from Brenda J. Perkins (included as Attachment No. 6).

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, FNI, and 7Arrows Land Staff, LLC, a contractor assisting Oncor in property abstracting. The public participation meeting was held May 20, 2021, from 4:00 p.m. to 7:00 p.m., at the City of Italy Community Center in Italy, Texas.

Oncor mailed a total of 24 individual written notices of the meeting to all owners of property within 500 feet of the centerline of the preliminary alternative route links for the Proposed Transmission Line Project. Also, a public notice was placed in the local newspaper listed below 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 § 22.54(a)(4).

Published Notice

Newspaper	County	Publication Date
The Ennis News	Ellis	May 9, 2021

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 routing 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 and/or FNI. 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 and because it allows attendees to gather information most important to them and to 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.

Due to COVID-19 public health and safety guidelines, Oncor and FNI also provided a virtual public participation website to solicit feedback from residents, landowners, public officials, and other interested parties concerning the proposed project, preliminary alternative routes, and the overall transmission line routing process. The virtual website was developed to mirror the in-person public meeting with information sections corresponding to each information station, including electronic versions of the maps, illustrations, aerial photography, and/or text explaining each subject. Electronic copies of the public meeting handout packet, questionnaire, and landowner bill of rights were also provided prominently on the virtual public meeting website. Each information section also had a Zoom meeting link to speak directly with an Oncor, FNI, or 7Arrows Land Staff representative.

Six individuals signed in as attendees at the public participation meeting. One attendee submitted a questionnaire at the meeting. One questionnaire was submitted via email from the virtual public meeting website. One additional email was received from an attendee that was submitted in lieu of the questionnaire. No questionnaires or letters were received by Oncor or FNI via mail at a later date.

Additional discussion concerning the public involvement program and specific information regarding the public participation meeting may be found in the Environmental Assessment and Routing Study, Section 2.5 pages 2-10 through 2-12, and Section 5.0, pages 5-1 through 5-2, 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 meeting attendees is included in Appendix B of Attachment No. 1.

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 = 1,000 feet map (Figure 3-1) is included in the Appendix F map pocket of the Environmental Assessment and Routing Study included as Attachment No. 1. This base map denotes sufficient cultural and natural features to permit location of all routes in the field. This map delineates the study area, routing constraints, and all routes and route links considered in the selection of routes. 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 any environmentally sensitive areas, if any. Figure 3-1 depicts existing transmission facilities in the area of the Proposed Transmission Line Project, including taps, ties, meter points, or other utility facilities, as applicable.

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 of the Environmental Assessment and Routing Study included as Attachment No. 1 depicts on an aerial photograph: (1) the location of each link that is used in the alternative routes filed in this CCN, with each link identified; (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 any link used in the alternative routes; and (4) the boundaries (approximate or estimated according to available county tax information) of all properties directly affected by any link used in an alternative 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 environmentally sensitive areas, if any, are depicted.

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. 7 is a table that cross-references each habitable structure and directly affected property identified in Figure 3-1 of Attachment No. 1; the cross-reference table includes corresponding landowner names and addresses and indicates which links and alternative routes affect each structure or property.

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 PUCT 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 500 feet of each proposed link centerline used in the alternative routes filed in this CCN, along with a general description of each habitable structure and its distance from the centerline of the link and the alternative routes associated is provided in the table below.

Habitable Structure	Distance (feet)	Description	Direction[1]	Link	Route
1[2]	94	SFR[3]	SE	A	All Filed Routes
	131		NE	B	2, 3, 5, 7, 13, 14, 17, 18, 19, 21, 22, 24, 25
	142		NE	T	31, 54, 55, 57, 58, 59, 60, 61, 62, 64, 65, 69, 70, 71, 72, 73, 74, 100, 130, 131, 133, 134, 139, 140, 144, 145, 147, 149, 150, 151
2	199	SFR	SW	B	2, 3, 5, 7, 13, 14, 17, 18, 19, 21, 22, 24, 25
3	434	SFR	NE	V	31, 100
	443		NE	W	100
	443		NE	X	31
	518*		SW	B	2, 3, 5, 7, 13, 14, 17, 18, 19, 21, 22, 24, 25
4	309	SFR	SE	X	31
	309		SE	V	31, 100
	309		SE	W	100
5	294	SFR	SE	X	31
	343		SE	V	31, 100
	343		SE	W	100
6	447	SFR	SE	X	31
	497		SE	V	31, 100
	497		SE	W	100
7	479	SFR	SE	X	31
8	345	SFR	SE	X	31

Habitable Structure	Distance (feet)	Description	Direction[1]	Link	Route
	455		SE	V	31, 100
	455		SE	W	100
9	195	SFR	SW	V	31, 100
	354		E	U1	54, 55, 57, 58, 59, 60, 61, 62, 64, 65, 69, 70, 71, 72, 73, 74, 130, 131, 133, 134, 139, 140, 151
	359		E	DDD	151
	359		E	V1	54, 55, 57, 58, 59, 60, 61, 62, 64, 65, 69, 70, 71, 72, 73, 74, 130, 131, 133, 134, 139, 140
	434		NW	W	100
	487		NW	X	31
10	218	SFR	SW	W2	130, 131, 133, 134, 139, 140
11	275	SFR	SW	W2	130, 131, 133, 134, 139, 140
12	505*	SFR	SW	F	2, 3, 5, 7
13	275	SFR	NW	JJ	5, 13, 14, 17, 18, 31, 54, 55, 57, 58, 73, 74, 100
	382		SW	EE	17, 18, 57, 58
	483		NE	HH	7, 19, 59, 60
14	279	SFR	NE	RR	147, 149

Notes:
[1] Represents the direction from the habitable structure to the provided alternative route link.
[2] Owned by Oystercatcher Solar.
[3] Denotes single family residence with a permanent foundation.

* The aerial photography used to determine the distance of habitable structures within 500 feet of the centerline of each alternative route link has a horizontal accuracy of +/- 20 feet. To account for this level of accuracy, FNI identified all habitable structures within a measured distance of 520 feet of each alternative route link centerline.

Figure 3-1 (Appendix F map pocket), located in Application Attachment No. 1, depicts the locations of all known habitable structures directly affected by the links used in the proposed alternative 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 centerline of any of the alternative route links and no known FM radio transmitters located within 2,000 feet of the centerline of any of the alternative route links.

There are no other known communication towers located within 2,000 feet of the centerline of any of the alternative route links.

Please refer to Section 3.7.7, page 3-54, and Section 7.6.6, pages 7-21 through 7-22, of the Environmental Assessment and Routing Study 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.

FNI'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 any alternative route.

FNI's review also identified: no FAA-registered airports without a runway greater than 3,200 feet in length within 10,000 feet of any alternative route; no heliports within 5,000 feet of any alternative route; and no private airstrips within 10,000 feet of any alternative route.

Please refer to Section 3.7.6, page 3-53 and Section 7.6.5, pages 7-20 through 7-21 of the Environmental Assessment and Routing Study 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 field reconnaissance surveys did not identify any pasture or cropland irrigated by traveling irrigation systems (rolling or pivot type) that will be traversed by any of the alternative routes of the Proposed Transmission Line Project.

Please refer to Table 7-2 in Appendix D of the Environmental Assessment and Routing Study 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 to the owners of the directly-affected land is included as Attachment No. 8. The names and addresses of the owners of the directly-affected land, to whom notice will be mailed by first-class mail, are included as Attachment No. 7.

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 Brazos Electric Power Cooperative 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:

Ellis County, County Judge
Ellis County, County Commissioners – Precincts 1, 2, 3, and 4

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 Italy, Mayor

City of Italy, Mayor Pro Tem
City of Italy, City Secretary
City of Italy, Director of Public Works
City of Italy, Council Members

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, and by first-class mail to the address below, is included as Attachment No. 9.

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

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 of this Application will be published in *The Ennis News*, a newspaper of general circulation in Ellis 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.

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.

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.

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

Please refer to Section 3.7.2, page 3-50, and Section 7.6.2, page 7-18 through 7-19 of the Environmental Assessment and Routing Study, 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 Texas Historic Commission ("THC") Historic Sites Atlas and the THC Archaeological Sites Atlas, to locate known cultural resources within 1,000 feet of the centerline of any route for the Proposed Transmission Line Project. THC records indicated no historical sites known to be within 1,000 feet of any alternative route centerline. THC records indicated no National Register of Historic Places ("NRHP"), State Antiquities Landmarks ("SALs"), or cemeteries recorded within 1,000 feet of any alternative route centerline. One archaeological site was located within 1,000 feet of the alternative route centerlines. The distances from this cultural resource to the closest route links and the corresponding routes are provided in the table below.

Feature ID	Routes	Links	Distance to Link (feet)	Direction to Link
THERE ARE NO CEMETERIES WITHIN 1,000 FEET OF A ROUTE				
THERE ARE NO OFFICIAL TEXAS HISTORICAL MARKERS WITHIN 1,000 FEET OF A ROUTE				
ARCHAEOLOGICAL SITES WITHIN 1,000 FEET OF ROUTE				
41EL23	19,21,22,24,25,59,60,61,62,64,65,130,131,133,134	AA	186	SE
	19,21,22,59,60,61,62,130,131	BB	849	NE
	24,25,64,65,133,134	CC	863	NE

Please refer to Section 3.8, pages 3-54 through 3-62, and Section 7.7, pages 7-22 through 7-24 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 and Routing Study prepared by FNI 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 Routing Study will be provided to the Texas Parks and Wildlife Department ("TPWD") 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 which 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 and Routing Study
Attachment No. 2:	Cost Estimates
Attachment No. 3:	ERCOT Standard Generation Interconnection Agreement dated August 20, 2021
Attachment No. 4:	Project Location Map referenced in Application Response #14
Attachment No. 5:	Schematic of Transmission System in Proximate Area of Project
Attachment No. 6:	Routing Memorandum of Brenda J. Perkins
Attachment No. 7:	Listing of Directly Affected Land Owners for Notice
Attachment No. 8:	Copy of Notice to Directly Affected Land Owners
Attachment No. 9:	Copy of Notice to Counties, Municipalities, OPUC, and Department of Defense Siting Clearinghouse
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

FREESE AND NICHOLS

Innovative approaches
Practical results
Outstanding service

ENVIRONMENTAL ASSESSMENT AND ALTERNATIVE ROUTE ANALYSIS

for the Proposed

OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

IN ELLIS COUNTY, TEXAS

ONCOR®

ONCOR ELECTRIC DELIVERY COMPANY LLC

August 2021

Prepared by:

FREESE AND NICHOLS, INC.
801 Cherry Street, Suite 2800
Fort Worth, Texas 76102
817-735-7300

ATTACHMENT NO. 1

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TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

ACRONYMS AND ABBREVIATIONS

A.D.	*anno Domini* (after Christ)
AM	amplitude modulation (e.g., AM radio transmitter)
APLIC	Avian Power Line Interaction Committee
B.C.	before Christ
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
DoD	Department of Defense
EA	Environmental Assessment
e.g.	*exempli gratia* (for example)
EMST	Ecological Mapping Systems of Texas
ESA	Endangered Species Act
et al.	*et alia* (and others)
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FM	Farm to Market Road (e.g., FM 876)
FM	frequency modulation (e.g., FM radio transmitter)
FNI	Freese and Nichols, Inc.
FPPA	Farmland Protection Policy Act
GIS	Geographic Information System
GLO	Texas General Land Office
GPS	Global Positioning System
HPA	High Probability Area
IH	Interstate Highway (e.g., IH-35E)
i.e.	*id est* (that is)
IPaC	Information for Planning and Consultation
ISD	Independent School District
kV	kilovolt (1,000 volts)
LRR	Land Resource Region
MBTA	Migratory Bird Treaty Act
MLRA	Major Land Resource Area
msl	mean sea level

NAIP	National Agriculture Imagery Program
NASS	National Agricultural Statistics Service (an agency of the USDA)
NCTCOG	North Central Texas Council of Governments
NHD	National Hydrography Dataset
NPS	National Park Service
NRCS	Natural Resources Conservation Service (an agency of the USDA)
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
NWP	Nationwide Permit
Oncor	Oncor Electric Delivery Company LLC
OTHM	Official Texas Historical Markers
PCN	Pre-Construction Notification
PUCT	Public Utility Commission of Texas
ROW	right-of-way
RRC	Railroad Commission of Texas
RTEST	Rare, Threatened, and Endangered Species of Texas
RTHL	Recorded Texas Historic Landmarks
SCS	Soil Conservation Service (agency was renamed NRCS, see above)
SFR	Single Family Residence
SGCN	Species of Greatest Conservation Need
spp.	plural of species (multiple species of the same Genus)
SWPPP	Storm Water Pollution Prevention Plan
TARL	Texas Archaeological Research Laboratory
TASA	Texas Archaeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
TxDOT	Texas Department of Transportation
TXNDD	Texas Natural Diversity Database
US	United States Highway (e.g., US-77)
USACE	United States Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

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1.0 PROJECT DESCRIPTION

1.1 SCOPE OF THE PROJECT

Oncor Electric Delivery Company LLC (Oncor) proposes to construct a double circuit 345 kilovolt (kV) transmission line to connect the proposed Oncor Old Country Switch and Oystercatcher Solar facilities in Ellis County, Texas. The new transmission line will use a single circuit position on double circuit capable structures. The proposed Oncor Old Country Switch will be located along the existing Oncor Venus Switch – Navarro 345 kV transmission line approximately two miles to the west of Interstate Highway 35 East (IH-35E) and approximately 0.3 miles to the east of Farm to Market Road (FM) 876. The proposed Oystercatcher Substation is located proximal to the intersection of Iola Lane and L R Campbell Road approximately 3.5 miles to the north-northwest of Italy, Texas. The proposed transmission line will be located approximately 5.0 miles to the northwest of downtown Italy, Texas. The proposed transmission line project will be approximately three to five miles long. Each of the project endpoints is shown relative to the location of the nearby towns and communities, roadways, and natural features on Figure 1-1.

Freese and Nichols, Inc. (FNI) was retained to identify and evaluate alternative routes and to prepare an Environmental Assessment (EA) and Alternative Route Analysis report to support Oncor's application for a Certificate of Convenience and Necessity (CCN). The routing study conducted is incorporated into this document. 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 document may also be used in support of any additional local, state, or federal permitting activities that may be required for the proposed project.

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

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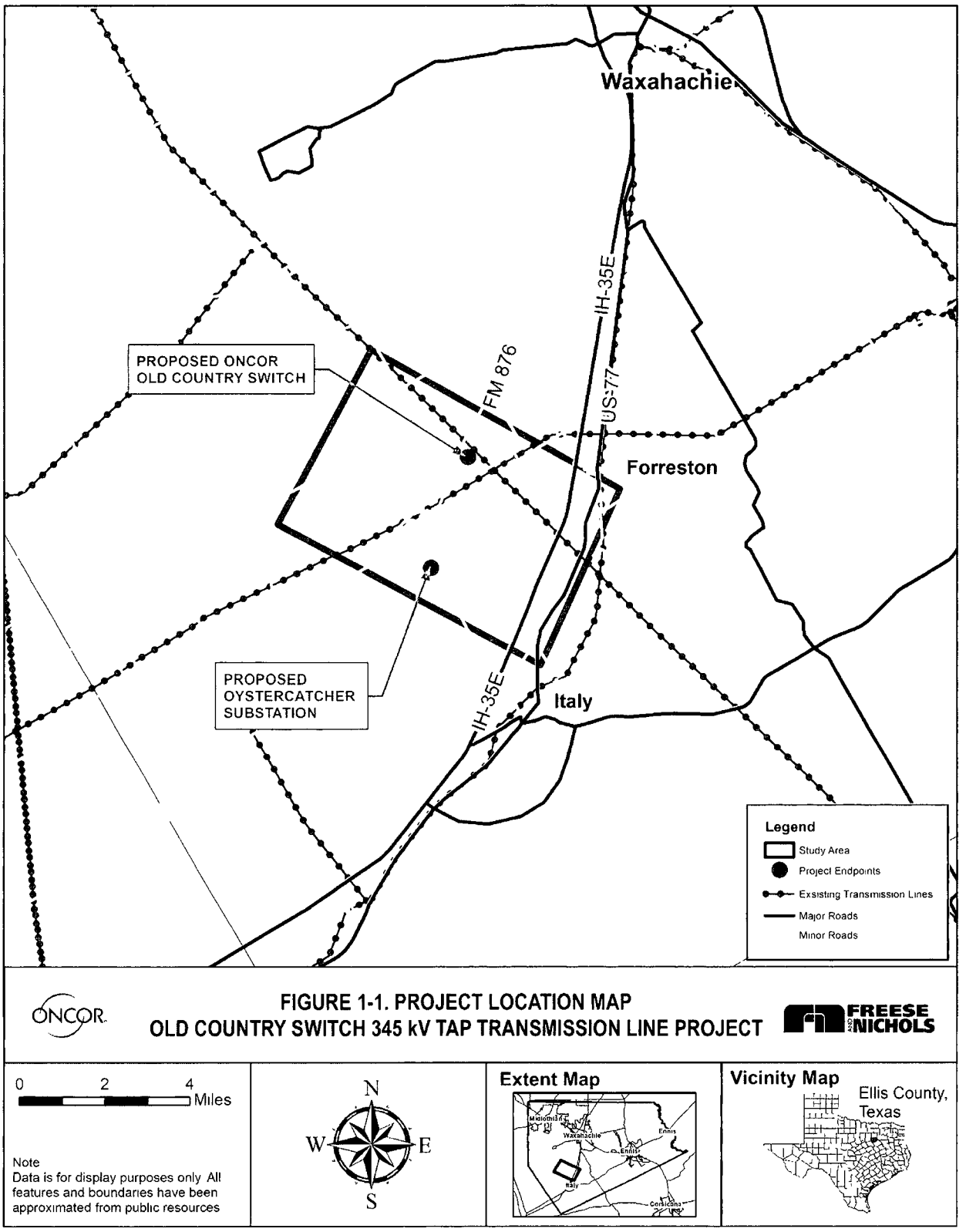
Waxahachie
IH-35E
FM 876
US-77
PROPOSED ONCOR
OLD COUNTRY SWITCH
Forreston
PROPOSED
OYSTERCATCHER
SUBSTATION
IH-35E
Italy
Legend
Study Area
Project Endpoints
Existing Transmission Lines
Major Roads
Minor Roads
ONCOR
FIGURE 1-1. PROJECT LOCATION MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT
0 2 4 Miles
Note
Data is for display purposes only. All features and boundaries have been approximated from public resources
N
W
E
S
Extent Map
Vicinity Map
Ellis County, Texas

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The following sections include a description of the project (Section 1.0), an explanation of the methodology used to select alternative routes (Section 2.0), a description of the existing environmental and social conditions in the study area (Section 3.0), and a description of the preliminary alternative routes that were developed by this process (Section 4.0). The public involvement program is described in Section 5.0, and a discussion of changes to preliminary alternative route links following the receipt of public input and other information is described in Section 6.0. An evaluation of expected environmental impacts is presented in Section 7.0, followed by a list of report preparers (Section 8.0), and references used in preparing this report (Section 9.0). The appendices include copies of agency correspondence (Appendix A), public participation meeting information (Appendix B), route definitions (Appendix C), environmental data by alternative route (Appendix D), habitable structure data (Appendix E), and an environmental and land use constraints map (Appendix F).

1.2 PURPOSE AND NEED FOR THE PROJECT

Oncor will provide support for the purpose and need for the 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 self-supporting, double circuit, lattice steel towers with one circuit in place initially (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 structure height is anticipated to be 80 to 160 feet, but tower height will vary depending upon terrain. The results of site-specific geotechnical and engineering studies will be used to determine the appropriate design and placement of the structures.

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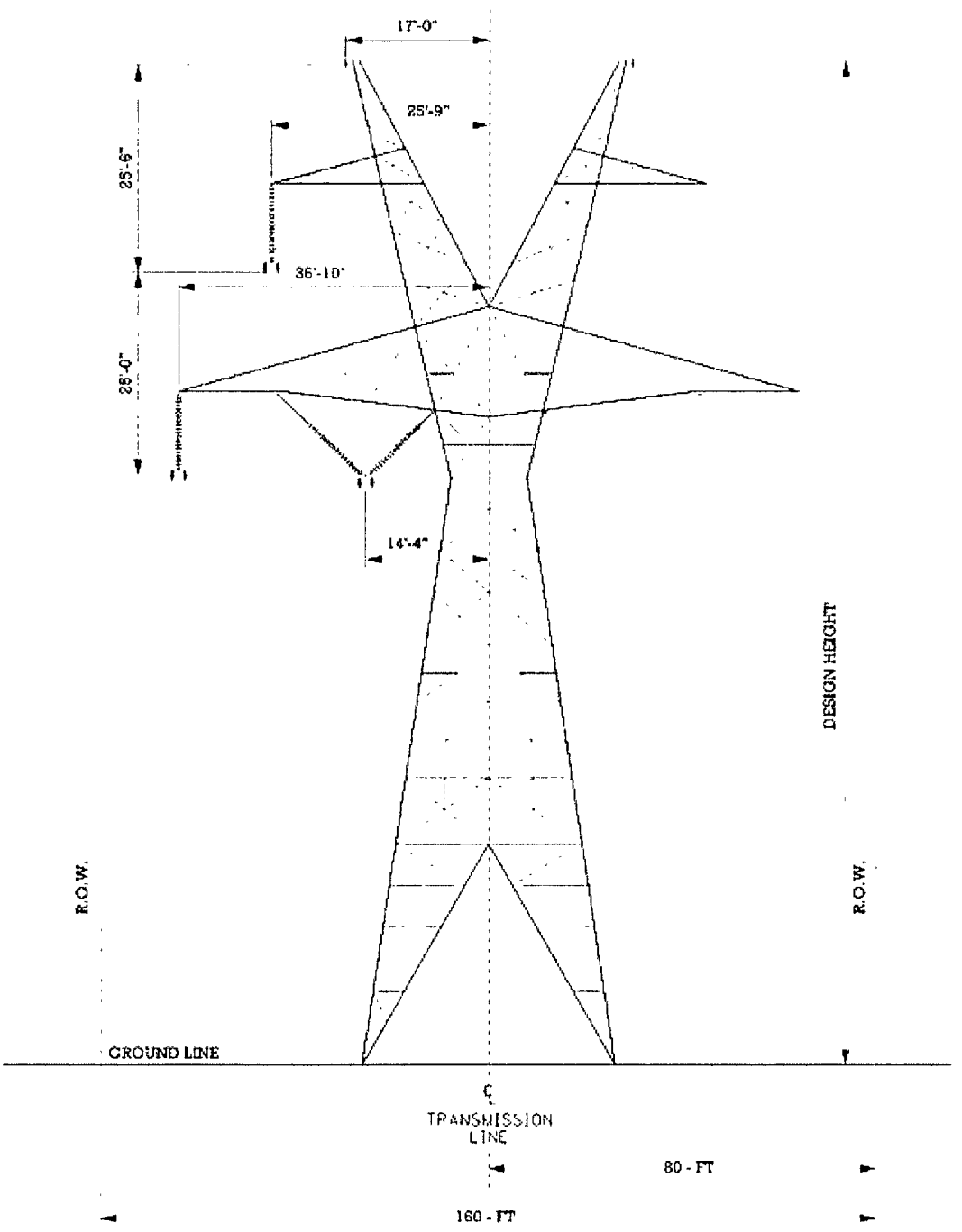

FIGURE 1-2. TYPICAL 345 kV TANGENT DOUBLE CIRCUIT "V" TOWER (ONE CIRCUIT IN PLACE INITIALLY) OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

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1.3.2 Right-of-Way Requirements

The proposed ROW width for the proposed project will be approximately 160 feet. The ROW normally extends an equal distance on both sides of the transmission line centerline. Additional ROW may be required at line angles, dead ends, or for terrain-related constraints.

1.3.3 Clearing Requirements

All brush and undergrowth within the ROW, except for low growing groundcover, will be removed and maintained. For areas requiring hand clearing, vegetation will be cut level with the ground. No stump exceeding two inches above the ground surface will remain. Any tree located in a fence line having a diameter greater than four inches will be cut even with the top of the fence. In the event that stumps are located on hillsides or uneven ground, stumps will be cut where a mowing machine can pass over the ROW without striking any stumps, roots, or snags.

1.3.4 Support Structure Assembly and Erection

Foundations for the lattice steel towers will be completed before erecting the structures. Four holes will be augered into the ground (one hole per tower footing) at each tower location as illustrated in Figure 1-2. The holes will be filled with steel-reinforced concrete to form piers. Stub angles for anchoring the tower will be embedded at the center of the concrete foundations. Depth of the foundation will vary depending on the design of the structure specific to that location.

Each lattice steel tower will be assembled on the ground near its designed location. Tower assemblies will then be lifted by crane and aligned with and attached to foundation stub angles with structure arms oriented perpendicular to the transmission line centerline. For angle structures, towers will be set with structure arms oriented on the angle bisector.

1.3.5 Conductor Stringing

Once a series of structures has been erected along the transmission line centerline, the conductor stringing phase will begin. 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 environmental controls installed to construct the transmission line will be removed.

2.0 ROUTE SELECTION METHODOLOGY

The objective of the routing study is to identify and evaluate alternative transmission line routes for the proposed project. Throughout this report, the terms "environmental" or "environment" shall include the human environment as well as the natural environment. FNI used a comprehensive transmission line routing methodology to identify and evaluate alternative transmission line routes. Potential routes were identified and evaluated in accordance with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code, PUCT Substantive Rules Section 25.101, including the PUCT policy of prudent avoidance, PUCT Procedural Rules Section 22.52(a)(4), and the PUCT CCN Application Form for a Proposed Transmission Line.

The following sections provide a description of the evaluation process, which included study area delineation, data collection, reconnaissance surveys, constraints mapping, identification of preliminary alternative routes, public involvement program, adjustment of preliminary alternative routes following field review and the public participation meeting, and evaluation of the alternative routes.

2.1 STUDY AREA DELINEATION

The first step in the identification of alternative routes was to define a study area. This area needed to encompass the proposed termination points (e.g., the proposed Oncor Old Country Switch and the proposed Oystercatcher Substation) and include an area large enough that a reasonable number of forward progressing, geographically diverse alternative routes could be identified. The purpose of delineating the study area for the proposed project was to establish boundaries and limits for the information gathering process (i.e., identifying environmental and land use constraints). The delineation of the study area also allowed FNI to focus its evaluation within a specific area.

FNI reviewed U.S. Geological Survey (USGS) 1:24,000 scale topographic maps (USGS, 2019) and aerial photography (U.S. Department of Agriculture [USDA], 2020b) to develop and refine the study area boundary for the proposed project. FNI located and depicted the project endpoints on the maps and identified major features in the study area such as IH-35E, United States

Highway (US) 77, FM 876, Chambers Creek, the City of Italy, existing transmission line infrastructure, and other features. Figure 2-1 shows the study area boundary FNI delineated overlain on aerial photography and general constraints from the above-described process. Figure 2-2 provides a more detailed map of the study area. The study area is roughly rectangular in shape and encompasses approximately 24 square miles (the longer axis is approximately six miles from northwest to southeast and the shorter axis is approximately four miles from northeast to southwest).

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, FNI initiated a variety of data collection activities. One of the first data collection activities was the development of a list of officials to be mailed a consultation letter regarding the proposed project. The purpose of the letter was to inform various local, state, and federal officials and agencies of the proposed project and give them the opportunity to provide information they may have regarding the study area. FNI utilized websites from the City of Italy and Ellis County, as well as confirmation via telephone calls, to identify local officials. Regional planning agencies' websites were reviewed to obtain contact information. State and/or federal agencies that may have potential permitting requirements for, or other interests in, the proposed project were also contacted. Correspondence was sent to the following federal, state, and regional agencies as well as local officials and departments. Appendix A includes copies of correspondence sent to and received from the following:

FEDERAL AGENCIES:

- Federal Aviation Administration (FAA)
- Federal Emergency Management Agency (FEMA) Region VI
- U.S. Army Corps of Engineers (USACE) Fort Worth District
- USDA Natural Resources Conservation Service (NRCS)
- U.S. Department of Defense (DoD)
- U.S. Fish and Wildlife Service (USFWS)

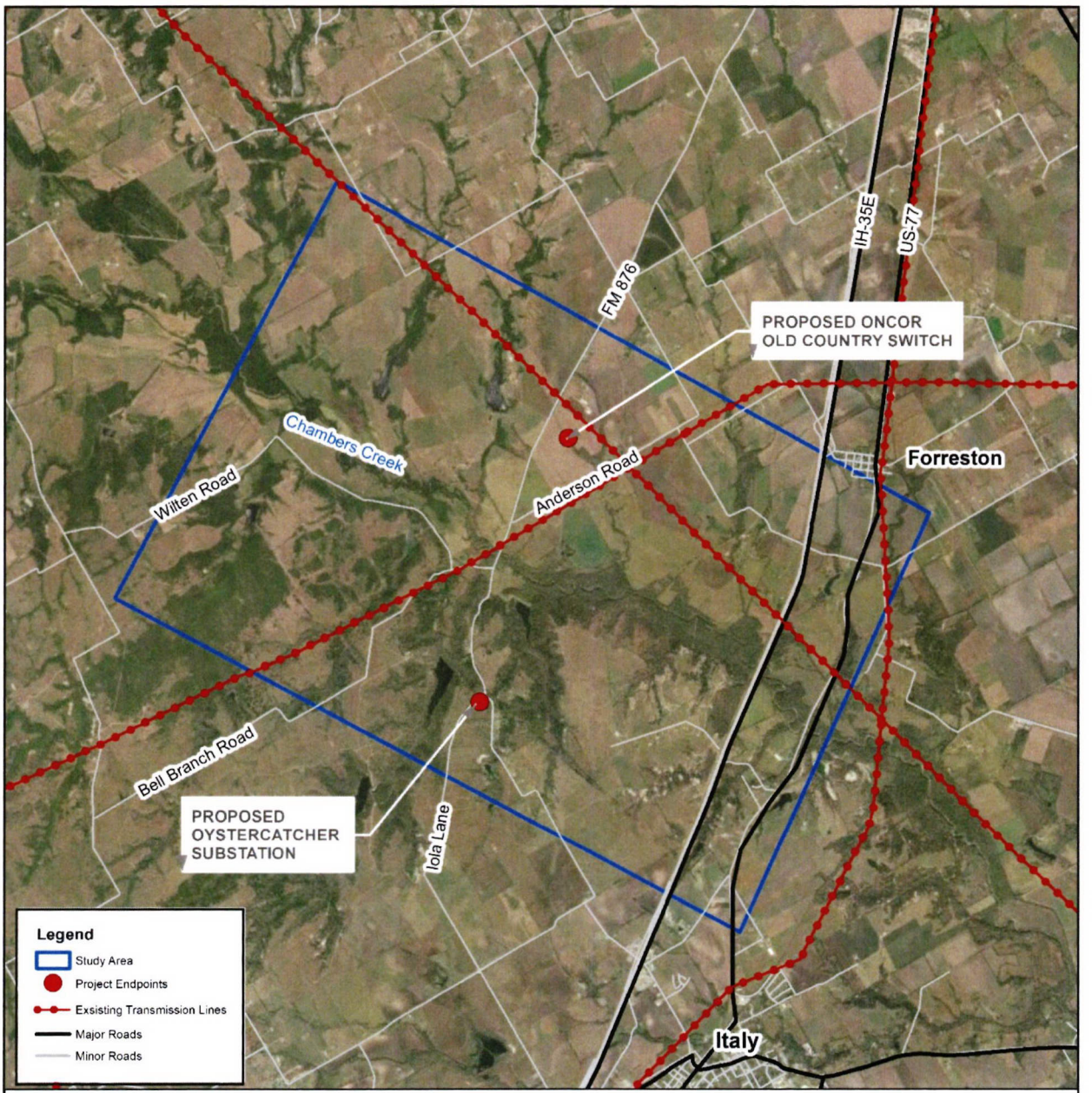


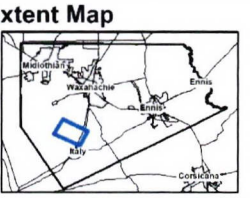
FIGURE 2-1. PROJECT AREA MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

0 4,250 8,500 Feet

Note:
Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2020b)

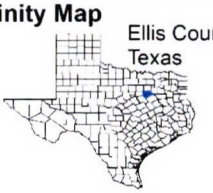
N
W E
S

Extent Map



Vicinity Map

Ellis County, Texas



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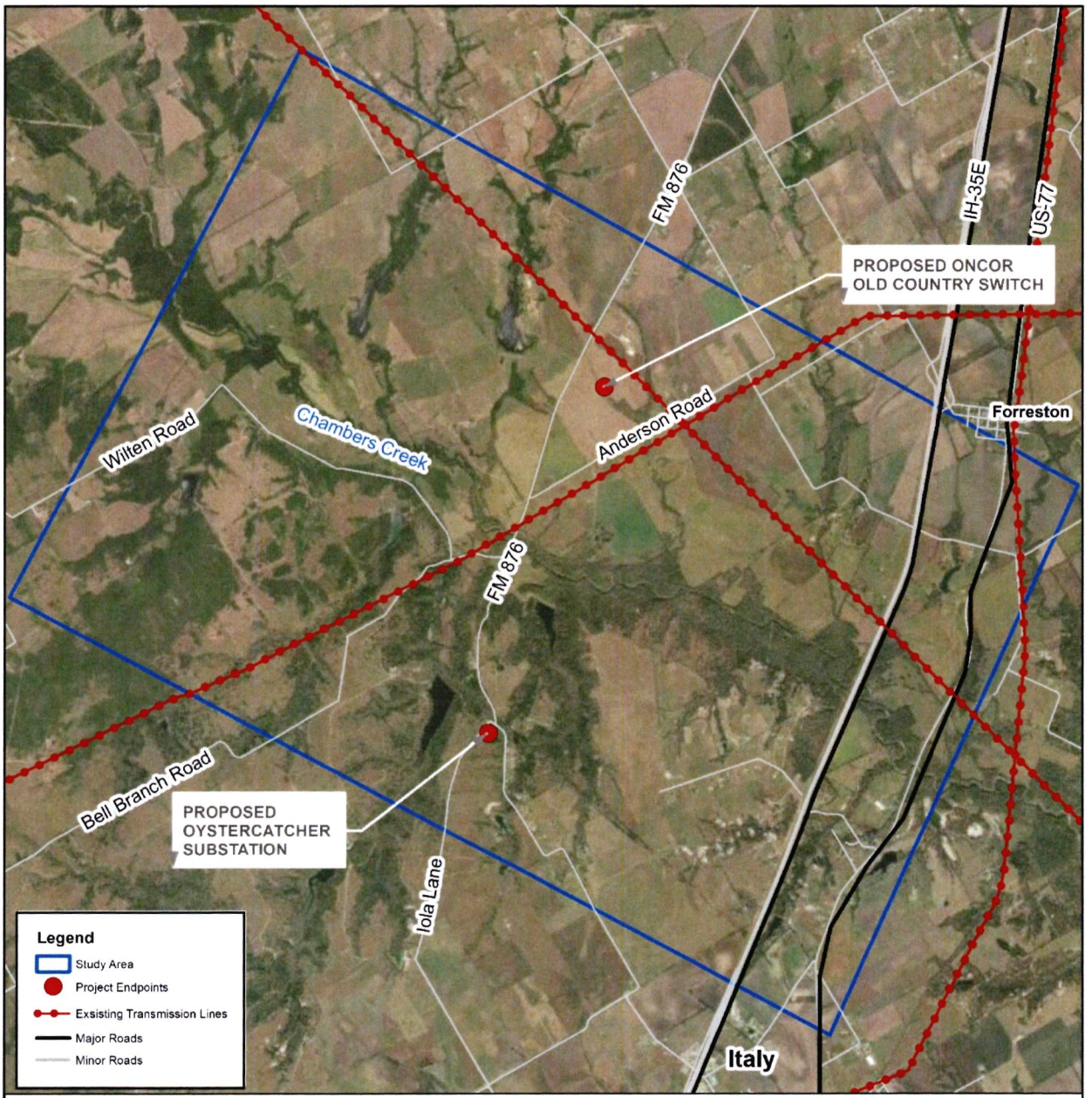

FIGURE 2-2. STUDY AREA MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

0 3,750 7,500 Feet

Note:
Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2020b)

N W E S

Extent Map

Vicinity Map

Ellis County, Texas

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STATE AGENCIES:

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

REGIONAL AGENCIES:

- Ellis-Prairie Soil and Water Conservation District
- North Central Texas Council of Governments (NCTCOG)

COUNTY AGENCIES:

- Ellis County (County Judge and County Commissioners)
- Ellis County Historical Commission

CITY AGENCIES:

- City of Italy (Mayor, Mayor Pro Tem, City Council Members, City Secretary, and Director of Public Works)

SCHOOL DISTRICTS:

- Italy Independent School District (ISD)
- Waxahachie ISD

In addition to soliciting comments from officials and agencies, FNI performed a review of available local, state, and federal files and records, published literature, and a variety of maps including recent aerial photography, USGS topographic maps, TxDOT and county highway maps, USFWS National Wetlands Inventory (NWI) maps, and county appraisal district land parcel boundary maps. Findings of the data collection activities are detailed in Section 3.0.

2.2.2 Reconnaissance Surveys

FNI conducted multiple reconnaissance surveys of the study area to develop and confirm the findings of the research and data collection activities and to identify existing conditions or constraints that may not have been previously noted. Results from the study area visits were also utilized to assist in the alternative route selection process. Ground reconnaissance surveys were conducted by visual observations of study area characteristics from public roads and public ROW located within the study area. Reconnaissance survey information was noted in the field, geographically referenced to digital aerial photography base maps using the ArcGIS Collector tool and recorded using Global Positioning System (GPS) data points. Reconnaissance surveys were conducted on the following dates:

- April 13, 2021
- May 7, 2021
- May 20, 2021

The data collection effort, although concentrated in the early stages of the proposed project, continued up to the point of final development of alternative routes. Results of the various data collection activities (e.g., file and record review; solicitation of information from local, state, and federal officials and agencies; reconnaissance surveys; etc.) are included in Sections 3.0 and 7.0 of this report.

2.3 CONSTRAINTS MAPPING

Information gathered during data collection was used to develop an environmental and land use constraints map. The constraints map, public maps, aerial photography, reconnaissance surveys, and other research materials were used to identify and select potential preliminary alternative route links 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 goal of this approach is to identify opportunity areas, which are areas where constraints are absent or fewer, or those areas with a lower likelihood of containing existing natural or human resources that could be negatively affected by a transmission line. For linear projects, crossing over or near certain

constraints is often unavoidable. In these instances, special considerations or mitigation measures may be used, even though there is no law or regulation that would otherwise prohibit the proximity of a transmission line. The geographic locations of different constraints within and proximal to the study area and the alternative routes were also considered during the impact analysis.

2.4 IDENTIFICATION OF PRELIMINARY ALTERNATIVE ROUTE LINKS

Upon completion of initial data collection activities and the constraint mapping process, the next step was to identify preliminary alternative route links to connect the project endpoints. FNI utilized the following sources of information to identify the preliminary alternative routes:

- input received from correspondence with agencies and local officials, as described in Section 2.2.1;
- results from the visual reconnaissance surveys of the study area;
- review of recent aerial photography;
- findings of publicly available data collection activities;
- environmental and land use constraints map;
- apparent property boundaries;
- existing compatible corridors;
- locations of existing developments; and
- other information.

Preliminary alternative route links were identified in accordance with Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code and PUCT Substantive Rules Section 25.101, including the PUCT policy of prudent avoidance. The intent was to identify an adequate number of geographically diverse alternative routes, which were environmentally acceptable considering such factors as the following: community values; park and recreation areas; historical and aesthetic values; vegetation, wildlife, and water resources; environmental quality; length of route parallel to or utilizing existing compatible corridors; length of route parallel to apparent property boundaries; and the PUCT policy of prudent avoidance. Oncor also provided engineering guidance relating to

paralleling existing compatible corridors in the study area. The preliminary alternative route links identified by FNI were then presented at a public participation meeting on May 20, 2021. A more detailed discussion of the development of alternative routes is presented in Section 4.0.

2.5 PUBLIC INVOLVEMENT PROGRAM

Once the preliminary alternative routes were identified, a public participation meeting was held on May 20, 2021 from 4:00 P.M. to 7:00 P.M. at the City of Italy Community Center. 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, preliminary alternative routes, and the overall transmission line routing 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 regarding the routing process, schedule, and the decision-making 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 500 feet of the centerline of the preliminary alternative route links. The aerial photography used to determine the distance of properties located within 500 feet of the centerline of each alternative route link has a horizontal accuracy of +/- 20 feet. To account for this level of accuracy, FNI identified all properties within a measured distance of 520 feet of each alternative route link centerline. In addition, an advertisement was published in the local newspaper announcing the location, time, and purpose of the meeting. The newspaper in which the public meeting notice was published, and the date of publication, is shown in Table 2-1. A copy of the notice can be found in Appendix B.

Table 2-1: Public Participation Meeting Notice in the Newspaper

Newspaper	Publication Date
The Ennis News	Sunday May 9, 2021

At the public participation meeting, Oncor and FNI set up information stations in the meeting room. Each station was devoted to a particular aspect of the proposed project and was staffed by Oncor, 7Arrows Land Staff, LLC (a land and title research firm), and/or FNI 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 a particular area of interest and ask specific questions. Furthermore, the one-on-one discussions with Oncor, FNI, and other representatives encouraged more interaction from those 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 preliminary alternative route links, and a questionnaire. The information packet also included answers to frequently asked questions, a drawing of Oncor's proposed typical transmission tower, 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.

Due to COVID-19 public health and safety guidelines, FNI also provided a virtual public participation website to solicit feedback from residents, landowners, public officials, and other interested parties concerning the proposed project, preliminary alternative routes, and the overall transmission line routing process. The virtual website was developed to mirror the in-

person public meeting with sections for each information station that included electronic versions of the maps, illustrations, photographs, and/or text explaining each topic. Electronic copies of the public meeting handout packet, questionnaire, and landowner bill of rights were also provided prominently on the virtual public meeting website. Each information section also had a Zoom meeting link to talk directly with a Oncor, FNI, or 7Arrows Land Staff representative during the advertised public meeting time.

FNI reviewed and evaluated the responses to the one questionnaire that was submitted at the meeting, the one questionnaire that was submitted from the virtual public meeting website, and one email from a landowner that was submitted in lieu of the questionnaire. The attendees' comments were considered and factored into the overall evaluation of the alternative routes.

2.6 ADJUSTMENTS OF ALTERNATIVE ROUTE LINKS FOLLOWING THE PUBLIC PARTICIPATION MEETING

Following the public participation meeting, modifications were made to several of the links presented at the public meeting. The modifications and addition of links were the result of FNI's further evaluation of the preliminary alternative route links taking into consideration feedback from the public meeting. The modified alternative route links are located throughout the study area and are further described and discussed in Section 6.0.

2.7 EVALUATION OF THE ALTERNATIVE ROUTES

Possible alternative route combinations were recalculated after making the route link adjustments noted above, and then evaluated in detail. Evaluation of the alternative routes (see Section 7.0) 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 would be crossed by an alternative route (e.g., number of stream crossings, length across cropland, etc.). Some of the evaluation factors include counts of features within a specified distance of each alternative route (e.g., habitable structures, airports, communications towers, etc.). Other factors included the length of the transmission line route that runs parallel to and/or utilizes existing compatible corridors, such as electric transmission lines and public roads. 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 the field reconnaissance survey.

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3.0 ENVIRONMENTAL SETTING OF THE STUDY AREA

3.1 CONSTRAINTS MAPPING

During the data collection process, FNI identified environmental and land use constraints within the study area. A constraints map was developed that identifies the locations of potential environmentally sensitive areas and other land use constraints which are mapped on an aerial photograph base map (Figure 3-1 located in Appendix F). The information obtained and reviewed in completing the routing study, and the environmental and land use constraints depicted in Figure 3-1, are described in detail in the following sections.

3.2 PHYSIOGRAPHY AND GEOLOGY

The study area is located in the north central region of Texas in Ellis County and lies within the Blackland Prairies Ecological Region of Texas, as shown on Figure 3-2 (Bureau of Economic Geology [BEG], 1996). According to the Geologic Atlas of Texas, Dallas Sheet (BEG, 1972), the study area is underlain by the alluvium deposits, fluviatile terrace deposits, and the Austin Chalk formation of the Quaternary and Upper Cretaceous periods. The alluvium and fluviatile terrace deposits consists of sand, silt, and clay. The Austin Chalk formation consists of light to dark gray chalk, marl, and microgranular calcite interbedded with calcareous clay with a thickness varying from 300 to 500 feet. Geologic units identified within the study area are provided in Table 3-1 along with their descriptions.

The topography of the study area is dominated by gently rolling hills with streams and channels. The elevation of the study area ranges from 450 to 650 feet above mean sea level (msl) according to most recent USGS topographic maps for the area (USGS, 2019). Drainage throughout the study area is primarily toward and occurring within the floodplain of Chambers Creek, which generally flows across the study area from west to east.

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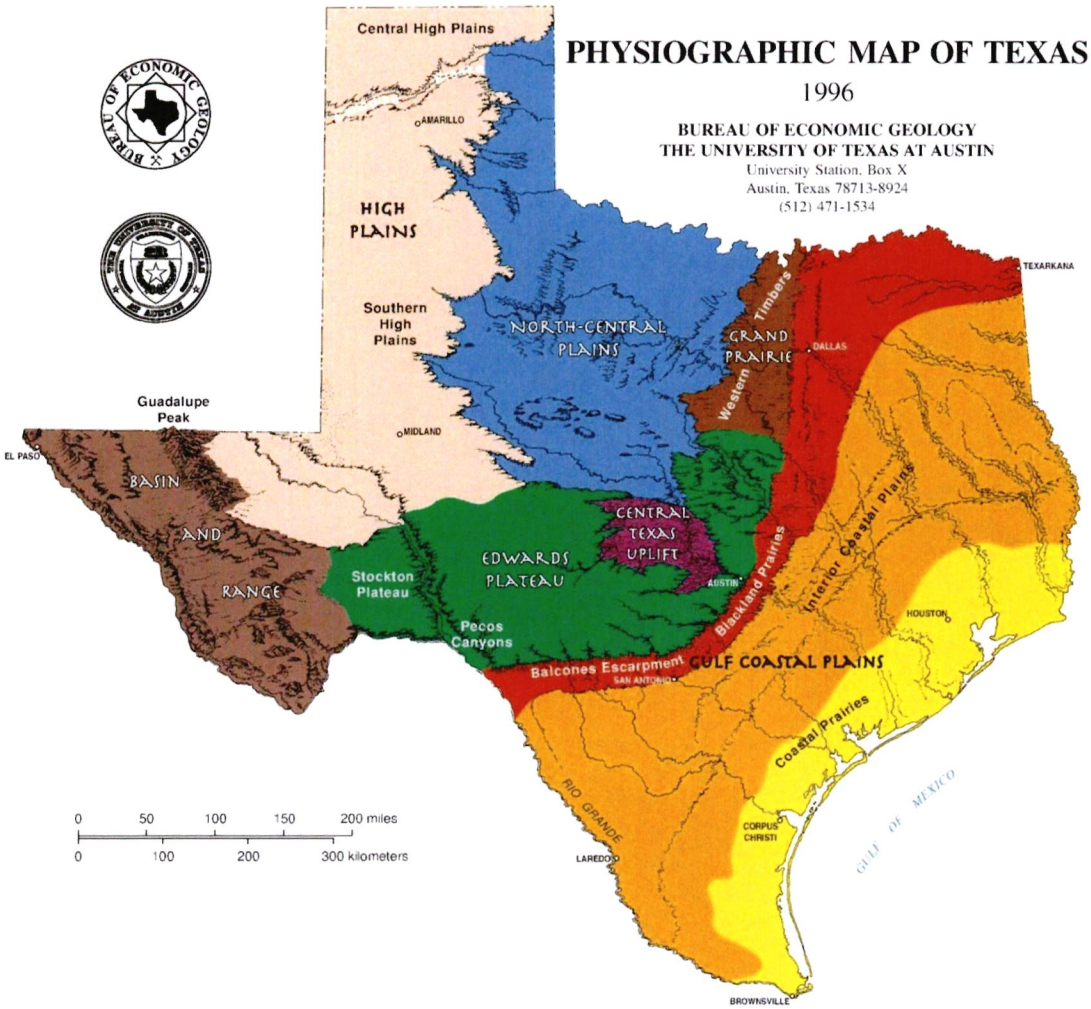

PROVINCE	MAX ELEV. (ft)	MAX ELEV. (ft)	TOPOGRAPHY	GEOLOGIC STRUCTURE	BEDROCK TYPES
Gulf Coastal Plains					
Coastal Prairies	300	0	Nearly flat prairie, <1 ft/mi to gulf	Nearly flat strata	Deltalc sands and muds
Interior Coastal Plains	800	300	Parallel ridges (quettas) and valleys	Beds tilted towards Gulf	Unconsolidated sands and muds
Blackland Prairies	1000	450	Low rolling terrain	Beds tilted south and east	Chalks and marls
Grand Prairie	1250	450	Low stairstep hills west, plains east	Strata dip east	Calcareous east; sandy west
Edwards Plateau					
Principal	3000	450	Flat upper surface with box canyons	Beds dip south; normal faulted	Limestones and dolomites
Pecos Canyons	2000	1200	Steep-walled canyons		Limestones and dolomites
Stockton Plateau	4200	1700	Mesa-formed terrain; heights to west	Unfaulted, near-horizontal beds	Carbonates and alluvial sediments
Central Texas Uplift	2000	800	Knobby plain; surrounded by questas	Centripetal dips, strongly faulted	Granites; metamorphic; sediments
North-Central Plains	3000	900	Low north-south ridges (questas)	West dip; minor faults	Limestones; sandstones; shales
High Plains					
Central	4750	2900	Flat prairies slope east and south	Slight dips east and south	Eolian silts and fine sands
Canadian Breaks	3800	2350	Highly dissected; local solution valleys		
Southern	3800	2200	Flat; many playas; local dune fields		
Basin and Range	8750	1700	North-south mountains and basins	Some complex folding and faulting	Igneous; metamorphic; sediments

FIGURE 3-2. PHYSIOGRAPHIC REGIONS OF TEXAS
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

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Table 3-1: Geologic Units within the Study Area

Geologic Time	Geologic Unit	Description
Holocene	Alluvium (Qal)	Floodplain deposits consisting of gravel, sand, silty clay, and organic matter.
Pleistocene	Fluviatile Terrace Deposits (Qt)	This geologic unit consists of gravel, sand, silt, and clay. Forms from continuous deposition and erosion of sediment by the river.
Gulfian/ Late Cretaceous	Austin Chalk (Kau)	The upper and lower parts of this formation consist of light gray chalk with microgranular calcite with interbeds of calcareous clay. The lower parts form westward facing scarp. The middle part consists of light gray thin bedded marl with interbeds of chalk and marcasite-pyrite modules. Thickness varies from 300 to 500 feet.

Source: BEG (1972).

3.3 SOILS

3.3.1 Soil Associations

Data from the NRCS (formerly the Soil Conservation Service [SCS]) were used to identify and characterize the soils within the study area. The Ellis County Soil Survey and USDA NRCS Web Soil Survey (a Digital General Soil Map of the United States completed in 2006, which consists of a broad inventory and mapping of general soil association units) were used to identify and characterize the soil associations (or types). Soil associations are main patterns of soils defined and delineated based on criteria such as soil texture, parent material, slope, characteristics of horizons in soil profile, and degree of erosion (NRCS, 2021). NRCS-mapped soil associations within the study area are shown on Figure 3-3 and described in Table 3-2.

The 35 soil associations (excluding the dam, gullied land, and gravel land mapped areas) occurring within the study area are associated with stream terraces, ridges, plains, drainageways and floodplains. The underlying geology, described in the previous section, is the foundation for the soils found within the study area.

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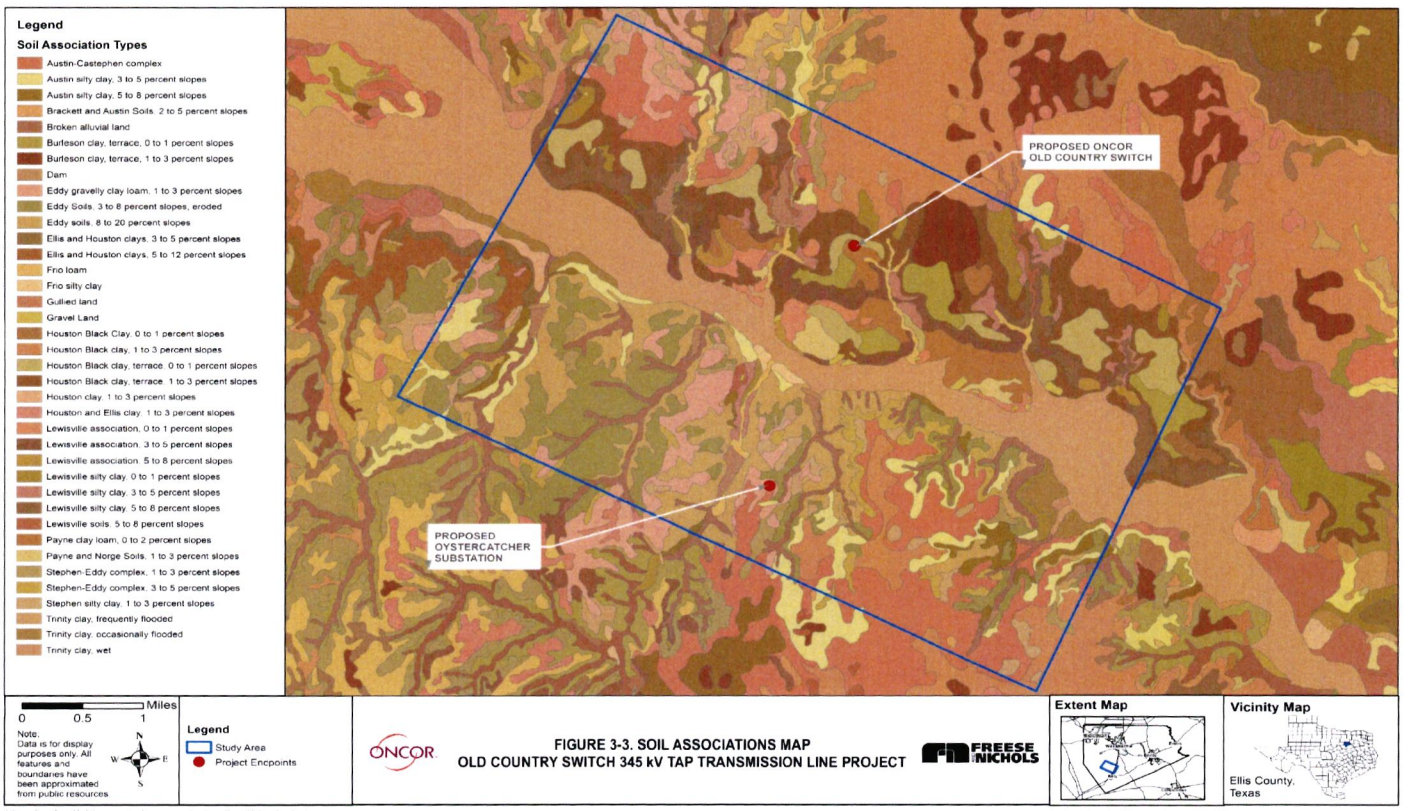

FIGURE 3-3. SOIL ASSOCIATIONS MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

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Table 3-2: Soil Associations within the Study Area

Soil Association Map Unit Name	Description	Acres in Study Area	Percent Coverage of Study Area
Austin-Castephen Complex	Residuum weathered from chalk. The soil is well drained, with medium to moderately high capacity to transmit water.	318	2.1
Austin silty clay, 3 to 5 percent slopes, moderately eroded	Silty clay from 0 to 29 inches; bedrock from 29 to 57 inches; residuum weathered from chalk. The soil is well drained, with low to moderately high capacity to transmit water.	632.7	4.4
Austin silty clay, 5 to 8 percent slopes, moderately eroded	Silty clay from 0 to 29 inches; bedrock from 29 to 47 inches; residuum weathered from chalk. The soil is well drained with low to moderately high capacity to transmit water.	204.4	1.4
Brackett and Austin Soils, 2 to 5 percent slopes	Silty clay loam from 0 to 19 inches, bedrock from 19 to 30 inches, residuum weathered from Austin Chalk Formation. The soil is well drained, with moderately low to high capacity to transmit water.	4.4	0.1
Broken alluvial land, rarely flooded	Clay loam from 0 to 80 inches; silty alluvium of Quaternary age derived from chalk. The soil is well drained with moderately low to moderately high capacity to transmit water.	594.8	4.1
Burleson clay, 0 to 1 percent slopes	Clay from 0 to 90 inches; calcareous clayey alluvium of Pleistocene age derived from mixed sources. The soil is moderately well drained with very low to moderately low capacity to transmit water.	239.1	1.7
Burleson clay, 1 to 3 percent slopes	Clay from 0 to 60 inches; calcareous clayey alluvium of Pleistocene age derived from mudstone. The soil is moderately well drained with very low to moderately low capacity to transmit water.	207.6	1.4
Eddy gravelly clay loam, 1 to 3 percent slopes	Gravelly clay loam from 0 to 6 inches; bedrock 6 to 70 inches; residuum weathered from Austin chalk. The soil is well drained with moderately low to high capacity to transmit water.	693.6	4.8
Eddy Soils, 3 to 8 percent slopes	Gravelly clay loam from 0 to 6 inches; bedrock 6 to 70 inches; residuum weathered from Austin chalk. The soil is well drained with moderately low to high capacity to transmit water.	1,363.6	9.5

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name	Description	Acres in Study Area	Percent Coverage of Study Area
Eddy Soils, 8 to 20 percent slopes	Gravelly clay loam from 0 to 6 inches; bedrock 6 to 70 inches; residuum weathered from Austin chalk. The soil is well drained with moderately low to high capacity to transmit water.	1,287.5	8.9
Ellis and Houston clay, 3 to 5 percent slopes, eroded	Clay from 0 to 18 inches; shaly clay from 18 to 28 inches; residuum weathered from Cretaceous age shale. The soil is well drained with very low to moderately low capacity to transmit water.	35.9	0.2
Ellis and Houston clays, 5 to 12 percent slopes, severely eroded	Clay from 0 to 18 inches; shaly clay from 18 to 28 inches; residuum weathered from Cretaceous age shale. The soil is well drained with very low to moderately low capacity to transmit water.	75.1	0.5
Frio Loam	Calcareous loam and clayey alluvium derived from limestone. The soil is well drained, with low capacity to transmit water.	29.5	0.2
Frio silty clay	Silty clay from 0 to 80 inches; calcareous clayey alluvium derives from mudstone and/or calcareous loamy alluvium derived from mudstone. The soil is well drained with moderately low to moderately high capacity to transmit water.	165.3	1.1
Houston Black clay, 0 to 1 percent slopes	Clayey residuum weathered from calcareous mudstone of Upper Cretaceous age. The soil is moderately well drained with very low to moderately low capacity to transmit water.	53.2	0.4
Houston Black clay, 1 to 3 percent slopes	Clayey residuum weathered from calcareous mudstone of Upper Cretaceous age. The soil is moderately well drained with very low to moderately low capacity to transmit water.	973.0	6.7
Houston clay, terrace, 0 to 1 percent slopes	Clayey alluvium derived from mudstone. The soil is moderately well drained, with a high capacity to transmit water.	108	0.7
Houston clay, terrace, 1 to 3 percent slopes	Clay from 0 to 70 inches; clayey residuum weathered from mudstone. The soil is well drained with very low to moderately low capacity to transmit water.	41.3	0.3

Table 3-2: Soil Associations within the Study Area (continued)

Soil Association Map Unit Name	Description	Acres in Study Area	Percent Coverage of Study Area
Houston Clay, 1 to 3 percent slopes	Clayey residuum weathered form mudstone. The soil is well drained with very high capacity to transmit water.	62.1	0.4
Houston and Ellis clays, 1 to 3 percent slopes	Clay from 0 to 80 inches; clayey residuum weathered from clayey shale of Eagle Ford shale or Taylor marl. The soil is well drained with very low to moderately low capacity to transmit water.	3.1	0.1
Lewisville association, 0 to 1 percent slopes	Silty clay from 0 to 52 inches; calcareous clayey alluvium derived from mudstone. The soil is well drained with moderately low to moderately high capacity to transmit water.	156.5	1.1
Lewisville association, 3 to 5 percent slopes, moderately eroded	Silty clay from 0 to 52 inches; calcareous clayey alluvium derived from mudstone. The soil is well drained with moderately low to moderately high capacity to transmit water.	244.7	1.7
Lewisville association, 5 to 8 percent slopes, eroded	Clay loam from 0 to 16 inches; silty clay from 16 to 52 inches; Quaternary age alluvium derived from mixed sources. The soil is well drained with moderately high to high capacity to transmit water.	69.1	0.5
Lewisville silty clay, 0 to 1 percent slopes	Silty clay from 0 to 69 inches; calcareous clayey alluvium derived from mudstone. The soil is well drained with moderately low to moderately high capacity to transmit water.	260.6	1.8
Lewisville silty clay, 3 to 5 percent slopes, eroded	Silty clay from 0 to 64 inches; calcareous clayey alluvium derived from mudstone. The soil is well drained with moderately low to moderately high capacity to transmit water.	237.8	1.6
Lewisville silty clay, 5 to 8 percent slopes, eroded	Silty clay from 0 to 52 inches; Quaternary age alluvium derived from mixed sources. The soil is well drained with moderately high to high capacity to transmit water.	420.9	2.9
Lewisville soils, 5 to 8 percent slopes	Silty clay from 0 to 66 inches, clayey alluvium derived from mudstone. The soil is well drained with a moderately high to high capacity to transmit water.	80.2	0.6

Table 3-2: Soil Associations within the Study Area (completed)

Soil Association Map Unit Name	Description	Acres in Study Area	Percent Coverage of Study Area
Payne clay loam, 0 to 2 percent slopes	Clay loam from 0 to 6 inches, clay from 6 to 60 inches, calcareous clayey residuum weathered from shale. The soil id moderately high capacity to transmit water.	392.6	2.7
Payne and Norge Soils, 1 to 3 percent slopes	Clay loam from 0 to 6 inches, Clay from 6 to 60 inches, stratifies channery clay from 60 to 80 inches, residuum weathered from shale in the Cook Mountain and Wilcox formations of Eocene age. The soil id moderately well drained with very low to moderately low capacity to transmit water.	98.8	0.7
Stephen-Eddy complex, 1 to 3 percent slopes, eroded	Silty clay from 0 to 14 inches; bedrock from 14 to 40 inches; residuum weathered from Austin chalk. The soil is well drained with moderately low to moderately high capacity to transmit water.	141.4	1.0
Stephen-Eddy complex, 3 to 5 percent slopes	Silty clay from 0 to 9 inches; extremely paracobbly silty clay from 9 to 15 inches; bedrock from 15 to 27 inches; calcareous clayey residuum weathered from chalk. The soil is well drained with low to moderately high capacity to transmit water.	303.4	2.1
Stephen silty clay, 1 to 4 percent slopes	Silty clay from 0 to 9 inches; extremely paracobbly silty clay from 9 to 15 inches; bedrock from 15 to 27 inches; calcareous clayey residuum weathered from chalk. The soil is well drained with low to moderately high capacity to transmit water.	379.7	2.6
Trinity Clay, 0 to 1 percent slopes, frequently flooded	Clayey; derived from mudstone. The soil is moderately well drained with a very low to moderately low capacity to transmit water.	1,630.0	11.3
Trinity Clay, 0 to 1 percent slopes, occasionally flooded	Clayey; derived from mudstone. The soil is moderately well drained with a very low to moderately low capacity to transmit water.	165.6	1.1
Trinity Clay, wet, occasionally flooded, frequently ponded	Clay from 0 to 60 inches; clayey alluvium of Holocene age derived from mixed sources. The soil is somewhat poorly drained with very low to moderately low capacity to transmit water.	8.0	0.1

Source: NRCS (2019); SCS (1980).

3.3.2 Prime Farmland

The Farmland Protection Policy Act (FPPA, 2021), in Title 7 United States Code (USC) §4201 (c)(1)(A), defines prime farmland soils as "land that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor." Prime farmlands have the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Additional potential prime farmlands are those soils that meet most of the requirements of prime farmland but fail because they lack the installation of water management facilities or sufficient natural moisture. The USDA would consider these soils prime farmland if these areas were irrigated.

There are several soil associations within the study area that are regarded as prime farmland soils, including Burleson clay (0 to 1 percent slopes), Burleson clay (1 to 3 percent slopes), Houston Black clay (0 to 1 percent slopes), Houston Black clay (1 to 3 percent slopes), and Lewisville association (1 to 3 percent slopes). The Austin silty clay soil association is identified as farmland of statewide importance by the NRCS (NRCS, 2021; SCS, 1980). Approximately 2,467 acres of the study area soils are classified as prime farmland soils (NRCS, 2021; SCS, 1980).

3.4 WATER RESOURCES

3.4.1 Surface Water Features and Floodplains

The study area occurs within the Trinity River Basin (TWDB, 2014). The Trinity River is the third largest river in Texas by average flow volume and is approximately 423 miles long. The river channel is highly incised but has annual or semiannual access to its floodplain during extreme precipitation events. The Trinity River runs generally from north to south approximately 30 miles to the east of the study area.

Chambers Creek is a stream that flows northwest to southeast across the study area. Chambers Creek, also known as Pecan Creek, starts in west central Ellis County and runs southeast, then northeast, and then south for 67 miles to its mouth on Richland Creek and Richland-Chambers

Reservoir in southern Navarro County. From the reservoir, surface water flows southeast into the Trinity River. The local terrain is flat with some shallow depressions and is surfaced by clay and sandy loams that support water-tolerant hardwood trees, conifers, and various grasses (Texas State Historical Association, 2019).

According to the National Hydrography Dataset (NHD) (USGS, 2021b), the study area contains over 60 linear miles of perennial streams/channels, comprising Baker Branch, Bee Creek, Bell Branch, Mill Branch, and Chambers Creek, and numerous unnamed tributaries. Mill Branch is located in the northeastern most corner of the study area and does not appear of Figure 3-1. Several SCS dams and reservoirs, Bell Branch Ranch Reservoir, and other unnamed ponds and lakes are scattered across the study area that vary greatly in size and type.

In 1997, state legislation (under the Texas Water Code Section 16.051) assigned statewide water resources planning to regional planning groups. As part of the planning process, each regional planning group recommends ecologically unique river and stream segments to the Texas State Legislature in regional and state water plans (TWDB, 2021a). Designation as an ecologically unique river or stream segment means that a state agency or political subdivision of the state may not construct a reservoir in those segments designated as such, which include biologic functions and habitat for threatened and endangered species. State designation as ecologically unique also prevents state agencies or municipalities from acquiring property or easements that would destroy the ecological values forming the basis for the designation (TWDB, 2021a). No stream segments in the study area are designated as ecologically unique under the relevant designation criteria (Norris and Linam, 2000).

A portion of Chambers Creek (Stream Segment 0814_02) downstream of the study area is listed in the Texas Integrated Report of Surface Water Quality for Clean Water Act Section 303(d) list of impaired water bodies maintained by the Texas Commission on Environmental Quality (TCEQ, 2020). This reach of Chambers Creek that extends from just above the confluence with Cummins Creek up to just above the confluence with Waxahachie Creek is listed as impaired for bacteria. These impairments may be a result of point sources, such as inadequately treated sewage or improperly managed animal waste from regulated livestock operations, or nonpoint sources such

as pet wastes, wildlife, aquatic birds, or failing septic systems (TCEQ, 2018). This impairment does not apply to the segment of Chambers Creek that runs through the study area. No water quality concerns were identified within the study area.

Portions of the study area along Chambers Creek lie within the FEMA 100-year floodplain. FEMA Flood Insurance Rate Maps 48139C0475F and 18139C0325F cover the study area (FEMA, 2001a, 2001b).

3.4.2 Groundwater Resources/Aquifers

The Trinity Aquifer underlies the study area and is classified as a major aquifer by the TWDB (2006). The Trinity Aquifer is a principal water-bearing unit extending across most of central and northeastern Texas and is composed of several smaller aquifers consisting of limestones, sands, clays, gravels, and conglomerates. Combined, the average freshwater saturated thickness is about 600 feet in north Texas. Groundwater pumped from this aquifer is primarily used for municipalities as public water supply. The groundwater resource also provides water for irrigation and livestock uses (George et al., 2011).

The Woodbine Aquifer is classified by the TWDB as a minor aquifer that occurs in the study area (TWDB, 2017). The Woodbine Aquifer overlies the Trinity Aquifer and consists of sandstone interbedded with shale and clay that form three distinct water-bearing zones. It reaches 600 feet in thickness in subsurface areas, and freshwater saturated thickness averages about 160 feet. The Woodbine Aquifer provides groundwater for municipal, industrial, domestic, livestock, and small irrigation supplies (George et al., 2011).

The TWDB Water Well Driller's Logs (2021c) and TWDB Groundwater Database Reports Water Data Interactive Groundwater Data Viewer (2021b) recorded 11 groundwater well records within the study area. Brief descriptions of the wells are provided in Table 3-3. Most of the water wells found within the study area represent domestic, stock, and public supply water wells. Seven of the water wells located within the study area appear to have been installed in the Woodbine Formation. Three of the water wells located within the study area appear to have been installed in the Trinity Formation.

Table 3-3: Water Well Records within the Study Area

State Well Identification Number	County	Well Depth (feet below surface)	Primary Use
3341802	Ellis	632	Stock
3342702	Ellis	2,850	Public Supply
33492	Ellis	545	Domestic
3349201	Ellis	2,559	Domestic
3349202	Ellis	2,800	Domestic
3349208	Ellis	668	Domestic
3349301	Ellis	900	Public Supply
320717	Ellis	640	Stock
485607	Ellis	660	Domestic
522556	Ellis	140	Domestic (Plugged)
560789	Ellis	900	Domestic

Source: TWDB (2021b); TWDB (2021c).

3.5 ECOLOGY

3.5.1 Vegetation

Natural vegetation is a result of the combination of geography, soils, and climate of an area. These key characteristics of a landscape describe the land's potential for supporting vegetation that occurs throughout the environment. The NRCS published a 2006 handbook that describes Land Resource Regions (LRRs), which are areas that share similar soil properties, moisture and climate characteristics, and overall landscape and geologic features (NRCS, 2006). This approach to the study of vegetation focuses fundamentally on the relationship between soils and soil-forming factors of a region and natural vegetation or agricultural practices that can be supported.

The study area falls entirely within the Southwestern Prairies Cotton and Forage Region LRR (Figure 3-4). As described in Section 3.2, the topography of the study area is consistent with that of the region and includes gently rolling hills that are drained by southeast-flowing streams

and tributaries. The dominant tree species include pecan (*Carya illinoinensis*), cedar elm (*Ulmus crassifolia*), various oaks (*Quercus* spp.), hackberry (*Celtis occidentalis*), and mesquite (*Prosopis glandulosa*). Big bluestem (*Andropogon gerardii*), indiangrass (*Sorghastrum nutans*), eastern gamagrass (*Tripsacum dactyloides*), switchgrass (*Panicum virgatum*), and sideoats grama (*Bouteloua curtipendula*) are among the grasses found throughout this region. The average annual precipitation ranges from 31 to 44 inches and occurs predominantly during spring and summer. The average annual temperature ranges from 62 to 67 degrees Fahrenheit. The soils are fine-textured, clayey soils.

NRCS further subdivided the LRRs into Major Land Resources Areas (MLRAs). LRRs make up a group of geographically associated MLRAs and identification of these large areas is a key player in statewide agricultural planning as well as at the regional and national level. 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 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 falls entirely within the Texas Blackland Prairies Ecological Region MLRA, and more specifically, the northern Texas Blackland Prairies Region, which stretches over 300 miles from Sherman in the north to San Antonio in the south (Griffith et al., 2007; TPWD, 2021a; NRCS, 2006). The location of the study area within the mapped MLRAs is shown in Figure 3-5.

Historically, the distinctive element of the northern Texas Blackland Prairies Region was the dominance of tallgrass prairie vegetation. However, as agricultural practices like farming became more prevalent in the late 1800's and early 1900's, the tallgrass prairie communities slowly began to convert to cropland and non-native pastures of introduced grasses.

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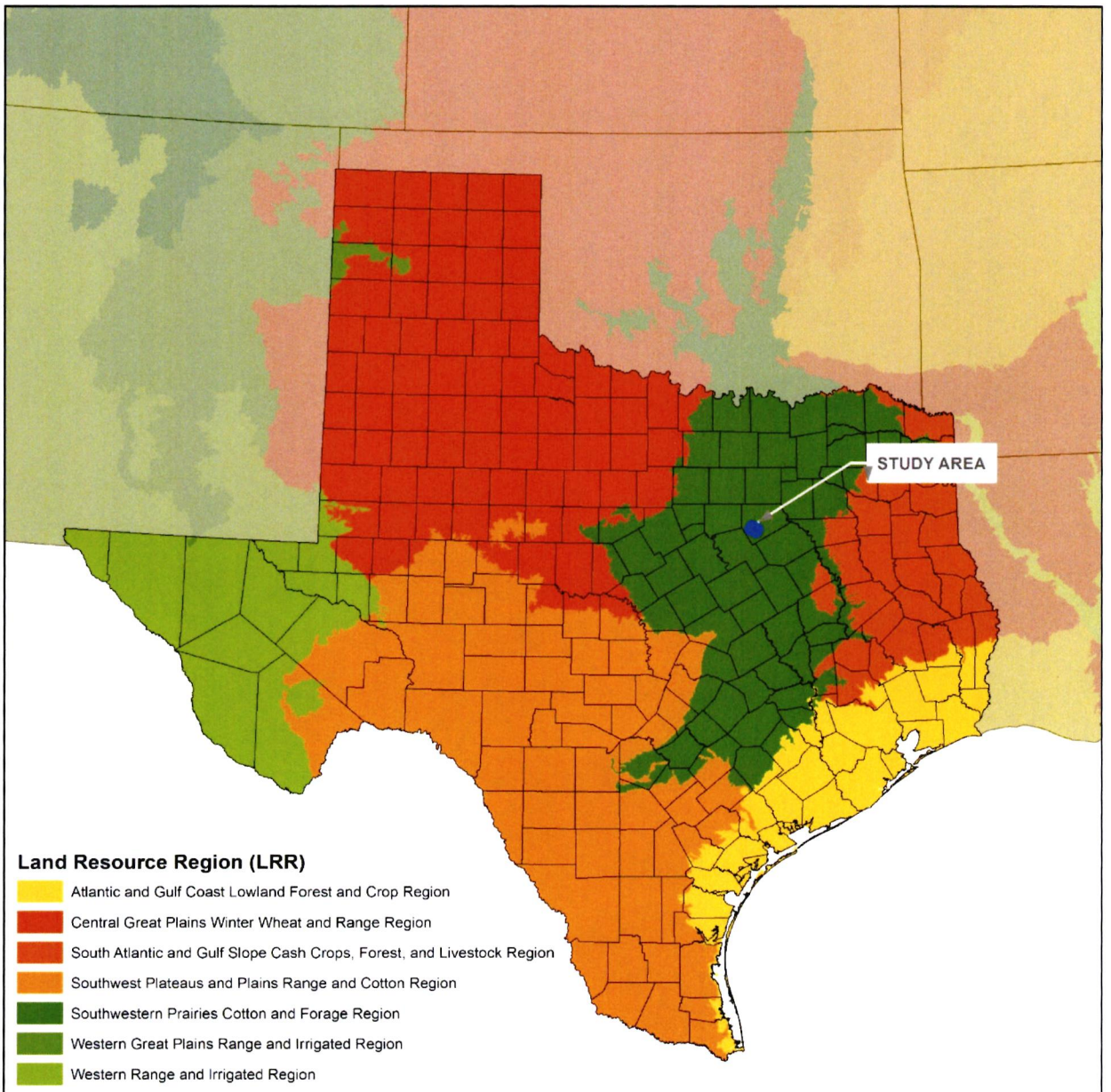

FIGURE 3-4. LAND RESOURCE REGIONS MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

0 75 150 Miles

Note:
Data is for display purposes only. All features and boundaries have been approximated from public resources.

N W E S

Extent Map

Vicinity Map

Ellis County, Texas

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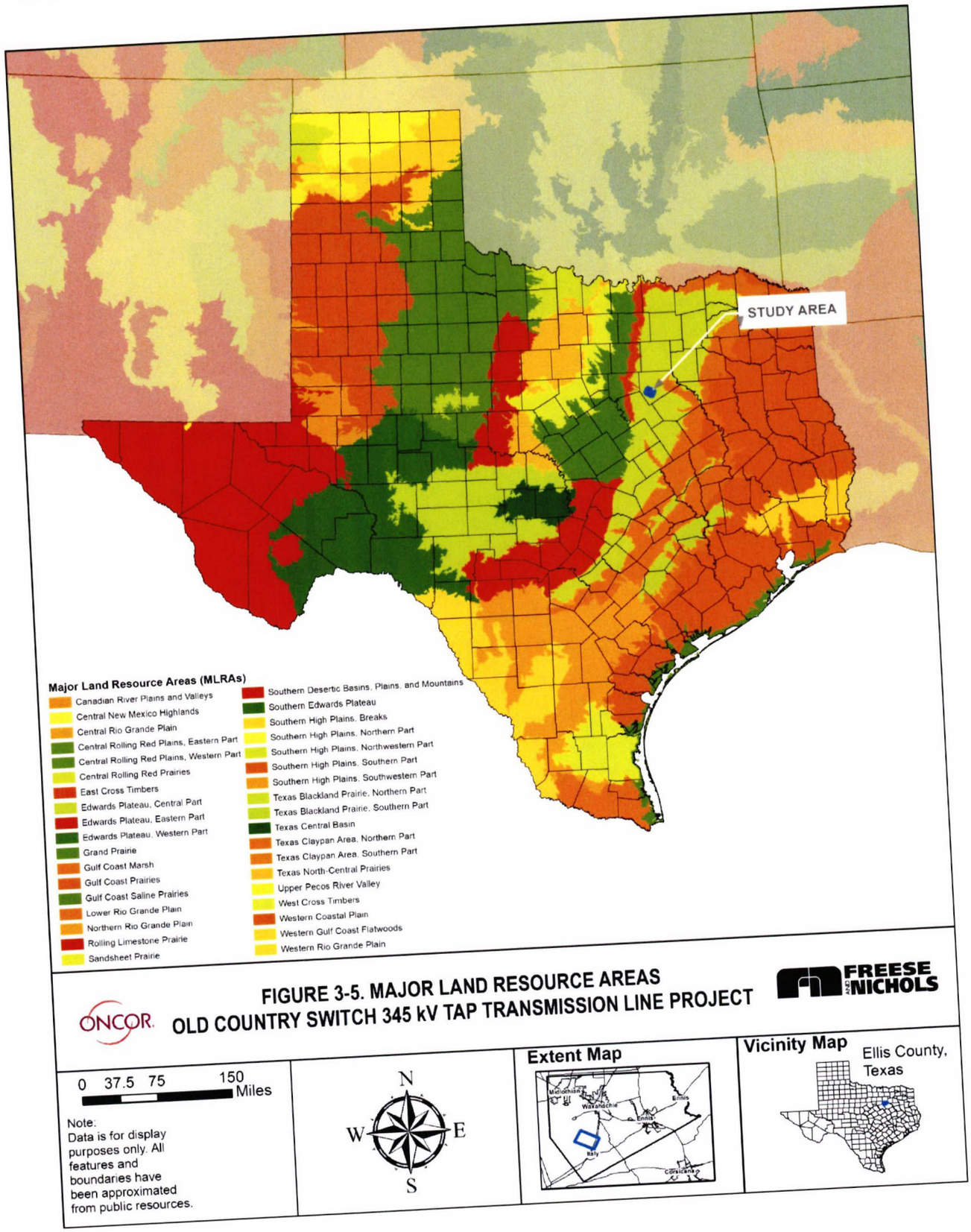
STUDY AREA
Major Land Resource Areas (MLRAs)
Canadian River Plains and Valleys
Central New Mexico Highlands
Central Rio Grande Plain
Central Rolling Red Plains, Eastern Part
Central Rolling Red Plains, Western Part
Central Rolling Red Prairies
East Cross Timbers
Edwards Plateau, Central Part
Edwards Plateau, Eastern Part
Edwards Plateau, Western Part
Grand Prairie
Gulf Coast Marsh
Gulf Coast Prairies
Gulf Coast Saline Prairies
Lower Rio Grande Plain
Northern Rio Grande Plain
Rolling Limestone Prairie
Sandsheet Prairie
Southern Desertic Basins, Plains, and Mountains
Southern Edwards Plateau
Southern High Plains, Breaks
Southern High Plains, Northern Part
Southern High Plains, Northwestern Part
Southern High Plains, Southern Part
Southern High Plains, Southwestern Part
Texas Blackland Prairie, Northern Part
Texas Blackland Prairie, Southern Part
Texas Central Basin
Texas Claypan Area, Northern Part
Texas Claypan Area, Southern Part
Texas North-Central Prairies
Upper Pecos River Valley
West Cross Timbers
Western Coastal Plain
Western Gulf Coast Flatwoods
Western Rio Grande Plain
FIGURE 3-5. MAJOR LAND RESOURCE AREAS
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT
0 37.5 75 150 Miles
Note:
Data is for display purposes only. All features and boundaries have been approximated from public resources.
N
W
E
S
Extent Map
Vicinity Map
Ellis County, Texas

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According to spatial data from TPWD Ecological Mapping Systems of Texas (EMST), the study area contains eight different terrestrial vegetation types (TPWD, 2021a; Elliot, 2014; Elliot et al., 2014) (Figure 3-6). Cropland is mapped separately on Figure 3-6 and was not categorized as an EMST terrestrial vegetation type. Additionally, the study area includes the Chambers Creek basin, contributing tributaries, and adjacent floodplain that are categorized as both herbaceous and shrub/forested. NWI maps indicate that several aquatic habitats are scattered throughout the study area (Figure 3-7). Each of the terrestrial or aquatic vegetation types identified within the study area are discussed below in Section 3.5.1.1 or Section 3.5.1.2, respectively.

3.5.1.1 Terrestrial Vegetation

Spatial data from TPWD EMST descriptions were used to estimate areas of major types of existing terrestrial vegetation within the study area (Figure 3-6). Data were developed from satellite imagery with 10-meter by 10-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 a sufficient number of land cover classes to provide insights for planning and management at a variety of scales (TPWD, 2012). For the purposes of the EMST study, the statewide ecological classifications were grouped into 12 different terrestrial vegetation types.

Eight of the 12 terrestrial vegetation types occur within the study area. The remaining cover classes cumulatively account for less than two percent of the total acreage within the study area. Figure 3-6 displays the TPWD land cover data by different land/vegetation cover types. Descriptions of the terrestrial vegetation occurring within the study area, as provided in Table 3-4, is based on field observations, interpretation of recent aerial photography, and a review of reports and maps produced by Elliott (2014) and Elliot et al. (2014).

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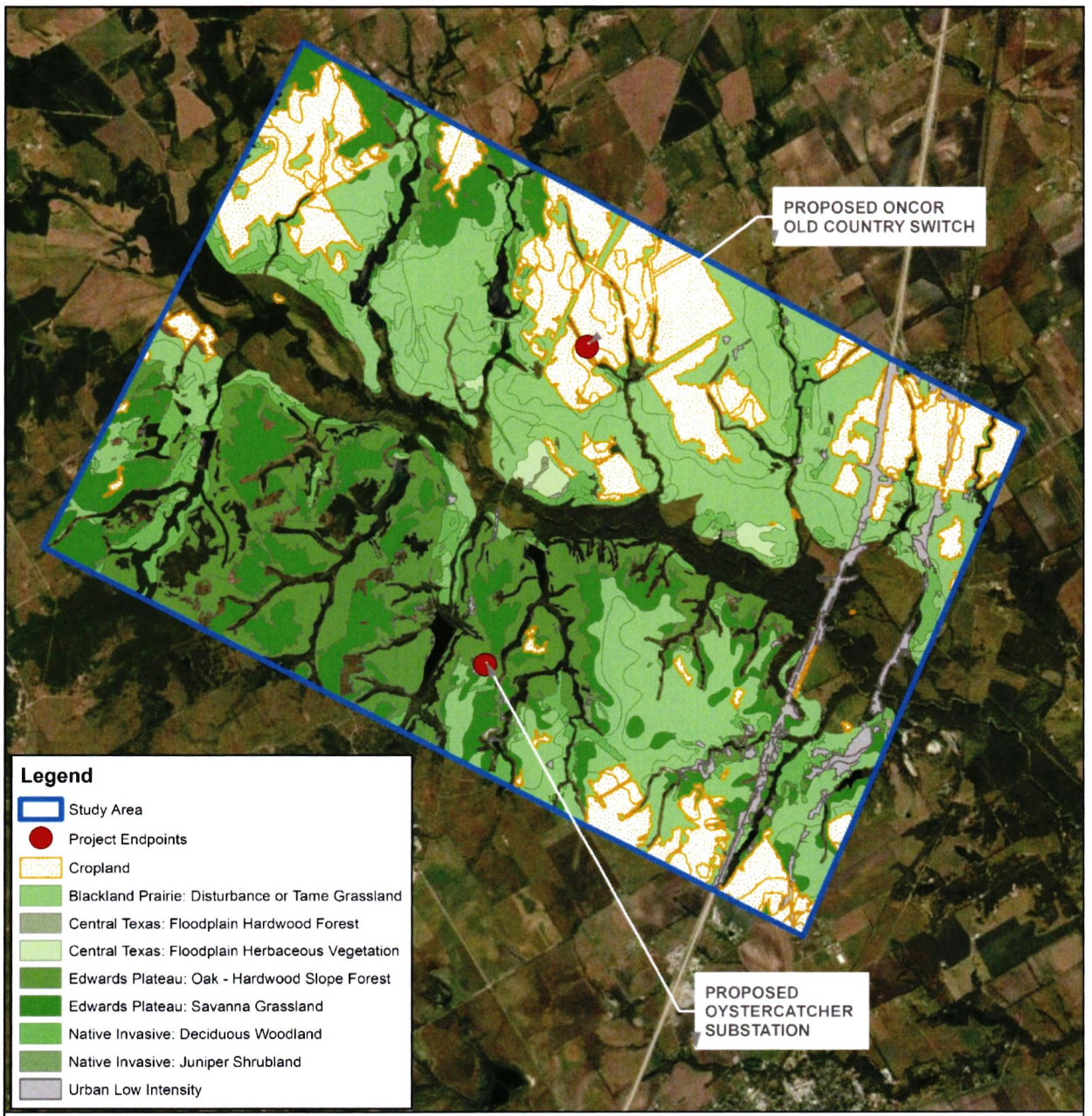


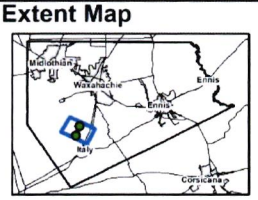
FIGURE 3-6. TERRESTRIAL VEGETATION COVER TYPE MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

0 0.5 1 Miles

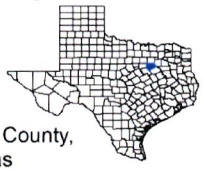
Note:
Data is for display purposes only. All features and boundaries have been approximated from public resources. Aerial Photography (USDA, 2020b)

N W E S

Extent Map



Vicinity Map



Ellis County, Texas

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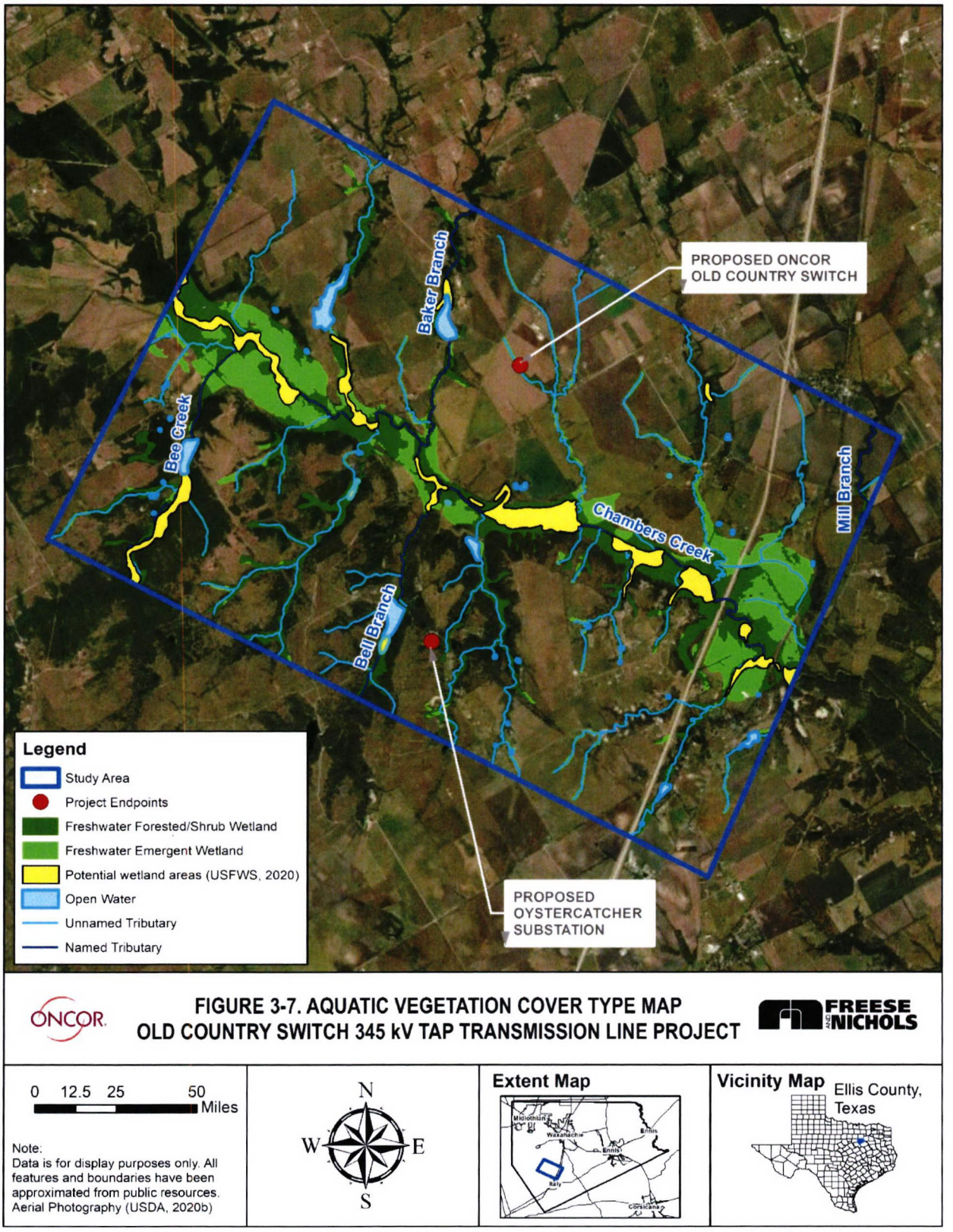

FIGURE 3-7. AQUATIC VEGETATION COVER TYPE MAP
OLD COUNTRY SWITCH 345 kV TAP TRANSMISSION LINE PROJECT

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Table 3-4: Description of Terrestrial Vegetation Types within the Study Area

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Blackland Prairie: Disturbance or Tame Grassland	This vegetative type describes landscapes that primarily consist of disturbance or tame grasslands and are dominated by bermudagrass (*Cynodon dactylon*), kleingrass (*Panicum coloratum*), King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*), and Johnsongrass (*Sorghum halepense*). Important native grasses may include little bluestem (*Schizachyrium scoparium*), Indiangrass (*Sorghastrum nutans*), Texas wintergrass (*Nassella leucotricha*), hairy grama (*Bouteloua hirsuta*), and threeawn species (*Aristida* spp.).	3,963	27
Floodplain Hardwood Forest	This vegetation type describes areas that are dominated by deciduous species.	1,618	11
Floodplain Herbaceous Vegetation	This vegetation type describes areas dominated by an herbaceous layer that includes grass species such as bermudagrass, King Ranch bluestem, and Johnsongrass. Lowland prairies with grasses including eastern gamagrass (*Tripsacum dactyloides*) and switchgrass (*Panicum virgatum*) may also be mapped as this vegetation type.	793	5
Oak – Hardwood Slope Forest	This vegetation type describes areas of forest or woodland on slopes generally greater than 20 percent on steep rocky sites with significant deciduous canopy cover. These sites tend to be somewhat more mesic than similar sites dominated by evergreen canopy. The overstory may be diverse, with species such as Texas oak, Lacey oak, white shin oak, chinkapin oak, cedar elm, netleaf hackberry, Texas ash, escarpment black cherry, Arizona walnut, and others. This system may occupy slopes on cretaceous limestone or chalk occurring north and east of the Edwards Plateau. In these situations, Shumard oak, chinkapin oak, slippery elm, and/or black walnut may be present in the canopy and may represent significant components of it. Plateau live oak and Ashe juniper may be present, often reaching large size under these conditions. Species such as red buckeye, Texas redbud, rough-leaf dogwood, elbowbush, Mexican buckeye, Jersey tea, Carolina buckthorn, rusty blackhaw, grape, and silktassel tend to occur in the shrub layer more frequently in this vegetation type than in the evergreen vegetation types of this system. Though dense canopy, rocky substrate, and significant litter accumulation results in a sparse herbaceous layer, forbs such as widowstears (*Tinantia anomala*), silver-puff (*Chaptalia texana*), baby blue-eyes (*Nemophila phacelioides*), cedar sage, Texas lespedeza (*Lespedeza texana*), and various ferns may be present, if patchy.	1,675	12

Table 3-4: Description of Terrestrial Vegetation Types within the Study Area (continued)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Savanna Grassland	This vegetation type describes uplands of the Edwards Plateau that are frequently described as a mosaic of woodlands, shrublands, and grasslands. Areas with reduced woody cover may occupy sites of considerable size, depending on the land use history, management, and fire history. While these sites have sometimes been referred to as prairies, they are more appropriately considered a part of the savanna mosaic. Grasslands in areas transitioning to regions with a prairie matrix (such as the northwestern transitions to shortgrass prairie, northern transitions to mixedgrass prairie, and northeastern and eastern transitions to tallgrass prairie), may closely resemble and be difficult to distinguish from these prairie types. Little bluestem, purple threeawn (*Arisitida purpurea*), Texas wintergrass, and sideoats grama are common dominants on these sites, but King Ranch bluestem and/or bermudagrass frequently dominate or are significant components. Numerous other grass species, including threeawn, cane bluestem (*Bothriochloa barbinodis*), silver bluestem, Indiangrass, tall grama, red grama, Texas grama, hairy grama, fluffgrass (*Erioneuron pilosum*), curly mesquite (*Hilaria belangeri*), and many others may be present or dominate these sites. Open, gentle slopes underlain by Glen Rose Limestone often maintain grasslands that are often dominated by tall grama and seep muhly. Sites under heavy, continuous grazing, or sites with thin or xeric soils tend to be dominated by shortgrass species such as buffalograss, curly mesquite, or fluffgrass. Numerous forb species are also present in the herbaceous layer. Woody cover constitutes less than 25% of the canopy and is made up of various species including, but not limited to, mesquite, Ashe juniper, agarito, white shin oak, plateau live oak, Texas persimmon, lotebush, and/or Texas mountain-laurel.	278	2
Native Invasive: Deciduous Woodland	This vegetation type is broadly defined and may consist of sugar hackberry (*Celtis laevigata*), water oak (*Quercus nigra*), cedar elm, sweetgum, winged elm (*Ulmus alata*), yaupon (*Ilex vomitoria*), huisache (*Acacia farnesiana*), ashes (*Fraxinus* spp.), or honey mesquite (*Prosopis glandulosa*) among the dominants. Post oak (*Quercus stellata*), coastal live oak (*Quercus virginiana*), and plateau live oak (*Quercus fusiformis*) may be important. Eastern redcedar (*Juniperus virginiana*) and loblolly pine (*Pinus taeda*) may also be present.	1,639	11

Table 3-4: Description of Terrestrial Vegetation Types within the Study Area (completed)

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Native Invasive: Juniper Shrubland	This vegetation type describes juniper-dominated-shrublands. Eastern redcedar is the primary dominant of these shrublands or low woodlands in the Blackland Prairie, Post Oak Savanna, and far northern Cross timbers ecoregions. To the west, on the Rolling Plains, redberry juniper may be the dominant. In other areas, Ashe juniper may dominate these shrublands. Other sites mapped as this type may be dominated by yaupon (*Ilex vomitoria*). A variety of deciduous species may also be present, including cedar elm, winged elm, sugar hackberry, sweetgum, water oak, and honey mesquite. To the east, sites dominated by young loblolly pine may be mapped as this type.	823	8
Urban Low Intensity	This vegetation type typically consists of developed areas with impervious cover. This includes areas within cities and towns that are non-industrious.	2,396	17

Source: Elliott (2014); Elliot et al. (2014).

3.5.1.2 Aquatic/Hydric Vegetation

Aerial photography, topographic maps, and the USFWS NWI Wetlands Mapper were examined to identify areas that may contain potential wetland vegetation that could be considered waters of the United States (USFWS, 2020). Several different types of wetlands occur within the study area, including freshwater emergent wetlands (10 acres) and freshwater forested/shrub wetlands (356 acres) (Figure 3-7).

Additionally, as described in Section 3.4.1, the study area contains a total of 63 linear miles of perennial streams/channels, comprising Baker Branch, Bee Creek, Bell Branch, Mill Branch, and Chambers Creek, and numerous unnamed tributaries. Site reconnaissance was conducted on April 13, 2021, to confirm the aquatic vegetation types within the study area that were identified in the NWI maps. Figure 3-7 shows the surface water features identified by the NWI maps as well as the features confirmed during site reconnaissance. Descriptions of each of the aquatic vegetation types identified within the study area are provided in Table 3-5.

Table 3-5: Description of Aquatic Vegetation Types within the Study Area

Vegetation Type	Description	Acres in Study Area	Percent Coverage of Study Area
Freshwater Emergent Wetland	Herbaceous marsh, fen, swale, and wet meadow	10	<1
Freshwater Forested / Shrub Wetland	Forested swamp or wetland shrub bog or wetland	356	2
Freshwater Pond	Pond	31	<1
Lake	Lake or reservoir basin	80	<1

Source: USFWS (2019); USFWS (2020)

The wetland vegetation identified within the study area are also described in Table 3-5. These wetlands may meet the criteria necessary to define them as waters of the U.S. pursuant to Section 404 of the Clean Water Act, and therefore, certain activities (e.g., placement of fill) within them may be subject to regulation by the USACE.

3.5.1.3 Commercially or Recreationally Important Plant Species

Commercially important species are defined as those that (a) are commercially or recreationally valuable; (b) are endangered or threatened; (c) affect the well-being of some important species within criterion (a) or (b); and (d) are critical to the structure and function of the ecological system or are biological indicators. Commercially important vegetation within the study area includes forage and row crops. According to the National Agricultural Statistics Service (NASS), the primary crop by highest number of acres in Ellis County is corn for grain, followed by winter wheat for grain, cotton, and sorghum (USDA, 2020a).

3.5.1.4 Endangered and Threatened Plant Species

As defined by the USFWS under the Endangered Species Act (ESA), an endangered species is one that is in danger of extinction throughout all or a significant portion of its range, while a

threatened species is one likely to become endangered within the foreseeable future throughout all or a significant portion of its range (USFWS, 2021a).

According to the USFWS and TPWD county lists, as well as the USFWS Information for Planning and Consultation (IPaC) website and the Texas Natural Diversity Database (TXNDD) for Ellis County, there are no endangered or threatened plant species within the study area (USFWS, 2021d; TPWD, 2021g).

The ESA also provides for the conservation of "critical habitat," the areas of land, water, and air space that a federally listed species needs for survival. These areas include sites with food and water, breeding areas, cover or shelter sites, and sufficient habitat to provide for normal population growth and behavior. No designated critical habitat for any endangered or threatened vegetation species occurs within the study area (USFWS, 2021a).

3.5.2 Fish and Wildlife

3.5.2.1 Terrestrial Wildlife

The study area is located within the Texan province as described by Blair (1950), specifically in the north central region of the province in Ellis County, Texas. Blair (1950) recognized at least 49 species of mammals, 39 species of snakes, 13 anuran species (frogs and toads), and 3 urodele species (salamanders) that occur in Texas. Of those species, the species with potential for occurrence in the study area are included in Tables 3-6 through 3-8.

Herpetological species (reptiles and amphibians) with potential for occurrence in the study area are included in Table 3-6. Mammalian species with potential for occurrence in the study area are included in Table 3-7. Avian species with potential for occurrence in the study area are included in Table 3-8.

Table 3-6: Reptile and Amphibian Species with Potential to Inhabit the Study Area

Common Name	Scientific Name	Habitat Preference(s)
Alligator snapping turtle	*Macrochelys temminckii*	Water
American alligator	*Alligator mississippiensis*	Water
American bullfrog	*Rana catesbeiana*	Water
Cottonmouth	*Agkistrodon piscivorus*	Open areas; Water
Diamondback water snake	*Natrix rhombifera*	Water
Eastern box turtle	*Terrapene carolina*	Open areas
Eastern collared lizard	*Crotaphytus collaris*	Open areas
Eastern fence lizard	*Sceloporus undulates*	Open areas; Woodlands
Gray tree frog	*Hyla versicolor*	Water; Woodlands
Green anole	*Anolis carolinensis*	Open areas
Green tree frog	*Hyla cinereal*	Water; Woodlands
Gulf Coast toad	*Bufo valliceps*	Open areas
Little brown skink	*Leiolopisma laterale*	Open areas; Woodlands
Northern copperhead	*Agkistrodon mokasen*	Open areas; Woodlands
Northern leopard frog	*Rana pipiens*	Water
Prairie skink	*Plestiodon septentrionalis*	Grassland; Open areas
Ribbon snake	*Thamnophis sauritus*	Open areas
Slender glass lizard	*Ophisaurus attenuatus*	Grassland; Open areas
Southern chorus frog	*Pseudacris nigrita*	Water
Southern crawfish frog	*Lithobates areolatus*	Water
Southern cricket frog	*Acris gryllus*	Water
Strecker's chorus frog	*Pseudacris streckeri*	Water
Texas garter snake	*Thamnophis sirtalis annectens*	Open areas
Texas horned lizard	*Phrynosoma cornutum*	Open areas
Texas spiny lizard	*Sceloporus olivaceus*	Grassland; Open areas
Timber rattlesnake	*Crotalus borridus*	Woodlands
Western box turtle	*Terrapene ornate*	Open areas
Western chicken turtle	*Deirochelys reticularia miaria*	Open areas
Western diamondback rattlesnake	*Crotalus atrox*	Open areas
Woodhouse's toad	*Bufo woodhousii*	Desert; Open areas; Water

Source. Blair (1950), TPWD (2021g)

Table 3-7: Mammalian Species with Potential to Inhabit the Study Area

Common Name	Scientific Name	Habitat Preference(s)
Baird's pocket gopher	*Geomys breviceps*	Desert; Open areas
Big brown bat	*Eptesicus fuscus*	Open areas
Black-tailed jackrabbit	*Lepus californicus*	Open areas
Cave myotis bat	*Myotis velifer*	Open areas
Deer mouse	*Peromyscus maniculatus*	Open areas; Woodlands
Eastern cottontail	*Slyvilagus floridannus*	Open areas; Urban areas; Woodlands
Eastern mole	*Scalopus aquaticus*	Grasslands; Open areas
Eastern red bat	*Lasiurus borealis*	Open areas
Eastern spotted skunk	*Spilogale putorius*	Open areas
Fox squirrel	*Sciurus niger*	Open areas; Urban areas; Woodlands
Fulvous harvest mouse	*Reithrodontomys fulvescens*	Open areas
Hispid cotton rat	*Sigmodon hispidus*	Open areas; Urban areas
Hispid pocket mouse	*Perognathus bispidus*	Open areas
Hoary bat	*Lasiurus cinereus*	Open areas; Woodlands
Javelina	*Tayassuidae spp.*	Desert
Long-tailed weasel	*Mustela frenata*	Open areas; Grasslands
Mountain lion	*Puma concolor*	Desert; Shrubland
Muskrat	*Ondatra zibethicus*	Grasslands; Open areas
Rabbit and hare	*Sylvilagus spp., Lepus spp.*	Grasslands; Open areas; Urban areas
Southeastern myotis bat	*Myotis austroriparis*	Desert; Shrubland
Squirrel	*Sciurus spp.*	Open areas; Urban areas; Woodlands
Swamp rabbit	*Slyvilagus aquaticus*	Woodlands
Thirteen-lined ground squirrel	*Citellus tridecemlineatus*	Open areas; Woodlands
Tricolored bat	*Perimyotis subflavus*	Open areas; Woodlands
Virginia opossum	*Didelphis virginiana*	Open areas; Urban areas; Woodlands
Western hog-nosed skunk	*Conepatus leuconotus*	Shrubland; Urban areas
White-footed mouse	*Peromyscus leucopus*	Woodlands
White-tailed deer	*Odocoileus virginianus*	Open areas; Urban areas; Woodlands
Woodland vole	*Microtus pinetorum*	Woodlands

Source: Blair (1950), TPWD (2021g)

Table 3-8: Avian Species with Potential to Inhabit the Study Area

Common Name	Scientific Name	Habitat Preference(s)
American golden plover	*Pluvialis dominica*	Water
American woodcock	*Scolopax minor*	Woodlands
Bald eagle	*Haliaeetus leucocephalus*	Water; Woodlands
Black-capped vireo	*Vireo atricapilla*	Shrubland; Woodlands
Black rail	*Laterallus jamaicensis*	Open areas; Water
Buff-breasted sandpiper	*Calidris subruficollis*	Water
Duck (including teal)	*Dendrocygna spp., Cygnus spp., Cairina moschata, Aix sponsa, Spatula spp., Mareca spp., Anas spp., Aythya spp.*	Water
Eastern wild turkey	*Meleagris gallopavo silvestris*	Open areas; Woodlands
Franklin's gull	*Leucophaeus pipixcan*	Open area; Water
Golden-cheeked warbler	*Setophaga chrysoparia*	Woodlands
Goose	*Anser spp., Branta spp.*	Water
Harris's sparrow	*Zonotrichia querula*	Grasslands; Open areas
Interior least tern	*Sternula antillarum athalassos*	Water
Lesser yellowlegs	*Tringa flavipes*	Water
Long-billed curlew	*Numenius americanus*	Open area; Water
Marbled godwit	*Limosa fedoa*	Water
Piping plover	*Charadrius melodus*	Water
Quail	*Colinus virginianus, Callipepla spp., Cyrtonix montezumae*	Desert; Shrubland
Rail, gallinule, and moorhen	*Rallus spp., Gallinula spp., Coturnicops novaboracensis, Laterallus jamaicensis*	Water
Red-headed woodpecker	*Melanerpes erythrocephalus*	Woodlands
Red knot	*Calidris canutus rufa*	Water
Semipalmated sandpiper	*Calidris pusilla*	Water
Swallow-tailed kite	*Elanoides forficatus*	Woodlands
Western burrowing owl	*Athene cunicularia hypugaea*	Grasslands; Open areas
White-faced ibis	*Plegadis chihi*	Water
White-winged dove	*Zenaida asiatica*	Grasslands; Open areas; Urban areas
Whooping crane	*Grus americana*	Water
Willet	*Tringa semipalmata*	Water
Wilson's snipe	*Gallinago delicata*	Water
Wood stork	*Mycteria americana*	Open areas

Source: Blair (1950), USFWS (2021g)

3.5.2.2 Fish and Aquatic Wildlife

The study area lies within the Trinity River Basin, and specifically, the Upper West Fork Trinity watershed and the Chambers Creek sub watershed (USGS, 2019). This area has been significantly impacted by human activities, including the construction of 22 reservoirs on the river to provide drinking water and flood control for the surrounding cities. The Trinity River Basin has historically been home to diverse habitats, including bottomland hardwood forests and wetlands; however, conversion of land use for urbanization, commercial/industrial development, row-crop farming, livestock production, timber production, and outdoor recreation have all altered the extent of these diverse habitats and the species that depend on them (TPWD, 2012).

The study area contains multiple streams and tributaries that converge with Chambers Creek; recreationally sought species expected to be found in the study area may include bluegill (*Lepomis macrochirus*), other sunfish (*Lepomis* spp.), and channel catfish (*Ictalurus punctatus*). Other species that may occur are listed in Table 3-9.

Table 3-9: Aquatic Species with Potential to Inhabit the Study Area

Common Name	Scientific Name	Habitat Preference(s)
Alligator gar	*Atractosteus spatula*	Water
Bantam sunfish	*L. symmetricus*	Water
Black bullhead	*Ameiurus melas*	Water
Black crappie	*P. nigromaculatus*	Water
Blackspot shiner	*Notropis atrocaudalis*	Water
Blackspotted topminnow	*F. olivaceus*	Water
Blackstripe topminnow	*F. notatus*	Water
Blacktail redhorse	*Moxostoma poecilurum*	Water
Blacktail shiner	*C. venusta*	Water
Blue catfish	*Ictalurus furcatus*	Water
Bluegill	*L. macrochirus*	Water
Bluntnose darter	*Etheostoma chlorosoma*	Water
Bowfin	*Amia calva*	Water
Bullhead minnow	*Pimephales vigilax*	Water
Channel catfish	*I. punctatus*	Water

Table 3-9: Aquatic Species with Potential to Inhabit the Study Area (continued)

Common Name	Scientific Name	Habitat Preference(s)
Common carp	*Cyprinus carpio*	Water
Flathead catfish	*Pylodictis olivaris*	Water
Flier	*Centrarchus macropterus*	Water
Freshwater drum	*Aplodinotus grunniens*	Water
Gizzard shad	*Dorosoma cepedianum*	Water
Golden shiner	*Notemigonus crysoleucas*	Water
Golden topminnow	*Fundulus chrysotus*	Water
Grass carp	*Ctenopharyngodon idella*	Water
Green sunfish	*Lepomis cyanellus*	Water
Largemouth bass	*Micropterus salmoides*	Water
Longear sunfish	*L. megalotis*	Water
Longnose gar	*L. osseus*	Water
Louisiana pigtoe	*Pleurobema riddellii*	Water
Mimic shiner	*N. volucellus*	Water
Orangespotted sunfish	*L. humilis*	Water
Pirate perch	*Aphredoderus sayanus*	Water
Pugnose minnow	*Opsopoeodus emiliae*	Water
Rainwater killifish	*Lucania parva*	Water
Red shiner	*Cyprinella lutrensis*	Water
Redear sunfish	*L. microlophus*	Water
Redfin pickerel	*Esox americanus*	Water
Ribbon shiner	*Lythrurus fumeus*	Water
Sandbank pocketbook	*Lampsilis satura*	Water
Slough darter	*E. gracile*	Water
Smallmouth buffalo	*Ictiobus bubalus*	Water
Spotted gar	*Lepisosteus oculatus*	Water
Spotted sunfish	*L. punctatus*	Water
Striped mullet	*Mugil cephalus*	Water
Texas fawnsfoot	*Truncilla macrodon*	Water
Texas heelsplitter	*Potamilus amphichaenus*	Water
Threadfin shad	*D. petenense*	Water
Trinity pigtoe	*Fusconaia chunii*	Water
Warmouth	*L. gulosus*	Water
Western mosquitofish	*Gambusia affinis*	Water

Table 3-9: Aquatic Species with Potential to Inhabit the Study Area (completed)

Common Name	Scientific Name	Habitat Preference(s)
White bass	*Morone chrysops*	Water
White crappie	*Pomoxis annularis*	Water
Yellow bullhead	*A. Natalis*	Water

Source: USFWS (2021b).

3.5.2.3 Commercially or Recreationally Important Fish and Wildlife Species

As stated in Section 3.5.1.3, a species is considered commercially important if the species is (a) commercially or recreationally valuable; (b) endangered or threatened; (c) affect the well-being of some important species within criterion (a) or (b); and (d) critical to the structure and function of the ecological system or are biological indicators.

TPWD divides the counties of Texas into ecological areas for wildlife management, with Ellis County falling into the Post Oak Savannah and Blackland Prairie Wildlife District (Wildlife Division District 5) (TPWD, 2021d). Wildlife Division District 5 encompasses a total of 31 counties extending south from the Red River to Grimes, Burleson, and Milam counties. Wildlife resources within the study area provide recreational benefits as a result of both non-consumptive (birdwatching) and consumptive uses (hunting). According to the USFWS (2014), more than one million people engage in recreational hunting within the State of Texas each year. Hunting generates over $2 billion each year via revenue gained through hunting fees, private leases, or travel-related expenses (USFWS, 2014).

Table 3-10 lists the species for which an established hunting season exists for Ellis County (TPWD, 2021c). Commercially important fish or wildlife species likely occur in the study area; however, the proposed transmission line project is not expected to permanently affect the occurrence of the species within the study area.

Table 3-10: Game Species with Potential for Occurrence within the Study Area

Common Name	Scientific Name	Habitat Preference(s)
American alligator	*Alligator mississippiensis*	Water
American woodcock	*Scolopax minor*	Woodlands
Duck (including teal)	*Dendrocygna spp., Cygnus spp., Cairina moschata, Aix sponsa, Spatula spp., Mareca spp., Anas spp., Aythya spp.*	Water
Eastern wild turkey	*Meleagris gallopavo silvestris*	Open areas; Woodlands
Goose	*Anser spp., Branta spp.*	Water
Javelina	*Tayassuidae spp.*	Desert
Mourning dove	*Zenaida macroura*	Grasslands; Open areas; Urban areas
Quail	*Colinus virginianus, Callipepla spp., Cyrtonix montezumae*	Desert; Shrubland
Rabbit and hare	*Sylvilagus spp., Lepus spp.*	Grasslands; Open areas; Urban areas
Rail, gallinule, and moorhen	*Rallus spp., Gallinula spp., Coturnicops novaboracensis, Laterallus jamaicensis*	Water
Squirrel	*Sciurus spp.*	Open areas; Urban areas; Woodlands
White-tailed deer	*Odocoileus virginianus*	Open areas; Urban areas; Woodlands
White-winged dove	*Zenaida asiatica*	Grasslands; Open areas; Urban areas
Wilson's snipe	*Gallinago delicata*	Water

Source: USFWS (2021c); TPWD (2021c).

3.5.2.4 Endangered and Threatened Fish and Wildlife Species

Table 3-11 lists those fish and wildlife species considered by USFWS to be endangered, threatened, or candidate species within a geographic range that includes Ellis County (USFWS, 2021d). Three bird species are federally listed: piping plover (*Charadrius melodus*, Threatened), red knot (*Calidris cautus rufa*, Threatened), and whooping crane (*Grus americana*, Endangered). Two bird species have been federally delisted: interior least tern (*Sternula antillarum*) and bald eagle (*Haliaeetus leucocephalus*). Two species are federal candidate species under consideration for protection: Texas fawnsfoot (*Truncilla macrodon*) and the monarch butterfly (*Danaus plexippus*). Only those species listed as endangered or threatened by USFWS are afforded federal protection under the ESA. There is no USFWS-designated critical habitat within the study area for any federally protected species. Three additional bird species (American golden plover [*Pluvialis dominica*], Harris's sparrow [*Zonotrichia querula*], and lesser yellowlegs [*Tringa flavipes*]) are not federally listed species but are protected during migration under the Migratory Bird Treaty Act (MBTA).

Table 3-11 also lists the fish and wildlife species considered by TPWD to be endangered or threatened species within a geographic range that includes Ellis County (TPWD, 2021b; TPWD, 2021e). In addition to the species listed by the USFWS, three additional bird species (black rail [*Laterallus jamaicensis*], wood stork [*Mycteria americana*], and white-faced ibis [*Plegadis chihi*]), four mollusk species (Trinity pigtoe [*Fusconaia chunii*], Texas heelsplitter [*Potamilus amphichaenus*], Louisiana pigtoe [*Pleurobema riddellii*], and sandbank pocketbook [*Lampsilis satura*]), and two reptile species (Texas horned lizard [*Phrynosoma cornutum*] and alligator snapping turtle [*Macrochelys temminckii*]) are state listed as threatened by TPWD. Texas Parks and Wildlife Code protects state-listed threatened and endangered species from capture, trap, take or killing.

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. The estimate of likelihood of a species to occur within the study area is based on an analysis of habitat available and the known habitat preference for each species.

Table 3-11: Endangered, Threatened, and Candidate Fish and Wildlife with Potential for Occurrence within the Study Area

Common Name	Scientific Name	Agency - Listing Status	Comments
Federally Listed Threatened and Endangered Species			
Piping plover	*Charadrius melodus*	USFWS – Threatened TPWD – Threatened	Migratory species; Typically, only considered for windfarm projects by USFWS
Red knot	*Calidris canutus rufa*	USFWS – Threatened TPWD – Threatened	Migratory species; Typically, only considered for windfarm projects by USFWS
Whooping crane	*Grus americana*	USFWS – Endangered TPWD – Endangered	Migratory species; Study area within migration corridor
Federally Listed Candidate Species			
Monarch butterfly	*Danaus plexippus*	USFWS – Candidate	Migratory species; Study area within migration corridor
Texas fawnsfoot	*Truncilla macrodon*	USFWS – Candidate	May occur within study area*
Federally Delisted Threatened and Endangered Species**			
Bald eagle	*Haliaeetus leucocephalus*	USFWS – Delisted	Previous observations within study area
Interior least tern	*Sternula antillarum*	USFWS – Delisted TPWD – Endangered	May occur within study area*
State Listed Threatened Species			
Alligator snapping turtle	*Macrochelys temminckii*	TPWD – Threatened	Previous observations within study area
Black rail	*Laterallus jamaicensis*	TPWD – Threatened	May occur within study area*
Louisiana pigtoe	*Pleurobema riddellii*	TPWD – Threatened	Previous observations within study area
Sandbank pocketbook	*Lampsilis satura*	TPWD – Threatened	Previous observations within study area
Texas heelsplitter	*Potamilus amphichaenus*	TPWD – Threatened	Previous observations within study area
Texas horned lizard	*Phrynosoma cornutum*	TPWD – Threatened	Previous observations within study area
Trinity pigtoe	*Fusconaia chunii*	TPWD – Threatened	Previous observations within study area
White-faced ibis	*Plegadis chihi*	TPWD – Threatened	May occur within study area*
Wood stork	*Mycteria americana*	TPWD – Threatened	Historically present in Texas; Not likely to occur within study area

Source: USFWS (2016); TPWD (2021e); USFWS (2021d), Randklev, et al. (2017).

**TXNDD records for Ellis County do not report any sightings of this species within the study area.*

***The interior least tern is a federally delisted species; however, it remains state listed as endangered in Texas.*

Descriptions of these listed threatened, endangered and candidate species and likelihood of occurrence within the study area are provided below.

Piping plover. The threatened piping plover (*Charadrius melodus*) is a small shorebird that inhabits coastal beaches and tidal flats (Haig and Elliott-Smith, 2004). From September to March, piping plovers are typically found along the Gulf coast shoreline using beaches, sandflats, tidal mudflats, dunes, and dredge islands as loafing and foraging areas (Haig and Elliott-Smith, 2004). TPWD TXNDD (2021g) and eBird (2021) show no observation of piping plovers within Ellis County. Potential habitat for piping plover was not observed within the study area. It is not likely that the proposed transmission line project will have an effect on migration of piping plovers.

Red knot. The threatened red knot (*Calidris canutus rufa*) is a medium-sized, stocky, short-necked sandpiper with a short, straight bill. During migration and winter in Texas, red knots may be found feeding in small groups on sandy, shell-lined beaches, bay flats, and lagoons (Oberholser, 1974). It is a moderately common migrant species along the coast, and more rarely inland, primarily in the eastern half of the state (USFWS, 2021d). There have been no recorded observations of red knots in Ellis County (TPWD, 2021g; eBird, 2021). No potential habitat for the red knot was observed within the study area. It is not likely that the proposed transmission line project will have an effect on migration of red knots.

Whooping crane. Endangered whooping cranes (*Grus americana*) are the tallest birds in North America and are known for their call, size, and white plumage. During migration, whooping cranes stopover habitat can include wetlands, fallow cropland, and pastures to roost and feed. Based on migration data compiled from a variety of information gathered from 1975 through 1999 (Austin and Richert, 2001), the study area is located within the designated migration corridor for the whooping crane. Their preferred habitat includes coastal marshes, estuaries, inland marshes, lakes, and ponds. TPWD TXNDD (2021g) and eBird (2021) data show no official observations reported near the study area.