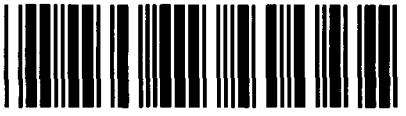
Control Number: 49238



Item Number: 2

Addendum StartPage: 0

WIND ENERGY TRANSMISSION TEXAS, LLC

WETT

APPLICATION OF WIND ENERGY TRANSMISSION TEXAS, LLC TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY FOR THE PROPOSED LONG DRAW SOLAR STATION TO LONG DRAW SWITCHING STATION 138 KV TRANSMISSION LINE IN BORDEN COUNTY

DOCKET NO. 49238

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

Application of Wind Energy Transmission Texas, LLC to Amend its Certificate of Convenience and Necessity for the Proposed Long Draw Solar Station to the Long Draw Switching Station 138 kV Transmission Line in Borden County, Texas

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:** Wind Energy Transmission Texas, LLC (WETT or the Company)

   Certificate Number: 30197

   Street Address: 210 Barton Springs Road, Suite 400 Austin, Texas 78704

   Mailing Address: 210 Barton Springs Road, Suite 150 Austin, Texas 78704-1212

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.**

   WETT will hold sole ownership interest in the Long Draw Solar Station to Long Draw Switching Station Transmission Line Project (the "Project").

3. **Person to Contact: For joint applications, provide all information for each applicant.**

Person to Contact:	Matt Van Arkel
Title/Position:	Regulatory Manager
Phone Number:	512-279-7377
Mailing Address:	210 Barton Springs Road, Suite 400 Austin, Texas 78704
Email Address:	matt.vanarkel@windenergyoftexas.com
Alternate Contact:	Antonio Ansede
Title/Position:	Vice President of Engineering and Construction
Phone Number:	512-279-7373
Mailing Address:	210 Barton Springs Road, Suite 400 Austin, Texas 78704
Email Address:	antonio.ansede@windenergyoftexas.com
Legal Counsel:	Dennis W. Donley, Jr.
Phone Number:	512-479-0300
Mailing Address:	Naman, Howell, Smith & Lee, PLLC 8310 North Capital of Texas Highway, Suite 490 Austin, Texas 78731
Email Address:	donley@namanhowell.com

Please contact Dennis W. Donley, Jr. 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.

Name or Designation of Project:	Long Draw Solar Station to Long Draw Switching Station Transmission Line Project
Design Voltage Rating (kV):	138 kV
Operating Voltage Rating (kV):	138 kV
Normal Peak Operating Current (A):	1100 A

The proposed Project is a new, single-circuit, 138 kV, 1.8-mile transmission line to be built on monopoles between a proposed 138 kV expansion of WETT's existing Long Draw 345 kV high-voltage switching station (which is located adjacent to Farm-to-Market 1054/Vealmoore Road in Borden County) and the proposed Long Draw Solar collector substation (which is being developed by a generator, ENGIE Long Draw Solar, LLC ("ENGIE") approximately 1.6 miles south of U.S. Highway 180 and 10 miles southwest of Gail, also in Borden County, Texas). ENGIE requested interconnection at 138 kV, and monopoles are appropriate to this Project's voltage, length, and terrain. The Project's proposed route has the unanimous agreement of impacted landowners.

Based upon ENGIE's requested interconnection voltage and other factors described below, the planned interconnection facilities will include a new 138 kV expansion adjacent to WETT's existing Long Draw Switching Station, a 0.3-mile 345 kV line to connect the expansion area to the existing station, and the 1.8-mile 138 kV line to connect to the expansion area to the Long Draw Solar collector substation.[1]

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

[1] The portion of the facilities which specifically requires a CCN is the 1.8-mile-long 138 kV line between WETT's Long Draw switching station and ENGIE's Long Draw Solar collector substation. 16 TAC § 25.101(b)(3), § 25.101(c)(2) and (c)(5)(A) except the need for a CCN amendment for the substation work and the less than one-mile line extension

responsibilities of each party for implementing the project (design, Right-Of-Way acquisition, material procurement, construction, etc.).

Not applicable. WETT will own, operate, and maintain all transmission line facilities, including conductors, wires, structures, hardware, and easements. WETT already owns the existing Long Draw Switching Station.

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.

Not applicable.

5. **Conductor and Structures:**

Conductor Size and Type:	1272 Bittern
Number of conductors per phase:	One
Continuous Summer Static Current Rating (A):	1100 Amperes
Continuous Summer Static Line Capacity at Operating Voltage (MVA):	260 MVA
Continuous Summer Static Line Capacity at Design Voltage (MVA):	260 MVA
Type and composition of Structures:	Steel Monopoles
Height of Typical Structures:	80 feet
Estimated Maximum Height of Structures:	95 feet

Explain why these structures were selected; include such factors as landowner preference, engineering considerations, and costs comparisons to alternate structures that were considered. Provide dimensional drawings of the typical structures to be used in the project.

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

Steel monopoles were selected as the best structure for constructing the Project, taking into account various factors including cost, technical specifications, footprint, ROW requirements, terrain, and other factors associated with this specific project.

Please refer to Figure 1-2 in Appendix A of the Environmental Assessment ("EA") for a dimensional drawing of the typical structures to be used for the Project. The EA is Attachment 1 to this application.

6. **Right-of-Way:**

Miles of Right-of-Way: Approximately 1.8 miles

Miles of Circuit: Approximately 1.8 miles

Width of Right-of-Way: 100 feet

Percent of Right-of-Way Acquired: 0 percent*

*WETT has not yet acquired this right of way, but the sole affected landowner supports the project and has granted WETT an option to purchase necessary land.

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.

Not applicable.

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

The Project will traverse approximately two miles between WETT's Long Draw Switching Station and a solar array on adjoining property, all in Borden County in West Texas, approximately 20 miles east of Lamesa. *See* Figure 1-1 in EA Appendix A. This is in the North Central Plains region of Texas; the area traversed is typical Texas High Plains scrubland/rangeland with some ridges. The Project will cross Tobacco Creek and an unnamed tributary.

7. **Substations or Switching Stations:**

List the name of all existing HVDC converter stations, substations or switching stations that will be associated with the proposed 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.

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.

The Project is associated with WETT's existing Long Draw Switching Station and the new Long Draw Solar Station, a collector substation that will be owned and operated by ENGIE.

8. Estimated Schedule:

Table 1: Estimated Schedule

Estimated Dates of:	Start	Completion
Right-of-Way and Land Acquisition	June 2019	August 2019
Engineering and Design	June 2019	October 2019
Material and Equipment Procurement	August 2019	January 2020
Construction of Facilities	October 2019	May 2020
Energize Facilities	--	May 2020

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

The Project will be constructed entirely in Borden County.

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

No portion of the route will be constructed within any municipal boundaries.

For each applicant, attach a copy of the franchise, permit or other evidence of the city's consent held by the utility. 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 proposed project which will be owned by the applicant.

Not applicable.

11. Affected Utilities:

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

No other electric utility will be served by the Project. WETT's existing Long Draw Switching Station is connected to Sharyland Utilities, LP.

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 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 electric utility other than WETT will be affected by or involved in the construction of the Project.

12. Financing:

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

WETT proposes to finance the facilities included in the Project with a combination of debt and equity, which should approximate the capital structure authorized by the PUCT and used in its previous projects. WETT plans to use internally-generated funds for the equity component and proceeds from borrowings for the debt component of such financing. WETT may use short-term construction financing that will later be repaid through long-term financing for the debt component of the project financing, as appropriate. WETT is the sole applicant so 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. Provide a breakdown of "Other" costs by major cost category and amount. Provide the information for each route in an attachment to this application.

The following table provides the cost estimates for the Project and Long Draw Switching Station expansion:

	Transmission Facilities	Substation Facilities
Right-of-way and Land Acquisition	$225,000	$0
Engineering and Design (Utility)	$940,000	$342,199
Engineering and Design (Contract)	--	--
Procurement of Material and Equipment (including stores)	$408,680	$9,057,037

Construction of Facilities (Utility)	$589,380	$3,025,182
Construction of Facilities (Contract)	--	--
Other (all costs not included in the above categories)	--	--
Estimated Total Cost	$2,163,060	$12,424,418

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 Project is needed to connect ENGIE's new 225 MW solar generation facility to the grid. ENGIE is installing a new, 225 MW solar generation facility and plans to construct, own, and operate its own collector substation less than two miles north of WETT's existing Long Draw Switching Station, all in Borden County.

Under applicable Commission rules, WETT is obligated to provide interconnection for new generation when requested.[2] In order to provide the transmission facilities needed to interconnect ENGIE's new station and generating facilities to the grid consistent with WETT's obligations, WETT proposes to construct, own, and operate the Project, as well as the 138 kV

[2] 16 TAC § 25.198(b) says "the TSP will provide transmission service to any transmission service customer" and § 25.191(d)(3) says "A TSP shall interconnect its facilities with new generating sources and construct facilities needed for such an interconnection."

expansion adjacent to WETT's existing Long Draw Switching Station and a 0.3-mile 345 kV line to the expansion area.[3] WETT and ENGIE have entered into a Standard Generation Interconnection Agreement on August 16, 2018 (the "SGIA"), which is attached hereto as Attachment 2, for WETT to provide transmission service to ENGIE's new collector substation.[4]

As of the date of this filing, all of the available bays at the Long Draw Switching Station are committed (either currently being used or having been allocated towards specific customers with signed interconnection agreements). As a consequence, the Long Draw Switching Station will have to be expanded to accommodate ENGIE's interconnection. WETT can expand by adding either 138 kV facilities or 345 kV facilities. With regards to this project, the original developer submitted the interconnection request to ERCOT for connection at 345 kV, but ultimately requested interconnection at 138 kV. The project was sold to ENGIE, who moved forward with the project at 138 kV. All of the studies performed were connecting at 138 kV and the facility study specifically includes all of the costs and equipment needed to interconnect at 138 kV. These studies went out for ERCOT review and no comments or objections were received. While the Long Draw Switching Station was initially constructed only at 345 kV consistent with CREZ planning at that time, the ability to expand was planned from the outset and the station was originally designed with 138 kV capability.[5] Since expansion is necessary to accommodate this generation in any event (whether at 138 kV or 345 kV), expanding the Long Draw Switching Station to accommodate the requested 138 kV interconnection as opposed to 345 kV offers advantages beyond simply meeting WETT's obligations to interconnect with ENGIE:

- Lower voltage transmission lines offer certain routing benefits in that they have smaller footprints and require less right-of-way, thereby reducing environmental impacts (and thus less land expense), allow for more flexibility in routing and responding to landowner requests, and cost less to build and maintain than higher voltage lines;

- Having 138 kV facilities in this area will not only enable the obligatory interconnection to ENGIE but also benefit the system as a whole by

[3] The 138 kV line (the "Project") exceeds 1 mile so WETT is requesting a CCN pursuant to 16 TAC § 25.101(b)(3). 16 TAC §§ 25.101(c)(2) and (c)(5)(A) except the need for a CCN amendment for the substation work and the less-than-one-mile line extension, although WETT provides information regarding those components herein.

[4] 16 TAC § 25.101(b)(3)(A) specifies that an economic cost-benefit study is not required in this scenario and that "great weight" will be given to written documentation that the transmission line is needed to interconnect a transmission service customer.

[5] In Docket No. 40606, WETT witness Bradley Ballard described the Long Draw 345 bays as the "initial" construction and noted the switching station locations were big enough to allow for future expansions "such as 138 kV yards," and WETT's discovery responses in that docket noted station configurations that allowed for additional positions as needed.

enabling future interconnection requests at 138kV: as noted above, a 138 kV feeder system is less expensive to build than a similar-length system built to accommodate 345 kV transmission. WETT has historically fielded a high number of interconnection requests generally, and has one other pending request at the Long Draw Switching Station for interconnection of a solar farm at 138 kV.

- Here, 138 kV can be used to bring additional resources to the grid without encroaching on the limited 345 kV interconnection paths into Long Draw, increasing the area export capability and system reliability; 345 kV access routes would require a great deal of clearance, which is inefficient given the existing facilities and land in this location;

- The impacted landowner has approved the line route presuming the narrower ROW and shorter structures associated with a 138 kV line; and

- 138 kV facilities may also offer reliability benefits, as they can more quickly be repaired/restored in the event of damage because of the lower cost of materials, and lesser need for specialized labor and equipment to effect repairs.

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 existing system configuration and location of the surrounding transmission facilities, alternatives to the Project are limited. Interconnections to alternative transmission facilities were considered. However, the next closest substation to ENGIE's location to would be the Faraday (Willow Creek) switching station near Gail, Texas, approximately 10 miles away. Similarly, no other transmission lines were significantly closer to ENGIE's location than WETT's, and connecting to another line would also require the installation of a new switching station at the junction, and the 138kV system in that area is already congested. Ultimately, these alternatives would be much less efficient to implement than the Project. The Project involves extension of the transmission facilities nearest to ENGIE's generating facility.

In addition, interconnection at 345 kV was considered, but since expansion would be required whether interconnection takes place at 345kV or 138kV, since ENGIE preferred the interconnection at 138 kV, and since the 138 kV facilities better

accommodate future interconnections in this area and offer the other benefits described above, interconnection at 345 kV was not considered an efficient or desirable alternative.

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 WETT's transmission system in the proximate area of the Project is attached as Attachment 3.

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.

WETT retained KP Environmental, Inc. ("KPE") to prepare the EA for the Project *See* Attachment 1. The objective of the EA was to provide information in support of this Application and to address the requirements of Public Utility Regulatory Act §§ 37.056(c)(4)(A)-(D), the PUCT CCN Application form, and 16 TAC § 25.101 as these apply to the Project.

The EA assesses the environmental effects that could result from the construction, operation, and maintenance of the Project. WETT provided KPE information regarding the project endpoints and potential route, the need for the project, engineering and design requirements, construction practices, and ROW requirements. KPE evaluated existing environmental conditions, including the human and natural resources that are located in the Project Study Area, and drafted the EA. Study Area selection, identification of constraints, and route assessment are specifically discussed within Section 2.0 of the attached EA. Ultimately, the route for the proposed line deemed most economical to build was agreed to by WETT and the landowner whose property is crossed by the proposed line; no other landowner approval is necessary, so extensive description of possible alternative routes within the Study Area was not needed. *See* 16 TAC § 25.101(b)(3)(B). As shown in the figures included in Appendix A to the EA, the agreed route runs relatively straight between the endpoints, with minor deviations to address any constraints created by the topography (such as traversing creeks and bluffs).

The EA may further be used in support of any additional federal, state, or local permitting activities that may be required for the Project.

To the extent engineering obstacles are encountered after Commission approval, the Project route may be modified to the extent necessary.

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 P.U.C. PROC. R. 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.

Not applicable; no public meeting or open house is required for this Project. Under 16 TAC § 22.52(a)(4), a public meeting is only required when 25 or more people are entitled to receive direct notice of the project. Here, there is only one landowner within 300 feet of the Project. WETT nonetheless worked with the impacted landowner and performed outreach to county and state officials.

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).

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.

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.

The requisite maps and aerial photographs are found at Figures 2-2 and 2-3 in the EA. Specifically, these figures depict over an aerial photograph: (1) the location of the Project, (2) the locations of all major public roads, including all federal and state roadways, (3) the locations of all known habitable structures on properties directly affected by the Project (none), and (4) the boundaries (approximate or estimated according to best available information) of all properties directly affected by the Project. No electronic installations, airstrips, irrigated pasture or cropland, parks and recreational facilities, historical and archeological sites, environmentally sensitive areas, or habitable structures are within relative proximity to the Project.

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.

Potentially required permits may include: Storm Water Pollution Prevention Plan ("SWPPP"), pedestrian cultural resources survey plan, potential US Army Corps of Engineers ("USACE") permits determined through consultation to be applicable under Section 401/404 and Section 10 Permit criteria, and U.S. Fish and Wildlife Service ("USFWS") permits determined to be applicable under the Endangered Species Act ("ESA"). Additional permits may also be required by Borden County. These permits have not yet been obtained, but would be obtained before construction begins, if required. *See* Section 2.2.4 of the EA.

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.

There are no known habitable structures in the Study Area or within 300 feet of the Project's proposed route. There is only one directly affected property owner apart from WETT.

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.

Review of Federal Communications Commission ("FCC") data identified no electronic installation of any kind within 10,000 feet of the Project's centerline. Because of the distance from the Project, no electronic installations are identified on Project maps. *See* Sections 3.6.6 and 4.6.6 of the EA.

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.

There are no airstrips, airports, or heliports within the indicated distances. Based on review of the aerial photography and data from the FAA and AirNav.com, the

nearest airport is the Lamesa Municipal Airport which is approximately 16 miles away. No indirect or direct impacts are anticipated and no slope analysis is required. Because of the distance from the Project, airports, airstrips, and heliports are not identified on Project maps. *See* Sections 3.6.5.2 and 4.6.5.2 of the EA.

KPE sent a consultation letter to FAA about the Project and received a response letter, included in Appendix B of the EA.

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.

Based upon aerial photography interpretation and field observations, there are no traveling irrigation systems within the Study Area, and therefore no descriptions or maps are required. *See* Sections 3.6.3 and 4.6.3 of the EA.

25. Notice:

Notice is to be provided in accordance with P.U.C. PROC. R. 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 that will be provided to the owner of the directly-affected land is included as Attachment 4. There is only one property owner that is directly affected by the Project. WETT has been working with the property owner throughout the development of this process.

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

A copy of the written notice to utilities, with attached maps, that will be provided to the utilities providing electric service within a five mile radius of the Project is included as Attachment 5. The following utilities will be provided the requisite notice on or before the filing date as required by PUCT rules:

- Big Country Electric Cooperative, Inc.
- Lyntegar Electric Cooperative, Inc.

- Sharyland Utilities, LP
- Texas Electric Services Co.

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/.

A representative copy of the written notice that will be provided to county authorities is included as Attachment 5. There are no municipalities located within five miles of the Project, so the following authority will be provided the requisite notice on or before the filing date as required by Commission rules:

- Borden County Judge Ross D. Sharp

Written notice will also be sent to the DoD Siting Clearinghouse upon filing of this Application. Attachment 5 will also be provided to the DoD Siting Clearinghouse at dodsitingclearinghouse@osd.mil.

In addition to these planned notices WETT will send, KPE has already sent a consultation letter and email to the DoD Siting Clearinghouse. The inquiry was received and the DoD requested GIS data of the Project. Such data was transmitted, and the DoD responded that the project will have minimal impact on military operations in the area.

KPE also sent consultation letters by mail and email to the following local officials and departments, and state and federal regulatory agencies:

Federal Agencies

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

State Agencies

- Texas Department of Transportation ("TxDOT")
  - Aviation Division
  - Environmental Affairs Division
  - Abilene District
- Texas General Land Office ("GLO")

- Texas Historical Commission ("THC")
- Texas Parks and Wildlife Department ("TPWD")
- Texas Water Development Board ("TWDB")
- Texas Commission on Environmental Quality ("TCEQ")

Regional Agencies

- Colorado River Municipal Water District
- Permian Basin Regional Planning Commission

County Agencies

- Borden County Officials (County Judge, County Commissioners, County Clerk, County Sheriff)

See Appendix B in the EA for copies of all the above correspondence.

D. Provide a copy of the notice that is to be published in newspapers of general circulation in the counties in which the proposed 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 *Borden Star*, a newspaper of general circulation in Borden County. A representative copy of this notice is included as Attachment 6. Proof of publication will be provided in the form of Publisher's Affidavits and tear sheets following publication of notice.

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

Not applicable.

26. Parks and Recreation Areas:

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

used to identify the parks and recreational areas. Locate the listed sites on a routing map.

National Park Service ("NPS") and TPWD data, along with aerial and topographic maps, were reviewed and no parks or recreational areas were located within 1,000 feet of the Proposed Route centerline. *See* Sections 3.6.2 and 4.6.2 of the EA. Therefore, no impacts to parks or recreational areas are anticipated, and no facilities are shown on maps.

KPE sent a consultation letter to TPWD about the Project and received a response letter. This correspondence is provided in Appendix B of the EA.

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.

A cultural resources review was conducted and found no historical or archeological sites within 1,000 feet of the proposed Route centerline. Therefore, no such sites are included on the maps and not lists have been created. *See* Sections 3.7.2, 3.7.3, and 4.7.1 of the EA.

KPE sent a consultation letter to the THC about the Project and received a response letter. This letter is provided in Appendix B of the EA. A pedestrian archeological survey will be required following issuance of the CCN and prior to construction to identify any previously unidentified cultural resources.

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 TAC §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 TAC §19.2(a)(21). Using the designations in 31 TAC §501.3(b), identify the type(s) of Coastal Natural Resource Area(s) impacted by any part of the route and/or facilities.

The 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 EA is included as Attachment 1. Section 3.4 of the EA, along with any tables and figures included therein, provides discussion of threatened and endangered species, including all information requested in this question. Section 5.0 of the EA provides a description of references and sources utilized to create the EA.

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.

As noted above, a consultation letter was provided to TPWD for review prior to filing this Application for the Project to solicit any comments that could be addressed as soon as possible. TPWD provided a response letter. This correspondence is included in Appendix B to the EA.

A copy of the EA will be provided to the TPWD for review within seven days following the filing of this application, as required herein. See Attachment 9 for a copy of the relevant letter of transmittal that will be sent to TPWD. An affidavit will be filed at the PUCT confirming that the letter and EA were sent to TPWD.

30. Affidavit

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

An affidavit is included as Attachment 8 to this Application.

31. List of Attachments

Attachment 1 – Environmental Assessment

Attachment 2 – Standard Generation Interconnection Agreement between WETT and ENGIE

Attachment 3 – Schematic of WETT's Transmission System in the Proximate Area of the Project

Attachment 4 – Landowner Notice

Attachment 5 –Utility, County Authority, and DoD Notice

Attachment 6 – Newspaper Notice

Attachment 7 – TPWD Notice

Attachment 8 – Affidavit

Attachment 1

Environmental Assessment

ENVIRONMENTAL ASSESSMENT FOR WIND ENERGY TRANSMISSION TEXAS LLC'S PROPOSED LONG DRAW 138kV TRANSMISSION LINE PROJECT IN BORDEN COUNTY, TEXAS

FEBRUARY 2019

Prepared for:

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APPENDIX C: STATUS AND RANK KEY FOR USE WITH SGCN AND RARE COMMUNITIES LIST

Acronyms and Abbreviations

APLIC	Avian Powerline Interaction Committee
AM	Amplitude Modulation
B.P.	Before Present
BEG	Bureau of Economic Geology
BGEPA	Bald and Golden Eagle Protection Act
CCN	Certificate of Convenience and Necessity
CFR	Code of Federal Regulations
DoD	United States Department of Defense
EA	Environmental Assessment
e.g.	exempli gratia (for example)
EMST	Ecological Mapping System of Texas
EO	Element Occurrence
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
et al	and others
etc.	et cetera
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FM	Frequency Modulation
GIS	Geographical Information System
GLO	Texas General Land Office
HTC	Historic Texas Cemeteries
i.e.	id est (that is)
kV	kilovolt
MW	Megawatt
MBTA	Migratory Bird Treaty Act
msl	mean sea level
NAIP	National Agricultural Imagery Program
NASS	National Agricultural Statistics Service
NESC	National Electrical Safety Code
NHD	National Hydrography Dataset

NOI	Notice of Intent
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OTHM	Official Texas Historic Marker
PUCT	Public Utility Commission of Texas
PURA	Public Utility Regulatory Act
ROW	Right-of-Way
RCT	Railroad Commission of Texas
RTHL	Recorded Texas Historic Landmarks
SGCN	Species of Greatest Conservation and Need
SWPPP	Stormwater Pollution Prevention Plan
TARL	Texas Archaeological Research Laboratory
TASA	Texas Archaeological Sites Atlas
TCEQ	Texas Commission on Environmental Quality
TxDOT	Texas Department of Transportation
THC	Texas Historical Commission
TXNDD	Texas Natural Diversity Database
TPDES	Texas Pollutant Discharge Elimination System
TPWD	Texas Parks and Wildlife Department
TWDB	Texas Water Development Board
USACE	United States Army Corp of Engineers
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
WETT	Wind Energy Transmission Texas, LLC
WHAB	Wildlife Habitat Assessment

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1.0 INTRODUCTION AND PROJECT OVERVIEW

1.1 Project Description

Wind Energy Transmission Texas, LLC (WETT) has been requested to and proposes to design and construct an approximately 1.8-mile long 138 kilovolt (kV) electric transmission line in Borden County, Texas, between a proposed 138kV expansion of its existing Long Draw 345kV high-voltage switching station (which is located adjacent to Farm-to-Market 1054/Vealmoore Road) and the proposed Long Draw Solar collector substation (which is being developed approximately 1.6 miles south of U.S. Highway 180 and 10 miles southwest of Gail, Texas) (**Figure 1-1 in Appendix A**). This proposed transmission line would be constructed as a single-circuit 138kV transmission line supported by monopole structures (**Figure 1-2 in Appendix A**). Additionally, WETT proposes to design and construct approximately 0.3 miles of new 345kV transmission line entirely on its own property to connect the existing Long Draw 345kV switching station to the proposed Long Draw 138kV expansion.

The routing of the proposed line was agreed to by WETT and the sole other landowner whose property is crossed by the proposed line. There are no habitable structures within 300 feet of the centerline of this 138kV line, so no other landowner approval was necessary to secure agreement for the routing. The route runs relatively straight between the endpoints, with minor deviations to address any constraints created by the topography (such as traversing creeks and bluffs).

KP Environmental, Inc. (KPE) was retained to conduct the routing and environmental analysis for the proposed Long Draw 138kV Transmission Line Project (Project) and prepare an Environmental Assessment (EA) to support WETT's application for a Certificate of Convenience and Necessity (CCN). This document provides information and addresses requirements of §37.056(c)(4)(A)-(D) of the Public Utility Regulatory Act (PURA), Public Utility Commission of Texas (PUCT) Procedural Rule §22.52(a)(4), the PUCT's CCN application form and PUCT Substantive Rule §25.101. This document may also be used in support of any additional federal, state, or local permitting activities that may be required.

KPE worked closely with WETT to obtain information on the Project description, need, construction practices, and right-of-way (ROW) requirements.

1.2 Purpose and Need

ENGIE Long Draw Solar, LLC (ENGIE) is developing a new 225 Megawatt (MW) solar generation facility in the area and plans to construct, own, and operate their own collector substation northeast of the existing Long Draw 345kV switching station in Borden County, Texas. ENGIE requested and ERCOT studied the interconnection at 138kV.

In order to provide transmission facilities necessary to interconnect ENGIE's new Long Draw Solar collector substation and generation facility to the electric grid, WETT proposes to construct, own, and operate approximately 1.8 miles of 138kV transmission line connecting the new collector substation to the proposed 138kV expansion of the existing Long Draw 345kV switching station. WETT explains that the 138kV facilities will also be beneficial because it has multiple pending requests at the Long Draw Switching Station, including two other solar farms under development in the immediate vicinity that plan to interconnect at 138kV.

1.3 Description of Proposed Facilities and Construction

1.3.1 Transmission Line Design

WETT proposes to use self-supporting, single-circuit monopole structures for the Project (see **Figure 1-2 in Appendix A**). All structures will be designed in compliance with applicable statutes, the appropriate edition of the National Electrical Safety Code (NESC), and WETT's standard design practices. The typical structure height will be 80 feet, but may vary depending upon terrain or other site-specific engineering requirements. This structure design is sized to a 138kV line. **Table 1-1** presents additional detail regarding the proposed transmission line design criteria.

Table 1-1 - Conductor and Structure Specifications

Conductor Size and Type	1272 Bittern
Number of Conductors Per Phase	1
Continuous Summer Static Current Rating (A)	1100 A
Continuous Summer Static Line Capacity at Operating Voltage (MVA)	260 MVA

Continuous Summer Static Line Capacity at Design Voltage (MVA)	260 MVA
Type and Composition of Structures	Single-circuit steel monopole
Height of Typical Structures	80 feet

1.3.2 Right-of-Way

The proposed ROW width for this Project will typically be 100 feet (50 feet on both sides of the transmission line centerline). Additional ROW may be required to accommodate line angle and dead-end structures. Based on certain site-specific conditions, ROW width may also vary somewhat to accommodate topographic conditions or other site-specific construction issues.

Temporary construction easements or separate access easements may also be required during construction and ongoing operation and maintenance of the facilities. Generally, the ROW will be unfenced, and landowners will have access to easement areas located on their land. Where existing fences cross the ROW or restrict access to the ROW, gates will be installed. The ROW will be maintained, as required, to allow access for the construction, operation, and maintenance of the transmission line.

Prior to initiating construction-related activities, WETT will secure easements from private landowners and managers of public lands whose properties would be crossed by the transmission line route. WETT will maintain contact with owners and relevant stakeholders of private land, as well as managers of public lands along the ROW, in advance of and during construction activities that could affect their property, business, or operations.

Also prior to initiating construction-related activities, detailed engineering design, biological resource (waters of the United States, potential habitat for federally- and state-listed threatened and endangered species), and cultural resource surveys will be conducted of the construction ROW and additional temporary work areas, where required. Results of surveys will be used to complete engineering design plans, as well as develop applicable environmental and resource permit applications and clearance requests. WETT will obtain required environmental resource permits and clearances prior to initiation of construction.

The majority of the construction process will be accomplished using conventional construction methods, which typically include ROW surveys, clearing, marking, transmission structure assembly and erection, conductor stringing, and restoration. The entire process will be coordinated so as to limit the time of disturbance to an individual area, to the best of WETT's ability, thereby minimizing the potential for erosion and the loss of normal use.

1.3.3 Clearing

With the exception of low growing groundcover, all trees, brush, and undergrowth within the ROW will be removed. For areas requiring hand clearing, vegetation will be cut level with the ground. Tree stumps will be cut to not exceed two inches above ground level. In the event that stumps are located on hillsides or uneven ground, stumps will be cut such that a mowing machine can pass over the ROW without striking them. Trees overhanging any part of the ROW will be trimmed such that the ROW is clear of all woody vegetation from the ground up. Additionally, any tree located in a fence line that has a diameter greater than four inches will be cut even with the top of the fence.

The construction ROW and temporary extra work areas will be cleared and graded, where necessary, to provide a relatively level surface for installation of transmission structures and the movement of construction equipment. Brush, trees, roots, and other obstructions such as large rocks and stumps will be cleared from the construction work areas where needed (such as at structure locations) and relocated on the landowner's property if allowed or transported to an approved disposal area. Non-woody vegetation, such as crops and grasses, will be mowed to avoid damage to root systems in areas where grading is not required.

To protect properties located adjacent to the Project ROW, any trees that need to be removed will be felled parallel to and within the ROW where feasible. Timber will be removed from the ROW. Based on coordination with the landowner, any marketable timber will be cut to standard lengths and stacked at the edge of the ROW for landowner use or for removal. Cleared woody debris will be chipped for the landowner or otherwise disposed. Any burning will be conducted in a manner so as to minimize fire hazard and prevent heat damage to surrounding vegetation. All clearing activities will be in accordance with local restrictions, regulatory requirements, and landowner preference.

WETT will work to minimize the adverse effects of electric transmission line construction on the

natural environment. WETT will utilize the following practices to help meet this goal:

- Clearing will be performed in a manner that will maximize, to the extent practicable, the preservation of natural habitat and the conservation of natural resources.
- The time and method of ROW clearing will take into account soil stability, the protection of natural vegetation, sensitive habitats, the protection of adjacent resources such as natural habitat for plants and wildlife, and the prevention of silt deposition in watercourses to the extent practicable.
- WETT will use the most efficient and effective method to remove undesirable plant species. Hydro axes and flail mowers may be used in clearing operations where such use will preserve the cover crop of existing vegetation.
- If herbicides are deemed appropriate, they will be applied and handled in accordance with the product manufacturers' published recommendations and specifications and as directed by appropriate qualified staff.
- Trees and brush will be cleared, where needed, unless WETT accommodates specific landowner requests that do not create operations and maintenance concerns or conflict with North American Electric Reliability Corporation (NERC) reliability standards.

1.3.4 Structure Assembly and Erection

Foundations for the monopole structures will be completed before erecting the structures. If the monopole is to be directly embedded, then a single hole will be augured into the ground at each structure location. Once the structure has been placed, the foundation will be filled with concrete, native material or other approved material to hold the structure securely in place.

If the pole is to have an anchor bolted foundation, a hole will be augured into the ground at each structure location, an anchor bolt cage will be placed in addition to steel rebar to reinforce the foundation, and the hole will be filled with concrete. Depth and diameter of the foundation will vary depending on the design of the structure specific to that location.

1.3.5 Conductor Stringing

After transmission structures have been erected along a section of the route, the conductors and shield wires will be installed via a tensioning system. First a rope will be threaded through the stringing blocks or dollies for each conductor and shield wire. Conductor and shield wires will then be pulled by the ropes and held tight by a tensioner to keep the wires from coming in contact with the ground and other objects that could be damaging to the wire. When the wire is tensioned to the required sag, the wire will be taken out of the blocks and placed in the suspension and dead-end clamps for permanent attachment. When construction is complete, all construction debris will be removed and the ROW will be allowed to naturally revegetate.

1.3.6 Access Roads

WETT will utilize existing roads to the extent possible to facilitate equipment and material access along the Project route. Project-related use of highways and other types of existing public roadways will typically not require improvements or special authorizations. However, WETT will likely also require new permanent and temporary access roads (private roads, drives, lanes, and other roads) of varying lengths and construction. Some roads may require upgrades to prevent rutting and to support the expected loads and size of construction-related equipment and materials. Upgrades that may be required could include grading, placement of gravel for stability, topping with equipment matting, or clearing of overhead vegetation. Similarly, construction of any new access roads will entail grading, compaction, and placement of gravel. Following construction, all temporary access roads will be returned to preconstruction uses unless other arrangements are agreed upon with landowners.

For those areas requiring construction of permanent access roads to provide a means of ingress and egress to the transmission line ROW for ongoing operations and maintenance activities, such roads will generally consist of a 15- to 25-foot-wide roadway of the length required to provide access along the ROW and to the nearest public roadway. Permanent access roads will be routed through previously cleared or disturbed areas to the greatest extent practicable.

The final location of all Project-related access roads will be determined following certification of a final route by the PUCT and review by WETT's construction contractor.

2.0 METHODOLOGY FOR ROUTE SELECTION

The objective of this study was to evaluate the proposed transmission line route for the Project. The Project Team used a comprehensive methodology to evaluate the transmission line route in accordance with § 37.056(c)(4)(A)-(D) of PURA, the PUCT's application form, and PUCT Substantive Rule § 25.101.

Ultimately, as previously noted, the route for the proposed line deemed most economical to build was agreed to by WETT and the landowner whose property is crossed by the proposed line; as there are no habitable structures within 300 feet of the centerline of this 138kV line, no other landowner approval was necessary to secure agreement for the routing, and extensive description of possible alternative routes was not necessary with full landowner agreement. As shown in the figures included in Appendix A, the agreed route runs in a nearly straight line between the endpoints, with minor deviations to address constraints created by the topography (such as traversing creeks and bluffs). Turns were relatively easy to accommodate for this route because the line is 138kV and is to be constructed on monopoles, meaning that significantly larger and more costly turning structures are not necessary as they might be on a higher voltage line or using different support structures. Such routing minimizes both cost and environmental impact of the line.

The following sections provide a description of the process, which consisted of Study Area delineation, data collection, and constraints mapping.

2.1 Study Area

The first step in the evaluation of the transmission line route was to select a Study Area large enough to adequately evaluate the Project in support of WETT's CCN Application and establish boundaries and limits for the information gathering process (i.e., identifying environmental and land use constraints).

The Project Team reviewed U.S. Geological Survey (USGS) 1:24,000 topographic maps and aerial photography (National Agriculture Imagery Program [NAIP], 2016), National Wetland Inventory (NWI) maps, and identified existing land use features in the Project vicinity. In November 2018, Project Team representatives delineated the preliminary Study Area boundary within 1,000 feet of

the proposed transmission line route based upon a preliminary review of cultural and natural features, and in accordance with the PUCT's CCN application form (**Figure 2-1 in Appendix A**).

2.2 Data Collection

Data was collected to identify routing opportunities and constraints within the Study Area. The Project Team solicited and collected Geographical Information System (GIS) data layers; collected data from various federal, state, and local officials and agencies; conducted literature, file, and record reviews; performed field reconnaissance surveys; reviewed a variety of maps; and captured recent aerial photography.

For transmission lines, opportunities are identified as existing linear facilities or physical features providing advantageous routing possibilities characterized by the potential to parallel a ROW or corridor. Examples of opportunities include existing transmission lines and other utility corridors, transportation corridors, and other linear features such as property lines.

Constraints are those environmental criteria including points, locations, areas, or features that should be taken into account because of their associated routing, construction or additional licensing/permitting procedures. Routing constraints include items such as habitable structures, hospitals, schools, and sensitive areas such as playa lakes, protected species' habitat, and cultural resources.

The Project Team identified routing opportunities and constraints within the Study Area, specifically factors referred to as "routing constraints" in the PUCT CCN Application Form. Those factors are discussed in this EA and also in the following sections of the PUCT CCN Application Form:

- Section 17. Routing Maps;
- Section 19. Habitable Structures;
- Section 20. Electronic Installations;
- Section 21. Airstrips;
- Section 22. Irrigation Systems;
- Section 24. Parks and Recreation Areas;

- Section 25. Historical and Archeological Sites; and
- Section 27. Environmental Impact.

2.2.1 Collection of GIS Data

Data collected to identify routing opportunities and constraints was assimilated into a GIS database that integrates, stores, edits, analyzes, shares, and displays geographic information. A preliminary inventory of the occurrence of opportunities and constraints within the Study Area was developed during data acquisition and was used to develop the GIS database and map features. Publicly available data sources were utilized to the extent feasible and are referenced at the end of this document.

2.2.2 Field Reconnaissance

The Project Team conducted field reconnaissance of the Study Area in October and November 2018. The objective was to review the land use patterns, topography, existing transmission lines, major roadways, major constraints, and the existing environmental setting of the Study Area. The Project Team also verified information and features contained in the GIS database and on the aerial photography for the Study Area. Slight adjustments to the route were made based on information gathered during field reviews.

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

To solicit data pertinent to the proposed Project, the Project Team developed a list of officials to be mailed a consultation letter. The purpose of the letter was to inform various local officials and departments, and state and federal regulatory agencies of the proposed Project and give them an opportunity to provide information pertinent to the Project evaluation. The Project Team utilized Borden County websites to identify local officials. Consultation letters were mailed on December 4, 2018 to the following local officials and departments, and state and federal regulatory agencies (see **Appendix B** for copies of correspondence).

Federal Agencies

- Federal Aviation Administration, Southwest Region (FAA)

- Federal Emergency Management Agency (FEMA)
- Natural Resources Conservation Service (NRCS)
- U.S. Army Corps of Engineers, Fort Worth District (USACE)
- U.S. Department of Agriculture (USDA)
- U.S. Department of Defense (DoD)
- U.S. Environmental Protection Agency (EPA)
- U.S. Fish and Wildlife Service (USFWS)

State Agencies

- Texas Department of Transportation (TxDOT)
    - Aviation Division
    - Environmental Affairs Division
    - Abilene District
- Texas General Land Office (GLO)
- Texas Historical Commission (THC)
- Texas Parks and Wildlife Department (TPWD)
- Texas Water Development Board (TWDB)
- Texas Commission on Environmental Quality (TCEQ)

Regional Agencies

- Colorado River Municipal Water District
- Permian Basin Regional Planning Commission

County Agencies

- Borden County Officials (County Judge, County Commissioners, County Clerk, County Sheriff)

In addition to solicitation from agencies, the Project Team performed a local, state, and federal file and records review, a review of published literature, and a review of a variety of maps including recent aerial photography (NAIP, 2016), USGS topographic maps, TxDOT county highway maps, and NWI maps.

2.2.4 Required Permits

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

- 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.
- A pedestrian cultural resources survey plan will be developed with the THC for the proposed Project.
- Consultation with the USACE will occur following the Commission's approval of this Application to determine appropriate requirements under Section 401/ 404 and Section 10 Permit criteria.
- Consultation with the USFWS will occur following the Commission's approval of this Application to determine appropriate requirements under the Endangered Species Act (ESA).

2.3 GIS Mapping

The data and information gathered during the data collection activities were used to develop an environmental and land use constraints map (**Figures 2-2 and 2-3 in Appendix A**). The constraints map, public maps, aerial photography, and other research materials were used to analyze the proposed transmission line route within the Study Area. As demonstrated on **Figures 2-2** and **2-3**, there are very few constraints in this Study Area.

2.4 Proposed Transmission Line Route Assessment

The Project Team initiated a detailed evaluation of the route and considered a variety of environmental and land use criteria. The limited number of constraints were assessed to determine the best route to minimize impacts to land use and environmental constraints, considering the ROW width and opportunity for turns afforded by the Project's voltage and structure selection. The number or quantity of each factor was primarily determined by reviewing recent (2016) aerial photography, USGS topographic maps, and previously collected GIS data.

Potential environmental and land use impacts of the route are addressed in **Section 4.0** of this EA.

3.0 ENVIRONMENTAL SETTING OF THE STUDY AREA

3.1 Physiography and Geology

The Study Area is within the North-Central Plains physiographic region of Texas (Bureau of Economic Geology [BEG], 1996). The topography of the North-Central Plains forms low north-south ridges (questas), and ranges in elevation from 900 to 3,000 feet above mean sea level (msl) (BEG, 1996). Study Area elevations range from approximately 2,510 to 2,610 feet above msl (**Figure 3-1 in Appendix A**).

The Project Study Area is underlain with Alluvium (Qal), Quaternary deposits, undivided (Qu), and Dockum Group, undivided (TRd) geological formations. Alluvium formations consist of alluvium and low terrace deposits along streams and contain sand, silt, clay, and gravel. Quaternary deposits, undivided formations consist of sand, silt, clay and gravel that are locally indurated with calcium carbonate (caliche). They include point bar, natural levee, stream channel, sand dune, terrace, alluvial fan, landslide bolson and playa deposits. Dockum Group, undivided formations consist of shale, sandstone, and gravel. They are mostly miceous, thinbedded, variegated shale deposits with a thickness up to 300 to 400 feet (USGS, 2015).

3.2 Soils

3.2.1 Soil Associations

Borden County soil survey data available from the NRCS (NRCS 2018) was used to identify and prepare the following descriptions of the soil resources found in the Study Area. Soil types are depicted on **Figure 3-2 in Appendix A.**

Colorado and Spur soils, 0 to 1 percent slopes, frequently flooded (Co): The Colorado series consists of very deep, well drained, moderately permeable soils that formed in calcareous loamy alluvium. These nearly level soils occur on flood plains. Slope ranges from 0 to 1 percent. The Spur series consists of very deep, well drained, moderately permeable soils that formed in calcareous, loamy alluvium. These nearly level to very gently sloping soils occur on floodplains or draws on

dissected plains. Slope ranges from 0 to 2 percent. Colorado and Spur soils consist of approximately 116.4 acres or 20.8% of the Study Area.

Dermott gravelly fine sandy loam, 3 to 20 percent slopes (Pt): The Dermott series consists of soils that are very shallow and shallow to a fractured and weathered petrocalcic horizon. They are well drained and moderately permeable soils that formed in loamy residuum derived from the Ogallala Formation. These soils can be found on gently and steeply sloping hills and ridges. Slope ranges from 3 to 30 percent. Dermott series soils consist of approximately 12.6 acres or 2.2% of the Study Area.

Estacado clay loam, 0 to 1 (EsA) and 1 to 3 percent (EsB) slopes: The Estacado series consists of very deep, well drained, moderately slowly permeable soils that formed in calcareous, loamy eolian deposits of the Blackwater Draw Formation of Pleistocene age. These soils can be found on nearly level and gently sloping plains, and playa slopes. Slope ranges from 0 to 5 percent. Estacado series soils consist of approximately 68.1 acres or 12.2% of the Study Area.

Knoco silty clay (Ba): The Knoco series consists of very shallow and shallow, well drained, very slowly permeable soils that formed in residuum weathered from claystone over dense noncemented claystone bedrock of Permian age. These very gently sloping to very steep soils occur on interfluves, side slopes and erosional footslopes on dissected plains. Slopes range from 1 to 60 percent. Knoco series soils consist of approximately 17.8 acres or 3.2% of the Study Area.

Posey loam, 1 to 3 percent slopes (PsB): The Posey series consists of very deep, well drained, moderately permeable soils that formed in calcareous, loamy eolian deposits from the Blackwater Draw Formation of Pleistocene age. These soils can be found on nearly level and strongly sloping plains, playa slopes, and draws. Slope ranges from 0 to 12 percent. Posey series soils consist of approximately 59.0 acres or 10.6% of the Study Area.

Spur clay loam, 0 to 1 percent slopes, occasionally flooded (Sp): The Spur series consists of very deep, well drained, moderately permeable soils that formed in calcareous, loamy alluvium. These nearly level to very gently sloping soils occur on floodplains or draws on dissected plains. Slope ranges from 0 to 2 percent. Spur clay loam soils consist of approximately 69.9 acres or 12.5% of the Study Area.

Stamford clay, dry, 1 to 3 percent slopes (StB): The Stamford series consists of moderately deep, well drained, very slowly permeable soils that formed in calcareous clayey alluvium over residuum derived from shale and siltstone. These nearly level to gently sloping soils occur on hillslopes and pediments on dissected plains. Slopes range from 0 to 5 percent. Stamford series soils consist of approximately 10.5 acres or 1.9% of the Study Area.

Vernon-Dermott complex, 2 to 30 percent slopes (VpF): The Vernon series consists of moderately deep over claystone bedrock, well drained, very slowly permeable soils that formed in residuum derived from noncemented claystone bedrock or dense clay of Permian age. These very gently sloping to steep soils occur on hillslopes, pediments, and escarpments on dissected plains. Slope ranges from 1 to 45 percent. The Dermott series consists of soils that are very shallow and shallow to a fractured and weathered petrocalcic horizon. They are well drained and moderately permeable soils that formed in loamy residuum derived from the Ogallala Formation. These soils can be found on gently and steeply sloping hills and ridges. Slope ranges from 3 to 30 percent. Vernon-Dermott complex soils consist of approximately 150.0 acres or 26.8% of the Study Area.

Weymouth-Vernon complex, 1 to 3 percent slopes (WvB): The Weymouth series consists of moderately deep, well drained, moderately permeable soils formed in calcareous, loamy and clayey alluvium and/or colluvium over dense, noncemented mudstone bedrock of Permian or Triassic age. These gently to strongly sloping soils occur on side slopes of hillslopes on dissected plains. Slope range from 1 to 15 percent. The Vernon series consists of moderately deep over claystone bedrock, well drained, very slowly permeable soils that formed in residuum derived from noncemented claystone bedrock or dense clay of Permian age. These very gently sloping to steep soils occur on hillslopes, pediments, and escarpments on dissected plains. Slope ranges from 1 to 45 percent. Weymout-Vernon complex soils consist of approximately 54.7 acres or 9.8% of the Study Area.

3.2.2 Soil Corrosivity

According to the NRCS, soil corrosivity pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if this combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil

layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer. For concrete, the risk of corrosion is also expressed as "low," "moderate," or "high," and is based on soil texture, acidity, and amount of sulfates in the saturation extract. Per NRCS review, all of the soils in the Study Area are classified as having "low" corrosivity to concrete.

3.2.3 Prime Farmland

As defined in 7 Code of Federal Regulations [CFR] § 657.5, prime farmland soils are those soils that have the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and are also available for these uses (the soil's use could be cropland, pasture, forest land, or other land, but not urban built-up or water). These soils have the 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. In general, prime farmland soils have adequate and dependable precipitation, a favorable temperature and growing season, acceptable acidity or alkalinity, permeability to water and air, and few or no surface stones. Prime farmland soils are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

According to the NRCS, the only soil series within the Study Area that meets the prime farmland criteria is the Spur clay loam, 0 to 1 percent, occasionally flooded. This soil type comprises approximately 69.9 acres or 12.6% percent of the Study Area. The NRCS does not consider electric transmission line installation to be a conversion of prime farmlands because the lines do not significantly restrict the use of the land for agriculture (Kiniry 2009).

3.3 Water Resources

3.3.1 Surface Water/Floodplains

According to the TWDB, the Study Area is located within the Colorado River Basin (TWDB, 2018a). According to the USGS' National Hydrography Dataset (NHD), Tobacco Creek and three unnamed streams are located within the Study Area (USGS, 2010). All of these water features are listed as

intermittent streams. These are presented on **Figure 3-3 in Appendix A.**

None of the streams within the Study Area are specifically classified under the 2000 Texas Surface Water Quality Standards (Texas Administrative Code [TAC] Title 30 §307) (TCEQ 2000). For these unclassified waters, the presumed uses are contact recreation and aquatic life (TCEQ 2000). Unclassified perennial waterbodies are afforded a high aquatic life use classification, while intermittent or ephemeral waterbodies are presumed to have limited or no aquatic life use, depending on the presence of perennial pools.

The TPWD designates Ecologically Significant Stream Segments for waters that display unique ecological value based on biological function, hydrologic function, riparian conservation areas, water quality, aquatic life, aesthetics, or habitat for threatened or endangered species. There are no Ecologically Significant Stream Segments designated by the TPWD (TPWD 2007) within the Study Area.

There also are no waterbodies listed in the Nationwide Rivers Inventory (National Park Service [NPS] 2009), or National Wild and Scenic Rivers (National Wild and Scenic Rivers 2010) within the Study Area.

FEMA has not conducted a detailed floodplain analysis for Borden County (FEMA, 2018); therefore, floodplain data for the Study Area are not available.

3.3.2 Groundwater/Aquifer

The Study Area is not located within any major or minor aquifers (TWDB, 2007). The nearest aquifer is the Ogallala Aquifer, which is located approximately three miles to both the north and south of the Study Area. The Ogallala Aquifer is the largest aquifer in the United States and consists of sand, gravel, clay, and silt and has a maximum thickness of 800 feet. The freshwater saturated thickness averages 95 feet. Water quality of the Ogallala Aquifer varies based on geographic location. Water to the north of the Canadian River is generally fresh, with total dissolved solids typically less than 400 milligrams per liter. Water quality diminishes to the south where large areas contain total dissolved solids greater than 1,000 milligrams per liter. In addition, naturally occurring arsenic, fluoride, and radionuclides occur in excess of primary drinking water standards

(TWDB, 2011).

The TWDB Groundwater Database recorded no groundwater wells within the Study Area (TWDB, 2018). The nearest documented groundwater well is located approximately two miles southwest of the Project. No springs or seeps are recorded in the Study Area.

3.3.3 Wetlands

Wetlands within the Study Area may support distinct communities of wildlife species, along with providing flood control, sediment stabilization, erosion control, nutrient removal, groundwater recharge, and other important functions. The wetlands mapped by the NWI in the Study Area are riverine and fresh emergent wetlands (USFWS, 2008) are presented on **Figure 3-3 in Appendix A.**

One of the emergent wetlands in the Study Area is an isolated wetland associated with a depression, playa, or small pond. The other emergent wetlands are associated with the floodplains of the streams in the Study Area.

Emergent wetlands in the Study Area mapped by the NWI are typically dominated by persistent vegetation and have hydrology that is either seasonally or temporarily flooded. Natural emergent wetland communities in the Study Area occur at the borders of lakes and ponds, and in riparian areas and sloughs along streams and rivers (NatureServe 2008). Vegetation characteristic of the emergent wetlands includes cattails (*Typha* spp.), rushes (*Juncus* spp.), sedges (*Carex* spp.), bulrushes (*Schoenoplectus* spp.) pondweeds (*Potamogeton* spp.), smartweeds (*Polygonum* spp.) and canarygrasses (*Phalaris* spp.) (NatureServe 2008). Emergent wetlands in isolated depressions may be associated with playa lakes; these areas typically contain species such as spikerushes (*Eleocharis* spp.), foxtail barley (*Hordeum jubatum*), Pennsylvania smartweed (*Polygonum pensylvanicum*), golden tickseed (*Coreopsis tinctoria*), western wheatgrass (*Pascopyrum smithii*), and buffalograss (*Buchloe dactyloides*) (NatureServe 2008).

3.4 Ecology

3.4.1 Vegetation

The Study Area falls within the Caprock Canyons, Badlands, and Breaks Level IV Ecoregion of the Southwestern Tablelands Level III Ecoregion of Texas (EPA 2012). The Southwestern Tablelands Level III Ecoregion is described as red hued canyons, mesas, badlands, and dissected river breaks and a low percentage of cropland. A large portion of this region consists of sub-humid grassland and semi-arid rangeland. Natural vegetation in this region include grama-buffalo grass with some mesquite-buffalo grass in the southeast, shinnery (midgrass prairie with low oak brush) along the Canadian River, and juniper-scrub oak-midgrass savanna on escarpment bluffs.

The Caprock Canyons, Badlands, and Breaks Level IV Ecoregion includes steep canyons, escarpments, rounded badlands, and dissected river breaks, along with intermittent spring fed streams. The vegetation cover that occurs in this ecoregion consists of redberry junipers (*Juniperus pinchotii*), skunbush sumac (*Rhus aromatica*), mountain mahogany (*Cercocarpus montanus*), plum (*Prunus* spp.), grape (*Vitis* spp.), and clematis (*Clematis* spp.) along the rimrock and cliff faces of the escarpments. Honey mesquite (*Prosopis glandulosa)* is found along the flat valley floors with Mohr shin oak (*Quercus mohriana*) and Harvard oak (*Q. havardii*) found along the benches and slopes. Cottonwood (*Populus* spp.), willow (*Salix* spp.), hackberry (*Celtis* spp.), and big bluestem grasses (*Andropogon gerardii*) with elms (*Ulmus* spp.) and alien saltcedars (*Tamarix* spp.) comprise the riparian vegetation in the ecoregion (Griffith G. E., Bryce, Omernik, & Rogers 2007).

According to the TPWD's Ecological Mapping Systems of Texas (EMST), the Study Area is comprised of the following vegetation types: Barren; High Plains: Floodplain Deciduous Shrubland; High Plains: Floodplain Hardwood – Juniper Forest; High Plains: Floodplain Herbaceous Vegetation; High Plains: Floodplain Juniper Shrubland; High Plains: Mesquite Shrubland; High Plains: Riparian Deciduous Shrubland; High Plains: Riparian Herbaceous Vegetation; High Plains: Shortgrass Prairie; Native Invasive: Mesquite Shrubland; Rolling Plains: Breaks Deciduous Shrubland; Rolling Plains: Mixedgrass Prairie; and Urban Low Intensity. Although the Study Area contains numerous vegetation types, the majority (approximately 81%) is comprised by the following three types of vegetation: Native Invasive: Mesquite Shrubland (44%); High Plains: Floodplain Deciduous

Shrubland (22%); and Rolling Plains: Mixedgrass Prairie (15%). Vegetation types are depicted on **Figure 3-4 in Appendix A.**

Native Invasive: Mesquite Shrubland vegetation type is often dominated by honey mesquite (*Prosopis glandulosa*), but species such as huisache (*Acacia farnesiana*), sugar hackberry (*Celtis laevigata*), Ashe juniper (*Juniperus ashei*), lotebush (*Ziziphus obtusifolia*), brasil (*Condalia hookeri*), cedar elm (*Ulmus crassifolia*), agarito (*Mahonia trifoliolata*), winged elm (*Ulmus alata*), sumacs. (*Rhus* spp), Texas persimmon (*Diospyros texana*), common persimmon (*Diospyros virginiana*), granjeno (*Celtis ehrenbergiana*), and Lindheimer pricklypear (*Opuntia engelmannii* var. *lindheimeri*) may also play an important role. Trees such as plateau live oak (*Quercus fusiformis*), coastal live oak (*Quercus virginiana*), or post oak (*Quercus stellata*) can form a sparse canopy (Elliott et al 2014).

High Plains: Floodplain Deciduous Shrubland vegetation type consists of shrubland on floodplain and dominant species include: mesquite (*Prosopis glandulosa*); black willow (*Salix nigra*); western soapberry (*Sapindus saponaria* var. *drummondii*); lotebush (*Ziziphus obtusifolia*); saltcedar (*Tamarix spp.*); and/or sugar hackberry (*Celtis laevigata*).

Rolling Plains: Mixedgrass Prairie is a grass land that typically occupies loam, clay loams, or sandy loams. It is dominated by species such as Texas wintergrass (*Nassella leucotricha*), little bluestem (*Schizachyrium scoparium*), silver bluestem (*Bothriochloa laguroides* sspp. *torreyana*), and sideoats grama (*Bouteloua curtipendula*).

3.4.1.1 Endangered, Threatened and Species of Greatest Conservation Need 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. Proposed species are those that have been formally submitted for official listing as endangered or threatened but have yet to be so designated. In addition, the USFWS has identified Candidate species, which are listed as those species for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support their being listed as either endangered or threatened and are likely to be listed in the foreseeable future.

Native animals or plants designated as a Species of Greatest Conservation Need (SGCN) are generally those that are declining or rare and in need of attention to recover or to prevent the need to list under state or federal regulation. Lists of SGCN were developed for Texas Parks and Wildlife Department's (TPWD) through expert consultation and public feedback. Texas hosts well over 1,300 species that are considered to be SGCN. These species are the focus of TPWD's Texas Conservation Action and guide the department's nongame conservation efforts.

Information was obtained from TPWD's Texas Natural Diversity Database (TXNDD) on November 21, 2018 (TPWD 2018a), USFWS Information for Planning and Consultation (IPaC) website on November 16, 2018 (USFWS 2018) and from the TPWD Wildlife Habitat Assessment (WHAB) Program database on December 5, 2018 (TPWD 2018b), concerning the occurrence and location of state and federally listed plant species and SGCN in the Study Area. **Table 3-1** lists plant species considered by USFWS and TPWD to be endangered, threatened, SGCN or rare within a geographic range within Borden County.

Currently, no plant species are listed by the USFWS or TPWD as endangered or threatened within the Study Area. There were two plant species listed as SGCN with potential to occur within the Study Area, Jones' selenia (*Selenia jonesii*) (TPWD 2018a), and Cory's evening-primrose (*Oenothera coryi*), (TPWD 2018b). Jones' selenia has been listed as an element of occurrence (EO) under the TXNDD within the Sandy Creek and Long Draw USGS Quadrangles. These two species are explained below.

Jones' selenia

Jones' selenia is listed as a SGCN but has no federal or state regulatory listing. TPWD ranks SGCN in order to account for abundance, stability and threats. Jones' Selenia has a G3 and S3 SGCN Golbal and state conservation status rank. A status rank of G3/S3 is described as "Vulnerable — Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation." (TPWD 2011).

Jones' selenia is a facultative wetland annual forb, which usually occurs in wetlands but can occur in uplands such as grassland habitats and is endemic to Texas (USDA 2018). Due to the potential

presence of suitable habitat (see **Section 3.4.1),** there is potential for this species to occur within the Study Area.

Cory's evening-primrose

Cory's evening-primrose is listed as a SGCN but has no federal or state regulatory listing and has a G3 and S3 SGCN Global and State conservation status rank as well. Cory's evening-primrose is a perennial, typically located in calcareous prairies in the Plains Country and Savanna/Open Woodland of north Texas and in the Panhandle. Due to the potential presence of suitable habitat (see **Section 3.4.1**), there is potential for this species to occur within the Study Area.

Table 3-1 – Endangered, Threatened, and Rare Plants of Potential Occurrence in Borden County[1,2]

Common Name	Scientific Name	USESA	SPROT	SGCN		Potential for Occurrence in the Study Area
				Global	State	
Jones' selenia	*Selenia jonesii*	N/A	-	G3	S3	Moderate potential to occur in grassland habitat adjacent to ephemeral streams or near natural emergent wetland communities in the Study Area.
Cory's evening-primrose	*Oenothera coryi*	N/A	-	G3	S3	Moderate potential to occur within Study Area.

[1] Source: TPWD, 2018; USFWS, 2018; USESA – U.S. Endangered Species Act - Federal protection/listing status. SPROT - Subnational (e.g. state) protection/listing status. SGCN - Species of Greatest Conservation Need. See Appendix C. definitions of Status and Rank. "-"indicates a species listed as "Rare" by TPWD, this listing carries no regulatory meaning; N/A – indicates a species that is not recognized as a candidate, threatened or endangered species.

3.4.2 Fish and Wildlife

The Study Area is located in the southwestern portion of the Kansan Biotic Province (Blair, 1950). The Kansan Biotic Province is unique in that it has a mixture of vegetation similar to other biotic provinces but a relatively large number of endemic urodele amphibian species inhabit this biotic province. Fifty-seven (57) species of mammals, 36 snake species, 16 lizard species, 15 anuran species (frogs and toads), five urodele species, and one land turtle species (the ornate box turtle, *Terrapin ornate*) are endemic within this province (Blair, 1950). It should be noted that these numbers are likely to have changed due to taxonomic revisions over the last half-century. Vertebrate species with the potential to inhabit the Study Area are based on ranges that intersect the proposed transmission line Project and are included in **Tables 3-2** through **3-5** below.

Table 3-2 – Lizard Species with Potential to Inhabit Study Area

Common Name	Scientific Name
Texas banded gecko	*Coleonyx brevis*
Eastern collared lizard	*Crotaphytus collaris collaris*
Long-nosed leopard lizard	*Gambelia wislizenii*
Greater earless lizard	*Cophosaurus texanus*
Spot-tailed earless lizard	*Holbrookia lacerata*
Great Plains earless lizard	*Holbrookia maculata maculata*
Texas horned lizard	*Phrynosoma cornutum*
Roundtail horned lizard	*Phrynosoma modestum*
Dune sagebrush lizard	*Sceloporus arenicolus*
Twin-spotted spiny lizard	*Sceloporus bimaculosus*
Southwestern fence lizard	*Sceloporus cowlesi*
Canyon lizard	*Sceloporus merriami*
Texas tree lizard	*Urosaurus ornatus ornatus*
Common side-blotched lizard	*Uta stansburiana*
Great Plains skink	*Eumeces obsoletus*
Common spotted whiptail	*Cnemidophorus gularis*
Little striped whiptail	*Cnemidophorus inornatus*
Marbled whiptail	*Cnemidophorus marmoratus*

Table 3-2 – Lizard Species with Potential to Inhabit Study Area	
Common Name	**Scientific Name**
Six-lined racerunner	*Cnemidophorus sexlineatus*
Common checkered whiptail	*Cnemidophorus tesselatus*

Source: Dixon 2013

Table 3-3 – Snake Species with Potential to Inhabit Study Area	
Common Name	**Scientific Name**
Kansas glossy snake	*Arizona elegans elegans*
Trans-Pecos ratsnake	*Bogertophis subocularis*
Plains hog-nosed snake	*Heterodon nasicus*
Chihuahuan nightsnake	*Hypsiglena jani*
Gray-banded kingsnake	*Lampropeltis alterna*
Desert king snake	*Lampropeltis getula splendida*
Central plains milksnake	*Lampropeltis triangulum gentilis*
Western coachwhip	*Masticophis flagellum testaceus*
Gophersnake	*Pituophis catenifer*
Long-nosed snake	*Rhinocheilus lecontei*
Variable ground snake	*Sonora semiannulata semiannulata*
Smith's black-headed snake	*Tantilla hobartsmithi*
Plain's black-headed snake	*Tantilla nigriceps*
Checkered gartersnake	*Thamnophis marcianus marcianus*
Western diamond-backed rattlesnake	*Crotalus atrox*
Prairie rattlesnake	*Crotalus viridis*
Massasauga	*Sistrurus catenatus*

Source: Dixon 2013

Table 3-4 – Mammalian Species with Potential to Inhabit Study Area	
Common Name	**Scientific Name**
Virginia opossum	*Didelphis virginiana*
Crawford's desert shrew	*Notiosorex crawfordi*
Coyote	*Canis latrans*

Table 3-4 – Mammalian Species with Potential to Inhabit Study Area	
Common Name	**Scientific Name**
Red fox	*Vulpes vulpes*
Common gray fox	*Urocyon cinereoargenteus*
Kit fox	*Vulpes macrotis*
Ringtail	*Bassariscus astutus*
Northern raccoon	*Procyon lotor*
Long-tailed weasel	*Mustela frenata*
American badger	*Taxidea taxus*
Western spotted skunk	*Spilogale gracilis*
Striped skunk	*Mephitis mephitis*
Hog-nosed skunk	*Conepatus leuconotus*
Hooded skunk	*Mephitis macroura*
Mountain lion	*Puma concolor*
Bobcat	*Lynx rufus*
Feral pig	*Sus scrofa*
Collared peccary	*Pecari tajacu*
Pronghorn	*Antilocapra americana*
Mule deer	*Odocoileus hemionus*
White-tailed deer	*Odocoileus virginianus*
Texas antelope squirrel	*Ammospermophilus interpres*
Mexican ground squirrel	*Spermophilus mexicanus*
Rio Grande ground squirrel	*Ictidomys parvidens*
Spotted ground squirrel	*Xerospermophilus spilosoma*
Black-tailed prairie dog	*Cynomys ludovicianus*
Yellow-faced pocket gopher	*Cratogeomys castanops*
Jones's pocket gopher	*Geomys knoxjonesi*
Plains pocket mouse	*Perognathus flavescens*
Merriam's pocket mouse	*Perognathus merriami*
Chihuahuan desert pocket mouse	*Chaetodipus eremicus*
Hispid pocket mouse	*Chaetodipus hispidus*
Nelson's pocket mouse	*Chaetodipus nelsoni*

Table 3-4 – Mammalian Species with Potential to Inhabit Study Area	
Common Name	**Scientific Name**
Merriam's kangaroo rat	*Dipodomys merriami*
Ord's kangaroo rat	*Dipodomys ordii*
Banner-tailed kangaroo rat	*Dipodomys spectabilis*
Western harvest mouse	*Reithrodontomys megalotis*
Plains harvest mouse	*Reithrodontomys montanus*
Texas deermouse	*Peromyscus attwateri*
Cactus deermouse	*Peromyscus eremicus*
White-footed deermouse	*Peromyscus leucopus*
North American deermouse	*Peromyscus maniculatus*
Mearns's grasshopper mouse	*Onychomys arenicola*
Northern grasshopper mouse	*Onychomys leucogaster*
Hispid cotton rat	*Sigmodon hispidus*
White-toothed woodrat	*Neotoma leucodon*
Southern plains woodrat	*Neotoma micropus*
Norway rat	*Rattus norvegicus*
Black rat	*Rattus rattus*
House mouse	*Mus musculus*
North American porcupine	*Erethizon dorsatum*
Desert cottontail	*Sylvilagus audubonii*
Eastern cottontail	*Sylvilagus floridanus*
Black-tailed jackrabbit	*Lepus californicus*

Source: Schmidly 2004

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Scaled quail	*Callipepla squamata*	YR
Northern bobwhite	*Colinus virginianus*	YR
Turkey vulture	*Cathartes aura*	S
Mississippi kite	*Ictinia mississippiensis*	M/S

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Northern harrier	*Circus cyaneus*	W
Sharp-shinned hawk	*Accipiter striatus*	W
Cooper's hawk	*Accipiter cooperii*	YR
Harris's hawk	*Parabuteo unicinctus*	YR
Swainson's hawk	*Buteo swainsoni*	S
Red-tailed hawk	*Buteo jamaicensis*	YR
Ferruginous hawk	*Buteo regalis*	W
Rough-legged hawk	*Buteo lagopus*	W
Golden Eagle	*Aquila chrysaetos*	W
American kestrel	*Falco sparverius*	YR
Merlin	*Falco columbarius*	W
Peregrine falcon	*Falco peregrinus*	M
Prairie falcon	*Falco mexicanus*	W
Killdeer	*Charadrius vociferus*	YR
Mountain plover	*Charadrius montanus*	M
Rock pigeon	*Columba livia*	YR
Eurasian collared-dove	*Streptopelia decaocto*	YR
White-winged dove	*Zenaida asiatica*	YR
Mourning dove	*Zenaida macroura*	YR
Inca dove	*Columbina inca*	YR
Yellow-billed cuckoo	*Coccyzus americanus*	S
Greater roadrunner	*Geococcyx californianus*	YR
Barn owl	*Tyto alba*	YR
Great horned owl	*Bubo virginianus*	YR
Long-eared owl	*Asio otus*	W
Burrowing owl	*Athene cunicularia*	YR
Short-eared owl	*Asio flammeus*	W
Common nighthawk	*Chordeiles minor*	S
Common poorwill	*Phalaenoptilus nuttallii*	S
Chimney swift	*Chaetura pelagica*	S

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Ruby-throated hummingbird	*Archilochus colubris*	M
Black-chinned hummingbird	*Archilochus alexandri*	S
Anna's hummingbird	*Calypte anna*	IRR
Calliope hummingbird	*Calypte costae*	M
Broad-tailed hummingbird	*Selasphorus platycercus*	M
Rufous hummingbird	*Selasphorus rufus*	M
Yellow-bellied sapsucker	*Sphyrapicus varius*	W
Red-naped sapsucker	*Sphyrapicus muchalis*	W
Ladder-backed woodpecker	*Picoides scalaris*	YR
Northern flicker	*Colaptes auratus*	W
Olive-sided flycatcher	*Contopus cooperi*	M
Western wood-pewee	*Contopus Sordidulus*	M
Willow flycatcher	*Empidonax traillii*	M
Least flycatcher	*Empidonax minimus*	M
Hammond's flycatcher	*Empidonax hammondii*	M
Gray flycatcher	*Empidonax wrightii*	M
Dusky flycatcher	*Empidonax oberholseri*	M
Cordilleran flycatcher	*Empidonaxoccidentalis*	M
Black phoebe	*Sayornis migricans*	YR
Eastern phoebe	*Saynoris phoebe*	M/W
Vermillion flycatcher	*Pyrocephalus rubinus*	S
Say's phoebe	*Saynoris saya*	YR
Ash-throated flycatcher	*Myiarchus cinerascens*	S
Cassin's kingbird	*Tyrannus vociferans*	M
Western kingbird	*Tyrannus verticalis*	S
Scissor-tailed flycatcher	*Tyrannus forficatus*	S
Loggerhead shrike	*Lanius ludovicianus*	YR
Plumbeous vireo	*Vireo plumbeus*	M
Cassin's vireo	*Vireo cassinii*	M
Blue-headed vireo	*Vireo solitarius*	M

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Warbling vireo	*Vireo gilvus*	M
Chihuahuan raven	*Corvus cryptoleucus*	YR
Horned lark	*Eremophila alpestris*	YR
Tree swallow	*Tachycineta bicolor*	M
Northern rough-winged swallow	*Stelgidopteryx serripennis*	S
Bank swallow	*Riparia riparia*	M
Cliff swallow	*Petrochelidon pyrrhonta*	S
Barn swallow	*Hirundo rustica*	S
Verdin	*Auriparus flaviceps*	YR
Red-breasted nuthatch	*Sitta canadensis*	W
White-breasted nuthatch	*Sitta carolinensis*	W
Brown creeper	*Certhia americana*	W
Cactus wren	*Campylorhynchus brunneicapillus*	YR
Rock wren	*Salpinctes obsoletus*	YR
Canyon wren	*Catherpes mexicanus*	YR
Bewick's wren	*Thryomanes bewickii*	YR
House wren	*Troglodytes aedon*	W
Marsh wren	*Cistothorus palustris*	W
Blue-gray gnatcatcher	*Polioptila caerulea*	M
Golden-crowned kinglet	*Regulus satrapa*	W
Ruby-crowned kinglet	*Regulus calendula*	W
Eastern bluebird	*Sialia sialis*	W
Western bluebird	*Sialia Mexicana*	IRR
Mountain bluebird	*Sialia currucoides*	W
Townsend's solitare	*Myadestes townsendi*	IRR
Swainson's thrush	*Catharus ustulatus*	M
Hermit thrush	*Catharus guttatus*	W
American robin	*Turdus migratorius*	W
Northern mockingbird	*Mimus polyglottos*	YR
Curve-billed thrasher	*Toxostoma curvirostre*	YR

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
European starling	*Sturnus vulgaris*	YR
American pipit	*Anthus rubescens*	W
Cedar waxwing	*Bombycilla cedrorum*	W
Phainopepla	*Phainopepla nitens*	IRR
Chestnut-collared longspur	*Calcarius ornatus*	W
McCown's longspur	*Calcarius mccownii*	W
Tennessee warbler	*Oreothlypis peregrina*	M
Orange-crowned warbler	*Oreothlypis celata*	W
Nashville warbler	*Oreothlypis ruficapilla*	M
Yellow warbler	*Setophaga petechia*	M
Yellow-rumped warbler	*Setophaga coronata*	W
Black-throated gray warbler	*Setophaga nigrescens*	M
Townsend's warbler	*Setophaga townsendi*	M
Black-and-white warbler	*Mniotilta varia*	M
American redstart	*Setophaga ruticilla*	M
Northern waterthrush	*Parkesia noveboracensis*	M
MacGillivray's warbler	*Oporornis tolmiei*	M
Common yellowthroat	*Geothlypis trichas*	W
Wilson's warbler	*Cardellina pusilla*	M
Yellow-breasted chat	*Icteria virens*	S
Green-tailed towhee	*Pipilo chlorurus*	W
Spotted towhee	*Pipilo maculatus*	W
Canyon towhee	*Pipilo fuscus*	YR
Rufous-crowned sparrow	*Aimophila ruficeps*	YR
Cassin's sparrow	*Peucaea cassinii*	YR
Chipping sparrow	*Spizella passerina*	W
Clay-colored sparrow	*Spizella pallida*	M
Brewer's sparrow	*Spizella breweri*	M
Field sparrow	*Spizella pusilla*	W
Vesper sparrow	*Pooecetes gramineus*	W

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Lark sparrow	*Chondestes grammaus*	S
Black-throated sparrow	*Amphispiza bilineata*	YR
Sagebrush sparrow	*Artemisiospiza nevadensis*	IRR
Lark bunting	*Calamospiza melanocorys*	W
Savannah sparrow	*Passerculus sandwichensis*	W
Grasshopper sparrow	*Ammodramus savannarum*	YR
Baird's sparrow	*Ammodramus bairdii*	M
Le Conte's sparrow	*Ammodramus leconteii*	IRR
Song sparrow	*Melospiza melodia*	W
Lincoln's sparrow	*Melospiza lincolnii*	W
Swamp sparrow	*Melospiza georgiana*	W
White-throated sparrow	*Zonotrichia albicollis*	W
White-crowned sparrow	*Zonotrichia leucophrys*	W
Dark-eyed junco	*Junco hyemalis*	W
Western tanager	*Piranga ludoviciana*	M
Summer tanager	*Piranga rubra*	M
Northern cardinal	*Cardinalis cardinalis*	YR
Pyrrhuloxia	*Cardinalis sinuatus*	YR
Black-headed grosbeak	*Pheucticus melanocephalus*	M
Blue grosbeak	*Passerina caerula*	S
Lazuli bunting	*Passerina amoena*	M
Indigo bunting	*Passerina cyanea*	M
Painted bunting	*Passerina ciris*	S
Dickcissel	*Spiza americana*	M
Red-winged blackbird	*Agelaius phoeniceus*	YR
Eastern meadowlark	*Sturnella magna*	W
Western meadowlark	*Sturnalla neglecta*	YR
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	M
Brewer's blackbird	*Euphagus cyanocephalus*	W
Common grackle	*Quiscalus quiscula*	W

Table 3-5 – Avian Species with Potential to Inhabit Study Area		
Common Name	**Scientific Name**	**Resident**
Great-tailed grackle	*Quiscalus mexicanus*	YR
Bronzed-cowbird	*Molothrus aeneus*	S
Brown-headed cowbird	*Molothrus ater*	YR
Orchard oriole	*Icterus spurius*	M
Bullock's oriole	*Icterus bullockii*	S
House finch	*Carpodacus mexicanus*	YR
Pine siskin	*Spinus pinus*	W
Lesser goldfinch	*Spinus psaltria*	S
American goldfinch	*Spinus tristis*	W
House sparrow	*Passer domesticus*	YR

S – Summer Resident; W – Winter Resident; YR – Year-round resident; M – Migrant; IRR – Irruptive range

Source: Lockwood & Freemann 2014

3.4.2.1 Endangered, Threatened and SGCN Animal Species

Table 3-6 lists those fish and wildlife species considered by USFWS and TPWD to be endangered, threatened, SGCN or rare within the Borden County geographic range. It should be noted that inclusion on the list does not imply that a species is known to occur in the Study Area, but only acknowledges the potential for occurrence. Only those species listed as threatened or endangered by USFWS are afforded federal protection.

Table 3-6 – Endangered, Threatened, and Rare Wildlife of Potential Occurrence in Borden County[3]

Common Name	Scientific Name	USESA	SPROT	SGCN		Potential for Occurrence in the Study Area
				Global	State	
Birds						
Bald Eagle	*Haliaeetus leucocephalus*	DL	T	G5	S3B,S3N	No potential (no tall trees or large bodies of water within or in proximity of the Study Area)
Ferruginous Hawk	*Buteo regalis*	N/A	-	-	-	High potential during Winter (Winter Resident in Study Area)
Peregrine Falcon	*Falco peregrinus*	DL	T	-	-	High potential (transient and/or migrant species in Study Area)
American Peregrine Falcon	*Falco peregrinus anatum*	DL	T	G4T4	S2B	High potential (transient and/or migrant species in Study Area)
Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	-	-	-	High potential (transient and/or migrant species in Study Area)
Whooping	*Grus*	LE	E			Extremely low potential

[3] Source: TPWD 2018; USFWS 2018; USESA – U.S. Endangered Species Act - Federal protection/listing status. SPROT - Subnational (e.g. state) protection/listing status. SGCN - Species of Greatest Conservation Need. See Appendix C. definitions of Status and Rank. "-"indicates a species listed as "Rare" by TPWD, this listing carries no regulatory meaning; N/A – indicates a species that is not recognized as a candidate, threatened or endangered species.

Table 3-6 – Endangered, Threatened, and Rare Wildlife of Potential Occurrence in Borden County[3]

Common Name	Scientific Name	USESA	SPROT	SGCN		Potential for Occurrence in the Study Area
				Global	State	
Crane	*americana*					(very rare migrant over plains in Study Area)
Snowy Plover	*Charadrius alexandrinus*	N/A	-	-	-	Extremely low potential (very rare migrant over plains in Study Area)
Western Snowy Plover	*Charadrius alexandrinus nivosus*	N/A	-	-	-	Extremely low potential (very rare migrant over plains in Study Area)
Mountain Plover	*Charadrius montanus*	N/A	-	G3	S2	Low potential (marginal breeding habitat in Study Area)
Interior Least Tern	*Sternula antillarum athalassos*	LE	E	G4T2Q	S1B	No potential (No annual water features to support prey base within the Study Area)
Western Burrowing Owl	*Athene cunicularia hypugaea*	N/A	-	G4.T4	S2B	Moderate potential (Potential based on burrow habitat availability in Study Area)
Sprague's Pipit	*Anthus spragueii*	N/A	-	-	-	Moderate potential (migrant species in Study Area)
Baird's Sparrow	*Ammodramus bairdii*	N/A	-	-	-	Extremely low potential (very rare migrant in Study Area)

Table 3-6 – Endangered, Threatened, and Rare Wildlife of Potential Occurrence in Borden County[3]

Common Name	Scientific Name	USESA	SPROT	SGCN		Potential for Occurrence in the Study Area
				Global	State	
Least Tern	*Sterna antillarum*	LE				No potential (No annual water features to support prey base within the Study Area)
Piping Plover	*Charadrius melodus*	TL	T	G3	S2N	No potential (No habitat present in Study Area)
Red Knot	*Calidris canutus rufa*	LT	-	G4/T2	SNRN	Extremely low potential (very rare migrant in Study Area)
Mammals						
Cave myotis	*Myotis velifer*	N/A	-	G4/G5	S4	No potential (No caves, abandoned mines, or structures within the Study Area)
Pale Townsend's big-eared bat	*Corynorhinus townsendii pallescens*	N/A	-	-	-	No potential (No caves, abandoned mines, or structures within the Study Area)
Big free-tailed bat	*Nyctinomops macrotis*	N/A	-	G5	S3	No potential (No caves, abandoned mines, or structures within the Study Area)
Black-tailed prairie dog	*Cynomys ludovicianus*	N/A	-	G4	S3	Does not occur in the Study Area
Palo Duro	*Peromyscus*	N/A	T	G5/T2	S2	No potential (No

Table 3-6 – Endangered, Threatened, and Rare Wildlife of Potential Occurrence in Borden County[3]						
Common Name	**Scientific Name**	**USESA**	**SPROT**	**SGCN**		**Potential for Occurrence in the Study Area**
				Global	**State**	
mouse	*truei comanche*					habitat present in Study Area)
Gray wolf	*Canis lupus*	LE	E	-	-	No potential (This species is considered extirpated within Texas)
Swift fox	*Vulpes velox*	N/A	-	G3	S1	Low to moderate potential (Habitat located in Study Area)
Black-footed ferret	*Mustela nigripes*	LE	-	G1	SX	No potential (This species is considered extirpated within Texas)
Reptiles						
Texas horned lizard	*Phrynosoma cornutum*	N/A	T	G4/G5	S3	Low potential (No ant hills present in Study Area)
Fish						
Texas Shiner	*Notropis amabilis*	N/A	-	G4	S4	No potential (No perennial rivers or tributaries in Study Area) [4]

[3]Source: TPWD 2018; USFWS 2018; USESA – U.S. Endangered Species Act - Federal protection/listing status. SPROT - Subnational (e.g. state) protection/listing status. SGCN - Species of Greatest Conservation Need. See Appendix C. definitions of Status and Rank. "-"indicates a species listed as "Rare" by TPWD, this listing carries no regulatory meaning; N/A – indicates a species that is not recognized as a candidate, threatened or endangered species.

As noted in **Table 3-6**, several of the listed species have the potential to occur within the study area. Species with no or extremely low to no potential to occur within the Study Area are not discussed further in this document. Descriptions of species that have the potential to occur and likelihood of occurrence are provided below.

Federally Endangered or Threatened Species

No federally endangered or threatened listed species are expected to occur within the Study Area. Species with the potential to occur within the Study Area which have recently been de-listed by the USFWS but are currently listed as threatened by TPWD include the peregrine falcon and the Arctic and American peregrine falcon subspecies which are assumed to be transient and/or migrants. They are not known to nest or overwinter in the Study Area.

State Endangered or Threatened Species

Species with the potential to occur within the Study Area which are not listed by the USFWS but are listed as threatened by TPWD include the Texas horned lizard. This species prefers open, flat terrain with scattered vegetation. Over the past 20 years, it has almost vanished from the eastern half of the state, but still maintains relatively stable numbers in west Texas (Price 1990). They can be found in arid and semiarid habitats in open areas with sparse plant cover. As horned lizards dig for hibernation, nesting, and insulation purposes, they commonly are found in loose sand or loamy soils.

SGCN Species

As discussed in **Section 3.4.1.1**, native animals or plants designated as a SGCN are generally those that are declining or rare and in need of attention to recover or to prevent the need to list under state or federal regulation. **Table 3-6** lists SGCN that may occur within the Study Area.

The Mountain Plovers nest on high plains or shortgrass prairie or on ground in shallow depression (TPWD 2018). At many locales, breeders are associated with prairie dogs. This species has a low potential to occur as Borden County is outside but adjacent to known species breeding range (Knopf and Wunder 2006).

The western burrowing owl is an inhabitant of treeless, short-grass plains and prairies, ideally unbroken by cultivation (Oberholser 1974). These owls nest and/or roost in abandoned burrows (TPWD 2016), such as those created by black-tailed prairie dogs. They winter throughout Texas and commonly breed in the Panhandle and West Texas (Lockwood & Freemann 2014), but almost exclusively in the Trans-Pecos, Rolling Plains, and High Plains (Panhandle) ecological regions with the largest concentration of confirmed breeding in the High Plains (Texas A&M Agrilife Extension 2018). Although TPWD's TXNDD has no documentation of the western burrowing owl occurring within or surrounding the Study Area, as the Study Area is located within High Plains ecological regions (**Section 3.4.1**), there is potential for this species to occur within the Study Area.

The black-tailed prairie dog is a highly gregarious animal that typically inhabits short-grass prairies, avoiding heavy brush and tall grasses due to visibility obstruction (Schmidly 2004). This is a keystone species, as they provide important food and cover to other listed and rare species, such as ferruginous hawks, and western burrowing owls. In Texas, they may be found in western portions of the state and in the Panhandle, including the Study Area. TPWD's TXNDD has historic documentation of prairie dog towns occurring within or surrounding the Study Area. A known prairie dog town located South of the existing Long Draw Substation within the Study Area; the prairie dogs were relocated during 2012 as part of previous WETT project. There are currently no prairie dogs inhabiting this prairie dog town. However, prairie dogs have the potential to reinhabit the Study Area.

Swift Fox are restricted to current and historic shortgrass prairie; western and northern portions of Panhandle, including Borden County. They hunt in high, well-drained mesas, hilltops, along the borders of valleys, and sparsely vegetated hillsides and other well-drained areas (TPWD 2018b). Moderate quality swift fox habitat is located within the Study Area and due to the rarity of the species, occurrence within the Study Area would be low to moderate.

Rare Species

Table 3-6 lists rare species not listed as federal or state endangered or threatened or SGCN that may occur within the Study Area. The Sprague's pipit is considered to be transient or migrant

species through the Study Area. These birds are not known to nest or overwinter in the vicinity of the proposed Project.

Ferruginous hawks are common to locally uncommon winter residents in Texas with some occurring year round in the Panhandle region of Texas (Panhandle) (Lockwood & Freemann 2014). Their winter range is known to be associated with the occurrence of prairie dogs and prairie dog towns as well as cultivated fields (Olendorff 1993). The species nests from southernmost Canada, south to Arizona, New Mexico, and northwest Texas and uses a variety of substrates for nesting including trees, cliffs, and relatively level ground as well as man-made structures. They prey on rabbits, ground squirrels, and prairie dogs (Texas A&M Agrilife Extension 2018). The presence of preferred prey base and suitability of habitat provides the potential for ferruginous hawks to occur within the Study Area.

3.5 Community Values and Community Resources

The term "community values" is included as a factor for the consideration of transmission line certification under PURA § 37.056(c)(4), but this term has not been specifically defined by the PUCT. The PUCT has included issues such as those listed below within the discussion of community values.

- Approvals or permits required from other governmental agencies are discussed in **Section 2.2.4** (Section 18 of the PUCT CCN Application Form);
- Description of the area traversed is provided in **Section 1.0**;
- Habitable structures within 300 feet of the centerline of the proposed Project (Section 19 of the PUCT CCN Application Form);
- Amplitude Modulation (AM)/Frequency Modulation (FM), microwave, and other electronic installations in the area (Section 20 of the PUCT CCN Application Form);
- FAA-registered airstrips, private airstrips, and heliports located in the area (Section 21 of the PUCT CCN Application Form);
- Irrigated pasture or croplands utilizing center-pivot or other traveling irrigation systems (Section 22 of the PUCT CCN Application Form);
- Parks and recreational areas within 1,000 feet of the centerline of the route (Section 26 of the PUCT CCN Application Form);

- Historical and archaeological sites within 1,000 feet of the centerline of the route (Section 27 of the PUCT CCN Application Form); and
- If a route is within a coastal management program boundary (Section 28 of the PUCT CCN Application Form).

The above-listed community values and resources are discussed in the following sections. Land uses, aesthetics, transportation, communication towers, and oil/gas facilities are also discussed in the following sections. In addition to the above items, the Project Team mailed consultation letters to various local elected and appointed officials to obtain information regarding community values and community resources.

Additionally, the Project Team also evaluated the Project for community resources, designated scenic vistas, and state-registered institutions such as churches, hospitals, nursing homes, schools, and day care centers. In the Study Area, there are no designated scenic vistas, state-registered institutions, churches, health clinics, nursing homes, schools, or state-registered day care centers. Additional community resources and values are discussed in the sections below.

3.6 Land Use

3.6.1 Urban/Residential Areas

The Study Area is located on approximately 558 acres of rural, undeveloped property in Borden County. The only existing development within the Study Area is the existing Long Draw 345kV switching station. No current or proposed urban/residential projects were identified within 300 feet of the proposed route centerline or within the Study Area. Additionally, no habitable structures are located within 300 feet of the route centerline or the Study Area. Lastly, there are no major roadway corridors in the Study Area. FM1054/Vealmoore Road does intersect the southwestern edge of the Study Area, however, it is not a major roadway corridor.

3.6.2 Recreational Areas

Based on a review of local, state, and federal data, maps, and websites, no recreational facilities were identified in the Study Area. No conservation easements, wildlife management areas, wildlife

management associations, or trails have been identified in the Study Area. No NPS national parks, monuments, recreation areas, preserves, battlefields, wild and scenic rivers, historic trails, or other national historic sites are located within the Study Area (NPS, 2018). Additionally, there are no TPWD parks within the Study Area (TPWD, 2018).

3.6.3 Agriculture

Agriculture is an important segment of the economy throughout the region and primarily represented by cropland (USDA, 2012). The Study Area is located in District 21 of the National Agricultural Statistics Service (NASS). According to the USDA 2012 Census of Agriculture, cotton is the dominant crop by acreage in Borden County, with smaller percentages consisting of forage-land used for all hay and haylage, grass silage, and greenchop (highly nutritious forage crop), wheat and sorghum for grain (USDA, 2012). The primary livestock in Borden County are cattle and calves, horses and ponies, layers (hens that lay eggs), goats, and pullets (young hens) for flock replacement (USDA, 2012). Based on aerial photography interpretation, no croplands or traveling irrigation systems appear to be present within the Study Area; however; the area may be used as rangeland for livestock.

3.6.4 Aesthetics

Aesthetics is included as a factor for consideration in the evaluation of transmission facilities in Section 37.056(c)(4)(A)-(D) of the Texas Utilities Code.

Consideration of the visual environment includes assessing aesthetics in the area and evaluating where the significant potential effect of a project is on the resource and recreational values or where the transmission line could potentially affect the scenic enjoyment of the area.
The Project Team considered the following aesthetics that give an area its aesthetic identity:

- topography (hills, valleys, etc.);
- water features in the landscape (ponds, lakes, etc.);
- diversity of vegetation;
- diversity of scenic elements;
- amount and intensity of human development; and

- overall uniqueness of the scenic environment compared with the larger region.

The topography of the Study Area is somewhat level as it varies in elevation from approximately 2510 to 2610 feet. The areas of highest elevation are located on the northern and southern edges of the Study Area and the elevation generally slopes downward toward Tobacco Creek and the other intermittent streams that bisect the Study Area.

As previously stated, the Study Area falls within the Southwestern Tablelands Level III Ecoregion of Texas, of which dissected river breaks and intermittent streams are indicative (Griffith G. E., et al, 2004). The Study Area is crossed by several streams and also contains a pond, however, none of these features are associated with any designated scenic vistas nor do they contain any unique characteristics. The overall landscape is mostly open shrubland with some portions of herbaceous grasslands.

The Study Area can generally be described as having a medium to low degree of natural aesthetic quality for the region, with the feel of rural Texas but also including existing electric transmission lines, a switching station, and oil/gas infrastructure within the surrounding area.

As previously stated, a review of the NPS website identified no wild and scenic rivers, historic trails, national parks, monuments, scenic vistas or battlefields within the Study Area (NPS, 2018).

3.6.5 Transportation/Aviation

3.6.5.1 Transportation

The existing transportation infrastructure within the Study Area is almost entirely limited to private roadways. FM1054/Vealmoore Road is the only public road within the Study Area and it bisects only the southwestern most tip of the Study Area. USH 180 is located approximately 1.4 miles to the north of the Study Area.

There are eight current and planned TxDOT projects in Borden County. One of these projects is located within the Study Area along FM 1054/Vealmoore Road. The project consists of seal coating the roadway and is scheduled to begin within four years (TxDOT, 2018).

No railroads are located within the Study Area. The West Texas and Lubbock Railroad is the closest railroad and is located approximately 18 miles west of the Study Area.

3.6.5.2 Aviation

Based on a review of aerial photography and data from the FAA and AirNav.com, there are no airfields within 20,000 feet or heliports within 5,000 feet of the Study Area. The nearest airport is the Lamesa Municipal Airport, located approximately 16 miles west of the Study Area. In addition, no proposed aviation projects were identified during the information gathering process.

3.6.6 Electronic Installations

A review of Federal Communications Commission (FCC) data identified no electronic installations or towers (AM/FM radio transmitters, microwave relay towers, cell towers, or meteorological towers) were identified within 10,000 feet of the Study Area.

3.6.7 Oil/Gas Facilities

According to data obtained from the Railroad Commission of Texas (RCT), there are no permitted well locations, active wells, or pipelines within the Study Area. The RCT data does indicate one well listed as a dry hole that is now the location of the existing Long Draw 345kV switching station. It is likely that if there was a dry well in this location, it has now been covered by the construction of the existing switching station. A review of the aerial photography does not indicate the presence of a well in this location or in the surrounding area.

3.6.8 Coastal Management Program

The Study Area is not located within the State of Texas Coastal Zone Boundary as defined in 31 TAC § 503.1. Therefore, the Project is not subject to the requirement for coastal zone management consistency approval.

3.7 Cultural Resources

3.7.1 Cultural Background

3.7.1.1 Regional History and Cultural Chronology

The Study Area is in the archeological region known as the Caprock Canyonlands, a region situated between the flat and nearly featureless Southern High Plains (Llano Estacado) to the west and undulating hills and irregular and steeply cut Caprock escarpments to the east (Leatherwood 2018). Griffith *et al.* (2007) also referred to the region as the Southwestern Tablelands. The rugged terrain of the Llano Estacado was formed by the flow of the Canadian, Red, Brazos, and Colorado Rivers, which created alternating layers of erosion resistant caliche and sandstone; erosion-prone layers of shales, mudstones, siltstones, and clays. The surrounding region is characterized by gently rolling valleys and plains dissected by broad, sandy channels of meandering rivers. Water sources include intermittent and spring-fed streams (Griffith et al. 2007). This cultural background discussion will outline regional patterns for the Caprock Canyonlands and reference previous investigations yielding pertinent archeological information.

3.7.1.2 Caprock Canyonlands (Southwestern Tablelands)

The erosion of the Caprock Escarpment has created a series of rugged canyonlands that separate the Llano Estacado from the lower plains to the east and south. In prehistoric times, the Caprock Canyonlands were relatively well watered and lush, providing an attractive base for the nomadic people of the region (Boyd 2004). Research on the 1990s, primarily at Lake Alan Henry, firmly established the Caprock Canyonlands as a unique archeological region with its own chronology and cultural complexes (Boyd 2004). As Boyd explains:

> The resource-rich Caprock Canyonlands played a major role in the development and evolution of cultures in the Southern Plains. The escarpment area seems to have been a critical zone, in terms of subsistence and settlement, for many different prehistoric populations over many thousands of years...the Caprock Canyonlands may be viewed as a home base for many cultures whose seasonally oriented activities over a much larger territory that included the Llano Estacado and Rolling Plains (Boyd 2004:299).

The cultural history of the Caprock Canyonlands is divided into five main prehistoric periods and one historic period, which includes the Paleoindian period (11,500 to 8500 years Before Present [B.P.]), the Archaic period (8500 to 2000 B.P.), the Late Prehistoric I (A.D. 500 to 1100/1200) and Late Prehistoric II (A.D. 1100/1200 to 1450), the Protohistoric period (A.D. 1450 to ca. 1600), and the Historic period (ca. A.D. 1650 to 1950). Archaeological periods are determined based on observable differences in cultural materials or artifacts, and where they occur within the archaeological record. **Table 3-7** and the following sections provide a brief summary of each period and associated sub-periods.

Table 3-7 – Cultural Chronology of the Caprock Canyonlands

TIME PERIOD	DATE RANGE	CULTURAL DESIGNATIONS
Paleoindian	11,500-8500 B.P.	Poorly represented in this region
Archaic	8500 to 2000 B.P.	Poorly represented in this region
Early Archaic	8500 to 6500 B.P.	Undefined
Middle Archaic	6000 to 4000 B.P.	
Late Archaic	4000 B.P - ca. A.D. 500	
Late Prehistoric I	ca. A.D. 500 to 1100/1200	Palo Duro Complex, Lake Creek Complex
Late Prehistoric II	A.D. 1100/1200 to 1450	Tierra Blanca Complex, Garza Complex
Protohistoric	A.D. 1450 to ca. 1600	Comanche, Apache, Teya
Historic	ca. A.D. 1650 to 1950	

(adapted by Boyd 2004:299)

3.7.1.3 PaleoIndian Period (11,500-8,500 B.P.)

In general, the Paleoindian period can be characterized as seasonally nomadic hunter-gatherers, following food and water resources as necessary. The most defining feature of this time is big-game hunting of now-extinct megafauna including mammoths, camels, and since-vanished morphological types of bison (Lewis et al. 2007:197). This time period coincided with the last stage of a humid maritime-like climate with cool summers, mild winters, and abundant precipitation (Johnson and Holliday 2004). Such a climate allowed for open grasslands in upland areas, and parklands along draws. Water resources were much more readily available than they are a today.

The Early Paleoindian period is represented by the Clovis culture (11,500-11,00 B.P.) and the Folsom culture (10,800 – 10,300 B.P.). Clovis culture is commonly represented by distinctive Clovis-style projectile points that were horizontally fluted and have a lanceolate shape. In general, sites dating to the Clovis period are associated with faunal kill and butchering and to some extent, open or rockshelter campsites.

The Folsom subdivision of the Paleoindian period has been delineated from the Clovis by a different type of projectile point. The Folsom point is generally thinner and features a horizontal fluting that covers almost the entire extent of the surface. Site associated with Folsom are also commonly big-game kill sites, notably bison, as well as short lived campsites.

The environmental conditions began to shift toward increased seasonality during the Late Paleoindian period. This ecologic transition created summers that were generally warmer and winters that were generally colder. The shift in environmental conditions also coincides with the reduction of megafauna species (Johnson and Holiday 2004). Multiple cultural complexes have been associated with the Late Paleoindian time period including Plainview, Cody, and Plano complexes. These different complexes are identified through distinct projectile point styles (Justice 1987).

Although researchers have found evidence for human occupation of the Southwestern Tablelands for roughly the last 12,000 years, the archaeological record of the Caprock Canyonlands is unfortunately lacking. Doug Boyd described the archeological record for the Caprock Canyonlands as "extremely biased" due to "severe erosion of the landscape over thousands of years [that] has removed a considerable amount of the late Pleistocene and early/middle Holocene sediments and landforms" (1994:7). As a result, the Paleoindian period in the Caprock Canyonlands is not well represented.

3.7.1.4 Archaic Period (8,500-2,000 B.P.)

The Archaic period in the Caprock Canyonlands, dated from 8500 to 2000 B.P., is subdivided into the Early Archaic period (8500 to 6500 B.P), the Middle Archaic period (6000 to 4000 B.P.), and the Late Archaic period (4000 B.P. – ca. A.D. 500). The Archaic period can be distinguished by adaptation to drought, as well as the gradual integration of plant resources into the subsistence base. During the Archaic, the lifeway remained hunter-gatherer with seasonal mobility, however,

the subsistence base systematically expanded to include mixed plants and additional wild game meat. These changes in subsistence strategies can be observed by an increase in the variety of artifacts associated with Archaic period cultures. The associated artifacts appear to be in response to the resources available during climate changes associated with decreasing continental glaciation and increasingly warmer and drier conditions (Johnson and Holliday 2004). Warmer and drier conditions resulted in less access to water, and drought conditions.

The date constraints of the Middle Archaic (6000 to 4000 B.P.) align with the period of peak aridity and the accumulation of eolian sediments (Johnson and Holliday 2004). From 6500 to 4500 B.P, the period known as the Altithermal brought about hot, dry, dusty conditions and a semi-arid to arid climate (Johnson and Holliday 2004). Eolian sedimentation peaked, vegetative cover was sparser than any recent time, and hard-water alkaline marshes and localized desertification occurred within the region (Holliday 1995).

The extreme and unprecedented scarcity of water is reflected in the archeological record. For example, the survival of the people who lived during this time period depended upon their adaption to the drought conditions, which is expressed by the presence of hand-dug water wells (Meltzer 1991). As the people became more tethered to known water sources, mobility decreased somewhat, as seen by evidence for relatively-longer inhabited campsites.

The Late Archaic (4000 B.P – ca. A.D. 500) was characterized by amelioration of climatic conditions. The continental climate consisted of relatively cooler temperatures and more available moisture that facilitated landscape stability and habitat changes that generally continue to modern times (Johnson and Holliday 2004). The desert-plains grassland was replaced by mixed-grass prairie. Localized marshes and wetlands returned to valley axes and springs began to flow. Also, playas and salina basins once again began to hold water seasonally or year-round (Holliday 1995).

As with the Early and Middle Archaic periods, bison hunting and processing continued to be a major subsistence activity. Along with more long-term campsites, tool caches, hearths, lithic procurement and processing sites, and rock shelters are associated with the Late Archaic (Johnson and Holliday 2004). Also, horticultural practices focused on corn, beans, perennials, and weedy annuals have been identified in the western Trans-Pecos region and in southeastern New Mexico (Johnson and Holliday 2004).

The Early Archaic period (8500 to 6500 B.P.) and the Middle Archaic period (6000 to 4000 B.P.) are poorly represented in the Southwestern Tablelands. Diagnostic projectile points dating to this period are sometimes found, but intact cultural deposits associated with these periods are rare. Research within the Lake Alan Henry area uncovered no intact deposits dating to the Early or Middle Archaic, and uncovered a few deposits possibly related to these time periods. However, the archeological context was disturbed, and no temporal category was assigned (Boyd et al. 1994). It appears that the potential for Paleoindian, Early, and Middle Archaic components exists mainly in the uplands, and such occupations most likely would be found near large playa lakes or on high rises within a few hundred meters of the canyon rim (Boyd et al. 1994).

The Late Archaic period is much more thoroughly represented in the Caprock Canyonlands, particularly at Lake Alan Henry. Known as the Little Sunday Complex, Late Archaic cultural remains in this region reflect a nomadic lifestyle based around the hunting of bison on a seasonal rotation (Boyd 1997). While plants and other animals contributed to the diet of Late Archaic people of the Caprock Canyonlands, the migration of bison is thought to have been the determining factor in seasonal movement. Within the Caprock Canyonlands, this period is represented by campsites and rockshelters.

3.7.1.5 Late Prehistoric Period (ca. A.D. 500-1450)

During the Late Prehistoric I period (ca. A.D. 500-1100/1200), drier climatic conditions resulted in a decline in bison populations, and native people adapted by shifting to a foraging lifestyle (Boyd 1997). The people of the northern Caprock Canyonlands are thought to have had extensive contact with Plains Woodland groups from western and central Oklahoma, while residents of the southern Caprock Canyonlands traded with Southwestern horticulturalists known as the Jornada Mogollon (Boyd 1997). Ceramics and arrow points appeared early in the first millennium A.D. and characterize the Late Prehistoric. The Palo Duro complex encompassed much of the southern portion of the Caprock Canyonlands and is characterized by remains of pit houses similar to those of the Mogollon and imported brownware pottery (Boyd 2004; Johnson and Holliday 2004). Pit house villages were likely occupied for only part of the year, with campsites representing occupation during other seasons (Boyd 1997). Several sites in the Lake Alan Henry area have been recognized as belonging to the Palo Duro complex (Boyd 1997, 2004).

The wetter conditions of the Late Prehistoric II (A.D. 1100-1541) period enabled the bison population of the Southern Plains to increase and marked a return of the bison-hunting nomadic lifestyle characteristic of the Late Archaic period. The people of the Southern Plain during this time combined bison hunting with the foraging lifestyle of the Late Prehistoric I period and benefitted from increasingly efficient tools for hunting and processing bison (Boyd 1997). In the Caprock Canyonlands, a shift in material culture around A.D. 1400 seems to indicate either an influx of people from outside the area or a quick adoption of outside technology (Boyd 1997). This change is marked archeologically, and sites include bison kill and processing sites, short-term hunting camps, base camps, and residential sites with evidence of tipi-like structures (Boyd 1997). In the southern Caprock Canyonlands, this set of cultural remains is known as the Garza complex. Sites from this time period in the Caprock Canyonlands are notable for the relatively high numbers of imported items, including *Olivella* shell beads, obsidian, turquoise, and non-local pottery (Boyd 1997). Many of these items may have arrived in the area through trade with Puebloan peoples to the south and west (Johnson and Holliday 2004).

3.7.1.6 Protohistoric Period (ca. A.D. 1450-1600)

The period between the arrival of Europeans in the general region and the time when European influences begin to be prevalent in the archeological record in known as the Protohistoric period. In the Caprock Canyonlands, this period is dated to between approximately A.D. 1541 (the year of Coronado's expedition into Texas) and 1750; the later date is somewhat arbitrary. The Garza complex continues into this time period with little change to the archeological record except for the occasional item of European manufacture at a site. Due to the continuity of the archeological record, Garza complex people have been tentatively correlated with the Teyas described in Coronado in 1541 (Boyd 1997).

3.7.1.7 Historic Period (ca. A.D. 1600-1950)

The Historic period in the Caprock Canyonlands encompasses the time between about 1750 and 1950 (the period after 1950 is considered the Modern period), when European influence increasingly dominated material remains. Following Coronado's 1541 *entrada* into what is now northern Texas, little direct European contact occurred in the area until the mid-seventeenth

century. Throughout the late seventeenth, eighteenth, and nineteenth centuries, Hispanic bison hunters known as *ciboleros* and Hispanic New Mexican traders, *comancheros*, shared the region with the historic Plains Indian groups (Morris 1997).

Major sedentary settlement of the area did not truly begin until the late nineteenth century. The primary historic pursuits in the Caprock Canyonlands were predominantly ranching and agriculture. Ranching began in the region in the 1870s, with activities increasing greatly in volume during the 1880s, supported by favorable markets and weather (Boyd 1994: 13). Individuals as well as companies leased land from the state of Texas in order to pursue ranching ventures. While some families moved to the region, most of the ranchers were single men. Ranch buildings consisted of central ranch headquarters and dispersed shelters, primarily dugouts, on the range. Initially most goods were procured from buffalo outposts to the north, but later Colorado City became the primary supplier to a 27-county region in West Texas (Boyd 1994:13).

Unfavorable weather conditions such as blizzards, drought, and the national panic of 1893 resulted in a ranching bust; Colorado City never recovered from this downturn. In 1895, the Four Section Act was created to encourage permanent settlement in the homestead tracts. Instead of immediately resulting in a surge of homesteaders, the act drove ranchers who had previously leased land to adopt innovative accounting techniques in order to control sections and pay taxes. However, homesteading gradually gained a foothold in the region. This closed-range policy resulted in the construction of homesteads and headquarters supported by line camps which were, once again, primarily dugouts. Temporary headquarters were often built before the construction of wood frame or rock houses. Supporting structures included fences, corrals, wells, wind mills, water tanks, and stock ponds. Outbuildings included tack rooms and covered sheds to protect livestock from severe weather (Boyd 1994).

Borden County

In 1876 ranchers from nearby Howard County extended north into what is now Borden County. By 1890, 222 people lived in the area. The land was primarily agricultural, consisting of 25 farms and ranches. The economy revolved entirely around livestock ranching, with over 71,000 cattle counted in Borden County in 1890. The county was officially organized in 1891, and the city of Gail became the county seat (Hunt and Leffler 2010).

In 1902, lands in Borden County became available for lease to state schools. The availability of land caused a slight spike in the population, and by 1910 there were over 200 farms and ranches and 1,386 permanent residents in the county. The number of farms dropped to 197 in 1920, but by 1930 the number of established farms and ranches in Borden raised to 292, and the recorded population was 1,505 residents (Hunt and Leffler 2010).

An economic shift away from livestock and towards land use to harvest cotton also occurred in the 1930s (Hunt and Leffler 2010). For comparison, in 1900, cotton was planted and grown on 137 acres, and by 1929, the amount of land for cotton agriculture had grown to over 20,000 acres. However, the Great Depression of the 1930s arrested the development of Borden County. In 1940, only 12,000 acres were used for cotton, and 233 farms remained in the county. The population recorded in the 1940 census had dropped to 1,356 (Hunt and Leffler 2010).

In 1949, a substantial number of productive oil fields were discovered in west Texas, including Borden County. Although some ranchers benefited from economic gains associated with oil production, Borden continued to experience declines in both the number of farms and population. According to the 2014 U.S. census, Borden County had only 652 permanent residents, and the economy had expanded to include hunting and fishing tourism, beef cattle, cotton, oats, hay, pecans, and petroleum production (Hunt and Leffler 2010).

3.7.2 Previous Archaeological Sites and Surveys

A review of the digital data provided by the Texas Archeological Sites Atlas (TASA), which is an online database maintained by the THC, revealed that no previously recorded archeological sites are located within the proposed Study Area. However, two previously recorded sites are located within the 1-kilometer (0.6-mile) buffer of the Study Area. These sites were identified as part of a WETT 345kV transmission line project (TASA).

These sites were along the linear survey path of the previous 2011 survey conducted by aci consulting. The site is a prehistoric lithic scatter located on private property approximately 3.29 mi (5.3 km) east of Vealmoore Road and Highway 180. Further investigations were not recommended,

and the site was considered not eligible for listing on the National Register of Historic Places (NRHP) in 2011.

TASA does not provide data for all sites that may exist in a given area, but only those that have been formally documented and submitted to the THC for data curation. Due to the lack of previous surveys within the Study Area and 1-kilometer buffer, there is the possibility for unknown sites to exist within the Study Area. A pedestrian archeological survey of the area is needed to identify any unknown cultural resource and would be conducted prior to construction.

3.7.3 Records Review

A review of the digital data provided by TASA was conducted to locate previously recorded historic resources within the Study Area. Resources include properties listed in, or eligible for listing in, the NRHP, Recorded Texas Historic Landmarks (RTHLs), Historic Texas Cemeteries (HTCs), and Official Texas Historic Markers (OTHMs). The THC and the Texas Archaeological Research Laboratory (TARL) were also consulted for published and unpublished data regarding historic cemetery locations, as well as historic properties listed in or determined eligible for listing in the NRHP.

Historic properties are listed in or determined eligible for listing on the NRHP. Listing in the NRHP provides national recognition of a property's historical or architectural significance and denotes that it is worthy of preservation. Buildings, sites, objects, structures, and districts are eligible for this designation if they are at least 50 years old and meet established criteria. If potentially eligible structures do exist, a formal eligibility evaluation by a qualified architectural historian may be necessary. The designation of RTHL is awarded by the THC to buildings and structures at least 50 years old that are deemed worthy of preservation for their historical and architectural associations. Designation of RTHL is a legal designation and comes with a measure of protection and is the highest honor the state can bestow on a historic resource. The designation of HTC is also awarded by the THC to some cemeteries in recognition of the historical significance of the cemetery. An OTHM is educational in nature and does not carry legal restriction on the use of the property or site, although the THC must be notified if the marker is ever to be relocated.

The records review revealed no historic properties, RTHLs, HTCs, cemeteries without designation, or OTHMs are located within the Study Area.

4.0 EVALUATION OF THE ROUTE

4.1 Impacts on Physiography/Geology

Construction and operation of the proposed transmission line is not anticipated to have a significant impact on the physiographic or geologic resources located within the Study Area. The proposed transmission structures and associated foundations will only disturb very small and shallow areas of either soil or bedrock. The physical properties of local soils and bedrock are conducive for foundations. No blasting or mining of bedrock is expected to be necessary for construction of transmission structures.

4.2 Impacts on Soils and Prime Farmland

Construction of electric transmission lines can cause short-term impacts associated with soil erosion and soil compaction. Typically, transmission projects result in few long-term effects on soils.

Soil erosion is a continuing natural process that can be accelerated by human disturbance associated with construction. Factors that influence the degree of erosion include soil texture, structure, length and percent of slope, vegetative cover, and rainfall or wind intensity. Vegetation clearing, access road construction, equipment movement, and excavation for transmission structure foundations could accelerate the erosion process, and without adequate protective measures, potentially result in discharge of sediment into waterbodies. Soil loss due to erosion could also reduce soil fertility and impair vegetation.

To minimize erosion potential, WETT will develop and implement a Transmission Vegetation Clearing and Maintenance Plan (TVCMP) for short-term and long-term management of vegetation within the ROW. During construction, WETT will implement erosion control measures as appropriate and return work areas to their original contours and grades, unless otherwise agreed to by the landowners or landowners' representatives. WETT will clear woody vegetation from the ROW and additional temporary and permanent work areas to support safe and efficient Project construction, equipment movement and access. During operation of the line, woody vegetation that

could interfere with the conductors will be trimmed or removed to ensure the safe and reliable operation and maintenance of the 138kV electric transmission line in accordance with NERC standards. Vegetation on stream banks will be left intact to the extent possible. Natural revegetation will be encouraged, and if seeding or plantings are necessary, revegetation will be conducted using a seed mixture of native species developed in consultation with individual landowners. WETT will develop and incorporate into the TVCMP invasive species monitoring and control measures to address the potential for invasive plant species to become established in disturbed areas.

WETT will develop a SWPPP to minimize the impacts of soil erosion and protect waterways from sedimentation. This SWPPP will specify revegetation practices consistent with the TVCMP, work area inspection frequency (both during and after construction), erosion prevention controls, and identify priority areas for revegetation. Discharges of stormwater runoff from construction projects of this type are eligible for coverage under General Permit Number TXR150000, General Permit to Discharge Wastes, pursuant to the TPDES, Section 402 of the Clean Water Act. WETT will comply with the requirements of this General Permit to minimize potential erosion associated with stormwater runoff.

Heavy equipment and vehicular traffic traveling within work areas could cause the soils to become compacted. The degree of compaction depends upon the ground weight of the equipment or vehicle, soil texture, and soil moisture content at the time of the activity. Compaction would be most severe where heavy weight-bearing equipment or vehicles operate on moist to wet soils containing high clay content. Compaction damages soil structure and reduces pore space, impeding the movement of air and water to plant roots. Compaction can result in reduced vegetative growth rates and crop yields. Although the Project work areas could be located in areas with compactable soils, the limited extent of these individual areas should limit the potential for compaction soil damage. In the event soils do become compacted, WETT will decompact the soils during restoration of the Project work areas.

WETT will minimize serious soil compaction and rutting by restricting heavy equipment traffic and other activities on susceptible soils where wet soil conditions exist. During construction, WETT will determine if wet soil conditions warrant restriction of heavy equipment/vehicle use or implementation of mitigation measures including those below:

- Low-ground pressure or tracked vehicles;
- Temporary access roads constructed in permit-authorized areas using crushed stone situated over geotextile filter fabric;
- Temporary construction matting in saturated areas where soil disturbance is likely; and
- Brush/wood chip matting in saturated areas where soil disturbance is likely.

The Study Area contains approximately 69.9 acres of soils that meet prime farmland criteria. Where present along the transmission line, the primary impact of Project construction and operation on prime farmland soils would be the small amount of land taken out of production by the small transmission structure foundations. However, the NRCS does not consider the construction and operation of electric transmission lines to be a conversion of prime farmland because the affected land can still be used for agricultural purposes after installation (Kiniry 2009). Therefore, implementation of the Project would not result in significant impacts to prime farmland soils in the Study Area.

4.3 Impacts on Water Resources

4.3.1 Surface Water

Construction and operation of the proposed transmission Project would have little impact to surface waters in the Study Area. Construction-related impacts may include short-term effects on water quality associated with localized increases in turbidity and downstream sedimentation resulting from construction in proximity to wetlands and waterbodies. Sediment may also be introduced into waterbodies by runoff of stormwater from adjacent areas of land disturbance. Temporary increases in turbidity may result in minor impacts to aquatic habitat and organisms, by reducing light levels, photosynthesis, and dissolved oxygen levels.

Because construction will proceed quickly at waterbody crossings with no or limited in-stream activity, disturbances will not be significant. Long-term impacts on water quality or aquatic organisms are not anticipated. Water quality and other stream attributes should be minimally affected and return to pre-construction conditions within a short period after completion of construction.

Additionally, WETT may install equipment access (i.e., bridges, culverts) across waterbodies to construction sites where necessary, and will remove after construction unless required for permanent access. Any permanent waterbody crossings, if needed, will be designed to maintain existing hydrology. Existing bridges and culvert structures will be used to the maximum extent possible during construction to minimize new waterbody crossings. To protect water quality, WETT will implement SWPPP best management practices to minimize sedimentation impacts to surface waters during construction, will develop a Spill Prevention, Control, and Countermeasures Plan containing measures for the proper control and handling of any petroleum and other chemical products, and will prohibit refueling of construction equipment within 100 feet of wetlands and/or waterbodies.

Based on the analysis conducted by the Project Team, implementation of the Project is not anticipated to result in significant impacts to surface water resources.

4.3.2 Groundwater

The construction, operation, and maintenance phases of the Project are not expected to adversely affect groundwater resources as there are no groundwater wells, or major or minor aquifers within the Study Area. No significant changes to groundwater recharge or water quality are anticipated.

Impacts to groundwater quality due to any accidental spills or leaks of petroleum products or other hazardous materials from equipment/vehicle refueling or maintenance during construction are unlikely as the nearest groundwater well is approximately two miles from the Study Area and the nearest aquifer is approximately three miles from the Study Area. However, WETT will implement procedures for the proper control and handling of these materials as part of a Spill Prevention, Control and Countermeasures Plan.

4.3.3 Wetlands

Project construction and operation is not expected to result in significant or long-term impacts to wetlands because the Project will be designed to span wetlands and waters of the U.S. to the extent possible. Wetlands could be temporarily impacted during construction by the alteration of wetland

habitat due to vegetation clearing. Land disturbance within and adjacent to a wetland could result in temporary, localized changes to wetland hydrology and water quality.

Following CCN issuance, WETT will conduct on-the-ground surveys of the certificated electric transmission line route for waters of the U.S. (wetlands and waters), design transmission structures to span waters of the U.S. wherever practicable, place additional temporary work spaces to avoid wetlands wherever practicable, report results to the USACE, consult with the USACE to determine any permit requirements pursuant to Section 401/404 of the Clean Water Act, and obtain any such required permit prior to initiation of construction.

4.4 Impact on Ecology

4.4.1 Vegetation

The primary impact to vegetation would be the removal of existing upland vegetation within the proposed transmission line ROW. The greatest amount of vegetation clearing would be required for the shrubs, while minimal clearing would be necessary in grasslands areas.

Construction within the ROW would be performed in such a manner as to minimize adverse impacts to vegetation and retain existing groundcover wherever possible. Where the transmission lines would traverse shrublands, clearing would be required. Where necessary, all trees, brush, and undergrowth within the ROW would be removed. Soil conservation practices would be undertaken to protect local vegetation and ensure a successful restoration program for disturbed areas. Erosion would be controlled as required by procedures set forth in the SWPPP.

4.4.1.1 Endangered, Threatened and SGCN Plant Species

Federal and State Endangered or Threatened Species

As stated in **Section 3.4.1.1**, no plant species are currently listed by the USFWS or TPWD as endangered or threatened in Borden County; therefore, impacts to federal- or state-listed threatened or endangered plant species are not anticipated.

SGCN Species

There were two plant species listed as SGCN with potential to occur within the Study Area, Jones' selenia and Cory's evening-primrose. Jones' selenia was listed as an element of occurrence (EO) under the TXNDD within the Sandy Creek and Long Draw USGS Quadrangles. Due to the lack of wetland habitat and minimal clearing in grasslands areas, adverse impacts to Jones' selenia is not anticipated. Cory's evening-primrose was not documented in TPWD's TXNDD. Due to best management practices described in **Section 4.1.1**, effects to Cory's evening-primrose is expected to be short-term and minimal.

4.4.2 Fish and Wildlife

Short-Term Effects

The impacts of transmission lines on wildlife can be divided into two basic categories: short- and long-term effects. Short-term effects result in physical disturbance usually during construction and maintenance activities. Increased noise and activity levels during construction may affect wildlife along the edges of proposed transmission line impact areas, temporarily displacing animals from the sites. The increased noise and activity levels during construction could also potentially disturb breeding or other activities of species inhabiting the areas adjacent to the ROW; however, the effect of increased noise, dust, and emissions from combustion engines on wildlife is expected to be minimal. Although the normal behavior of many wildlife species would be temporarily altered during construction of the proposed transmission line, permanent effects due to noise, dust, and emissions are not expected.

In general, the primary impact of construction activities on wildlife would be the result of vegetation clearing and associated disturbances. Any required clearing and other construction-related activities would directly and/or indirectly affect most animals that reside in, or pass through, transmission line ROWs. Some small, low-mobility species have the potential to be killed by heavy construction and maintenance machinery. These include several species of amphibians, reptiles, mammals, and, if ROW clearing and construction occurs during the breeding season, the young of many species, including nestling and fledgling birds. Fossorial animals (i.e. those that live underground) such as mice, moles, and gophers may be similarly impacted as a result of soil

compaction caused by heavy machinery. Larger or more mobile species such as birds, deer, rabbits, and foxes may avoid clearing and construction activities and be displaced to adjacent areas outside of the ROW. Wildlife in the immediate area may experience a loss of browse during construction; however, the prevalence of similar habitats in adjacent areas and regrowth of vegetation in the ROW following construction would minimize the effects of this loss. During construction, vegetation clearing will be avoided during the migratory bird nesting season (March through August) to the extent practicable to minimize adverse impacts to birds. If clearing during bird nesting season is unavoidable, surveys will be conducted in the disturbance areas to ensure that no nests with eggs or young will be impacted by construction.

Long-term Effects

Long-term effects are primarily due to habitat modification and the addition of permanent, man-made structures. After construction is completed and grasses, forbs, and shrubs are allowed to recover, many forms of wildlife are anticipated to re-occupy transmission line ROWs. Clearing of ROW for construction and maintenance activities will result in increased edge habitat in dense shrubland areas and a decrease in edge where the existing landscape is patchy. Edge habitats or ecotones are often preferred by generalist species such as cottontail rabbits, deer, and northern bobwhite quail. More specialized species can be positively or negatively impacted by clearing activities, such as grassland passerines that may benefit from the increase in open expanses.

Transmission line structures could benefit some bird species, particularly raptors and corvids, by providing resting and hunting perches, particularly in open, treeless habitats (Avian Powerline Interaction Committee [APLIC] 2006). Raptors often utilize the support structures as nesting sites; most common among these is the red-tailed hawk. Vultures and ravens are known to use these structures as nighttime roosts and the wires and supports are often used as hunting or resting perches. The danger of electrocution to birds would be minimal as the distance between conductors or conductor and ground wire on 138kV transmission lines is greater than the wingspan of the birds in the area. Also, the Project would follow APLIC guidelines and install devices where necessary to deter bird landings on the insulator between the conductor and structure.

The proposed transmission line (both structures and wires) presents a potential hazard to flying birds, particularly migrants. Collisions tend to increase in frequency during the fall when migrating

flocks are denser and flight altitudes are lower in association with cold air masses, fog, and inclement weather. The greatest danger of mortality exists during periods of low ceiling, poor visibility, and drizzle when birds are flying low, perhaps commencing or terminating a flight, and may have difficulty seeing obstructions. Migrant species, including passerines, however, should be minimally affected during migration since normal flying altitudes are generally greater than the heights of the proposed transmission structures (Kerlinger 1995).

For resident birds and birds during periods of nonmigration, those most prone to collision are often the largest and most common in a given area (APLIC 2006). Resident birds, or those in an area for an extended period, learn the location of power lines and become less susceptible to wire strikes (Avery 1978). Raptors are typically uncommon victims of transmission line collisions due to their great visual acuity and common behavior of soaring thermals, which usually don't develop until late morning when light is sufficient to allow for detection of conductor wires (Avery 1978).

Additionally, bird fatalities can occur due to electrocution if contact occurs with energized and ground structures simultaneously. Electrocution of birds occurs when an individual completes a circuit by bridging the gap between energized and/or grounded equipment. In general, phase to phase and phase to ground spacing on transmission lines should be greater than the wingspan of a bird to avoid electrocution. The danger of electrocution to birds would be minimal as the Project would follow APLIC guidelines which requires the distance between conductors or conductor and ground wire on transmission lines to be greater than the wingspan of the birds likely to occur in the Study Area. Furthermore, as previously stated, the Project would follow APLIC standard practice to install devices where necessary to deter bird landings on the insulator between the conductor and structure.

4.4.2.1 Endangered, Threatened and SGCN Animal Species

Federally Endangered or Threatened Species

Based on information obtained from USFWS (USFWS 2018) and TPWD (TPWD 2018), no federally endangered or threatened listed species are expected to occur within the Study Area. In addition, the federally de-listed peregrine falcon, including the American and Arctic peregrine falcon subspecies, has the potential to occur in the Study Area.

As discussed in **Section 3.4.2.1**, the peregrine falcon, including its Arctic and American subspecies, is a potential migrant through the Study Area. This species and subspecies were not documented in TPWD's TXNDD; however, this species and its subspecies are known to migrate throughout the state, and thus have the potential to occur within the Study Area during migration. Nevertheless, risk of collision is likely to be low due to the peregrine falcon's diurnal habits and visual acuity. Therefore, the proposed project is unlikely to adversely affect the peregrine falcon or its Arctic and American subspecies.

State Endangered or Threatened Species

One species, the Texas horned lizard, is state-listed as threatened by TPWD and has the potential to occur in the Study Area. The Texas horned lizard could potentially be impacted by construction of the transmission line due to some degree of ground disturbance. This species is less mobile than the other listed taxa and thus could conceivably be unintentionally harmed by the heavy machinery. However, the overall impacts to the species would be short-term and limited to the construction phase of the proposed Project. To the extent possible, a biological monitor will be present during construction to try and relocate any Texas horned lizards if found. If a biological monitor is unable to be present, any state-listed species that are found during construction will be allowed to safely leave the site.

SGCN Species

While not listed as endangered or threatened by USFWS or TPWD, **Table 3-6 lists** SGCN that may occur within the Study Area. This includes mountain plover, western burrowing owl, Black-tailed prairie dog, and swift fox.

As discussed in **Section 3.4.2.1** the mountain plover has a low potential to occur as Borden County is outside but adjacent to known species breeding range. This species was not identified by TPWD's TXNDD as occurring within the Study Area. Therefore, these species are unlikely to be affected by the construction and operation of the proposed transmission line.

As discussed in **Section 3.4.2.1**, western burrowing owls have the potential to occur in open prairies and grasslands within the Study Area; therefore, there is potential for this species to occur. However, it is anticipated the overall impacts to the species would be short-term and limited to the construction phase of the proposed Project.

TPWD's TXNDD documented prairie dog towns occurring within or surrounding the Study Area and historically known prairie dogs were relocated in 2012. However, prairie dogs have the potential to reinhabit the Study Area as discussed in **Section 3.4.2.1**. Similar to the western burrowing owl, it is anticipated the overall impacts to the species would be short-term and limited to the construction phase of the proposed Project.

Moderate quality swift fox habitat is located within the Study Area; therefore, the species has the potential to occur within the Study Area. However, due to the low to moderate potential of occurrence, the mobility of the species and the large amount of adjacent habitat, the proposed transmission line is unlikely to adversely affect the swift fox.

Rare Species

Table 3-6 lists "rare" species not listed as federal or state endangered or threatened or TPWD SGCN that may occur within the Study Area. These include the ferruginous hawk and Sprague's pipit.

As discussed in **Section 3.4.2.1**, ferruginous hawks oftentimes coexist with prairie dog towns. There are records of black-tailed prairie dog occurrence per TPWD's TXNDD. Even though previous black-tailed prairie dogs located in the Study Area have been relocated, there is a potential for prairie dog towns to reestablish in the Study Area. Due to the potential presence of prey base and ferruginous hawks are known winter residents of the region, there is potential for this species to occur. However, due to the high visual acuity and mobility of this species, the proposed transmission line is unlikely to adversely affect the ferruginous hawk.

As discussed in **Section 3.4.2.1**, the Sprague's pipit is assumed to be a transient species and present only for brief periods. This species was not identified by TPWD's TXNDD as occurring within the

Study Area. Therefore, these species are unlikely to be affected by the construction and operation of the proposed transmission line.

4.5 Impacts on Community Values and Community Resources

Impacts on community resources can be classified into either direct effects or indirect effects. Direct effects are those that would occur if the location and construction of the Project results in the removal of, or loss of public access to, a valued resource. Indirect effects are those that would result from a loss in the enjoyment or use of a resource due to the characteristics (primarily aesthetic) of the Project. Impacts to community values and resources are discussed in the following sections and summarized in **Table 4-1.**

Table 4-1 – Environmental Data Summary for Route Evaluation

	Route
1. Length of route in feet	9,567.13
2. Length of route in miles	1.8
3. Length of route parallel and adjacent to existing transmission lines	0
4. Length of route utilizing existing transmission ROW	0
5. Length of route parallel and adjacent to existing public roads/highways	0
6. Length of route parallel and adjacent to existing pipelines	0
7. Length of route parallel and adjacent to railroads	0
8. Length of route parallel to apparent property boundaries	0
9. Total length of route parallel to existing corridors (including apparent property boundaries)	0
10. Number of habitable structures[5] within 300 feet of the route centerline	0
11. Length of route across parks/recreational areas	0
12. Number of additional parks or recreational areas[6] within 1,000 feet of the route centerline	0
13. Length of route through commercial/industrial areas	0
14. Length of route across agricultural pastureland/rangeland	9,567.13
15. Length of route across agricultural cropland and orchards	0
16. Length of route across agricultural land with mobile irrigation systems	0
17. Length of route across upland forest	0
18. Length of route across riparian woodland, including forested wetlands	0
19. Length of route across emergent wetlands	0
20. Number of streams crossed by the route	0

[5] *Habitable structures include but are not limited to single-family and multi-family dwellings and related structures, mobile homes, apartment buildings, commercial structures, industrial structures, business structures, churches, hospitals, nursing homes, and schools, or other structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis.*

[6] *Defined as parks and recreational areas owned by a governmental body or an organized group, club, or church.*

Table 4-1 – Environmental Data Summary for Route Evaluation	
	Route
21. Length of route parallel to rivers, creeks, and streams (within 100 feet)	0
22. Number of recorded cultural resource sites[7] crossed by the route	0
23. Number of additional recorded cultural resource sites within 1,000 feet of the route centerline	0
24. Length of route across areas of high prehistoric and historic archaeological site potential	0
25. Number of airstrips with runways greater than 3,200 feet within 20,000 feet of the route centerline	0
26. Number of airstrips with runways equal to or less than 3,200 feet within 10,000 feet of the route centerline	0
27. Number of heliports within 5,000 feet of the route centerline	0
28. Length of route across open water (lakes, ponds)	0
30. Number of commercial AM radio transmitters within 10,000 feet of route centerline	0
31. Number of FM radio transmitters, microwave relay stations, and other electronic installations within 2,000 feet of the route centerline	0
32. Number of U.S. or State Highways crossed by the route	0
33. Number of FM roads, county roads, or other streets crossed by the route	0
34. Length of route within foreground visual zone of park/recreational areas (1/2 mile)	0
35. Length of route within foreground visual zone of State and U.S. Highways (1/2 mile unobstructed)	0

4.6 Land Use Impacts

Land displaced by the transmission line construction represents the largest land use impacts. Additionally, land use impacts result from the compatibility of electric transmission line ROW with adjacent land uses. Note that a 138kV transmission line on monopoles uses a narrower ROW, and thus a smaller land use impact, than a higher voltage line or larger structure type would. Most existing land uses will continue during construction.

Movement of workers and materials through the area during construction results in temporary impacts to land uses within the ROW. Temporary effects on residents and businesses in the area immediately adjacent to construction work areas would be negligible from construction noise and dust. There may be limited temporary disruption of traffic flow during construction. Coordination

[7] *Recorded cultural resources sites are defined as those sites recognized and recorded by the THC.*

Note: Unless otherwise noted, all length measurements are in feet. All linear measurements were obtained from ESRI aerial photography flown in 2016.

among WETT, their contractors, and landowners regarding access to the ROW and construction scheduling will minimize these temporary disruptions. Due to the remote location of the Project and the lack of urban/residential areas in the vicinity of the Project, temporary effects to residents and businesses are expected to be negligible.

Following construction, disturbed work areas will be graded or otherwise restored and allowed to revert to approximate preconstruction conditions. Only one landowner is impacted by the Project and all agreements negotiated during the easement acquisition process will dictate any other acceptable restoration measures. Natural revegetation will be encouraged, and if seeding or plantings are necessary, revegetation will be conducted using a seed mixture of native species developed in consultation with the landowner. As a result, land use impacts to these areas would be temporary. Because vegetation is expected to return to preconstruction conditions within one to two growing seasons, impacts to lands located within the ROW will be short term and minor. Shrublands within the ROW will be maintained in a low-growth state to minimize potential interference with the conductors.

Permanent land use conversion will not occur to most lands within the ROW. Allowable land uses generally permitted within the permanent ROW would include agriculture, including the use of farming equipment and the cultivation of row crops, and rangeland/pastureland. The only future land uses not allowed in the permanent ROW are aboveground construction and the growth, planting, or cultivation of trees.

4.6.1 Urban/Residential Areas

The ROW of the Project would affect approximately 21 acres of undeveloped, rural land. The nearest population center, Gail, is approximately 10 miles to the northeast of the Project. The PUCT considers the number of habitable structures located in the vicinity of a route when evaluating impacts. The Project Team conducted a review of aerial photography and determined that there are no habitable structures within 300 feet of the centerline of the route or within the entire Study Area. There are no residential or urban areas within or in proximity to the Study Area, thus there will be no direct or indirect impacts to residential or urban areas.

4.6.2 Recreational Areas

As discussed in **Section 3.6.2**, there are no recreational areas within the Study Area. Because no recreational areas would be crossed by the route, no direct or indirect impacts to recreational areas are anticipated from Project construction.

4.6.3 Agriculture

As discussed in **Section 3.6.3**, the only agricultural land uses within the Study Area are possibly as rangeland for livestock. There are no croplands or center-pivot or other traveling irrigation systems within the Study Area. Thus, there would be no impacts to cropland or irrigation systems. Additionally, there would be no long-term or significant displacement of livestock activities as existing agricultural land uses could be resumed following construction.

4.6.4 Aesthetics

Impacts to visual resources can occur when the ROW, transmission lines, and/or structures alter the character of existing views. The degree of scenic impact is highly subjective, and depends on the value that viewers place on the landscape in its natural form versus with the presence of the transmission line. Factors that affect the amount of overall visual impact include the numbers of viewers who would see the facilities, how long they would view the facilities, the expectations of those viewers in terms of what they are used to seeing and their aesthetic preferences, the natural scenic quality of the existing landscape, and the extent other manmade features such as utilities, buildings, and roadways are already present in the area.

Construction of the transmission line could have temporary and permanent aesthetic effects. Temporary impacts would include views of the actual assembly and erection of the Project. Permanent impacts would involve the views of the structures and lines associated with the Project. WETT proposes to use monopole tower structures which generally reduce visual impacts as their visibility fades into the background horizon as towers become more distant from the viewer.

There are no officially designated federal, state or local scenic areas in or near the Study Area that would be affected by the Project. Visual impacts are likely to be experienced mostly by local

residents and motorists on roadways near the Project. The local roadways are relatively lightly traveled, limiting the number of viewers who would see the Project, and those travelers who do see the Project would likely experience its view for a relatively short period of time. In addition, the character of the landscape near the Study Area has already been altered from its natural form by several existing transmission lines that terminate at the existing Long Draw 345kV switching station.

Based on the presence of few residences, the lack of designated visual resources, and the existing transmission infrastructure in the Study Area, no significant impacts to aesthetic resources are anticipated.

4.6.5 Transportation/Aviation

4.6.5.1 Transportation

Construction of the Project will result in minor, short-term impacts to the transportation network in the Study Area. The movement of construction equipment and materials and the daily commuting of employees to and from the construction work areas may slightly increase traffic volumes. Construction work of this type is typically scheduled to take advantage of daylight hours, 6 days per week; therefore, most workers will commute to and from the construction ROW during off-peak hours.

To maintain safe conditions, WETT will direct its construction contractors to ensure enforcement of local weight restrictions and limitations by its vehicles. At new points of access to the ROW from hard-surfaced roads that are developed for the Project, a stone pad will be installed to minimize dirt tracking onto the pavement, and any soil that is left on the road surface by the crossing of construction equipment would be removed. When necessary for equipment to cross roads, mats or other appropriate measures (e.g., sweeping) will be used to reduce any deposits of soil on the road surface.

Overall, WETT does not anticipate significant traffic impacts along the route during construction. No traffic-related impacts are anticipated during operation of the Project. WETT will consult with TxDOT to coordinate construction with the planned seal coating of FM 1054/Vealmoore Road.

4.6.5.2 Aviation

Depending on terrain, the structure height for the typical transmission structures would be 80 feet. According to FAA Regulations, Part 77 (FAA, 2015), notification of the construction of the proposed transmission line is required if structure heights exceed the height of an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public, private, or military airport having at least one runway longer than 3,200 feet; 50 to 1 for a horizontal distance of 10,000 feet from the nearest runway of a public, private, or military airport where all runways are 3,200 feet in length or less; or 25 to 1 for a horizontal distance of 5,000 feet for heliports.

No airstrips were identified within 20,000 feet of the Project. In addition, no heliports were identified within 5,000 feet of the Project. Therefore, FAA notification is not required, and no direct or indirect impacts to airstrips or heliports are anticipated as a result of the Project.

4.6.6 Electronic Installations

As previously discussed, no electronic installations or towers were identified within 10,000 feet of the proposed transmission line route; therefore, no direct or indirect impacts are anticipated.

4.6.7 Oil/Gas Facilities

As previously discussed, there are no permitted well locations, active wells, or pipelines within the Study Area. According to data obtained from the Railroad Commission of Texas (RCT), there is a well identified as a dry hole in the location of the existing Long Draw 345kV switching station. However, it appears this well no longer exists as it has been covered by the existing switching station and could not be identified in the vicinity on aerial photography. Therefore, no direct or indirect impacts to oil and gas facilities are anticipated.

4.7 Impacts on Cultural Resources

4.7.1 Archaeological and Historical Resources

Because of the limited physical disturbance associated with construction of a transmission line project and the ability to span areas where significant resources could occur, potential impacts to archaeological and cultural resources that would result from development of the Project are expected to be limited.

As previously discussed, there were no previously recorded archaeological sites, historic properties, RTHLs, HTCs, cemeteries without designation, or OTHMs in the Study Area. Construction activities associated with any proposed project have the potential to adversely impact cultural resources through changes in the quality of the archaeological, historical, or cultural characteristics that qualify a property to meet the criteria of eligibility to the NRHP. These impacts occur when the construction of a project alters the integrity of locations, design, setting, materials, construction, or association that contribute to a resource's significance in accordance with the NRHP criteria. As discussed in 36 CFR 800, adverse impacts on NRHP-listed or -eligible properties may occur under conditions that include, but are not limited to:

- Destruction or alteration of all or part of a property;
- Isolation from or alteration of the property's surrounding environment (setting); or
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting.

A project can result in both direct and indirect impacts to cultural resources. Specifically, direct impacts typically occur during construction. Indirect impacts include those caused by construction that occur later in time or are further removed, but are foreseeable. These indirect impacts may include changes in land use patterns, population density, or accelerated growth rates.

Avoidance is the preferred form of mitigation for direct or indirect impacts to cultural resources. An alternative form of mitigation of direct impacts can be developed for archaeological and historical sites with the implementation of a program of detailed data retrieval. Also, relocation

may be possible for some historic structures. Careful design considerations can reduce indirect impacts to historical properties.

Due to the lack of previous surveys within the Study Area, there is the possibility for unknown sites to exist within the Study Area. A pedestrian archaeological survey of the area is needed to identify any unknown cultural resource. Following CCN issuance, WETT will conduct a pedestrian archaeological survey of the certificated route in accordance with a preapproved research design developed in consultation with the THC for the new transmission line Project. The results of these surveys will be presented to the THC for review and comment.

4.7.2 Unanticipated Discoveries

Previously unrecorded cultural resources are sometimes discovered during the course of construction projects, even after the Study Area has been surveyed for cultural resources. Although there would be a very slight probability of encountering undiscovered cultural resources within the limits of the surveyed ROW, WETT will develop an Unanticipated Discoveries Plan that outlines the procedures that would be followed in the event that unanticipated cultural resources or human remains are encountered during construction of the Project. This plan will be submitted to the THC for review and comment prior to adoption by WETT and will address the following items:

- Training and Orientation;
- Observation of Cultural Materials;
    - Stopping Work;
    - Minimization of Equipment Usage in Surrounding Areas;
    - Notifications;
    - Archaeological Examination/Evaluation;
    - Alternatives Analysis;
    - Mitigation;
- Observation of Human Remains;
    - Stopping Work;
    - Notifications;
    - Minimization of Equipment in Surrounding Areas;
    - Archaeological Examination/Evaluation;

- Notification of Medical Examiner; and
- Notification of Native American Representatives.