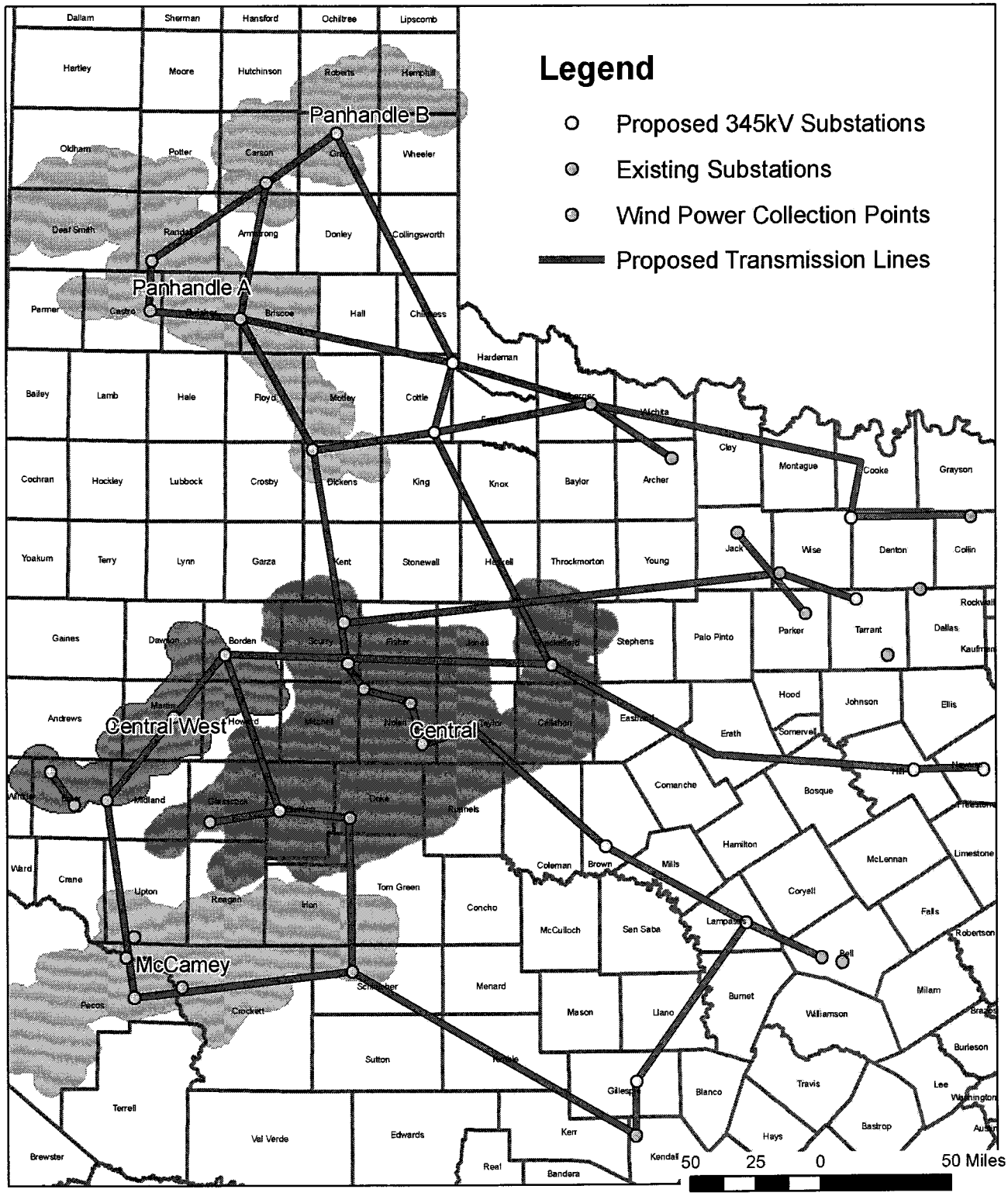
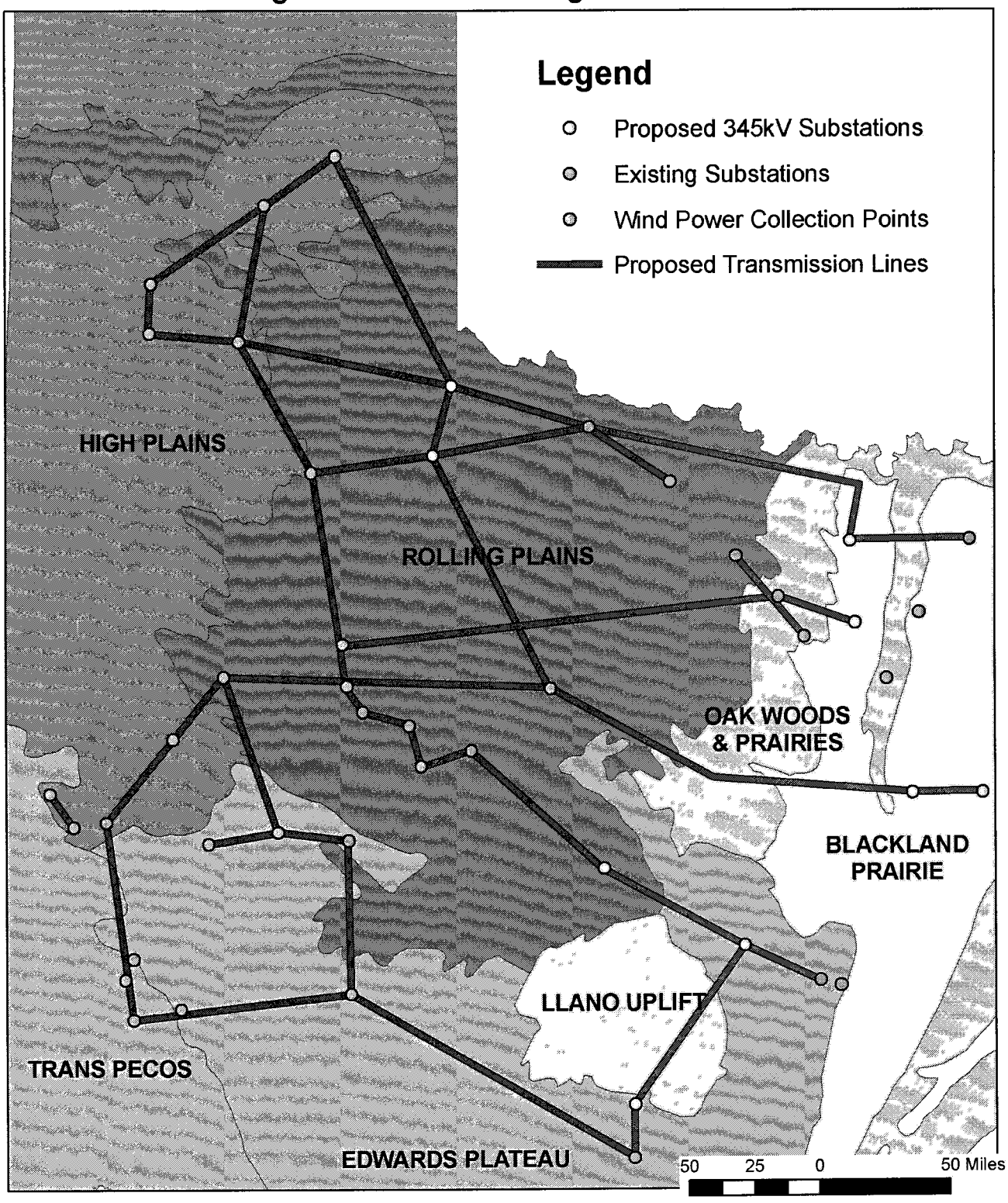
Figure 2. Transmission Plan (Lines Requiring New Structures)



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

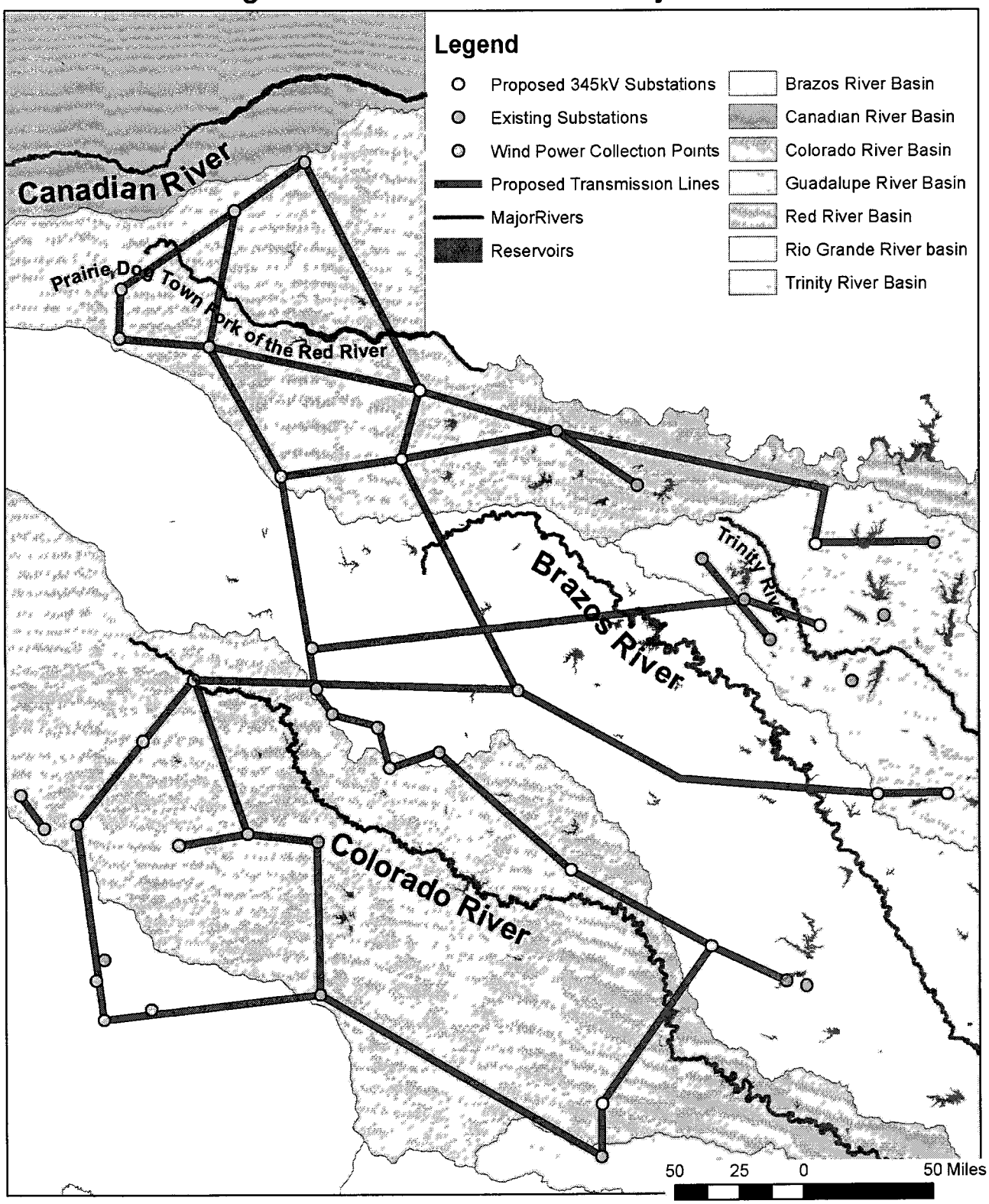
Figure 3. Natural Regions of Texas



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

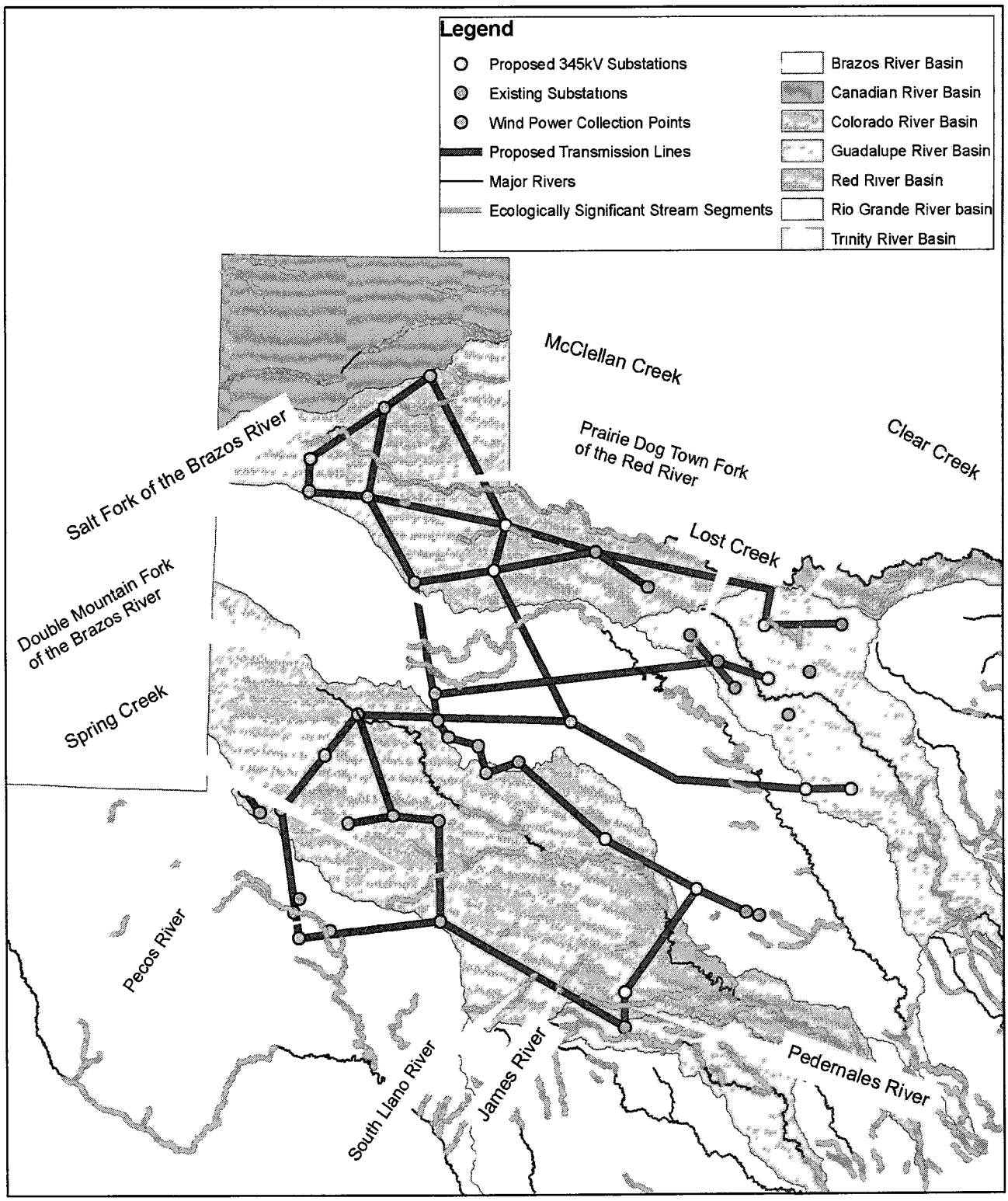
Figure 4. Reservoirs and Major Rivers



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

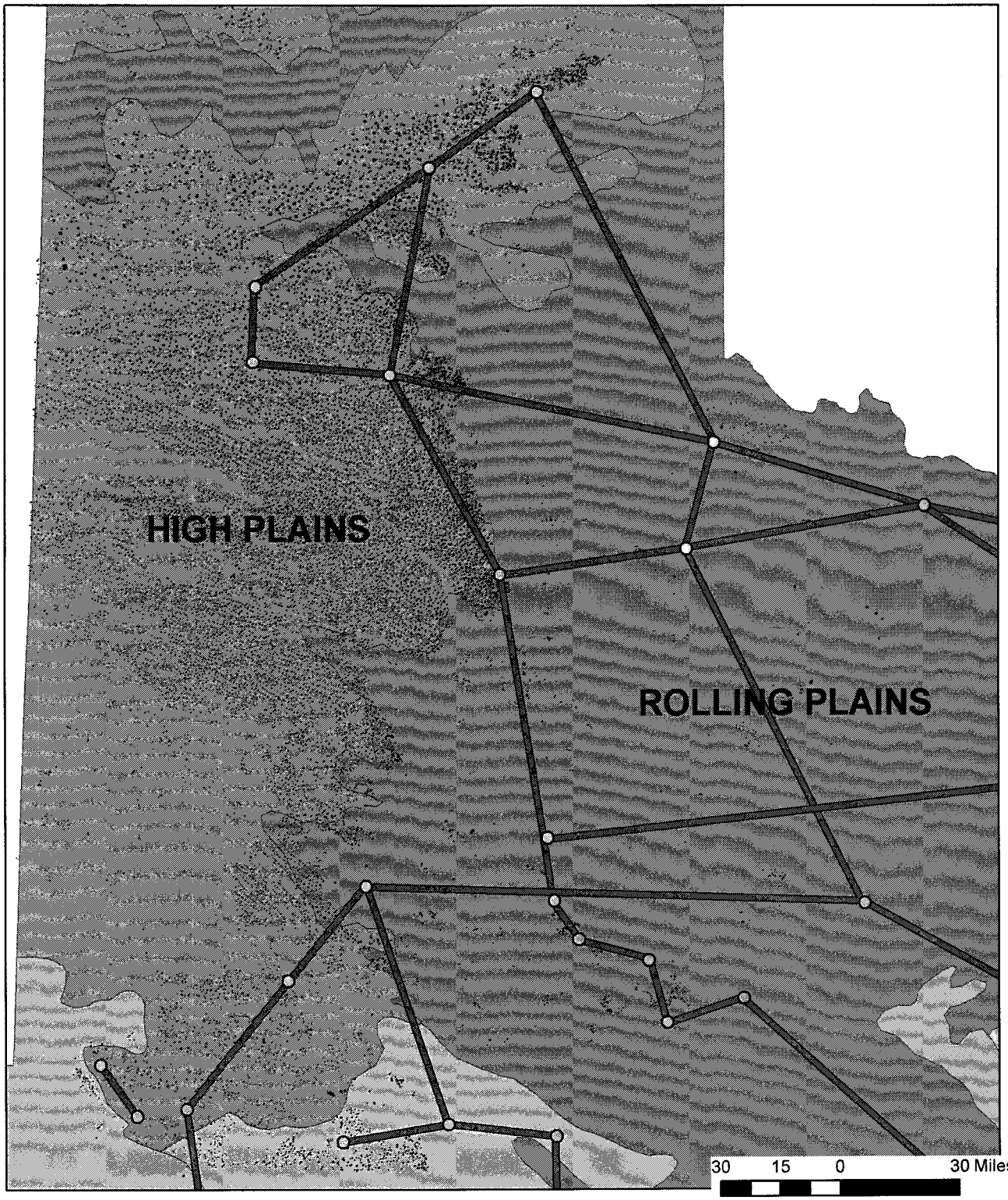
Figure 5. Ecologically Significant Stream Segments



22 December 2008
Projection Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 6. Playa Lakes



23 December 2008
Projection. Texas State Mapping System

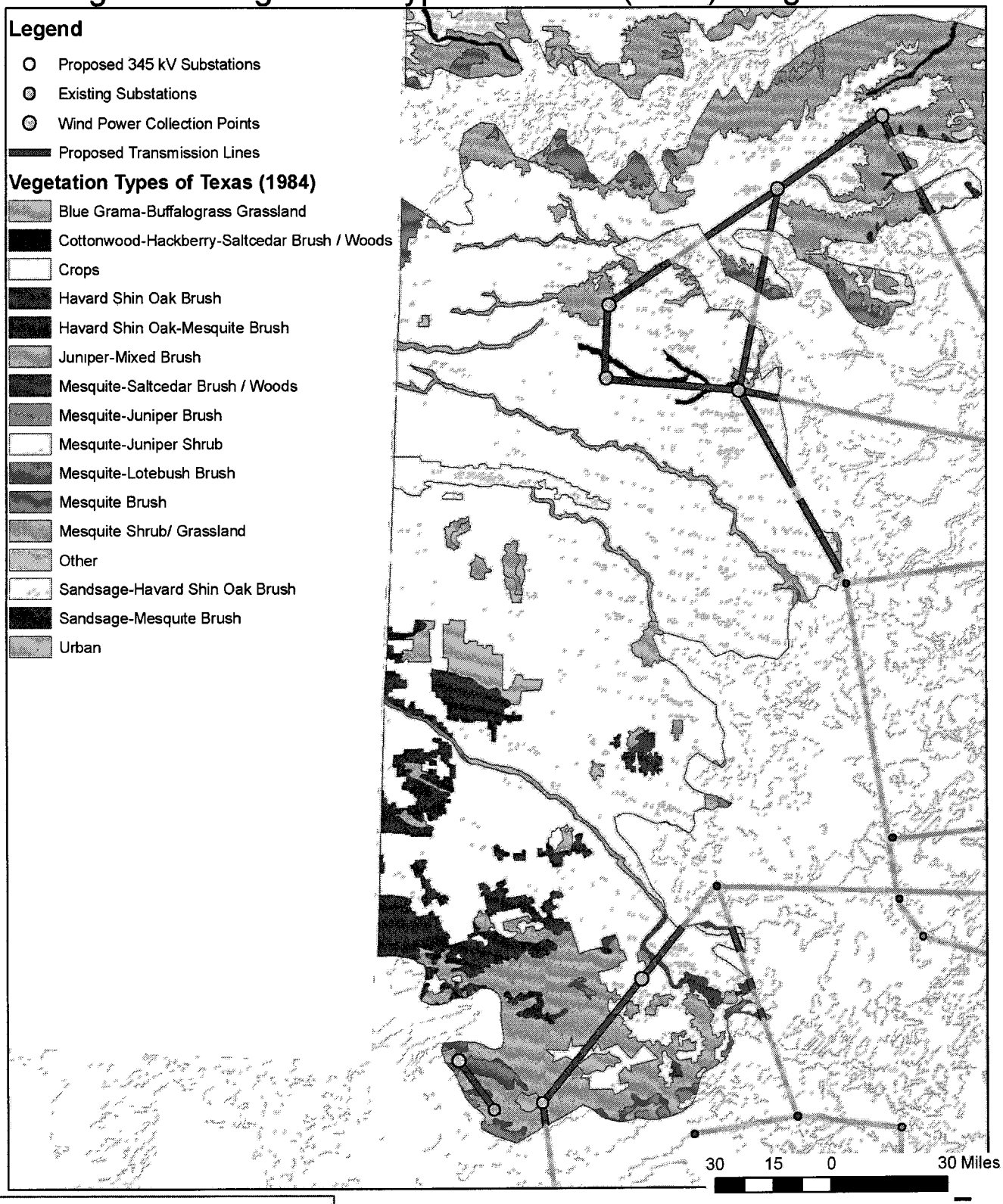
Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Legend

- Proposed 345kV Substations
- Existing Substations
- Wind Power Collection Points
- Proposed Transmission Lines
- TTU_playas

TEXAS PARKS & WILDLIFE

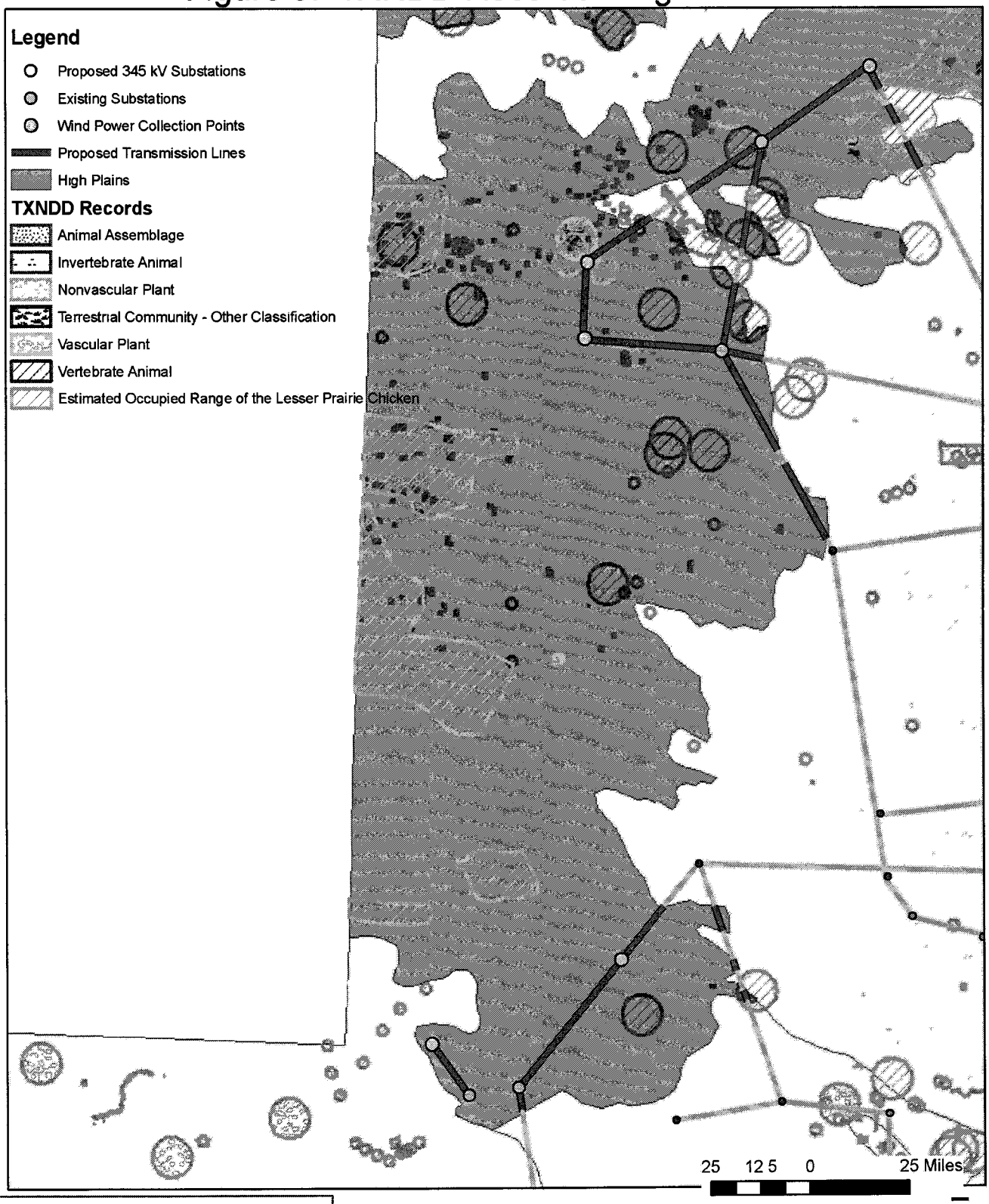
Figure 7. Vegetation Types of Texas (1984) - High Plains



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 8. TXNDD Records - High Plains

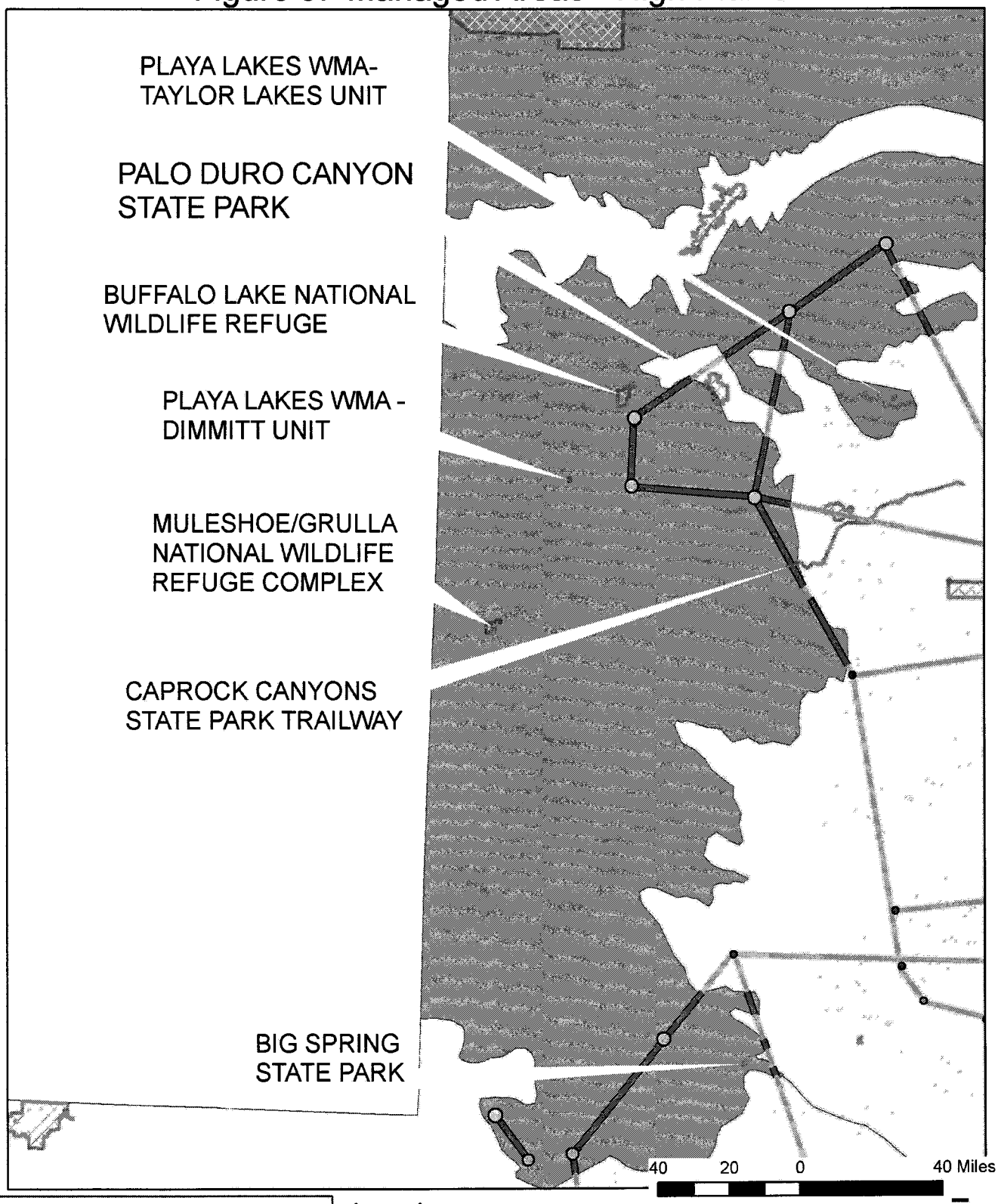


23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

Figure 9. Managed Areas - High Plains



23 December 2008
Projection: Texas State Mapping System

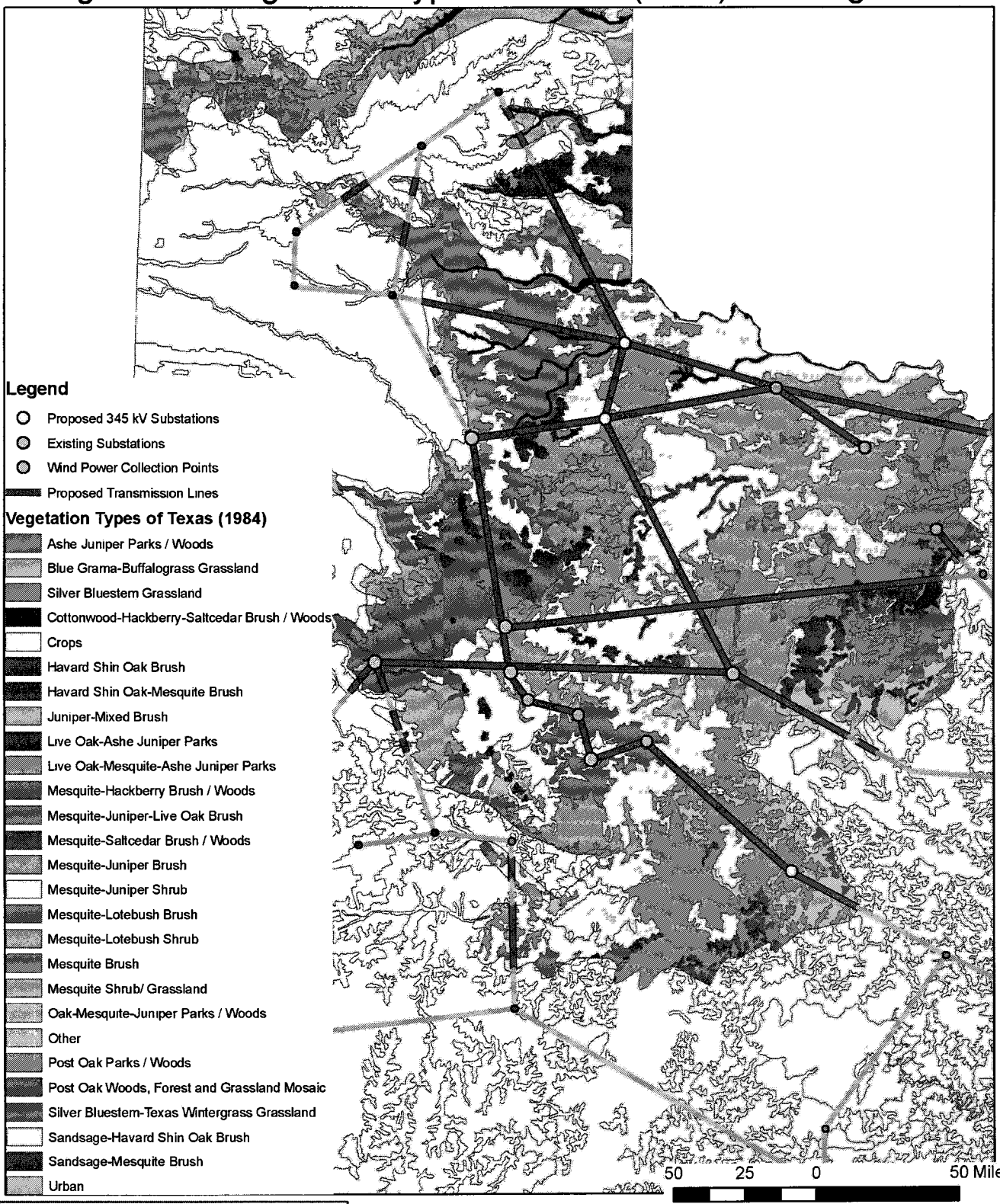
Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Legend

- Proposed 345 kV Substations
- Existing Substations
- Wind Power Collection Points
- Proposed Transmission Lines
- High Plains
- Managed Areas

TEXAS PARKS & WILDLIFE

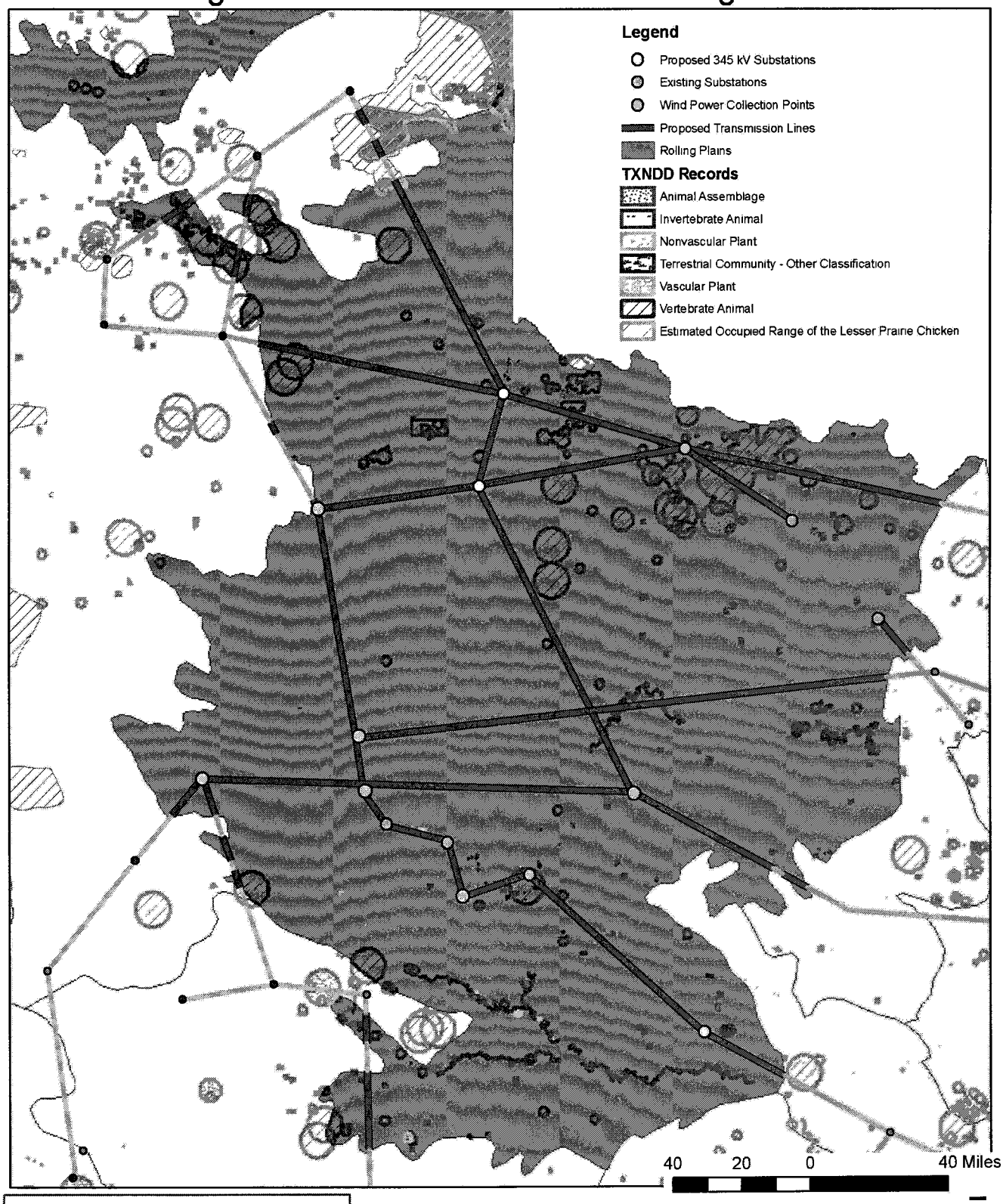
Figure 10. Vegetation Types of Texas (1984) - Rolling Plains



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 11. TXNDD Records - Rolling Plains

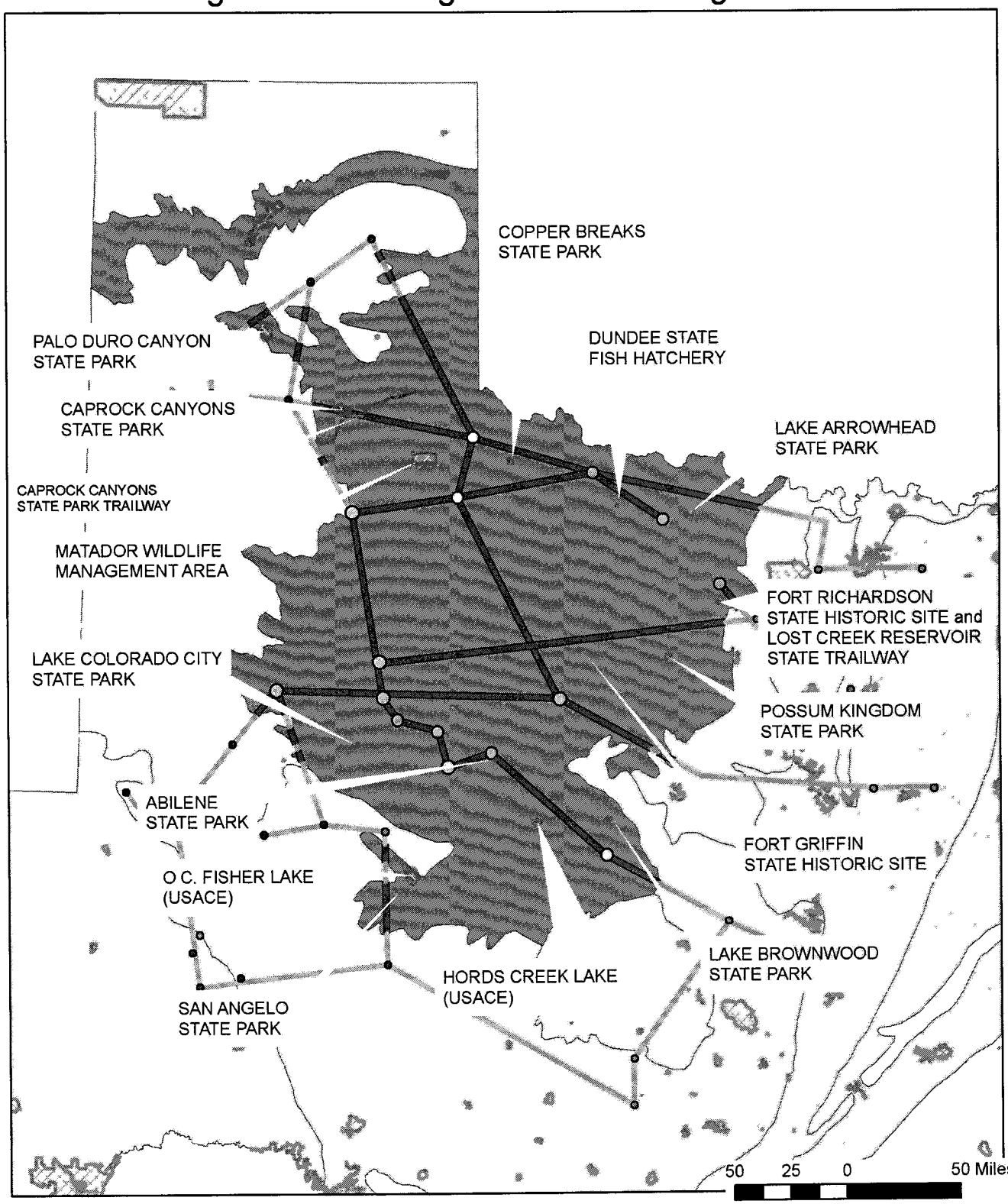


23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

Figure 12. Managed Areas - Rolling Plains



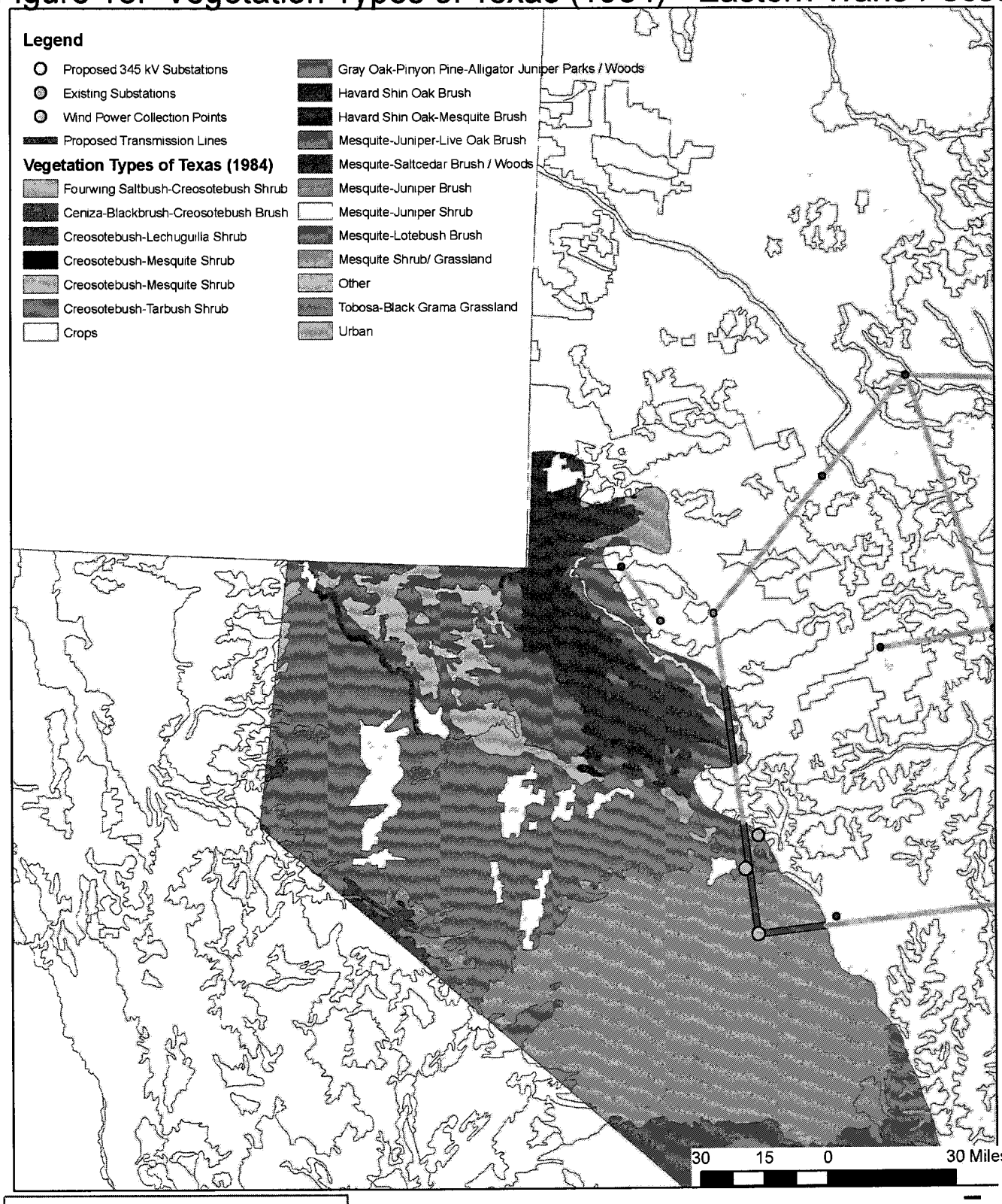
23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Legend

- Proposed 345 kV Substations
- Existing Substations
- Wind Power Collection Points
- Proposed Transmission Lines
- Rolling_Plains
- Managed Areas

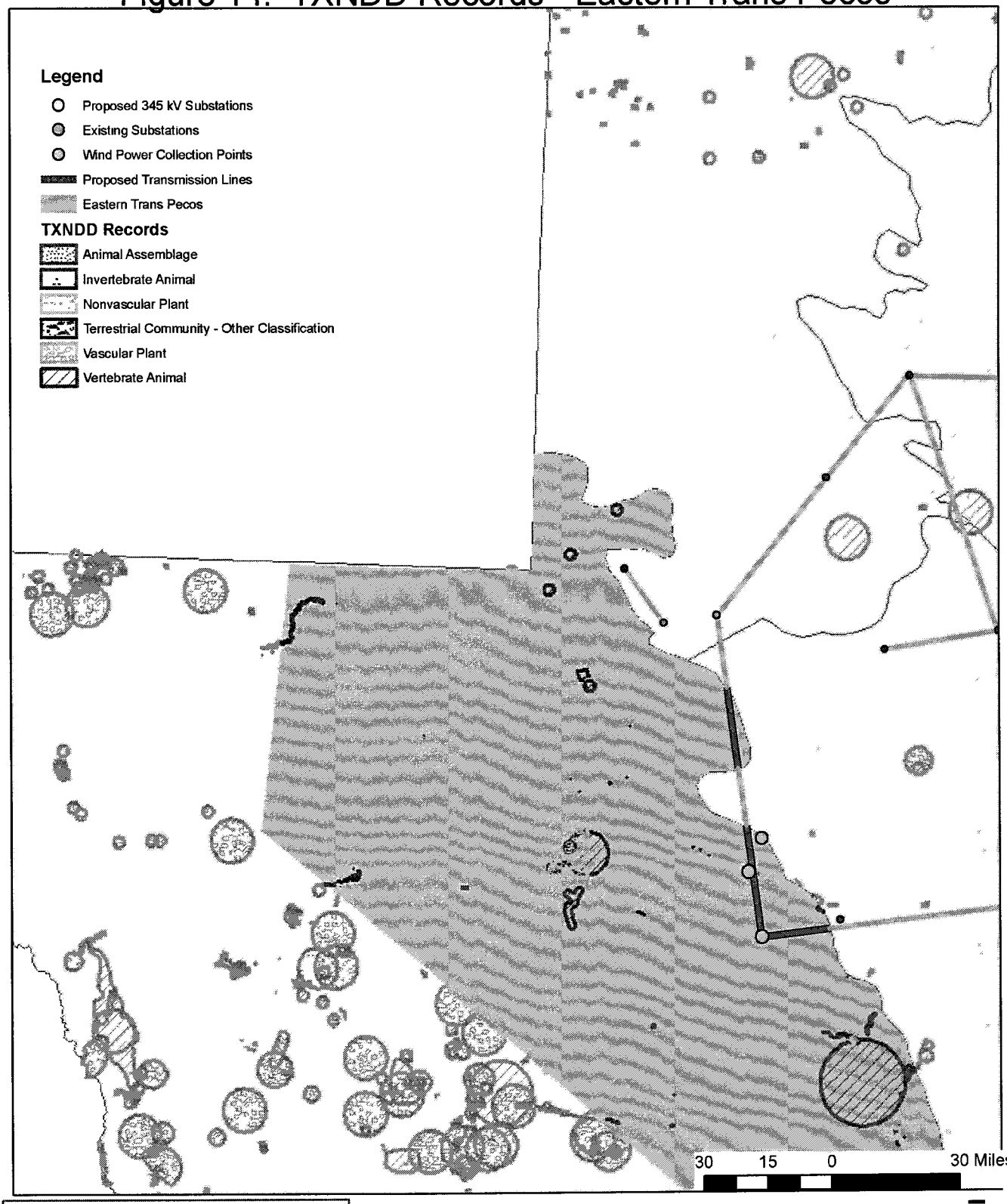
Figure 13. Vegetation Types of Texas (1984) - Eastern Trans Pecos



23 December 2008
Projection Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

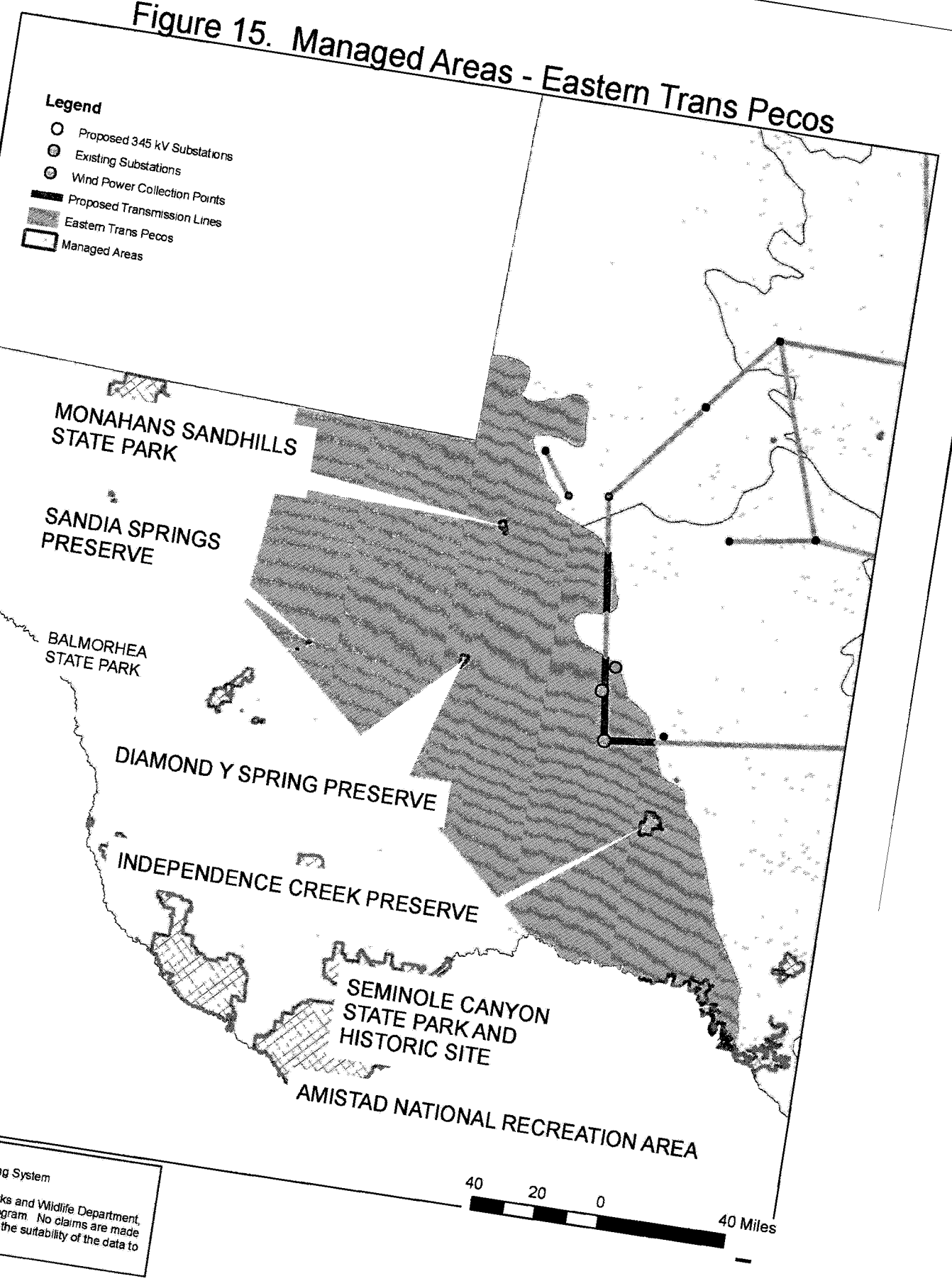
Figure 14. TXNDD Records - Eastern Trans Pecos



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 15. Managed Areas - Eastern Trans Pecos



23 December 2008
Projection. Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

Figure 16. Vegetation Types of Texas (1984)
Edwards Plateau and Llano Uplift

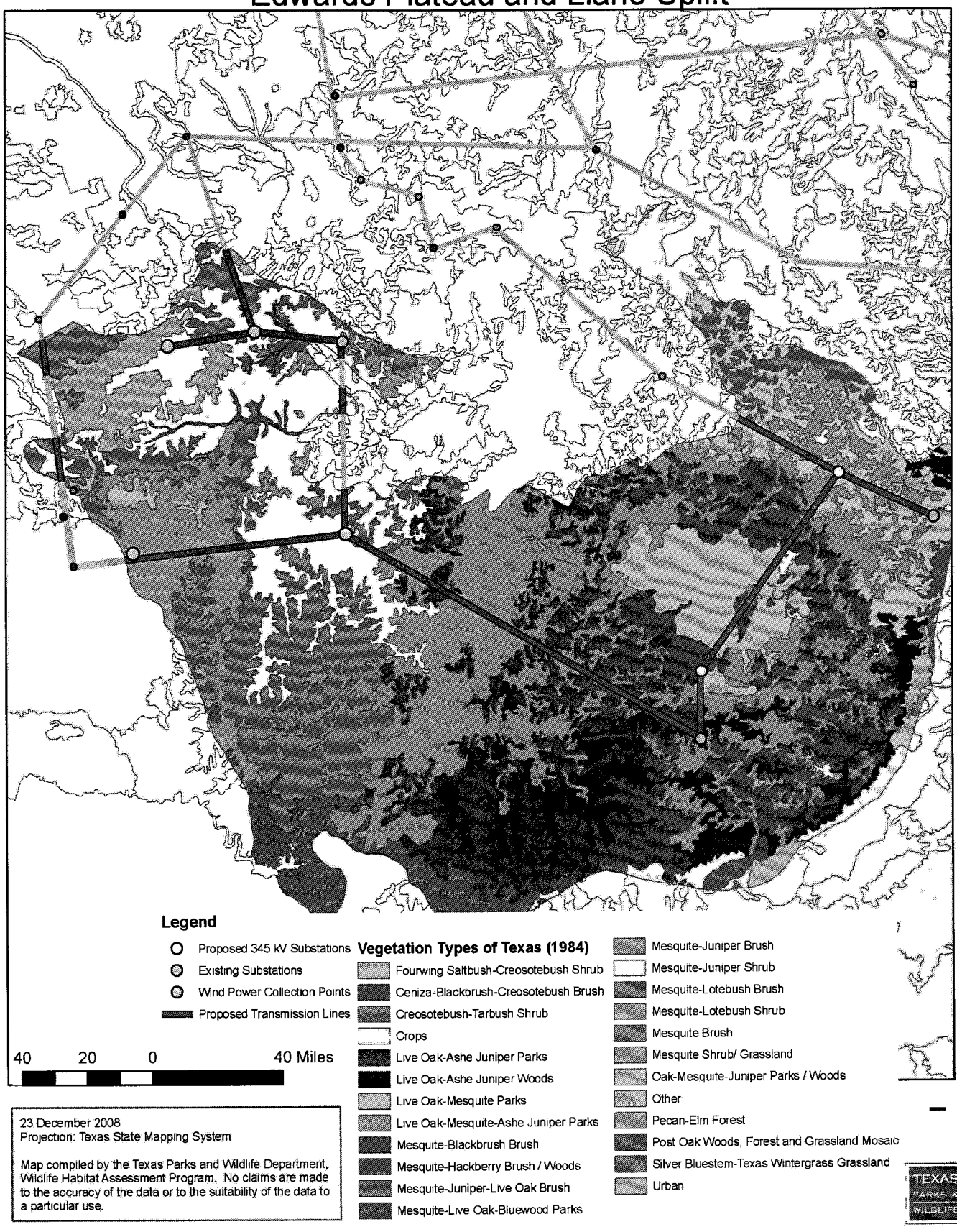
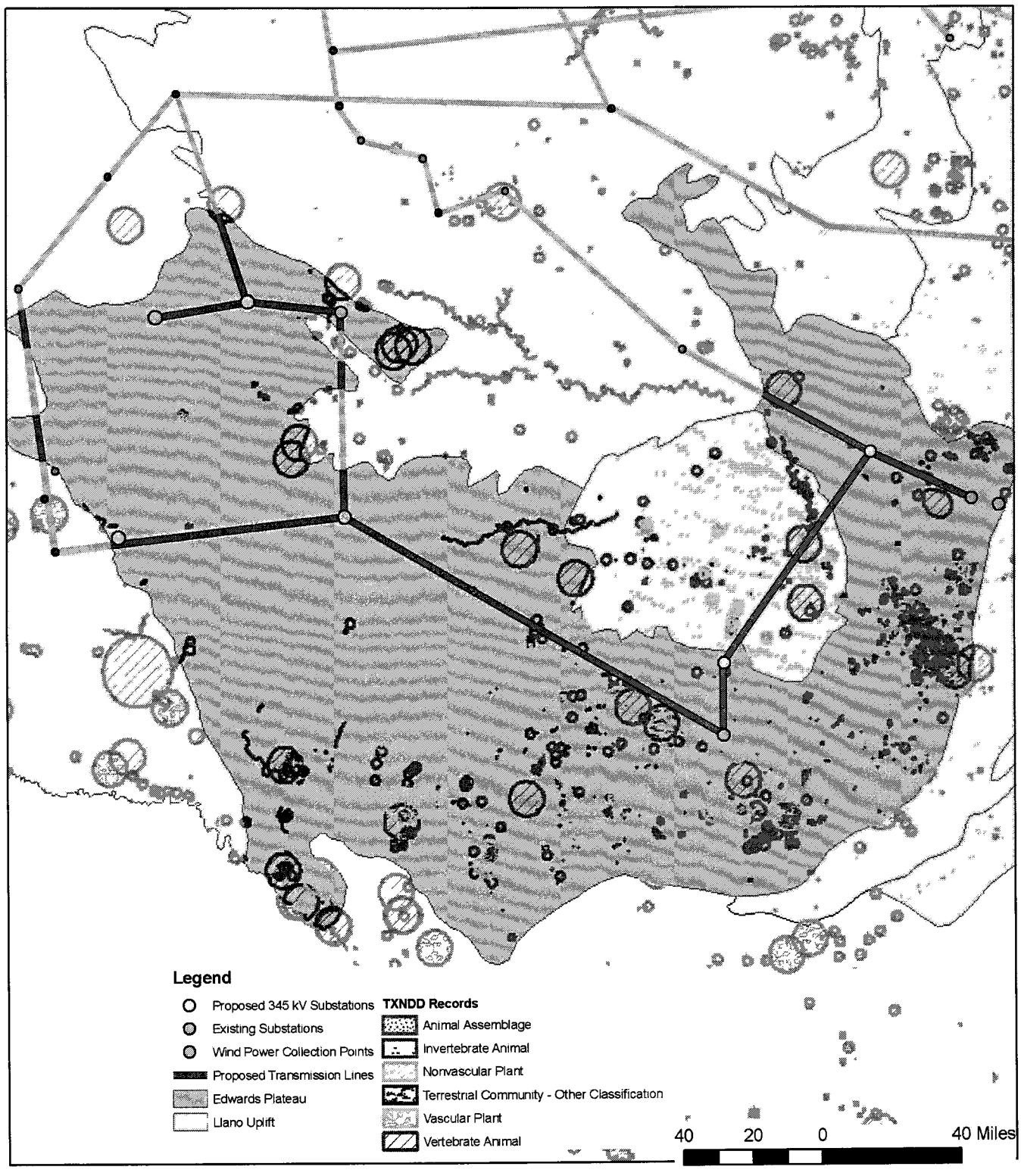


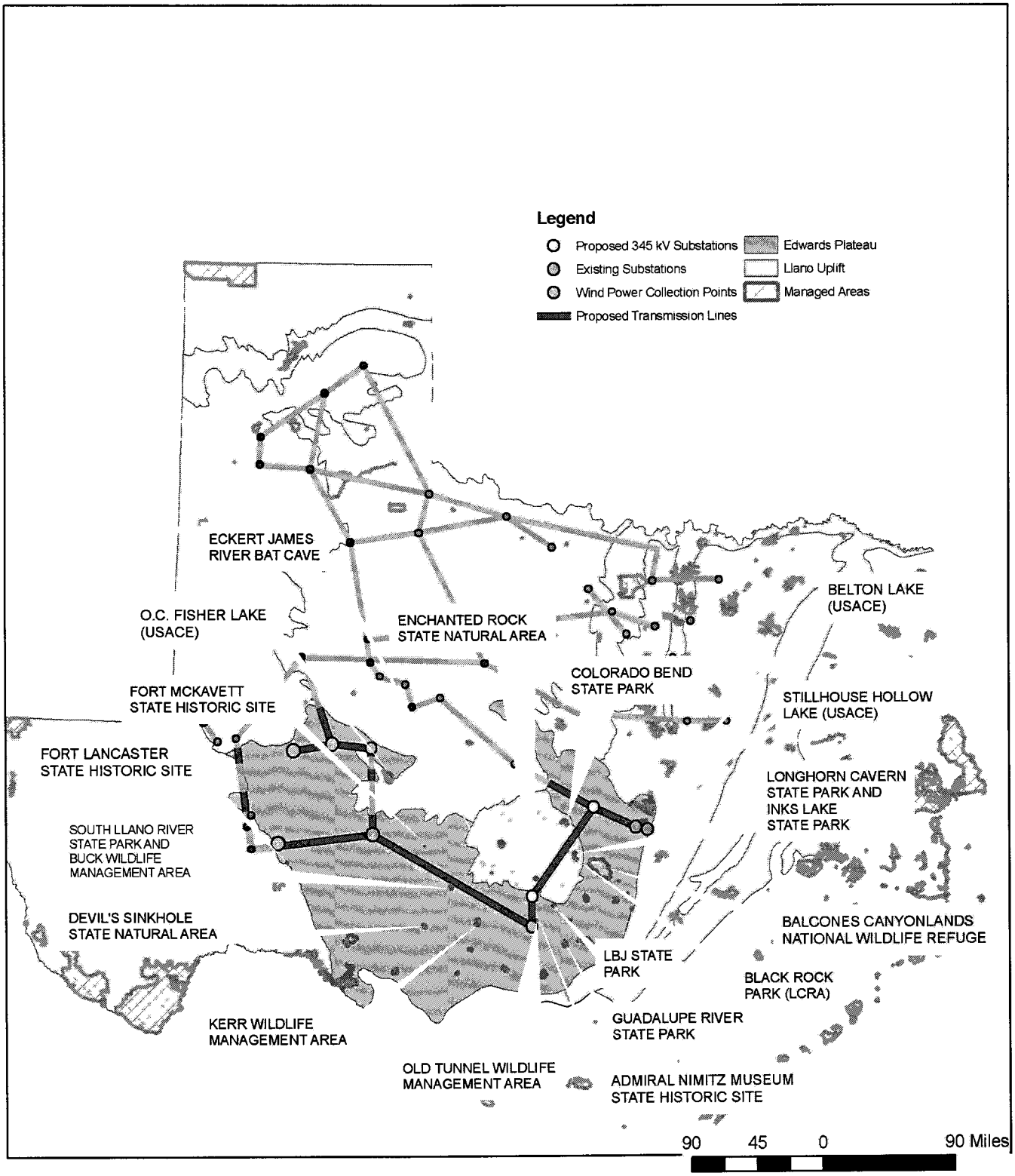
Figure 17. TXNDD Records - Edwards Plateau and Llano Uplift



23 December 2008
Projection Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

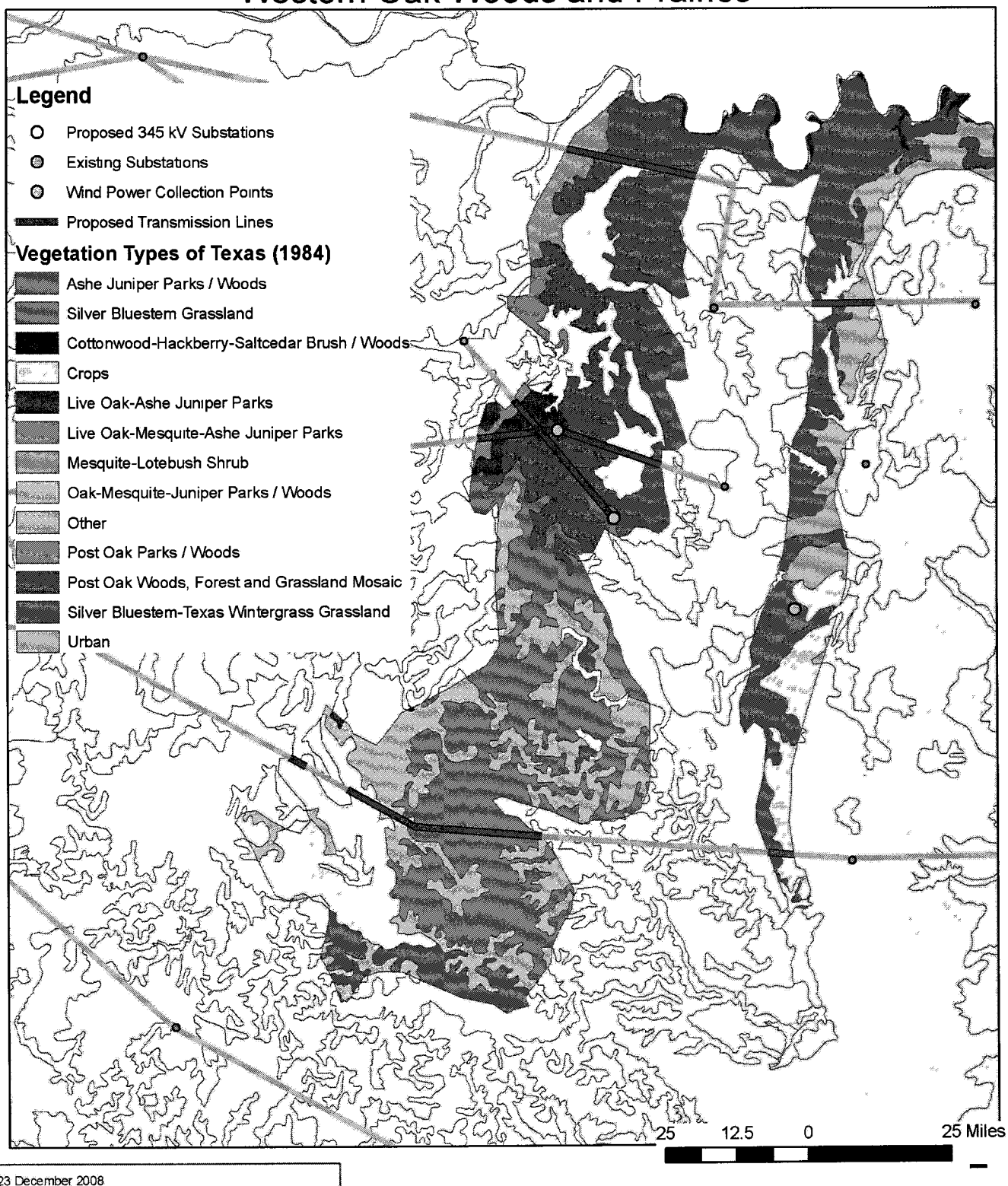
Figure 18. Managed Areas - Edwards Plateau and Llano Uplift



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 19. Vegetation Types of Texas (1984)
Western Oak Woods and Prairies

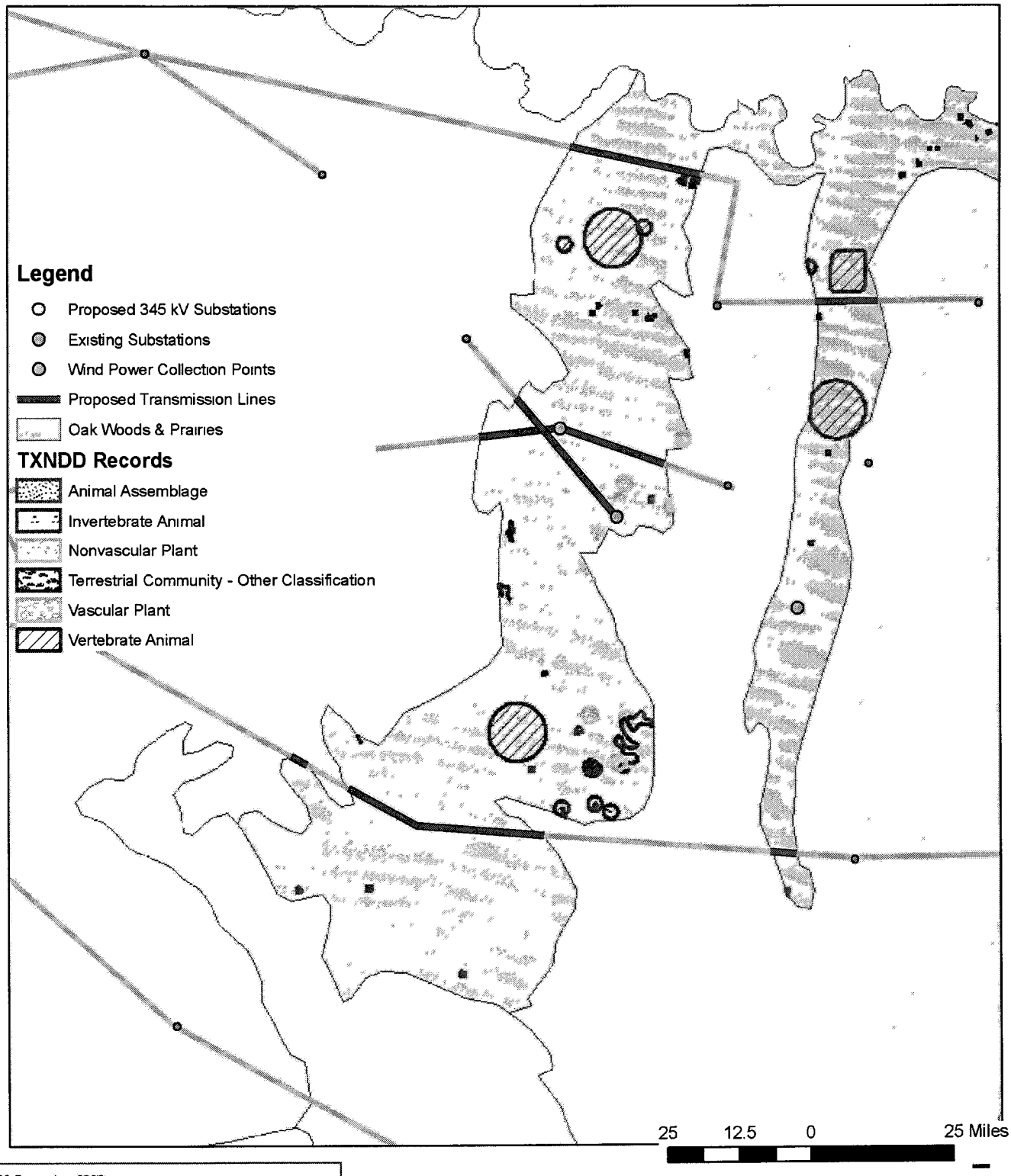


23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

Figure 20. TXNDD Records - Western Oak Woods and Prairies

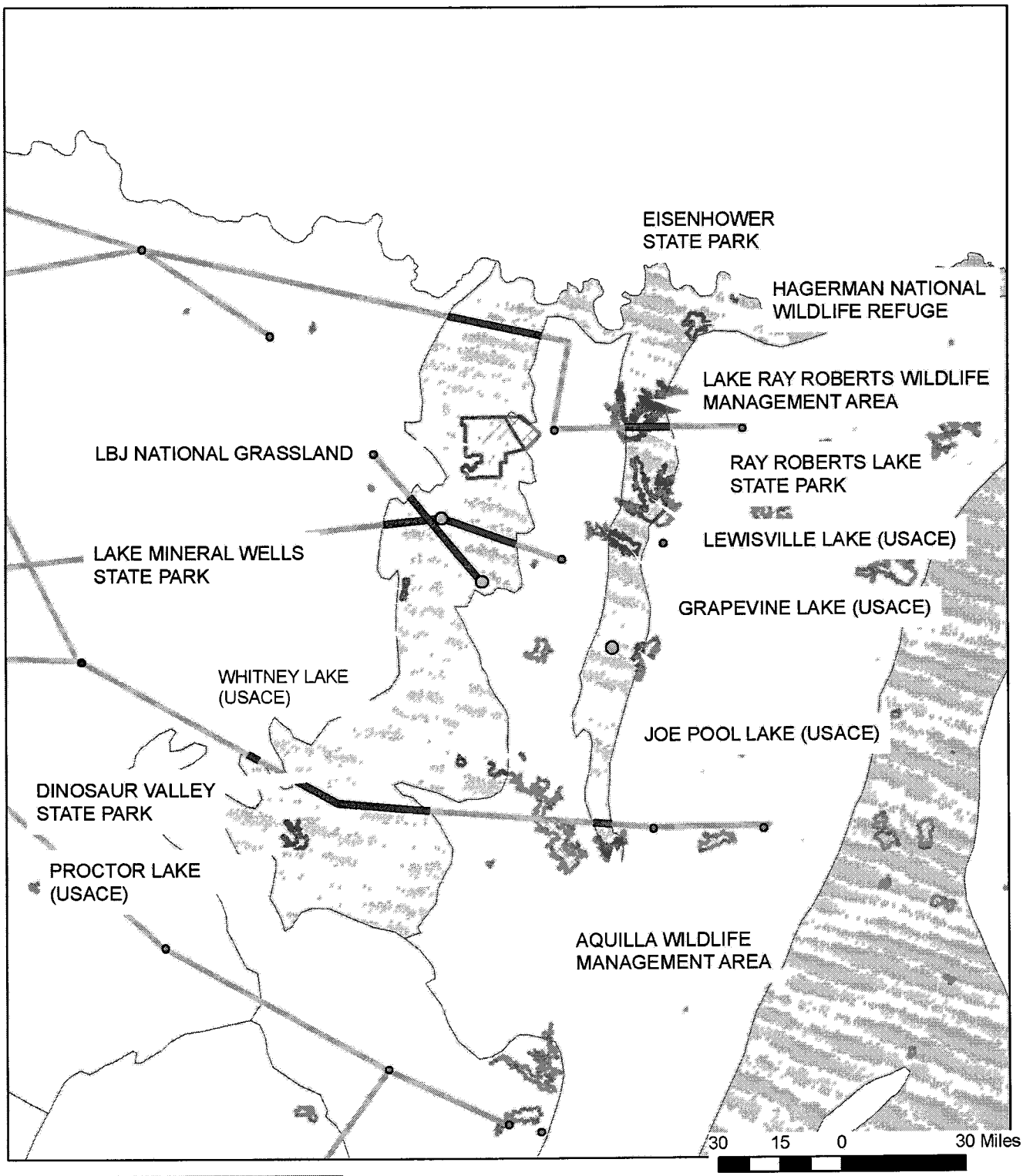


23 December 2008
Projection Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

TEXAS PARKS & WILDLIFE

Figure 21. Managed Areas - Western Oak Woods and Prairies



23 December 2008
Projection: Texas State Mapping System

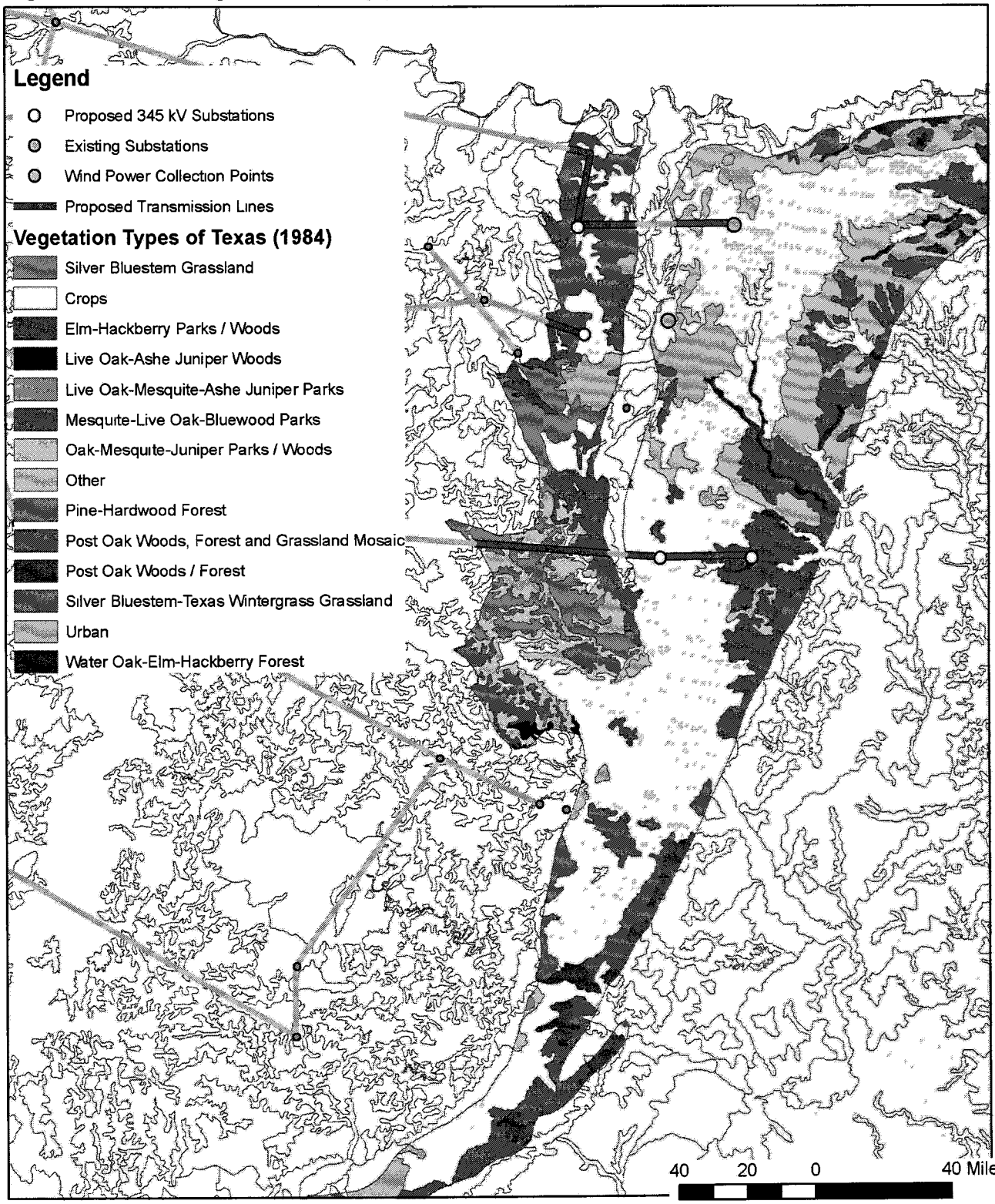
Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Legend

- Proposed 345 kV Substations
- Existing Substations
- Wind Power Collection Points
- Proposed Transmission Lines
- Oak Woods & Prairies
- Managed Areas

TEXAS PARKS & WILDLIFE

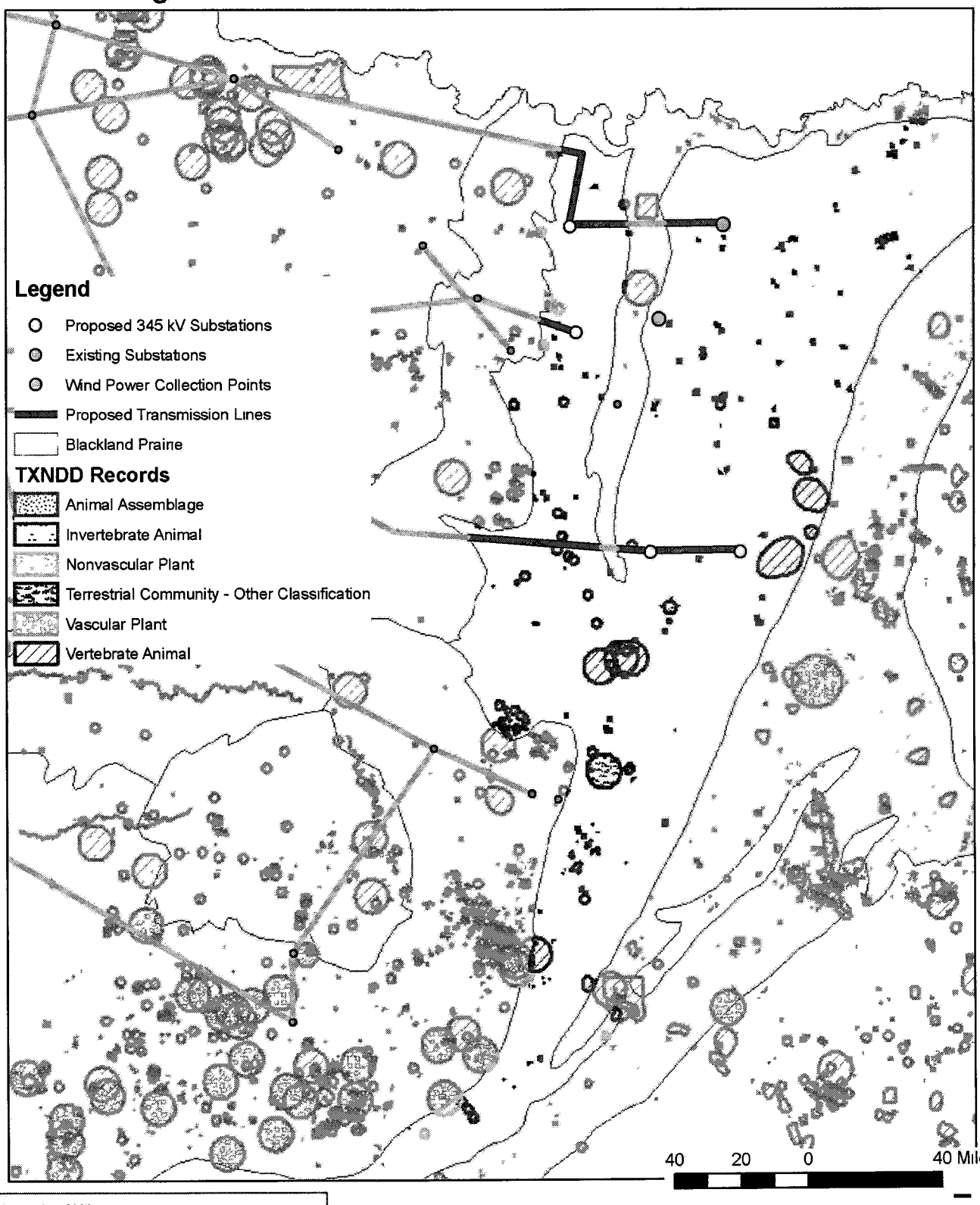
Figure 22. Vegetation Types of Texas (1984) - Blackland Prairie



23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

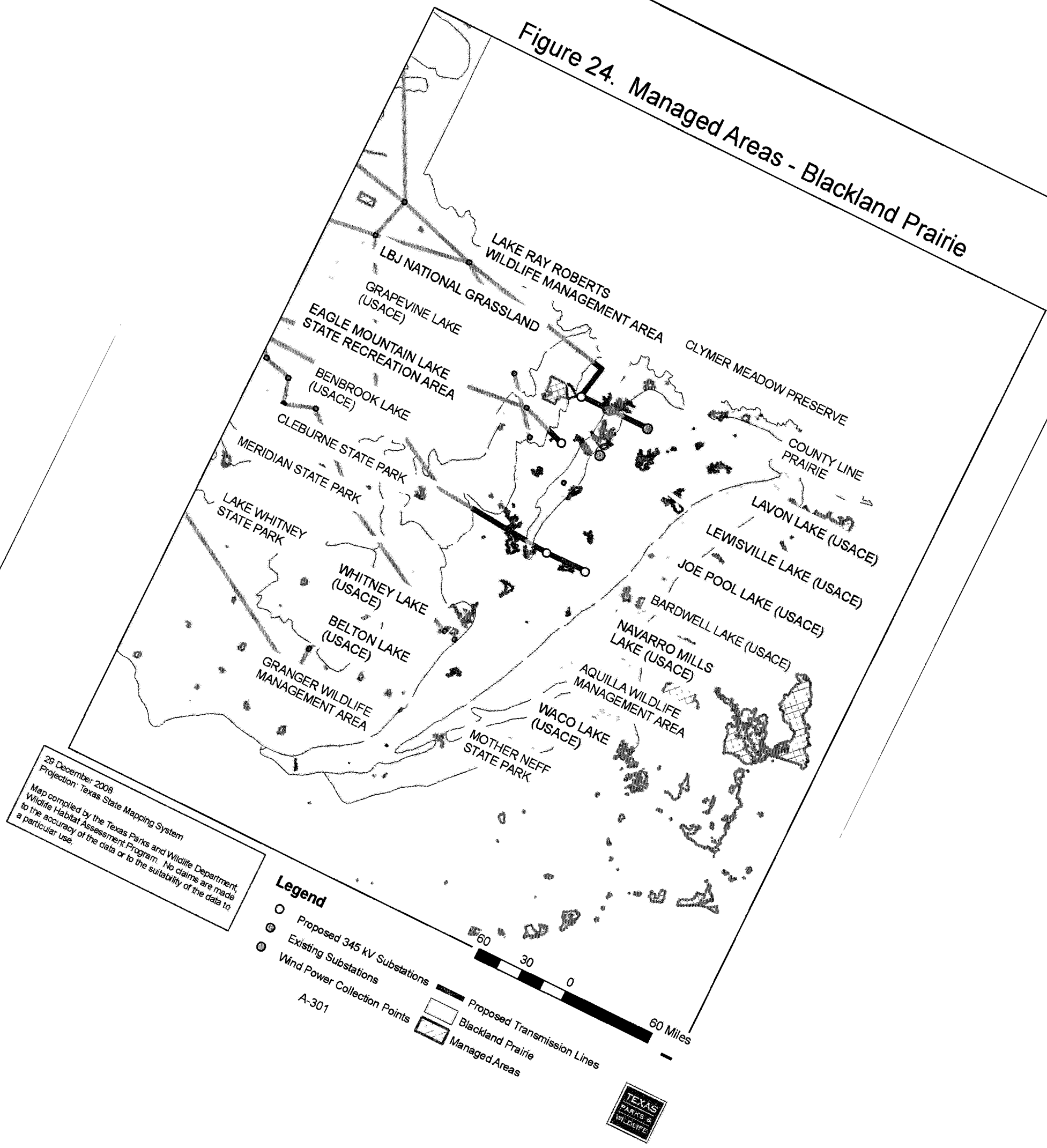
Figure 23. TXNDD Records - Blackland Prairie

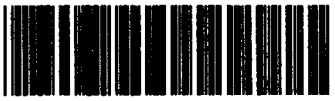


23 December 2008
Projection: Texas State Mapping System

Map compiled by the Texas Parks and Wildlife Department, Wildlife Habitat Assessment Program. No claims are made to the accuracy of the data or to the suitability of the data to a particular use.

Figure 24. Managed Areas - Blackland Prairie





Control Number: 35665

Item Number: 1273

Addendum StartPage: 0

Public Utility Commission of Texas

Memorandum

TO: All Parties of Record

FROM: Chairman Barry T. Smitherman

DATE: January 28, 2009

RE: Docket No. 35665 - *Commission Staff's Petition for the Selection of Entities Responsible for Transmission Improvements Necessary to Deliver Renewable Energy from Competitive Renewable Energy Zones.*

I received the enclosed information from the Texas Parks and Wildlife Department containing information on the flora and fauna located in the areas where the proposed CREZ lines may be built. This information should be considered by parties when planning and constructing the CREZ lines.

1273

TEXAS PARKS & WILDLIFE

Life's better outside.™

January 21, 2009

Mr. Barry T. Smitherman, Chairman
Public Utility Commission of Texas
1701 N. Congress Avenue
P.O. Box 13326
Austin, TX 78711-3326

RE: Competitive Renewable Energy Zones (CREZ) Transmission Plan – Scenario 2, Docket No. 33672

Dear Chairman Smitherman:

Texas Parks and Wildlife Department (TPWD) has reviewed the CREZ Transmission Plan Scenario 2 and offers the following information for consideration if moving forward with this plan. Due to the scope of this review and in an effort to conserve resources, this document is printed double-sided. Maps and other attachments are provided as digital copies on the attached compact disc.

To assist in minimizing adverse impacts to natural resources, TPWD has provided the following information for use in early project planning. TPWD recommends this information be provided to companies proposing to construct transmission lines for the Scenario 2 plan. If providing this information becomes problematic for the Public Utilities Commission (PUC), please recommend that transmission line companies contact TPWD directly for a copy of this letter and the attached maps.

BACKGROUND

In 2005, Senate Bill (SB) 20 directed the PUC to determine the most productive wind zones in Texas. In response to SB 20, the PUC studied 25 zones and asked developers to nominate zones in which they had an interest in developing wind energy. TPWD provided comments to the PUC regarding the nominated potential wind energy zones in April 2007. A copy of that letter is attached for your reference. Of the nominated areas, the PUC designated five areas as CREZ, all of which are located in west Texas and the Texas panhandle. The locations of the CREZ are shown in Figure 1.

4200 SMITH SCHOOL ROAD
AUSTIN, TEXAS 78744-3291
512.389.4800
www.tpwd.state.tx.us

Also in response to SB 20, the PUC identified transmission system improvements necessary to deliver wind power generated in west Texas and the panhandle to the populated areas (load centers) of the state. In July 2008, after evaluating five plans (Scenarios 1A, 1B, 2, 3, and 4), the PUC determined that Scenario 2 would be the most appropriate. This plan includes the construction of several new 345 kilovolt (kV) electric transmission lines and substations as well as upgrades to other existing lines and substations. New lines are expected to be in service within four to five years. Proposed transmission lines that will require the construction of new structures are shown in Figure 2.

PURPOSE AND SCALE OF THIS ANALYSIS

The purpose of this letter is to communicate to the PUC the general concerns TPWD has at his time regarding potential regional-scale impacts to natural resources from the construction of proposed transmission lines. This letter does not replace coordination with TPWD on a project-by-project basis. However, TPWD hopes to make the PUC aware of potential concerns early in the planning process to help guide the design and location of transmission projects and minimize adverse impacts to natural resources to the extent possible.

The proposed transmission lines would cross the following natural regions of Texas as shown in Figure 3.

- High Plains
- Rolling Plains
- Trans Pecos
- Edwards Plateau
- Llano Uplift
- Blackland Prairie
- Oak Woods and Prairies

Approximately 2,376 miles of new right-of-way would be required to install the proposed electric transmission lines, and easements for new 345 kV lines would be approximately 200 feet wide. Therefore, the total land acquisition required to complete the construction of transmission lines for Scenario 2 would be approximately 57,594 acres. Potential impacts to natural resources on these lands will generally vary by natural region. This letter will attempt to address some of these potential impacts on a regional scale. Because the exact routes of the lines have not yet been determined, regional information within 5 miles of the Scenario 2 transmission line corridors shown on Figure 2 will be included. Since major rivers in the project area cut across more than one natural region, potential impacts to water resources will be addressed by river basin. Information regarding natural resources and potential impacts is provided at a coarse scale, and general recommendations that apply to all natural regions have been provided for your planning reference. As individual transmission line projects are identified and proposed routes are developed, TPWD recommends transmission companies

and/or their routing analysis contractors contact TPWD early in the planning process for site-specific information and recommendations.

GENERAL RECOMMENDATIONS – ALL NATURAL REGIONS

Vegetation

TPWD recommends routing transmission lines along existing road, pipeline, or other utility right-of-way (ROW) and easements to reduce habitat fragmentation. Impacts to native vegetation should be minimized to the extent feasible during project design and construction. If vegetation must be removed to construct the necessary infrastructure, TPWD recommends mitigating for the loss by revegetating areas disturbed by project activities with site-specific native species. Natural buffers contiguous to aquatic systems should remain undisturbed to preserve wildlife cover, food sources, and travel corridors. A diagram is attached that illustrates how existing woody vegetation can be trimmed and maintained to accommodate the transmission line, eliminating the need for completely clearing the ROW. Unavoidable impacts to riparian vegetation should be mitigated by the replacement of site specific native trees and stabilizing ground cover in the project area.

Native grasslands support grassland birds, migrant songbirds, wintering raptors, and other grassland wildlife. Populations of many grassland birds are following a decline attributed to loss and degradation of habitat. TPWD stresses that areas of existing native grasses should be preserved to the extent feasible. To prevent the introduction of non-native species to native pastures/rangelands, ground disturbance in such areas should be avoided. In areas where ground disturbance is unavoidable, the area should be restored to its original or higher-quality native condition. TPWD recommends that disturbed areas be revegetated with native grasses and forbs to create habitat beneficial to wildlife and promote biodiversity. This would be especially important when the adjacent property exhibits native vegetation. The use of Bermuda grass (*Cynodon dactylon*) and other introduced species should be avoided.

The 77th Texas Legislature required that TPWD prepare and adopt a Land and Water Resources Conservation and Recreation Plan (LWRCRP). In the LWRCRP, native prairies, grassland habitats, and riparian habitats are considered the most threatened in the State and are listed as the highest priority to be conserved by TPWD. This plan can be viewed in its entirety at http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_pl_e0100_0867.pdf.

General descriptions provided for vegetation communities in the above-listed natural regions are based on descriptions in *Natural Vegetation Types of Texas and Their Representation in Conservation Areas* by David Bezanson. For further

information on vegetation communities, this work can be accessed online at http://abisw.org/bezanson/ and the TPWD Vegetation Types of Texas (1984) can be found at http://www.tpwd.state.tx.us/publications/pwdpubs/pwd_bn_w7000_0120/.

Rare and Protected Species

General information regarding records from the Texas Natural Diversity Database (TXNDD) is provided below on a regional basis. The TXNDD is intended to assist users in avoiding harm to rare species or significant ecological features. Absence of information in an area does not imply that a species is absent from that area. Although it is based on the best data available to TPWD regarding rare species, the data from the TXNDD do not provide a definitive statement as to the presence, absence or condition of special species, natural communities, or other significant features within your project area. These data are not inclusive and **cannot be used as presence/absence data**. They represent species that could potentially be in the project areas. This information cannot be substituted for on-the-ground surveys. The TXNDD is updated continuously. As individual transmission projects are identified, please request the most current and accurate information at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

Due to the limitations in TXNDD data discussed above, rare species other than those that have been documented in the TXNDD could be present in the project areas. Please review the TPWD county lists of rare, threatened, and endangered species with the potential to occur in the counties where transmission lines are proposed. The TPWD county lists may be obtained online at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species.phtml. The U.S. Fish and Wildlife Service (USFWS) should be contacted for guidance, permitting, survey protocols, and mitigation for federally listed species. For USFWS rare species lists by county please visit http://www.fws.gov/southwest/es/EndangeredSpecies/lists/.

TPWD recommends the project routes be surveyed for rare species during the seasons when the species would be most detectable. Determining the actual presence of a species in a given area depends on many variables including daily and seasonal activity cycles, environmental activity cues, preferred habitat, transiency and population density (both wildlife and human). The absence of a species can be demonstrated only with great difficulty and then only with repeated negative observations, taking into account all the variable factors contributing to the lack of detectable presence. If encountered during construction, measures should be taken to avoid impacting wildlife.

Migratory Birds

Birds shown on the TPWD county lists as well as other birds protected by the Migratory Bird Treaty Act (MBTA), Endangered Species Act, and/or the Bald and Golden Eagle Protection Act could be present in the project areas. The MBTA explicitly prohibits intentional and unintentional take of migratory birds, including their nests and eggs, except when authorized through a permit issued by the USFWS. TPWD recommends avoiding vegetation trimming or removal during the primary breeding season, March through August, for migratory bird species to help minimize impacts to this group. Additional information regarding the MBTA may be obtained through the Southwest Regional Office (Region 2) Division of Migratory Birds, USFWS, at (505) 248-7882.

Birds typically establish flight corridors along and within river and creek drainages. Transmission lines that cross or are located near these drainages should have line markers installed at the crossings or closest points to the drainages to reduce the potential of collisions by birds flying along or near the drainage corridors. To prevent electrocution of perching raptors, raptor protection measures such as adequate conductor spacing, perch guards, and insulated jumper wires should also be used. Additional information can be found in the guidelines published in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* and the attached *Avian Protection Plan Guidelines*.

Managed Areas

Chapter 26.001 (a) of the Parks and Wildlife Code states that no feasible and prudent alternative to taking of Parks and Wildlife property must be demonstrated and that all reasonable planning to minimize impacts to the property have been explored. If a transmission line is designed to go through a property owned by TPWD, approval for an easement from the Texas Parks and Wildlife Commission will be required, which can be several months to year long process.

TPWD strongly discourages project alternatives that cross TPWD properties such as State Parks, State Natural Areas (SNA) and Wildlife Management Areas (WMA). TPWD recommends avoiding these areas and routing around TPWD property. Transmission companies should also consider the visual impacts of a 345 kV or larger transmission line near parks in which scenic vistas are major attractions, (e.g., Palo Duro Canyon State Park and Enchanted Rock State Natural Area, among others). If a proposed project has the potential to impact a TPWD State Park or SNA, please contact David Riskind at (512) 389-4897, and if a project has the potential to impact a WMA, please contact Dennis Gissell at (512) 389-4407.

Lands managed for conservation by other entities such as the USFWS, U.S. Army Corps of Engineers (USACE), U.S. Department of Agriculture (USDA) Forest Service, and the Texas Historical Commission (THC) should also be avoided during project design and construction. Conservation agencies should be contacted early in the planning process if a transmission line may impact their property.

Cumulative Impacts

TPWD recommends compensatory mitigation for impacts to natural resources along the transmission line routes. Mitigation plans should take into account cumulative and indirect impacts to fish and wildlife resources from these projects combined with previous development in these natural regions as well as new development that may occur as a result of the construction of new transmission lines (i.e., new houses, commercial development, roads).

WATER RESOURCES

Major Waterways

The Scenario 2 transmission lines cross the major rivers of Texas as shown in Figure 4. The number of crossings of each major river by the Scenario 2 transmission line system is shown in the following table.

River	Number of Crossings
Prairie Dog Town Fork of the Red River	3
Trinity River	1
Brazos River	3
Colorado River	2
Pecos River (Rio Grande River Basin)	2

Wind power collection stations are proposed very near or adjacent to the Colorado River in Borden County and the Pecos River on the Crockett/Pecos county line. A portion of the line that crosses Mills County could run very near or adjacent to the Colorado River in that area.

Designated Ecologically Significant Stream Segments that would be crossed by the proposed transmission lines are shown in the following table and in Figure 5. Information regarding criteria for designation as an Ecologically Significant Stream Segment can be found in 31 TAC 357.8 or at http://www.tpwd.state.tx.us/landwater/water/environconcerns/water_issues/sigsegs/.

Red River Basin	
Name	Reason for Designation
McClellan Creek	Ecoregion stream: High water quality, exceptional aquatic life, high aesthetic value, diverse benthic macroinvertebrate and fish communities
Prairie Dog Fork of the Red River	Threatened or endangered species/unique communities : Interior least tern
Brazos River Basin	
Name	Reason for Designation
Double Mountain Fork Brazos River	Prairie stream ecosystem displays significant overall habitat value, threatened or endangered species (Sharpnose shiner and Smalleye shiner), unique communities, exemplary native prairie-stream fish community
Salt Fork of the Brazos River	Prairie stream ecosystem displays significant overall habitat value, threatened or endangered species (Sharpnose shiner and Smalleye shiner), exemplary native prairie-stream fish community
Steele Creek	Ecoregion stream; High water quality, exceptional aquatic life, high aesthetic value, diverse fish community
Trinity River Basin	
Name	Reason for Designation
Clear Creek	Ecoregion stream: High water quality, exceptional aquatic life, high aesthetic value, diverse benthic macroinvertebrate community
Lost Creek	Riparian conservation area: Fort Richardson State Park and Trail and Lost Creek Reservoir State Trailway, high water quality, exceptional aquatic life, exceptional aesthetic value
Colorado River Basin	
Name	Reason for Designation
Spring Creek	Ecoregion stream: High water quality, exceptional aquatic life, high aesthetic value, diverse benthic macroinvertebrate community, threatened or endangered species/unique communities - one of only four known remaining populations of endemic Texas fatmucket freshwater mussel
South Llano River	Riparian conservation area - South Llano River State Park and WMA, ecoregion stream: high water quality, exceptional aquatic life, high aesthetic value, diverse benthic macroinvertebrate and fish communities, threatened or endangered species/unique communities - only major watershed containing a genetically pure population of Guadalupe bass
James River	Ecoregion stream: High water quality, exceptional aquatic life, high aesthetic value, overall use

Pedernales River	Biological function - National Wild and Scenic Rivers System nominee for outstandingly remarkable wildlife values and significant natural areas (NPS, 1995) Riparian conservation area - Pedernales Falls State Park; Stonewall Park; LBJ State Park; LBJ National Park High water quality, exceptional aquatic life, exceptional aesthetic value
Rio Grande River Basin	
Name	Reason for Designation
Pecos River	Biological function - Texas Natural Rivers System nominee for outstandingly remarkable fish and wildlife values (NPS, 1995), High water quality, exceptional aquatic life, exceptional aesthetic value (NPS, 1995) Threatened or endangered species/unique communities - Proserpine shiner

TPWD recommends transmission companies minimize crossings of waterways to the extent feasible. Riparian areas should be spanned by transmission lines and vegetation communities should be left intact. Substations and collection stations should be constructed in previously disturbed upland areas, outside of riparian corridors. Necessary waterway crossings should be made perpendicular to the channel to minimize impacts to riparian habitats. Installing transmission lines parallel to waterways and therefore removing large sections of riparian habitat should be avoided. The aesthetic value of waterways should also be taken into consideration when routing transmission lines. When possible, lines should cross waterways at previously disturbed sites. Project Specific Locations such as staging areas for construction equipment should be located outside riparian corridors in previously disturbed areas.

Waterway crossings such as bridges and culverts installed for equipment access to construction sites should be removed after construction, and drainages and waterways should be returned to pre-construction contours. The fluvial geomorphology of waterways should not be altered as a result of the proposed projects. Soil disturbance in the vicinity of surface water features should be conducted in conjunction with a storm water pollution prevention plan to protect water quality during and after construction.

Section 404 of the Clean Water Act establishes a federal program to regulate the discharge of dredged and fill material into the waters of the U.S., including wetlands. The USACE and the Environmental Protection Agency are responsible for regulating water resources under this act. Although the regulation of isolated waters of the U.S. including wetlands has been removed from the USACE permitting process, isolated water resources provide valuable habitat for wildlife, help protect water quality, and recharge groundwater.

TPWD recommends transmission companies consult with the USACE for potential impacts to waters of the U.S. including jurisdictional determinations,

delineations, and mitigation. Adverse impacts to jurisdictional and isolated water resources in the project area should be avoided. Unavoidable impacts to sensitive wetland areas should be mitigated by compensating for the loss of jurisdictional and isolated wetland habitat.

Disturbance of State-owned streambeds and removal of streambed materials may require a permit from TPWD under Chapter 86 of the Parks and Wildlife Code. Application forms and additional information on the requirements of this permit for impacts to the streambeds can be obtained by contacting Rollin MacRae at the letterhead address or by phone at (512) 389-4639.

Playa Lakes

Playa lakes are ephemeral wetlands that occur across the High Plains and portions of the Rolling Plains natural regions. Based on a review of data from the Texas Tech University (TTU) Playa Lakes Digital Database, playa lakes may be present in the proposed routes of the Scenario 2 transmission lines. TTU Playa Lakes Digital Database data is shown in Figure 6 for your reference, and additional information regarding features displayed on that map can be obtained at http://www.rw.ttu.edu/gstlab/playas.pdf. Playa lakes support a diversity of wildlife species including large numbers of waterfowl and predators. There is potential for electrocution and collision of large-bodied waterfowl species and avian predators with transmission lines near these upland lakes. Direct loss to wildlife from electrocution or collisions with lines could be less significant than the potential for disease created by decomposition after these fatalities. Subsequent decomposition of animal tissue within a water regime significantly contributes to the concentration of botulism bacteria that is highly toxic and often fatal to wildlife. During disease epidemics, playa lakes that are highly concentrated with botulism bacteria can have devastating adverse impacts on the remaining waterfowl and wildlife populations that use them.

Transmission lines should be located as far from playa lakes as possible to avoid potential collisions by waterfowl and other bird species using these wetlands, and the projects should be designed to avoid or minimize additional disturbance to playa lakes. Transmission lines near playa lakes should be buried when feasible, and bird flight diverter markings should be installed when overhead lines are used.

POTENTIAL IMPACTS BY NATURAL REGION

High Plains

Vegetation

Although much of the region has been converted to cropland, vegetation communities in the High Plains natural region include upland short grasslands, sandy soils that support Havard oak and other shinnery species, wooded riparian areas, and playa wetlands. Vegetation communities in the High Plains as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 7.

While grassland habitats can be spanned and left relatively undisturbed by the construction of a transmission line in this natural region, riparian corridors and other wooded areas in the High Plains could be cleared as a result of the installation of these lines. Also, soil disturbance in areas temporarily cleared for construction can encourage the spread of non-native, invasive plant species such as Salt cedar (*Tamarix* sp.) and non-native grasses and forbs that can out-compete native species. The removal of woody vegetation and introduction of non-native species in project areas should be avoided.

Rare and Protected Species

The following rare and protected species and special features have been documented in the TXNDD within 5 miles of the transmission line routes in the High Plains.

State Listed Threatened	
Common Name	Scientific Name
Black bear	*Ursus americanus*
Palo Duro mouse	*Peromyscus truei comanche*
Species of Concern	
Common Name	Scientific Name
Swift Fox	*Vulpes velox*
Three-tongue spurge	*Chamaesyce chaetocalyx* var. *triligulata*
Special Features	
Common Name	
Prairie dog town	

A general map of TXNDD records in the High Plains is shown in Figure 8. TXNDD records in such a large area are difficult to display graphically and are best viewed in a Geographic Information System. For specific projects please request digital data (shapefiles) at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

Although the federal candidate for listing lesser prairie-chicken (*Tympanuchus pallidicinctus*) has not been documented in the TXNDD, the estimated occupied range of this species in the High Plains is crossed by the proposed transmission

lines as shown in Figure 8. On December 10, 2008, the USFWS changed the listing priority number of this candidate from a priority number 8 to a priority number 2. Listing priority numbers range from 1 to 12, and a species with a listing priority of 1 would have the highest priority for listing as threatened or endangered under the Endangered Species Act. Additional information regarding listing priority numbers can be found at http://www.fws.gov/endangered/pdfs/1983_LPN_Policy_FR_pub.pdf. This change in priority is partially due to the expansion of wind power projects within the range of the lesser prairie-chicken (LPC). Research in Kansas on the Greater Prairie-chicken (a closely related species) suggests that this species may avoid areas with tall vertical structures such as transmission line towers and pump jacks.

TPWD strongly recommends transmission companies avoid constructing transmission line towers in occupied and potential LPC habitat. To help preclude listing the LPC as threatened or endangered, every effort should be made to avoid impacts to this species or its habitat. TPWD recommends that project areas within the range of this species be surveyed for LPCs and suitable LPC habitat prior to construction. Surveys should take place during the breeding season and should be performed using established survey protocols. Results of LPC surveys should be submitted to TPWD so that we may add to our knowledge base of this species and provide more comprehensive recommendations. If construction near potential lek sites or nesting/brood-rearing cover for the LPC is unavoidable, TPWD recommends scheduling project activities outside of the peak nesting season for this species. TPWD recommends transmission companies coordinate project activities within LPC habitat with Heather Whitlaw, TPWD Wildlife Diversity Specialist, at (806) 742-4968 or heather.whitlaw@tpwd.state.tx.us. Ms. Whitlaw will provide transmission companies with survey protocols and materials upon request.

Another species of concern in the High Plains is the Black-tailed prairie dog (*Cynomys ludovicianus*). The prairie dog is a keystone species which provides food and/or shelter for rare species tracked by TPWD such as the Ferruginous Hawk, Western Burrowing Owl, and Swift fox, as well as many other wildlife species. TPWD recommends avoiding impacts to Prairie dog towns and the wildlife species that depend on these towns during routing and construction of transmission lines.

The Bald Eagle (*Haliaeetus leucocephalus*) is known to winter in the High Plains of Texas. This species is state-listed threatened as well as being protected by the U.S. Bald and Golden Eagle Protection Act. The Bald Eagle generally (although not exclusively) winters near water sources that provide sufficient fish and other prey. TPWD recommends transmission line companies consider the potential for bird strikes, including the Bald Eagle, near water sources and mark the lines to protect this species.

Managed Areas

Managed areas located in the High Plains include, but are not limited to, the lands shown on Figure 9. TPWD owned properties including Caprock Canyons State Park Trailway and Palo Duro Canyon State Park are located on or within 5 miles of the transmission system as proposed in Scenario 2 and may be directly or indirectly impacted by construction of these lines. The Buffalo Lake National Wildlife Refuge (owned by the USFWS) is also located within 5 miles of the transmission line route in the High Plains.

Rolling Plains

Vegetation

Vegetation communities in the Rolling Plains are dominated by Mesquite, which ranges from scattered stands to open woodlands. Mixed grasslands consisting of midgrasses and shortgrasses are also present in the Rolling Plains, although many of these areas have been converted to cropland. Vegetation includes Juniper in areas such as the western portion of this natural region where the Rolling Plains meets the High Plains at the Caprock Escarpment. Shinnery species are present in the northern portion of the natural region, and riparian corridors occur throughout, especially along the major rivers discussed above in the "Water Resources" section. Vegetation communities in the Rolling Plains as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 10.

Potential impacts to vegetation communities such as grasslands and riparian corridors similar to those expressed above for the High Plains also apply in the Rolling Plains. Riparian corridors and other wooded areas that provide food and cover for wildlife should be left intact. Transmission lines should be routed in previously disturbed areas such as existing ROW, cropland, or non-native pastureland. Potential impacts to rare and protected species that depend on vegetation communities in the Rolling Plains are discussed in the following section.

Rare and Protected Species

The following rare and protected species, special features, and natural communities have been documented in the TXNDD within 5 miles of the transmission line routes in the Rolling Plains.

Federal and State Listed Endangered	
Common Name	Scientific Name
Black-capped Vireo	*Vireo atricapilla*
Golden-cheeked Warbler	*Dendroica chrysoparia*

Interior Least Tern	*Sterna antillarum athalassos*
Federal Listed Threatened	
Common Name	Scientific Name
Concho water snake	*Nerodia paucimaculata*
State Listed Threatened	
Common Name	Scientific Name
Brazos water snake	*Nerodia harteri*
Common Black-hawk	*Buteogallus anthracinus*
Palo Duro mouse	*Peromyscus truei comanche*
Texas horned lizard	*Phrynosoma cornutum*
Texas kangaroo rat	*Dipodomys elator*
Federal Candidate for Listing	
Common Name	Scientific Name
Sharpnose shiner	*Notropis oxyrhynchus*
Smalleye shiner	*Notropis buccula*
Species of Concern	
Common Name	Scientific Name
Snowy Plover	*Charadrius alexandrinus*
Western Burrowing Owl	*Athene cunicularia hypugaea*
Guadalupe bass	*Micropterus treculi*
Plains spotted skunk	*Spilogale putorius interrupta*
Swift fox	*Vulpes velox*
Texas garter snake	*Thamnophis sirtalis annectens*
Dwarf broomspurge	*Chamaesyce jejuna*
Hill Country wild-mercury	*Argythamnia aphoroides*
Irion County wild-buckwheat	*Eriogonum nealleyi*
Warnock's coral-root	*Hexalectris warnockii*
Special Features	
Common Name	
Prairie dog town	
Colonial Waterbird Rookery	
Natural Communities	
Common Name	Scientific Name
Ashe Juniper-Oak Series	*Juniperus ashei-quercus* spp. series
Blue Grama-Buffalograss Series	*Bouteloua gracilis-buchloe dactyloides* series
Cottonwood-Tallgrass Series	*Populus deltoides-andropogon gerardii* series
Havard Shin Oak/Tallgrass Series	*Quercus havardii/schizachyrium scoparium* series
Mohr's Shin Oak Series	*Quercus mohriana* series
Oneseed Juniper Series	*Juniperus monosperma* series
Redberry Juniper-Midgrass Series	*Juniperus pinchotii-bouteloua gracilis* series
Sideoats Grama Series	*Bouteloua curtipendula* series
Texas Oak Series	*Quercus buckleyi series*
Tobosa Series	*Hilaria mutica* series

A general map of TXNDD records in the High Plains is shown in Figure 11. As stated above, TXNDD records in such a large area are difficult to display graphically and digital data (shapefiles) should be requested at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

A portion of the estimated occupied range of the LPC is located in the Rolling Plains as shown on Figure 11. Prairie dogs and wintering Bald Eagles also occur in the Rolling Plains. Information and recommendations provided above for these species in the High Plains natural region also apply for these species in the Rolling Plains natural region.

Within the Scenario 2 transmission plan area, Whooping Cranes migrate through portions of the Rolling Plains, Oak Woods and Prairies, and Blackland Prairie natural regions. Collisions with transmission lines are a known cause of Whooping Crane mortality. Additional information about the Whooping Crane including a rough map of its migration route is attached for your reference. TPWD recommends that transmission companies avoid locating lines near areas that may provide potential stopover habitat for Whooping Cranes during migration. Please contact Tom Stehn of the USFWS at (361) 286-3559 for additional information regarding the Whooping Crane and threats to this species.

Nesting pairs of the federal and state listed endangered Interior Least Tern have been documented along the Prairie Dog Town Fork of the Red River in the Rolling Plains. Because the transmission line projects are proposed to cross this waterway multiple times, the potential exists for collisions of Least Terns with the transmission lines. TPWD recommends transmission line companies consider the potential for bird strikes, including the Interior Least Tern, and mark the lines that cross this waterway.

Clearing of woody vegetation in the Rolling Plains could result in adverse impacts to various rare and protected species that occur in this natural region. Mesquite and grassland vegetation in the northern portion of the Rolling Plains could support state listed species including the Texas kangaroo rat and the Texas horned lizard. Vegetation including Mesquite as well as species such as Ashe juniper in the southern and eastern portions of the Rolling Plains could support the federal and state listed endangered Black-capped Vireo and Golden-cheeked Warbler. Removal and fragmentation woody vegetation in the Rolling Plains could adversely impact these and other species and should be avoided.

Managed Areas

Managed areas located in the Rolling Plains include (but are not limited to) the lands shown in Figure 12. TPWD-owned properties including Caprock Canyons

State Park, Caprock Canyons State Park Trailway, Copper Breaks State Park, and Abilene State Park are located on or within 5 miles of the transmission system as proposed in Scenario 2 and may be directly or indirectly impacted by construction of these lines. This route may also directly or indirectly impact TPWD property in Palo Duro Canyon State Park. Please note that the boundaries of Palo Duro Canyon State Park on the attached map have not been updated to show the recent (September 2008) addition of a 2,912-acre property known as Fortress Cliffs Ranch on the northeastern edge of the park. The Fort Griffin State Historic Site (owned by the THC) may also be located within 5 miles of the transmission route in the Rolling Plains.

Trans Pecos

Vegetation

The Trans Pecos is the most diverse physiographic area of Texas. The proposed transmission line route crosses into the extreme eastern portion of this natural region. Because the western portion of the Trans Pecos includes mountainous areas that contain very different habitat and vegetation types from the eastern portion where this project would be located, the information provided below pertains only to the eastern portion of the Trans Pecos, east of a line formed by the western boundaries of Reeves, Pecos, and Terrell counties.

Vegetation in the eastern Trans Pecos includes a sparse cover of shrubs such as Mesquite, Acacia, Juniper, Creosotebush, and Tarbush. Additional species found in this area may include various grasses, cacti, and succulents. Thickets of Mesquite and other species are found along waterways such as the Pecos River and its tributaries. Vegetation communities in the eastern Trans Pecos as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 13.

The Trans Pecos is part of the Chihuahuan Desert ecosystem and therefore supports many plant species that are considered rare or endemic to this area. Potential impacts to rare and protected plants that may occur in this natural region are discussed in the following section.

Rare and Protected Species

The following rare and protected species have been documented in the TXNDD within 5 miles of the transmission line route in the Trans Pecos.

State Listed Threatened	
Common Name	Scientific Name
Pecos pupfish	*Cyprinodon pecosensis*

Species of Concern	
Common Name	Scientific Name
Grayleaf rock-daisy	*Perityle cinerea*

A general map of TXNDD records in the eastern portion of the Trans Pecos is shown in Figure 14. As stated above, TXNDD records in such a large area are difficult to display graphically, and digital data (shapefiles) should be requested at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

The Pecos River and associated springs support several rare, endemic, or near-endemic species, particularly fish, aquatic snails, and amphipods. Because the transmission line routes as proposed in Scenario 2 cross the Pecos River multiple times and multiple wind power collection points are proposed very near this area, adverse impacts to this ecosystem could occur from the cumulative effects of vegetation removal, construction activities, and soil disturbance. Impacts to the Pecos River and its associated springs and spring-fed tributaries should be avoided.

The Pecos River is also known to be an area of great historical and archeological significance, and project routes should be carefully evaluated for impacts to these resources.

Sites that will be cleared for the construction of towers, substations, and collecting stations, as well as areas that will be cleared for access during construction should be evaluated for the presence of rare and protected plant species and these species should be avoided if found.

Managed Areas

Managed areas located in the eastern portion of the Trans Pecos include (but are not limited to) the lands shown in Figure 15.

Edwards Plateau and Llano Uplift

Vegetation

Vegetation communities in the Edwards Plateau include mixed grasslands and woodlands of Juniper, Texas persimmon, Mesquite, and various species of Oak. The vegetation of the Llano Uplift is similar to that of the surrounding Edwards Plateau, but outcrops of igneous and metamorphic rock support unique plant communities. The Edwards Plateau and Llano Uplift both support a high number of endemic species. Riparian woodlands include large Bald cypress trees along spring-fed rivers. Vegetation communities in the Edwards Plateau and Llano

Uplift as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 16.

Potential impacts to rare and protected species that depend on vegetation communities in the Edwards Plateau and Llano Uplift are discussed in the following section. In addition to providing habitat for several endangered species, vegetation communities in the Edwards Plateau and Llano Uplift help stabilize soils and protect the quality of water entering limestone aquifers in the region. Riparian corridors in this natural region also protect water quality in spring fed streams that are important water sources in this area.

Rare and Protected Species

The following rare and protected species, special features, and natural communities have been documented in the TXNDD within 5 miles of the transmission line routes in the Edwards Plateau and the Llano Uplift.

Federal and State Listed Endangered	
Common Name	Scientific Name
Black-capped Vireo	*Vireo atricapilla*
Golden-cheeked Warbler	*Dendroica chrysoparia*
Tobusch fishhook cactus	*Sclerocactus brevihamatus* ssp. *Tobuschii*
State Listed Threatened	
Common Name	Scientific Name
Bald Eagle	*Haliaeetus leucocephalus*
Texas horned lizard	*Phrynosoma cornutum*
Species of Concern	
Common Name	Scientific Name
Guadalupe bass	*Micropterus treculi*
Headwater catfish	*Ictalurus lupus*
Cave myotis bat	*Myotis velifer*
Llano pocket gopher	*Geomys texensis texensis*
Swift fox	*Vulpes velox*
Texas garter snake	*Thamnophis sirtalis annectens*
Basin bellflower	*Campanula reverchonii*
Big red sage	*Salvia pentstemonoides*
Edwards Plateau cornsalad	*Valerianella texana*
Elmendorf's onion	*Allium elmendorfii*
Hill Country wild-mercury	*Argythamnia aphoroides*
Irion County wild-buckwheat	*Eriogonum nealleyi*
Rock quillwort	*Isoetes lithophila*
Small-headed pipewort	*Eriocaulon koernickianum*
Valdina Farms Sinkhole salamander	*Eurycea troglodytes complex*
Warnock's coral-root	*Hexalectris warnockii*

Special Features	
Common Name	
Prairie dog town	
Colonial Waterbird Rookery	
Bat cave	
Natural Communities	
Common Name	Scientific Name
Ashe Juniper-Oak Series	*Juniperus ashei-quercus* spp. Series
Cedar Elm-Sugarberry Series	*Ulmus crassifolia-celtis laevigata* series
Curly Mesquite-Sideoats Grama Series	*Hilaria belangeri-bouteloua curtipendula* series
Lacey Oak Series	*Quercus glaucoides* series
Pecan-Sugarberry Series	*Carya illinoensis-celtis laevigata* series
Plateau Live Oak/Little Bluestem Series	*Quercus fusiformis/schizachyrium scoparium* series
Post Oak-Blackjack Oak Series	*Quercus stellata-quercus marilandica* series
Sideoats Grama Series	*Bouteloua curtipendula* series
Texas Oak Series	*Quercus buckleyi* series

A general map of TXNDD records in the Edwards Plateau and Llano Uplift is shown in Figure 17. As stated above, TXNDD records in such a large area are difficult to display graphically and digital data (shapefiles) should be requested at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

The Black-capped Vireo (BCV) and Golden-cheeked Warbler (GCW) are federal and state listed endangered songbirds that occur in the Edwards Plateau and Llano Uplift natural regions as well as the surrounding natural regions. The GCW nests in Juniper woodlands that contain Oak and other hardwoods, and the BCV nests in rangelands with scattered clumps of shrubs separated by grassland. Additional information about the BCV, GCW, and their preferred habitats is attached for your reference. Removal or fragmentation of BCV and/or GCW habitat for the construction of transmission lines and substations could adversely impact these species and should be avoided. Unavoidable impacts to these species and their habitats may require a permit from the USFWS. Please contact the USFWS Austin Ecological Services Field Office at (512) 490-0057 for more information.

The Edwards Plateau and Llano Uplift contain many caves and manmade features that house large colonies of the Mexican free-tailed bat (*Tadarida brasiliensis*) as well as other bat species. A map of the major bat colonies in central Texas is attached for your reference. Disturbance or modification of caves or surrounding habitat could cause the bats to abandon these sites. TPWD recommends routing transmission lines away from bat colonies and minimizing disturbance to the surrounding area.

The Bald Eagle is known to nest in the Edwards Plateau and Llano Uplift, as well as in the Oak Woods and Prairies and Blackland Prairie natural regions. Specifically, several Bald Eagle nesting territories have been recorded in the Scenario 2 general area along the San Saba River, Llano River, Colorado River, and Lampasas River. TPWD recommends transmission line companies avoid impacts to Bald Eagle nesting territories during design and construction. Also, TPWD recommends companies consider the potential for bird strikes and mark the lines near water sources to protect this species.

Sites that will be cleared for the construction of towers, substations, and collecting stations, as well as areas that will be cleared for access during construction should be evaluated for the presence of rare and protected plant species and these species should be avoided if found.

Managed Areas

Managed areas located in the Edwards Plateau and Llano Uplift include (but are not limited to) the lands shown in Figure 18. TPWD-owned properties including Enchanted Rock State Natural Area, Old Tunnel WMA, Buck WMA, and South Llano River State Park are located on or within 5 miles of the transmission system as proposed in Scenario 2 and may be directly or indirectly impacted by construction of these lines. USACE-owned property surrounding Stillhouse Hollow Lake could also be directly impacted by the transmission line as shown. The Admiral Nimitz Museum State Historical Park (owned by the THC) and Black Rock Park (owned by the Lower Colorado River Authority) are also located within 5 miles of the route in this natural region.

Western Oak Woods and Prairies (a.k.a. Cross Timbers)

Vegetation

The western Oak Woods and Prairies include vegetation similar to adjacent natural regions such as Juniper, various oak woodlands, Post oak savanna, and grasslands. Vegetation communities in the western Oak Woods and Prairies as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 19.

The construction of transmission lines in this natural region could result in the removal or fragmentation of woodlands and the introduction of non-native species into native grasslands.

Rare and Protected Species

The following rare and protected species and natural communities have been documented in the TXNDD within 5 miles of the transmission line routes in the western Oak Woods and Prairies.

Federal and State Listed Endangered	
Common Name	Scientific Name
Black-capped Vireo	*Vireo atricapilla*
Golden-cheeked Warbler	*Dendroica chrysoparia*
State Listed Threatened	
Common Name	Scientific Name
Bald Eagle	*Haliaeetus leucocephalus*
Species of Concern	
Common Name	Scientific Name
Comanche Peak prairie-clover	*Dalea reverchonii*
Natural Communities	
Common Name	Scientific Name
Little Bluestem-Indiangrass Series	*Schizachyrium scoparium-sorghastrum nutans* series
Post Oak-Blackjack Oak Series	*Quercus stellata-quercus marilandica* series

A general map of TXNDD records in the western Oak Woods and Prairies is shown in Figure 20. As stated above, TXNDD records in such a large area are difficult to display graphically, and digital data (shapefiles) should be requested at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

The BCV and GCW have been documented in portions of the Oak Woods and Prairies natural region. Please see information and recommendations provided above for these species in the Edwards Plateau natural region.

The migratory path of the Whooping Crane may cross portions of the western Oak Woods and Prairies natural region. Please see information and recommendations provided above for this species in the Rolling Plains natural region.

Managed Areas

Managed areas located in the western Oak Woods and Prairies include (but are not limited to) the lands shown in Figure 21. TPWD owned properties including Aquilla Lake WMA, Lake Ray Roberts WMA, and Ray Roberts Lake State Park are located on or within 5 miles of the transmission system as proposed in Scenario 2 and may be directly or indirectly impacted by construction of these lines.

Blackland Prairie

Vegetation

Although much of the native tall grasslands in this natural region have been converted to agricultural land or planted in non-native pasture grasses, some areas of native grasses such as Little bluestem, Big bluestem, Indiangrass, and Switchgrass remain. Bottomland areas include species such as Oak, Elm, Pecan, and Ash. Vegetation communities in the Blackland Prairie as mapped in the TPWD Vegetation Types of Texas (1984) are shown in Figure 22.

TPWD stresses that areas of existing native grasses along transmission line routes should be preserved. Grassland habitat should be maintained by reducing or eliminating mowing. Maintenance plans should include suppression of woody plant encroachment by herbicide or mowing areas that start to grow up in woody species, such as once every 5 years. Mowing should occur during the non-breeding period of the year for ground-nesting birds, preferably during late summer, thus allowing a regrowth to 1 foot or more prior to winter. Minimum grass height should be 8 inches. Mowing should also occur after the grass species has released its seed.

While grassland habitats can be spanned and left relatively undisturbed by the construction of a transmission line in this natural region, bottomlands could be cleared as a result of the installation of these lines. Also, soil disturbance in areas temporarily cleared for construction can encourage the spread of non-native, invasive plant species. The removal of woody vegetation and introduction of non-native species in project areas should be avoided.

Rare and Protected Species

The following rare and protected species, special features, and natural communities have been documented in the TXNDD within 5 miles of the transmission line routes in the Blackland Prairie.

Federal and State Listed Endangered	
Common Name	Scientific Name
Black-capped Vireo	*Vireo atricapilla*
Golden-cheeked Warbler	*Dendroica chrysoparia*
State Listed Threatened	
Common Name	Scientific Name
Bald Eagle	*Haliaeetus leucocephalus*
Species of Concern	
Common Name	Scientific Name
Texas garter snake	*Thamnophis sirtalis annectens*

Comanche Peak prairie-clover	*Dalea reverchonii*
Glen Rose yucca	*Yucca necopina*
Special Features	
Common Name	
Colonial Waterbird Rookery	
Natural Communities	
Common Name	Scientific Name
Cedar Elm-Sugarberry Series	*Ulmus crassifolia-celtis laevigata* series
Little Bluestem-Indiangrass Series	*Schizachyrium scoparium-sorghastrum nutans* series
Pecan-Sugarberry Series	*Carya illinoensis-celtis laevigata* series
Plateau Live Oak/Little Bluestem Series	*Quercus fusiformis/schizachyrium scoparium* series
Post Oak-Blackjack Oak Series	*Quercus stellata-quercus marilandica* series
Texas Oak Series	*Quercus buckleyi* series

A general map of TXNDD records in the Blackland Prairie is shown in Figure 23. As stated above, TXNDD records in such a large area are difficult to display graphically and digital data (shapefiles) should be requested at txndd@tpwd.state.tx.us or contact Dorinda Scott at (512) 389-8723.

The BCV and GCW have been documented in portions of the Blackland Prairie natural region and the migratory path of the Whooping Crane may cross portions of this region. Please see information and recommendations provided above for these species.

Managed Areas

Managed areas located in the Blackland Prairie include (but are not limited to) the lands shown in Figure 24. TPWD-owned properties including Aquilla Lake WMA, Lake Ray Roberts WMA, and Eagle Mountain Lake State Recreation Area are located on or within 5 miles of the transmission system as proposed in Scenario 2 and may be directly or indirectly impacted by construction of these lines. The LBJ National Grassland and property owned by the USACE surrounding Navarro Mills Lake and Whitney Lake are also located on or within 5 miles of the route in the Blackland Prairie.

I appreciate the opportunity to provide preliminary input on this transmission plan. To facilitate processing of individual project reviews, TPWD requests that projects that are components of the Scenario 2 plan be identified as such when

sent to TPWD for review. Please contact Julie Wicker at (512) 389-4579 or Kathy Boydston at (512) 389-4638 if you have any questions.

Sincerely,

Clay Brewer
Interim Director, Wildlife Division

CB:KB:JCW:gg.13699

Attachment

This CD contains maps and other attachments referred to in TPWD comments and recommendations dated January 21, 2009, regarding the CREZ Scenario 2 transmission plan. The following information is included on this CD:

- Figure 1 through Figure 24
- Diagram showing recommended method of vegetation clearing
- Map of major bat colonies in central Texas
- Avian Protection Plan Guidelines
- Additional information regarding select rare, threatened, or endangered species
- Copy of TPWD comments regarding proposed Competitive Renewable Energy Zones (dated April 10, 2007) with attachments

Black-capped Vireo

Scientific Name: *Vireo atricapillus*

Federal Status: Endangered, 10/6/87 • State Status: Endangered

Description

The Black-capped Vireo is a 4.5 inch insect-eating songbird. Mature males are olive green above and white below with faint greenish-yellow flanks. The crown and back of the head is black with a partial white eye-ring. The iris is brownish-red and the bill black. The plumage on the back of the female is duller than the male. Females have a medium to dark gray head with a blackish ring around the white surrounding the eye (this generally distinguishes the female from the second year male).

Male Black-capped Vireo
© TPWD

Female Black-capped Vireo
© USFWS A. Shull

Distribution and Habitat

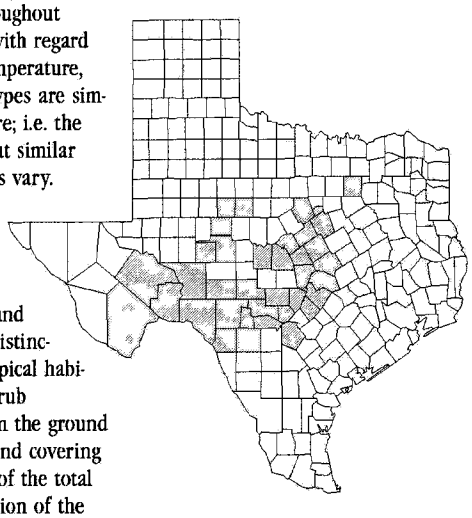
Historical records from 1852-1956 show that the Black-capped Vireo once occurred and nested from central Kansas, Oklahoma, Texas and into northern Mexico. Today, Black-capped Vireos are known to nest in central and southwest Texas, a few counties in central Oklahoma, and in Coahuila and Nuevo Leon, Mexico, although less is known of their status in Mexico. Black-capped Vireos winter along the western coast of Mexico.

The descriptions of habitat presented in this document are intended to help landowners determine if they have Black-capped Vireo habitat on their property. Not all sites within the habitat types described will be used by Black-capped Vireos. It is only where individuals of this species occupy the identified habitat types during the breeding season that special management considerations such as those provided in these guidelines need to be considered.

In Texas, vireo habitat is found on rocky limestone soils of the Edwards Plateau, Cross Timbers and Prairies, eastern Trans-Pecos and, to a limited extent, on igneous soils in the Chisos Mountains. Although Black-capped Vireo habitat throughout Texas is highly variable with regard to plant species, soils, temperature, and rainfall, all habitat types are similar in vegetation structure; i.e. the "overall look" is somewhat similar although the plant species vary. Vireos require broadleaf shrub vegetation reaching to ground level for nesting cover. They typically nest in shrublands and open woodlands with a distinctive patchy structure. Typical habitat is characterized by shrub vegetation extending from the ground to about 6 feet or more and covering about 30-60% or greater of the total area. In the eastern portion of the vireo's range, the shrub layer is often combined with an open, sparse to moderate tree canopy. Patches of open grass or bare rock separate the clumps of shrubs and trees. In central Texas, this habitat is often regrowth from disturbances such as clearing, fire, and browsing.

In the Edwards Plateau and Cross Timbers Regions, vireo habitat occurs where soils, topography, and land use produce scattered hardwoods with abundant low cover. Common broad-leaved plants in vireo habitat in these regions include: Texas (Spanish) oak, Lacey oak, shin oak, Durand (scaley-bark) oak, live oak, mountain laurel, evergreen sumac, skunkbush sumac, flameleaf sumac, redbud, Texas persimmon, Mexican buckeye, elbowbush and agarita. Although Ashe juniper is often part of the plant composition in vireo habitat, preferred areas usually have a low density and cover of juniper.

In the western Edwards Plateau and Trans-Pecos Regions, on the western edge of the vireo's range, the birds are often found in canyon bottoms and slopes where sufficient moisture is available to support diverse shrub vegetation. Dominant woody plants in this habitat type include sandpaper oak, Vasey oak, Texas kidneywood, Mexican walnut, Texas persimmon, lotebush, brasil, wafer ash, mountain laurel, cenizo, whitebrush, and guajillo.



For all habitat types, the plant composition appears to be less important than the presence of adequate broad-leaved shrubs, foliage to ground level, and mixture of open grassland and woody cover. Deciduous and broad-leaved shrubs and trees throughout the vireo's range are also important in providing habitat for insects on which the vireo feeds.