prime farmlands contain soils that meet most of the prime farmland requirements but lack the installation of water management facilities or sufficient natural moisture. The United States Department of Agriculture (USDA) would consider these soils prime farmland if such practices were installed.

Construction of transmission line projects are typically not subject to requirements of the Farmland Protection Policy Act unless they are associated with federal funding. The NRCS responded to POWER's solicitation for information in a letter dated July 3, 2019 stating, "The major concerns within the study area are soil depth and slope. Most of the very shallow and shallow soils (less than 100 cm [centimeters]) are also on steep to very steep slopes. These limitations may require additional consideration in equipment required for construction as well as site selection. We strongly encourage the use of acceptable erosion control methods during the construction of this project" (see Appendix A).

3.1.3 Surface Water

The study area is located within the San Antonio River Basin and within the Medina and Cibolo Sub-Basins (USEPA 2019b). Other named surface waters within the study area include Chimenea Creek, Helotes Creek, Leon Creek, Los Reyes Creek, Morales Spring, Pecan Creek, and Rundale Spring. Additional unnamed surface waters include stock ponds and ephemeral/intermittent streams. Review of the 2017 Texas Water Development Board (TWDB) State Water Plan and the 2016 Regional Water Plan for South Central Texas did not indicate any proposed surface water developments within the study area (TWDB 2016; South Central Texas Regional Water Planning Group 2015).

Special Status Waters

Under 31 TAC § 357.43 and 31 TAC § 358.2, TPWD has designated Ecologically Significant Stream Segments (ESSS) based on habitat value, threatened and endangered species, species diversity, and aesthetic value criteria (TPWD 2019a). No designated ESSS were identified within the study area (TPWD 2019a).

In accordance with Section 303(d) and 304(a) of the CWA, the TCEQ identifies surface waters for which effluent limitations are not stringent enough to meet water quality standards and for which the associated pollutants are suitable for measurement by total maximum daily load. Review of TCEQ's (2016) Texas Integrated Report of Surface Water Quality does not indicate any surface waters within the study area that do not meet their water quality standards.

3.1.4 Groundwater

The study area is located within the Edwards Aquifer Contributing Zone (Edwards Aquifer Authority [EAA] 2020a) and District 4 of the EAA (2020b) jurisdictional area. The EAA has regulatory jurisdiction in Bexar County and authorizes groundwater withdrawals for municipal, industrial, and irrigation purposes. The study area is located within the Subchapter E and F Regulated Area as defined by the EAA Rules. Subchapter E of the rules states that in addition to notification requirements of the TCEQ, a responsible party shall notify the EAA of any unauthorized discharges or spills into surface waters. Subchapter F states that the responsible party of a facility storing more than 1,000 gallons of regulated substances in containers of less than 500 gallons, that are located on the Recharge Zone must register the facility with the EAA (2019). Due to the study area's location within the Edwards Aquifer Contributing Zone, the proposed project must be reviewed and approved by the TCEQ (2020) Edwards Aquifer Protection Program prior to start of construction.

The major ground water aquifers mapped within the study area include the Edwards Balcones Fault Zone (subcrop) and Trinity (subcrop) aquifers. The Trinity Aquifer underlies eastern and southern portions of the study area and underlies a large area across central and northeast Texas. It consists primarily of limestone, sand, clay, gravel, and various conglomerates. The average freshwater saturated thickness in Central Texas is approximately 1,900 feet with total dissolved solids, sulfates, and chloride increasing with the depth of the aquifer (TWDB 2011). The Edwards-Balcones Aquifer underlies a portion of the study area as well as much of the Central Texas Escarpment area. The average thickness fluctuates between 200 and 600 feet with an average saturated thickness of over 560 feet. Water quality ranges from fresh to slightly saline, with salinity typically increasing westward within the Trinity Group (TWDB 2011). Other ground water resources include numerous domestic and public supply water wells located primarily in the southeast portion of the study area; four springs located in the northeast corner of the study area; one spring located along Pecan Creek; two springs located along Leon Creek; and four springs located near the southern boundary of the study area (TWDB 2019 and 1975).

3.1.5 Floodplains

FEMA's Flood Insurance Rate Maps and National Flood Hazard Layer were reviewed for the study area. The 100-year floodplains are primarily associated with Pecan Creek and Leon Creek and their associated tributaries. The 100-year flood (1.0 percent flood or base flood) represents a flood event that has a 1.0 percent chance of being equaled or exceeded for any given year (FEMA 2019).

3.1.6 Wetlands

NWI mapped wetland data are based on topography and interpretation of infrared satellite data and color aerial photographs and are classified under the Cowardin Classification System (Cowardin et al. 1979). No NWI mapped wetlands were identified within the study area (USFWS 2019a).

3.1.7 Coastal Management Program

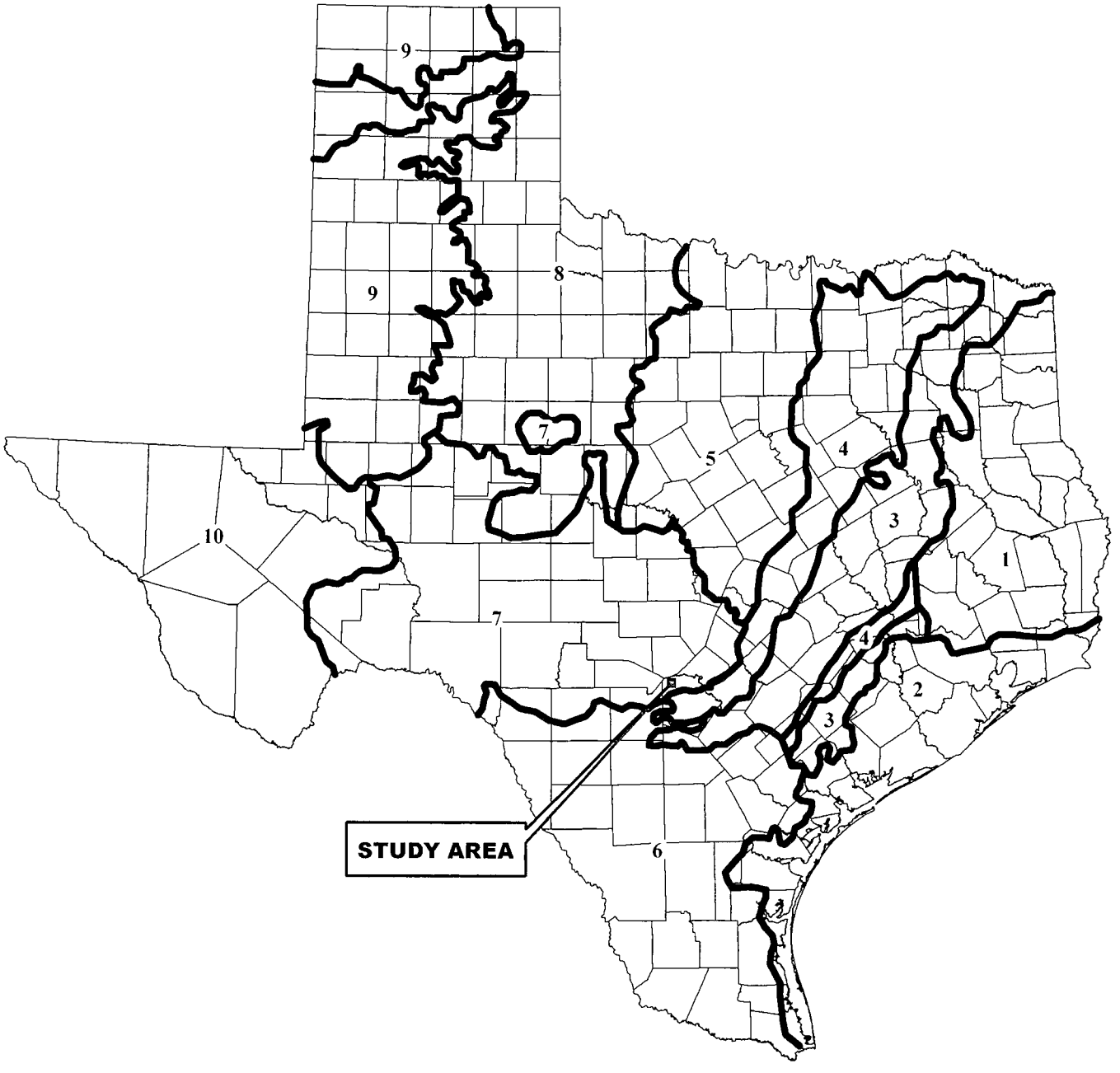
The PUC must comply with Coastal Management Program (CMP) policies when approving CCNs for electric transmission lines that are located within the Coastal Management Zone (CMZ) under the Coastal Zone Management Act of 1972. The study area is not located within the CMZ boundary as defined in 31 TAC § 503.1 and this excludes the Project from CMP conditions.

3.1.8 Vegetation

Data and information on ecological resources within the study area were obtained from a variety of sources, including aerial photograph interpretation, field reconnaissance surveys, correspondence with the USFWS, TPWD, and published literature and technical reports. All biological resource data for the study area was mapped utilizing GIS.

Ecological Region

The study area is located within the USEPA Edwards Plateau Level III Ecoregion and within the Balcones Canyonlands Level IV Ecoregion (Griffith et al. 2007). As shown in Figure 3-2, the study area is located within the Edwards Plateau Vegetational Area (Gould et al. 1960). A general description of the historical climax vegetation community of the Balcones Canyonlands ecoregion is included below. For the vegetation community, plant species composition and density are dependent on location, hydrology, soils, and disturbance history or land management activities.



N

0 50 100 200

Miles

Source Gould, F W., Hoffman, G O., and Rechenthin, C A 1960, modified

Date: 6/29/2020

Legend

Vegetational Areas Boundary

1 Pineywoods
2 Gulf Prairies and Marshes
3 Post Oak Savannah
4 Blackland Prairies
5 Cross Timbers and Prairies
6 South Texas Plains
7 Edwards Plateau
8 Rolling Plains
9 High Plains
10 Trans-Pecos

County Boundary

SCENIC LOOP 138 kV
TRANSMISSION LINE AND
SUBSTATION PROJECT

Figure 3-2
Location of the Study Area
In Relation to the
Vegetational Areas of Texas

cps

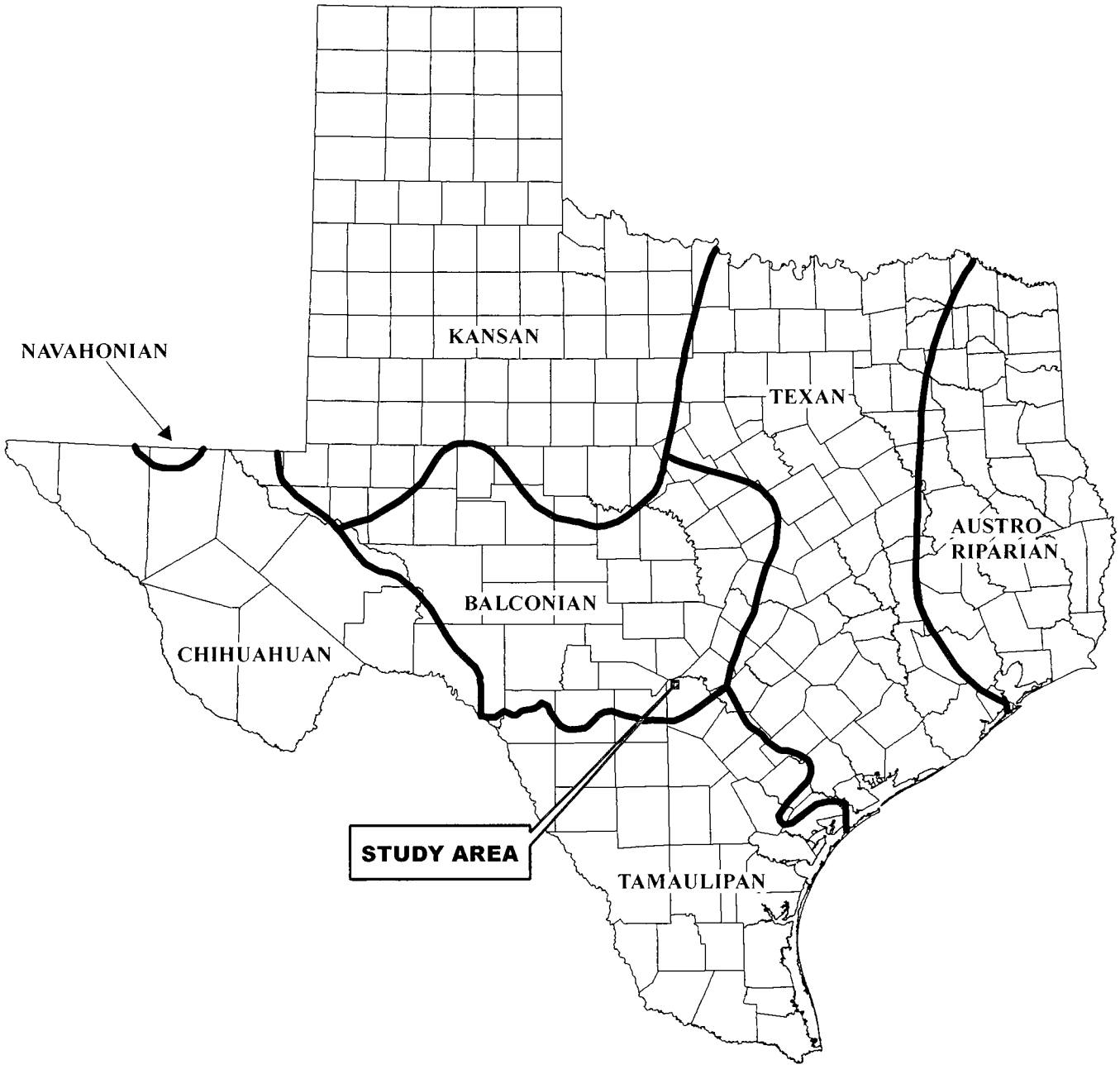
POWER ENGINEERS

Balcones Canyonlands Ecoregion

The Balcones Canyonland Ecoregion forms the southern border of the Edwards Plateau and is distinctly unique due to the extent of the escarpments. This region is highly dissected by streams, springs, and rivers, and serves as an important recharge zone for the Edwards Aquifer. Plant communities vary in the Balcones Canyonlands and occur along soil and moisture gradients, from evergreen woodlands on slopes, to deciduous north-slope forest, to mesic riparian forest. Sheltered canyons support slippery elm (*Ulmus rubra*), Ohio buckeye (*Aesculus glabra*), boxelder (*Acer negundo*), bigtooth maple (*Acer grandidentatum*), Carolina basswood (*Tilia americana*), and escarpment black cherry (*Prunus serotina* var. *exima*). Relict species such as baldcypress (*Taxodium distichum*) and black willow (*Salix nigra*) may also occur along major streams. Westward canyons support more arid species such as Ashe juniper (*Juniperus asheii*), sumac (*Rhus* spp.), Texas sotol (*Dasylirion texanum*), acacia (*Acacia* spp.), honey mesquite (*Prosopis glandulosa*), and ceniza (*Leucophyllum frutescens*). Oak savannas composed of plateau live oak (*Quercus fusiformis*), Texas oak (*Quercus buckleyi*), ashe juniper, cedar elm, and escarpment black cherry occur on ridgetops and benches between canyons and drainages. With the cessation of wildfires in recent times, Ashe juniper has invaded much of the oak savanna, but where these grasslands still persist species such as threeawns (*Aristida* spp.) and gramas (*Bouteloua* ssp.) are dominant (Griffith et al. 2007).

3.1.9 Wildlife

The study area occurs within the Balconian Biotic Province (see Figure 3-3) as described by Blair (Blair 1950). The Balconian province's faunal composition is characterized as an intermixed representation of Austroriparian, Tamaulpian, Chihuahuan, and Kansan province species. The following sections list species that may occur in and represent the faunal diversity of the study area today.



0 50 100 200

Miles

Source: Blair, 1950, modified

Date: 6/29/2020

Legend

Biotic Province Boundary

County Boundary

SCENIC LOOP 138 kV
TRANSMISSION LINE AND
SUBSTATION PROJECT

Figure 3-3
Location of the Study Area
In Relation to the
Biotic Provinces of Texas

Amphibians

Amphibian species (frogs, toads, and salamanders) that may occur within the study area are listed in Table 3-2. Frogs and toads may occur in all vegetation types, while salamanders are typically restricted to hydric habitats (Tipton et al. 2012).

TABLE 3-2 AMPHIBIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Frogs/Toads	
American bullfrog	*Lithobates catesbeianus*
Barking frog	*Eleutherodactylus augusti*
Blanchard's cricket frog	*Acris blanchardi*
Cliff chirping frog	*Eleutherodactylus marnokii*
Cope's gray treefrog	*Hyla chrysoscelis*
Couch's spadefoot	*Scaphiopus couchi*
Eastern green toad	*Anaxyrus debilis*
Gray treefrog	*Hyla versicolor*
Green treefrog	*Hyla cinerea*
Gulf Coast toad	*Incilius nebulifer*
Hurter's spadefoot	*Scaphiopus hurterii*
Red-spotted toad	*Anaxyrus punctatus*
Rio Grande chirping frog	*Eleutherodactylus cystignathoides*
Rio Grande leopard frog	*Lithobates berlandieri*
Rocky Mountain toad	*Anaxyrus woodhousii*
Southern leopard frog	*Lithobates sphenocephala*
Spotted chorus frog	*Pseudacris clarkii*
Strecker's chorus frog	*Pseudacris streckeri*
Texas toad	*Anaxyrus speciosus*
Western narrow-mouthed toad	*Gastrophryne olivacea*
Salamanders	
Black-spotted newt	*Notophthalmus meridionalis*
Comal blind salamander	*Eurycea tridentifera*
Small-mouthed salamander	*Ambystoma texanum*
Tiger salamander	*Ambystoma tigrinum*
Western slimy salamander	*Plethodon albagula*

Source. Dixon 2013

Reptiles

Reptiles (turtles, lizards and snakes) that may occur in the study area are listed in Table 3-3. These include those species that are more commonly observed near water (e.g., aquatic turtles) and those that are more common in terrestrial habitats (Dixon 2013).

TABLE 3-3 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Turtles	
Cagle's map turtle	*Graptemys caglei*
Eastern box turtle	*Terrapene carolina*
Eastern mud turtle	*Kinosternon subrubrum*
Eastern musk turtle	*Sternotherus odoratus*
Guadalupe spiny softshell	*Apalone spinifera guadalupensis*
Ornate box turtle	*Terrapene ornata ornata*
Pond slider	*Trachemys scripta*
Snapping turtle	*Chelydra serpentina*
Texas cooter	*Pseudemys texana*
Texas tortoise	*Gopherus berlandieri*
Yellow mud turtle	*Kinosternon flavescens*
Lizards	
Brown anole	*Anolis sagrei*
Common spotted whiptail	*Cnemidophorus gularis*
Crevice spiny lizard	*Sceloporus poinsettii*
Eastern collared lizard	*Crotaphytus collaris collaris*
Eastern six-lined racerunner	*Cnemidophorus sexlineata sexlineata*
Great Plains skink	*Plestiodon obsoletus*
Green anole	*Anolis carolinensis*
Keeled earless lizard	*Holbrookia propinqua*
Little brown skink	*Scincella lateralis*
Mediterranean gecko	*Hemidactylus turcicus*
Prairie lizard	*Sceloporus consobrinus*
Prairie skink	*Plestiodon septentrionalis*
Rose-bellied lizard	*Sceloporus variabilis*
Short-lined skink	*Plestiodon tetragrammus brevilineatus*
Slender glass lizard	*Ophisaurus attenuatus*
Southern spot-tailed earless lizard	*Holbrookia lacerata subcaudalis*
Texas alligator lizard	*Gerrhonotus infernalis*
Texas banded gecko	*Coleonyx brevis*
Texas greater earless lizard	*Cophosarus texanus texanus*
Texas horned lizard	*Phrynosoma cornutum*
Texas spiny lizard	*Sceloporus olivaceus*
Texas tree lizard	*Urosaurus ornatus ornatus*

TABLE 3-3 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Snakes	
Black-tailed rattlesnake	*Crotalus molossus*
Broad-banded copperhead	*Agkistrodon contortrix laticinctus*
Bullsnake	*Pituophis catenifer sayi*
Central American indigo snake	*Drymarchon melanurus*
Checkered garter snake	*Thamnophis marcianus*
Chihuahuan night snake	*Hypsiglena jani*
Cottonmouth	*Agkistrodon piscivorus*
Desert kingsnake	*Lampropeltis getula splendida*
Diamond-backed watersnake	*Nerodia rhombifer*
Eastern black-necked garter snake	*Thamnophis cyrtopsis ocellatus*
Eastern hog-nosed snake	*Heterodon platirhinos*
Eastern rat snake	*Pantherophis obsoletus*
Eastern yellow-bellied racer	*Coluber constrictor flaviventris*
Flat-headed snake	*Tantilla gracilis*
Graham's crayfish snake	*Regina grahamii*
Long-nosed snake	*Rhinocheilus lecontei*
Mexican milksnake	*Lampropeltis triangulum annulata*
Plain-bellied watersnake	*Nerodia erythrogaster*
Plains black-headed snake	*Tantilla nigriceps*
Plains hog-nosed snake	*Heterodon nasicus*
Prairie kingsnake	*Lampropeltis calligaster*
Prairie ring-necked snake	*Diadophis punctatus arnyi*
Rough earthsnake	*Virginia striatula*
Rough green snake	*Opheodrys aestivus*
Schott's whipsnake	*Masticophis schotti*
Smooth earthsnake	*Virginia valeriae*
Southwestern rat snake	*Pantherophis emoryi meahllmorum*
Striped whipsnake	*Masticophis taeniatus*
Texas brown snake	*Storeria dekayi texana*
Texas coral snake	*Micrurus tener*
Texas garter snake	*Thamnophis sirtalis annectens*
Texas glossy snake	*Arizona elegans arenicola*
Texas lined snake	*Tropidoclonion lineatum texanum*
Texas patch-nosed snake	*Salvadora grahamiae lineata*
Texas thread snake	*Rena dulcis*
Timber rattlesnake	*Crotalus horridus*
Western coachwhip	*Masticophis flagellum*
Western diamond-backed rattlesnake	*Crotalus atrox*
Western ground snake	*Sonora semiannulata*
Western ribbon snake	*Thamnophis proximus*

Source: Dixon 2013.

Birds

Texas Ornithological Society (Lockwood and Freeman 2014) data and TPWD ecoregion specific avian check lists (Lockwood 2008) were reviewed for species distribution and life history information. Avian species potentially occurring within the study area include year-round residents and summer, and/or winter migrants as shown in Table 3-4. Additional transient bird species may migrate within or through the study area in the spring and fall and/or use the area to nest (spring/summer) or overwinter. The likelihood for the occurrence of each species depends upon availability of suitable habitat and season.

TABLE 3-4 AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	RESIDENT	SUMMER	WINTER
Accipitriformes: Accipitridae				
Cooper's hawk	*Accipiter cooperii*		X	X
Northern harrier	*Circus cyaneus*			X
Red-shouldered hawk	*Buteo lineatus*	X		
Red-tailed hawk	*Buteo jamaicensis*	X		
Sharp-shinned hawk	*Accipiter striatus*			X
Swainson's hawk	*Buteo swainsoni*		X	X
Zone-tailed hawk	*Buteo albonotatus*		X	
Accipitriformes: Cathartidae				
Black vulture	*Coragyps atratus*	X		
Turkey vulture	*Cathartes aura*	X		
Apodiformes: Apodidae				
Chimney Swift	*Chaetura pelagica*		X	
Apodiformes: Trochilidae				
Black-chinned hummingbird	*Archilochus alexandri*		X	
Buff-bellied hummingbird	*Amazilia yucatanensis*		X	
Ruby-throated hummingbird	*Archilochus colubris*		X	
Rufous hummingbird	*Selasphorus rufus*			X
Caprimulgiformes: Caprimulgidae				
Common nighthawk	*Chordeiles minor*		X	
Common poorwill	*Phalaenoptilus nuttallii*		X	
Charadriiformes: Charadriidae				
Killdeer	*Charadrius vociferus*	X		
Columbiformes: Columbidae				
Eurasian collared-dove	*Streptopelia decaocto*	X		
Inca dove	*Columbina inca*	X		
Mourning dove	*Zenaida macroura*	X		
Rock pigeon	*Columba livia*	X		
White-winged dove	*Zenaida asiatica*	X		
Coraciiformes: Alcedinidae				
Belted kingfisher	*Megaceryle alcyon*			X
Green kingfisher	*Chloroceryle americana*	X		
Cuculiformes: Cuculidae				
Greater roadrunner	*Geococcyx californianus*	X		
Yellow-billed cuckoo	*Coccyzus americanus*		X	

TABLE 3-4 AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	RESIDENT	SUMMER	WINTER
Falconiformes: Falconidae				
American kestrel	*Falco sparverius*			X
Crested caracara	*Caracara cheriway*	X		
Passeriformes: Bombycillidae				
Cedar waxwing	*Bombycilla cedrorum*			X
Passeriformes: Cardinalidae				
Blue grosbeak	*Passerina caerulea*		X	
Dickcissel	*Spiza americana*		X	
Indigo bunting	*Passerina cyanea*		X	
Northern cardinal	*Cardinalis cardinalis*	X		
Painted bunting	*Passerina ciris*		X	
Summer tanager	*Piranga rubra*		X	
Passeriformes: Corvidae				
American crow	*Corvus brachyrhynchos*			X
Blue jay	*Cyanocitta cristata*	X		
Common raven	*Corvus corax*	X		
Passeriformes: Emberizidae				
Cassin's sparrow	*Peucaea cassinii*	X		
Chipping sparrow	*Spizella passerina*	X		
Clay-colored sparrow	*Spizella pallida*			X
Dark-eyed junco	*Junco hyemalis*			X
Eastern towhee	*Pipilo erythrophthalmus*			X
Field sparrow	*Spizella pusilla*	X		
Grasshopper sparrow	*Ammodramus savannarum*		X	
Harris's sparrow	*Zonotrichia querula*			X
Lark bunting	*Calamospiza melanocorys*			X
Lark sparrow	*Chondestes grammacus*		X	
Lincoln's sparrow	*Melospiza lincolnii*			X
Savannah sparrow	*Passerculus sandwichensis*			X
Song sparrow	*Melospiza melodia*	X		X
Spotted towhee	*Pipilo maculatus*			X
Vesper sparrow	*Pooecetes gramineus*			X
White-crowned sparrow	*Zonotrichia leucophrys*			X
White-throated sparrow	*Zonotrichia albicollis*			X
Passeriformes: Fringillidae				
American goldfinch	*Spinus tristis*			X
House finch	*Haemorhous mexicanus*	X		
Lesser goldfinch	*Spinus psaltria*		X	
Pine siskin	*Spinus pinus*			X
Passeriformes: Hirundinidae				
Bank swallow	*Riparia riparia*			X
Barn swallow	*Hirundo rustica*		X	
Cave swallow	*Petrochelidon fulva*		X	
Cliff swallow	*Petrochelidon pyrrhonota*		X	
Purple martin	*Progne subis*		X	
Tree swallow	*Tachycineta bicolor*		X	

TABLE 3-4 AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	RESIDENT	SUMMER	WINTER
Passeriformes: Icteridae				
Baltimore oriole	*Icterus galbula*		X	X
Brown-headed cowbird	*Molothrus ater*	X		
Bullock's oriole	*Icterus bullockii*		X	
Common grackle	*Quiscalus quiscula*	X		
Eastern meadowlark	*Sturnella magna*	X		
Great-tailed grackle	*Quiscalus mexicanus*	X		
Orchard oriole	*Icterus spurius*		X	
Red-winged blackbird	*Agelaius phoeniceus*	X		
Passeriformes: Laniidae				
Loggerhead shrike	*Lanius ludovicianus*	X		X
Passeriformes: Mimidae				
Gray catbird	*Dumetella carolinensis*			X
Long-billed thrasher	*Toxostoma longirostre*	X		
Northern mockingbird	*Mimus polyglottos*	X		
Passeriformes: Motacillidae				
American pipit	*Anthus rubescens*			X
Passeriformes: Paridae				
Black-crested titmouse	*Baeolophus atricristatus*	X		
Carolina chickadee	*Poecile carolinensis*	X		
Passeriformes: Parulidae				
Black-and-white warbler	*Mniotilta varia*		X	
Black-throated green warbler	*Septophaga virens*		X	
Canada warbler	*Cardellina canadensis*			X
Common yellowthroat	*Geothlypis trichas*			X
Hooded warbler	*Setophaga citrina*		X	
Magnolia warbler	*Setophaga magnolia*			X
Mourning warbler	*Geothlypis philadelphia*			X
Northern parula	*Setophaga americana*		X	
Orange-crowned warbler	*Oreothlypis celata*			X
Pine warbler	*Setophaga pinus*			X
Tennessee warbler	*Oreothlypis peregrina*			X
Wilson's warbler	*Cardellina pusilla*			X
Yellow warbler	*Setophaga petechia*			X
Yellow-rumped warbler	*Setophaga coronata*			X
Passeriformes: Passeridae				
House sparrow	*Passer domesticus*	X		
Passeriformes: Polioptilidae				
Blue-gray gnatcatcher	*Polioptila caerulea*		X	
Passeriformes: Regulidae				
Golden-crowned kinglet	*Regulus satropa*			X
Ruby-crowned kinglet	*Regulus calendula*			X
Passeriformes: Remizidae				
Verdin	*Auriparus flaviceps*	X		
PASSERIFORMES: Sturnidae				
European starling	*Sturnus vulgaris*	X		

TABLE 3-4 AVIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME	RESIDENT	SUMMER	WINTER
Passeriformes: Troglodytidae				
Bewick's wren	*Thryomanes bewickii*	X		
Cactus wren	*Campylorhynchus brunneicapillus*	X		
Carolina wren	*Thryothorus ludovicianus*	X		
House wren	*Troglodytes aedon*			X
Winter wren	*Troglodytes hiemalis*			X
Passeriformes: Turdidae				
American robin	*Turdus migratorius*		X	
Eastern bluebird	*Sialia sialis*	X		
Swainson's thrush	*Catharus ustulatus*		X	
Passeriformes: Tyrannidae				
Brown-crested flycatcher	*Myiarchus tyrannulus*		X	
Eastern phoebe	*Sayornis phoebe*		X	
Eastern wood-pewee	*Contopus virens*		X	
Great crested flycatcher	*Myiarchus crinitus*		X	
Least flycatcher	*Empidonax minimus*		X	
Say's phoebe	*Sayornis saya*			X
Scissor-tailed flycatcher	*Tyrannus forficatus*		X	
Vermilion flycatcher	*Pyrocephalus rubinus*		X	
Western kingbird	*Tyrannus verticalis*		X	
Passeriformes: Vireonidae				
Bell's vireo	*Vireo bellii*		X	
Blue-headed vireo	*Vireo solitarius*			X
Hutton's vireo	*Vireo huttoni*		X	X
Warbling vireo	*Vireo gilvus*		X	
White-eyed vireo	*Vireo griseus*		X	
Yellow-throated vireo	*Vireo flavifrons*		X	
Pelecaniformes: Ardeidae				
Great blue heron	*Ardea herodias*	X		
Great egret	*Ardea alba*		X	
Piciformes: Picidae				
Downy woodpecker	*Picoides pubescens*			X
Golden-fronted woodpecker	*Melanerpes aurifrons*	X		
Ladder-backed woodpecker	*Picoides scalaris*	X		
Northern flicker	*Colaptes auratus*			X
Yellow-bellied sapsucker	*Sphyrapicus varius*			X
Strigiformes: Strigidae				
Barn owl	*Tyto alba*	X		
Barred owl	*Strix varia*	X		
Great horned owl	*Bubo virginianus*	X		

Source: Lockwood 2008, Lockwood and Freeman 2014

Mammals

Mammals that may occur in the study area are listed in Table 3-5. The occurrence of each species within the study area is dependent on available suitable habitat.

TABLE 3-5 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Mammals	
American badger	*Taxidea taxus*
American beaver	*Castor canadensis*
American perimyotis	*Perimyotis subflavus*
Attwater's pocket gopher	*Geomys attwateri*
Big brown bat	*Eptesicus fuscus*
Big free-tailed bat	*Nyctinomops macrotis*
Black rat	*Rattus rattus*
Black-tailed jackrabbit	*Lepus californicus*
Black-tailed prairie dog	*Cynomys ludovicianus*
Bobcat	*Lynx rufus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Cave myotis	*Myotis velifer*
Collared peccary	*Pecari tajacu*
Common gray fox	*Urocyon cinereoargenteus*
Common raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Crawford's desert shrew	*Notiosorex crawfordi*
Eastern cottontail	*Sylvilagus floridanus*
Eastern fox squirrel	*Sciurus niger*
Eastern gray squirrel	*Sciurus carolinensis*
Eastern mole	*Scalopus aquaticus*
Eastern red bat	*Lasiurus borealis*
Eastern spotted skunk	*Spilogale putorius*
Eastern woodrat	*Neotoma floridana*
Feral pig	*Sus scrofa*
Fulvous harvest mouse	*Reithrodontomys fulvescens*
Ghost-faced bat	*Mormoops megalophylla*
Gulf Coast kangaroo rat	*Dipodomys compactus*
Hispid cotton rat	*Sigmodon hispidus*
Hispid pocket mouse	*Chaetodipus hispidus*
Hoary bat	*Aeorestes cinereus*
Hog-nosed skunk	*Conepatus leuconotus*
House mouse	*Mus musculus*
Lacey's white-ankled deermouse	*Peromyscus laceianus*
Least shrew	*Cryptotis parva*
Long-tailed weasel	*Mustela frenata*
Merriam's pocket mouse	*Perognathus merriami*

TABLE 3-5 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Mountain lion	*Puma concolor*
Nine-banded armadillo	*Dasypus novemcinctus*
North American deermouse	*Peromyscus maniculatus*
Northern pygmy mouse	*Baiomys taylori*
Northern yellow bat	*Dasypterus intermedius*
Norway rat	*Rattus norvegicus*
Nutria	*Myocastor coypus*
Plains harvest mouse	*Reithrodontomys montanus*
Red fox	*Vulpes vulpes*
Red wolf	*Canis rufus*
Ringtail	*Bassariscus astutus*
Rio Grande ground squirrel	*Ictidomys parvidens*
Rock squirrel	*Otospermophilus variegatus*
Southern plains woodrat	*Neotoma micropus*
Striped skunk	*Mephitis mephitis*
Swamp rabbit	*Sylvilagus aquaticus*
Texas deermouse	*Peromyscus attwateri*
Virginia opossum	*Didelphis virginiana*
Western spotted skunk	*Spilogale gracilis*
White-footed deermouse	*Peromyscus leucopus*
White-tailed deer	*Odocoileus virginianus*
White-toothed woodrat	*Neotoma leucodon*

Source. Schmidly and Bradley 2016.

3.1.10 Aquatic Resources

Perennial and intermittent streams and creeks occur within the study area. Perennial aquatic environments may support species of smartweeds and docks (*Polygonaceae*), pennyworts (*Hydrocotyle* spp.), widgeon-grass (*Ruppia cirrhosa*), pondweed (*Potamogetonaceae*), and duckweeds (*Lemna* spp.). Emergent wetlands may be located along the edges of ponds and streams during wetter periods and may be comprised of rushes (*Juncus* spp.), spikerushes (*Eleocharis* spp.), sedges (*Carex* spp.), and flatsedges (*Cyperus* spp.). Typical woody plant species in these wetland or riparian areas may include elms (*Ulmus* spp.), bald cypress, American sycamore (*Platanus occidentalis*), pecan (*Carya illinoinensis*), cottonwood (*Populus deltoides*), black willow, and rattlebush (*Sesbania* spp.) (Chadde 2012a and 2012b).

Intermittent flowing streams support aquatic species primarily adapted to ephemeral pool habitats. Because intermittent streams consist of small headwater drainages, persistent flow is unlikely to be sufficient to support any substantial lotic species assemblage. Species in ephemeral aquatic habitats are typically adapted to rapid dispersal and completion of life cycles. In streams dominated by scoured, sandy-clay bottoms, accumulations of

woody debris or leaf pack provide the most important feeding and refuge areas for invertebrates and forage fish. Softer muddy bottoms generally harbor substantial populations of burrowing invertebrates (e.g., larval diptera and oligochaetes), which can be an important food source to higher trophic levels (Hubbs 1957).

Perennial streams and ponds offer relatively stable water levels and the constant pools and flow facilitate stable population growth. Species with flowing water or pooled area habitat requirements will use perennial streams and those adapted for deeper waters will use lake/pond environments. With distance downstream, especially in pooled areas where sufficient water is present, fish communities tend to be heavily dominated by widely distributed sunfish (*Lepomis* spp.), bass (*Micropterus* spp.), and catfish (*Ictalurus* spp.) (Hubbs 1957). Numerous species of turtles, snakes, and amphibians are also dependent on perennial surface waters for their habitat requirements. Some of these herptile species infrequently use terrestrial habitats to migrate between surface waters, but primarily use impounded and perennial surface waters.

Potential ponds located in the study area will exhibit variability in terms of their age, drainage, use by livestock, past fish stocking, and fertilization history. Typically for pond habitat, fluctuations in water levels are experienced during summer months because of high evaporation rates and repeated heavy rainfall required to fill ponds. Periods of extended drought in the region may reduce these seasonal water level fluctuations or dry ponds completely.

3.1.11 Threatened and Endangered Species

Information on sensitive wildlife and vegetation resources within the study area were obtained from a variety of sources, including correspondence with the USFWS and TPWD. Additional information was obtained from published literature and technical reports. Available biological resource data for the study area were mapped using GIS.

For the purpose of this EA, emphasis was placed on obtaining known occurrences of special status species and unique vegetation communities that have been previously documented within the study area. Special status species include those listed by the USFWS as threatened, endangered, proposed, or candidate; and those listed by TPWD as threatened, endangered, or as a rare species. Spatial data of known occurrences for listed species and/or sensitive vegetation communities was obtained from the TPWD's TXNDD on April 04, 2019 (TXNDD 2019). The TXNDD data provides a data record, known as an element of occurrence record (EOR), of state-listed rare or threatened/endangered species and rare vegetation communities that have been documented within a given area. The TXNDD data does not preclude the potential for a species to exist within the study area. Only a species-specific survey within the study area can determine the presence or absence of a special status species.

A USFWS IPaC Official Species List (USFWS 2020b; Consultation Code: 02ETAU00-2020-SLI-1016) and Resource List was received on April 8, 2019. This USFWS (2020b) report identifies potentially occurring federal-listed threatened, endangered, and candidate species and habitats within the study area. By definition, a threatened species is defined as likely to become endangered within the near foreseeable future throughout all or a significant portion of its range. An endangered species is in danger of extinction throughout all or a significant portion of its range. Candidate species are those that have sufficient information regarding their biological vulnerability and threat(s) to support listing as threatened or endangered and are likely to be proposed for listing in the near foreseeable future (USFWS 2019b).

The ESA also provides for the conservation of "designated critical habitat," which is defined as the areas of land, water, and air space that an endangered species needs for survival. These areas include sites with food and water, breeding areas, cover or shelter sites, and sufficient habitat to provide for normal population growth and behavior for the species. Critical habitat for the endangered Madla Cave meshweaver (*Cicurina madla)* is mapped within the southeast corner of the study area, south of the Cielo Vista community (USFWS 2020b). The critical habitat for the Madla Cave meshweaver is mapped within areas known to contain karst features. Karst habitat is used by several federally protected species listed in Table 3-6. According to USFWS (2020a) Ecological Services Southwest Region, the study area for the project intersects portions of Karst Zones 1, 2, 3, 4, and 5. Karst Zone 1 is defined as areas known to contain karst invertebrate species. Karst Zone 2 is defined as areas having a high probability of containing suitable habitat for endangered karst invertebrate species. Karst Zone 3 is defined as areas that probably do not contain endangered karst invertebrate species. Karst Zone 4 is defined as areas that require further research but are generally equivalent to Zone 3, although they may include sections that could be classified as Zone 2 or 5 as more information becomes available. Karst Zone 5 is defined as areas, both cavernous and non-cavernous, that do not contain endangered karst invertebrate species (Veni 2002). Karst Zone 5 occurs in the north portion of the study area. Karst Zones 2, 3, and 4 occur intermixed across the south portion of the study area. Karst Zone 1 is restricted to the southeast corner of the study area, southeast of the Cross Mountain community.

Threatened and Endangered Plant Species

USFWS (2020b) IPaC species list for the study area and TPWD (2019b) county listings were reviewed for special status plant species potentially occurring within the study area. One federal- / state-listed endangered plant species, Texas wild-rice (*Zizania texana*), and one candidate plant species, the Bracted twistflower (*Streptanthus bracteatus*), was identified as having the potential to occur within the study area (USFWS 2020b; TPWD 2019b; TXNDD 2019). A brief description of these species' life history, habitat requirements, and documented occurrences within the study area are summarized.

Texas Wild-rice

Texas wild-rice is endemic to Texas and the only known populations occur in portions of the Upper San Marcos River within Hays County (Poole et al. 2007). This species occurs in the spring-fed San Marcos River within clear, cool, shallow, swift water. Sediments are typically coarse sandy soils and this species flowers year-round (Poole et al. 2007; TPWD 2019b). This species is not anticipated to occur within the study area due to a lack of potential suitable aquatic habitat.

Bracted Twistflower

Bracted twistflower is endemic to the Edwards Plateau ecoregion. It is a short annual, growing to about eight inches tall. The entire plant is glabrous with pink to purple flowers. Bracted twistflower occurs on shallow, well-drained gravelly clays and clay loams over limestone in openings of oak-juniper woodlands, as well as in canyon bottoms. It can be found growing amidst dense shrub areas; however, plants are often more robust in sites with plentiful sunlight. Associate plant species include shrubby boneset (*Ageratina havanensis*), desert barberry (*Berberis trifoliata*), Texas hog plum (*Colubrina texensis*), bush croton (*Croton fruticulosus*), Texas oak, Mexican buckeye (*Ungnadia speciosa*), featherleaf desertpeony (*Acourtia runcinata*), green milkweed vine (*Matelea reticulata*), blue curls (*Phacelia congesta*), Buckley's fluffgrass (*Tridens buckleyanus*), little bluestem, and sideoats grama. Populations of this species may change extensively between years depending on the amount winter rainfall. The primary causes for its decline are residential development and browsing by white-tailed deer (Poole et al. 2007). This species may occur within the study area if suitable habitat is available.

Threatened and Endangered Animal Species

The USFWS (2020b) IPaC species report for the study area and TPWD (2019b) county listings were reviewed for special status animal species potentially occurring within the study area. Federally- and/or state-listed, and candidate status animal species potentially occurring within the study area are listed in Table 3-6. Federal status species listed in the TPWD Annotated County Lists of Rare Species have been included in Table 3-6 for consistency. Although only federally-listed threatened or endangered species are protected under the ESA, state-listed species may receive protection under other federal and/or state laws, such as the MBTA, BGEPA, Chapters 67, 68, and 88 of the Texas Parks and Wildlife Code, and Section 65.171–65.184 and 69.01–69.14 of Title 31 of the TAC. Brief descriptions of life history, habitat requirements, and documented occurrences within the study area are summarized below for each species.

TABLE 3-6 LISTED THREATENED AND ENDANGERED ANIMAL SPECIES FOR BEXAR COUNTY

SPECIES		LEGAL STATUS	
COMMON NAME	SCIENTIFIC NAME	USFWS[1]	TPWD[2]
Amphibians			
Cascade Caverns salamander	*Eurycea latitans*	-	T
Mexican treefrog	*Smilisca baudinii*	-	T
San Marcos salamander	*Eurycea nana*	T	T
Texas blind salamander	*Typhlomolge rathbuni*	E	-
Texas salamander	*Eurycea neotenes*	-	T
Arachnids			
Bracken Bat Cave meshweaver	*Cicurina venii*	E	-
Cokendolpher Cave harvestman	*Texella cokendolpheri*	E	-
Government Canyon Bat Cave meshweaver	*Cicurina vespera*	E	-
Government Canyon Bat Cave spider	*Neoleptoneta microps*	E	-
Madla Cave meshweaver	*Cicurina madla*	E	-
Robber Baron Cave meshweaver	*Cicurina baronia*	E	-
Birds			
Golden-cheeked warbler	*Dendroica chrysoparia*	E	E
Interior least tern	*Sternula antillarum athalassos*	E	E
Piping plover	*Charadrius melodus*	T	T
Reddish egret	*Egretta rufescens*	-	T
Tropical parula	*Setophaga pitiayumi*	-	T
White-faced ibis	*Plegadis chihi*	-	T
Whooping crane	*Grus americana*	E	E
Wood stork	*Mycteria americana*	-	T
Zone-tailed hawk	*Buteo albonotatus*	-	T
Crustaceans			
Peck's Cave amphipod	*Stygobromus pecki*	E	-
Fishes			
Fountain darter	*Etheostoma fonticola*	E	-
Sharpnose shiner	*Notropis oxyrhynchus*	E	-
Smalleye shiner	*Notropis buccula*	E	-
Toothless blindcat	*Trogloglanis pattersoni*	-	T
Widemouth blindcat	*Satan eurystomus*	-	T
Insects			
Beetle (No designated common name)	*Rhadine exilis*	E	-
Beetle (No designated common name)	*Rhadine infernalis*	E	-
Comal Springs dryopid beetle	*Stygoparnus comalensis*	E	-
Comal Springs riffle beetle	*Heterelmis comalensis*	E	-
Helotes mold beetle	*Batrisodea venyivi*	E	-
Mammals			
American black bear	*Ursus americanus*	-	T

TABLE 3-6 LISTED THREATENED AND ENDANGERED ANIMAL SPECIES FOR BEXAR COUNTY

SPECIES		LEGAL STATUS	
White-nosed coati	*Nasua narica*	-	T
Mollusks			
Golden orb	*Quadrula aurea*	C	T
Guadalupe orb	*Cyclonaias necki*	-	T
Texas fatmucket	*Lampsilis bracteata*	C	-
Texas pimpleback	*Quadrula petrina*	C	-
Reptiles			
Cagle's map turtle	*Graptemys caglei*	-	T
Texas horned lizard	*Phrynosoma cornutum*	-	T
Texas tortoise	*Gopherus berlandieri*	-	T

[1] USFWS 2020b, [2] TPWD 2019b
E – Federal- or State-Listed Endangered
T – Federal- or State-Listed Threatened
C – Federal Candidate for Listing

Federal Listed Species

AMPHIBIANS

San Marcos Salamander

The San Marcos salamander requires clear, constant flowing water with aquatic vegetation over sand and gravel substrates. Its reddish-brown color allows it to camouflage well with aquatic vegetation. The San Marcos salamander is restricted to the outflows of Spring Lake and the riffle just below Spring Lake dam near the City of San Marcos (Tipton et al. 2012). This species is not anticipated to occur within the study area due the known range of suitable habitat.

Texas Blind Salamander

The Texas blind salamander is white, like many other species adapted to living in aquatic caves of the Edwards Aquifer, and measures up to five inches in length. Similar to the San Marcos salamander, the Texas blind salamander requires constant flow of clear water. This subterranean species is only seen above ground when strong water flows bring it to the surface. The Texas blind salamander is only known to occur in the Balcones Escarpment near the city of San Marcos and is found within subterranean streams of the Purgatory Creek (Tipton et al. 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

ARACHNIDS

Braken Bat Cave Meshweaver

The Braken Bat Cave meshweaver is a species of eyeless spider known only from a single specimen at the type locality, Braken Bat Cave, Bexar County, Texas This invertebrate species is a troglobite, which is an organism that spends its entire life in subterranean environments (NatureServe 2019). Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution and alterations in water flow (USFWS 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Cokendolpher Cave Harvestman

The Cokendolpher Cave harvestman is a species of eyeless spider also referred to as the Robber Baron Cave harvestman. It is a troglobite (NatureServe 2019) endemic to Bexar County, Texas, where it has only been documented in Robber Baron Cave, a cave which runs underneath a heavily urbanized area in the City of San Antonio. Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution, and alterations in water flow (USFWS 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Government Canyon Bat Cave Meshweaver

The Government Canyon Bat Cave meshweaver is a spider endemic to Bexar County, Texas. It is a troglobite (NatureServe 2019) that is only known to occur in Bexar County at Government Canyon Bat Cave located within Government Canyon State Natural Area. Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution, and alterations in water flow (USFWS 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Government Canyon Bat Cave Spider

The Government Canyon Bat Cave spider is endemic to Bexar County, Texas. It is a troglobite (NatureServe 2019) that has only been documented in Bexar County at Government Canyon Bat Cave and Surprise Sink located within Government Canyon State Natural Area. Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution, and alterations in water flow (USFWS 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Madla Cave Meshweaver

The Madla Cave meshweaver is an eyeless spider endemic to Bexar County, Texas. It is a troglobite that has been observed in eight caves including Lost Pothole, Christmas Cave, Helotes Blowhole, Madla's Cave, Madla's Drop Cave, Headquarters Cave, the Hills and Dales Pit, and Robbers Cave within the University of Texas at San

Antonio main campus (NatureServe 2019). Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution, and alterations in water flow (USFWS 2012). Genetic research of this species suggests that additional populations may exist outside the eight documented caves (Paquin and Hedin 2004). Review of TXNDD (2019) data identified one EOR located within 0.5 mile of the study area. Critical habitat for this species is mapped within the southeast corner of the study area (USFWS 2020a). This species may occur within the study area if suitable cave/karst habitat is available.

Robber Baron Cave Meshweaver

The Robber Baron Cave meshweaver is an eyeless spider endemic to Bexar County, Texas. It is a troglobite (NatureServe 2019) that is only known from Robber Baron Cave within the Alamo Heights karst region. Threats to this species include habitat loss from quarrying operations, cave filling, habitat degradation via pollution, and alterations in water flow (USFWS 2012). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

BIRDS

Golden-cheeked Warbler

The golden-cheeked warbler's entire nesting range is confined to habitat in 33 counties located in central Texas. Nesting typically occurs from March to May in mature oak-juniper woodland areas with a moderate to high density of mature Ashe juniper trees mixed with deciduous trees (e.g., oaks) creating dense foliage in the upper canopy (Pulich 1976; Campbell 2003). These oak-juniper woodland vegetation communities are typically located in moist areas along steep-sided slopes, drainages, and bottomlands. However, golden-cheeked warblers will also nest in upland oak-juniper woodlands on flat topography (Pulich 1976). The golden-cheeked warbler migrates southward to southern Mexico and northern Central America to overwinter. Review of TXNDD (2019) data identified one EOR mapped within the northeast and northwest portion of the study area.

In order to identify potential suitable habitat within the study area, POWER used published data developed by Diamond et al. (2010) to analyze the location, extent, relative quality, and relative occupancy potential of the golden-cheeked warbler. As defined by the Diamond et al. (2010) Model C, mapped areas of potential suitable habitat for the golden-cheeked warbler were assigned a numeric value of **1**, **2**, **3**, or **4**, where **1** represents the lowest quality habitat and **4** represents the highest quality habitat. The Model C habitat designation descriptions are as follows:

- **1** - potential low-quality habitat when bordering higher ranked habitat; not habitat when not bordering higher ranked habitat;
- **2** - potential low-quality habitat when bordering higher ranked habitat; not habitat when not bordering higher ranked habitat;

- **3** - potential moderate quality habitat when bordering habitat ranked 4; potential low-quality habitat when not bordering habitat ranked 4; and
- **4** - potential moderate to high quality habitat.

During the data analysis, POWER biologists evaluated each route segment. Using GIS applications, Model C habitat data and route segments were superimposed on 2010 (date of Diamond Model results) and 2019 (the most recent imagery currently available for the study area) aerial imagery to perform a side-by-side analysis of observable habitat alteration. Biologists identified obvious vegetation alterations in areas designated as potential suitable habitat by the Model C. Examples of obvious vegetation alterations included newly constructed infrastructure (e.g., roads, transmission lines, and pipelines), commercial/residential developments, and clear-cut or thinned vegetation. Unaltered areas (no obvious alterations of vegetation) were assumed to remain the same quality and retained their Model C value designation. Using GIS applications, altered areas were subtracted from the Model C data and not included in the data tabulation presented in Table 4-1.

Model C mapped areas were avoided to the greatest extent possible, with an emphasis on avoiding areas with a numeric value of **3** and **4** where high-quality habitat is most likely to occur. POWER did not consider an increase in habitat quality during the data analysis assessment. Areas without Model C value designation were not considered to have the minimal characteristics required to support golden-cheeked warbler populations and were not evaluated. This species may occur within the study area if suitable habitat is available. Pedestrian field surveys by qualified biologists may be necessary to verify modeled habitat and determine presence or absence of golden-cheeked warblers.

Interior Least Tern

The interior least tern is a subspecies of the least tern that nests inland along sand and gravel bars within braided streams and rivers. It is also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel quarries, etc.). Breeding may begin as early as April and typically ends by late August. The USFWS recognizes any nesting least tern located 50 miles or greater from a coastline as the interior least tern subspecies (Campbell 2003; TPWD 2014). This species is not anticipated to occur within the study area due to lack of suitable habitat.

Piping Plover

The piping plover is a small migratory shorebird that nests within the Great Lakes, Northern Great Plains or Atlantic Coast (TPWD 2019b). Primary fall migration to Texas is from July to early September, while spring migration occurs from March to early May. Piping plovers are common to locally uncommon winter residents

along the Gulf of Mexico coastline (Lockwood and Freeman 2014). This species is not anticipated to occur within the study area due to lack of suitable habitat.

Whooping Crane

The eastern half of the study area is located within the central migratory corridor for the whooping crane. The migration path includes a 220-mile wide corridor that begins at their nesting site at Wood Buffalo National Park in Canada and continues south to their wintering grounds at the Aransas National Wildlife Refuge along the Texas coast. The migratory corridor contains 95 percent of all confirmed whooping crane stopover sightings, during migration. Whooping cranes overwinter in the Aransas National Wildlife Refuge from November through March. During migration, they typically fly at altitudes greater than 1,000 feet but will roost and feed in areas away from human disturbance during nightly stopovers. Stopover areas include large rivers, lakes and associated wetlands, playa lakes, pastureland, and cropland (USFWS 2009). This species may occur within the study area as a rare transient during migration.

CRUSTACEANS

Peck's Cave Amphipod

Little is known about the life history of the Peck's Cave amphipod, except that it is an eyeless cave obligate. This species has only been observed at spring openings of Comal and Hueco springs in the Edwards Aquifer area (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

FISHES

Fountain Darter

The fountain darter is a species of perch that is endemic to the San Marcos and Comal River headwaters in Hays and Comal counties, Texas (Thomas et al. 2007). It inhabits clear waters with aquatic vegetation and constant water temperatures. Diet consists of small crustaceans and insect larvae. Females lay their eggs year-round and utilize calmer waters of the river. Fountain darters are often associated with algae mats (Thomas et al. 2007). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Sharpnose Shiner

The sharpnose shiner occurs in the Brazos, Wichita, and Colorado river systems. Historically it occurred throughout the Brazos River system but is currently only known from the Brazos River system upstream of Possum Kingdom Reservoir. This species is generally found in river runs and pools and is thought to prefer large

turbid waters with sand, gravel, and clay-mud bottoms (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Smalleye Shiner

The smalleye shiner is endemic to the Brazos River system, although the current known distribution for this species includes the Brazos River system upstream of Possum Kingdom Reservoir and may be found in portions of the Colorado River above Lake Buchanan as a result of introductions. The smalleye shiner is believed to be extirpated downstream of Possum Kingdom Reservoir. This species typically inhabits river channels or medium to large prairie streams with sandy substrate and turbid to clear water (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

INSECTS

Unnamed Beetle (Rhadine exilis)

This unnamed beetle species is endemic to Bexar County, Texas. It is an eyeless cave obligate that has been documented in about 50 different caves (NatureServe 2019). *Rhadine exilis* is known only from caves in the southern portion of Camp Bullis Military Base (Reddell and Cokendolpher 2004). Threats to this species include habitat loss from quarrying operations, cave filling, and habitat degradation via pollution, and alterations in water flow (USFWS 2012). Review of TXNDD (2019) data identified two EO records located within 0.5 mile of the study area. This species may occur within the study area if suitable habitat is available.

Unnamed Beetle (Rhadine infernalis)

This unnamed beetle species is an eyeless cave obligate that has been documented in approximately 39 different caves in Bexar County, Texas (NatureServe 2019). Threats to this species include habitat loss from quarrying operations, cave filling, and habitat degradation via pollution, and alterations in water flow (USFWS 2012). Review of TXNDD (2019) data identified two EO records located within 0.5 mile of the study area. This species may occur within the study area if suitable cave/karst habitat is present and available.

Comal Springs Dryopid Beetle

The Comal Springs dryopid beetle is translucent, with a rust-colored exoskeleton. It is eyeless and measures approximately three to four millimeters long. The larvae may inhabit the ceilings of spring openings where organic soil and roots are present, whereas the adults are completely aquatic. Diet of the Comal Springs dryopid beetle is unknown; however, it may be like that of other dryopid beetles, which includes detritus and aquatic plants. It has only been collected from Comal Springs and Fern Bank Springs of the Edwards Aquifer (USFWS 2007). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Comal Springs Riffle Beetle

The Comal Springs riffle beetle is approximately two millimeters long, with a reddish-brown exoskeleton. Diet consists of detritus and microorganisms. They are restricted to springs within the Edwards Aquifer and are only known to occur near headwaters of the Comal and San Marcos rivers (USFWS 2007). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Helotes Mold Beetle

The Helotes mold beetle is endemic to karst features within Texas. It has been documented in eight caves near Helotes, Texas, northwest of San Antonio. This species is a cave obligate, growing up to 2.4 millimeters long and is believed to be predatory in nature (USFWS 2012). This species may occur within the study area if suitable cave habitat is available.

Federal Candidate Species

Golden Orb

The golden orb is a freshwater mussel endemic to central and south Texas. The shell is orange, yellow, or yellowish brown with occasionally green rays. This mussel species inhabits sandy, gravely, and muddy bottoms of lentic and lotic water bodies with depths varying from a few centimeters to over three meters. The golden orb is presumed to be extirpated from the Medina and Cibolo watersheds (HUC 12100302 and HUC 12100304), which occur in the study area (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Guadalupe Orb

The Guadalupe orb is a freshwater mussel that inhabits sand, gravel, and cobble bottoms, in medium-sized streams to large rivers with low to moderate flow. It has primarily found in riffles and runs, and only occasionally in pools. It is considered intolerant of impoundments (Howells 2014; Randklev et al. 2017). This species is endemic to the Guadalupe river basin and reports from the San Antonio basin are based on unreliable locality information (Neck 1982; Howells 2014; Randklev et al. 2017; Johnson et al. 2018). This species is not anticipated to occur within the study area due to the limits of its known distribution.

Texas Fatmucket

The Texas Fatmucket is a freshwater mussel endemic to central Texas. This species is currently known to inhabit the Colorado and Guadalupe river basins. It is believed to be intolerant of impoundments and inhabits streams with low water capacity that dry quickly during drought and low water events. The Texas Fatmucket primarily occupies water bodies bedrock substrates but sometimes occurs in muddy substrates. Small populations of this species have only been documented in Runnels, Tom Green, Menard, Kerr, and Gillespie counties. In 2015,

surveys documented three abundant populations in portions of the San Saba, Llano, and Pedernales rivers. (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Texas Pimpleback

The Texas Pimpleback is a freshwater mussel endemic to central Texas in the Colorado River Basin. One viable population occurs in the Concho River in a sanctuary managed by TPWD (NatureServe 2019). This species is not anticipated to occur within the study area due to the known range of suitable habitat.

Other Federally Protected Species

Bald Eagle

The bald eagle was delisted in 2007 by the USFWS, because the population has recovered beyond the ESA criteria for listing. The status of the bald eagle population is currently monitored by USFWS and the species is still protected under the MBTA and the BGEPA. Bald eagles may nest and/or winter in Texas. Nests are built in tree tops or on cliffs near rivers or large lakes. The bald eagle primarily preys on fish but will also eat birds, small mammals, and turtles and will often scavenge or steal carrion (Campbell 2003). This species may occur within the study area if suitable habitat is available.

State Listed Species

AMPHIBIANS

Cascade Caverns Salamander

The Cascade Caverns salamander is a small, subaquatic amphibian endemic to Texas. Its range includes springs and caves within the Edwards Aquifer area (TPWD 2019b). The salamander is pale brown to yellowish in color and grows up to four inches in length. Cave-dwelling forms of the Cascade Caverns salamander have greatly reduced nonfunctional eyes and little skin pigmentation. Other populations of this species have more skin pigmentation and functional eyes (Powell et al. 2016). This species may occur within the study area if suitable habitat is available.

Mexican Treefrog

The Mexican treefrog is nocturnal and seeks shelter under loose tree bark or in damp soil during the heat of the day. It breeds during May to October during rainy periods and lays eggs in temporary rain pools, ponds, canals, and flooded fields (TPWD 2019b). This species may occur within the study area if suitable habitat is available.

Texas Salamander

The Texas salamander is endemic to Bexar and Kendall counties in Texas. It is adapted to living in subterranean streams and creeks. This subterranean species is capable of traversing upland habitats when conditions are wet but may rarely do so successfully (NatureServe 2019). This species may occur within the study area if suitable habitat is available

BIRDS

Reddish Egret

The reddish egret is a wading bird with blue legs and a pink bill. This species may occur as white (white phase) or as gray with a rusty colored head and neck (dark phase). The Reddish Egret is a permanent resident of the Texas Gulf Coast and inhabits brackish marshes, shallow salt ponds, and tidal flats (Alsop 2002). They nest on the ground or in trees and bushes on dry coastal islands in brushy thickets of yucca and prickly pear (TPWD 2019b). This species may occur in the study area as a rare non-breeding migrant (Lockwood and Freeman 2014) if suitable habitat is available.

Tropical Parula

The tropical parula inhabits dense or open woods, undergrowth, brush, and trees along edges of rivers and resacas. This species is a breeding resident in Texas and feeds on insects and berries (Alsop 2002). This species may occur in the study area if suitable habitat is available.

White-faced Ibis

The white-faced ibis prefers freshwater marshes, swamps, ponds, rivers, sloughs, and irrigated rice fields, but will also use brackish and saltwater habitats. This species is a colonial nester and forages on insects, newts, leeches, earthworms, snails, crayfish, frogs, and fish (TPWD 2019b). White-faced ibis commonly breeds and winters along the Texas Gulf Coast (Arvin 2007). This species may occur in the study area as a non-breeding migrant (Lockwood and Freeman 2014) if suitable habitat is available.

Wood Stork

The wood stork inhabits prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including saltwater areas. This species usually roosts communally in tall snags, sometimes in association with other wading birds and historically nested in Texas (TPWD 2019b). This species is not anticipated to occur within the study area due to lack of suitable habitat.

Zone-tailed Hawk

The zone-tailed hawk inhabits arid open country, including open deciduous or pine-oak woodland, mesa or mountain country (often near watercourses), wooded canyons, and tree-lined rivers along middle-slopes of desert mountains. This species nests in a wide range of habitats and sites, including small trees in lower desert, giant cottonwoods in riparian areas, and mature conifers in high mountain regions (TPWD 2019b). This species may occur in the study area as a rare resident or migrant (Lockwood and Freeman 2014) if suitable habitat is available.

FISHES

Toothless Blindcat

The toothless blindcat is a small, eyeless fish restricted to freshwater pools within caves located in the Medina watershed (HUC 12100302), which partially occurs within the study area, and Upper San Antonio River watershed. Diet of the toothless blindcat may consist of detritus and fungi (NatureServe 2019). This species may occur within the study area if suitable habitat is available.

Widemouth Blindcat

The widemouth blindcat is a small, white to pink eyeless fish restricted to freshwater pools within caves located in the Medina watershed (HUC 12100302), which partially occurs within the study area, and Upper San Antonio River watershed. Diet of the widemouth blindcat consists of shrimp, amphipods, and isopods (NatureServe 2019). This species may occur within the study area if suitable habitat is available.

MAMMALS

American Black Bear

The American black bear is listed as threatened due to similarities with the Louisiana black bear (*Ursus americanus luteolus*), which has now been federally delisted. The American black bear is a stocky, large, omnivore with black to cinnamon brown fur that consumes insects, roots, and tubers. Preferred habitat in Texas includes bottomland hardwood forest and large tracts of inaccessible forested areas (TPWD 2019b). This species historically inhabited large tracts of forest and woodland throughout Texas and was once thought to be extirpated from the state. In recent years sightings have increased near the Chisos Mountains in west Texas and the Texas Panhandle by bears dispersing from Mexico and New Mexico (Schmidly and Bradley 2016). Review of TXNDD (2019) data identified one American black bear EO record from the year 1980 mapped with the study area. This species may occur within the study area if suitable habitat is available.

White-nosed Coati

The white-nosed coati is a member of the raccoon family (*Procyonidae*) that inhabits cropland/hedgerows, mesquite grasslands, oak scrub, riparian corridors, and canyons of south and west Texas. Denning occurs in snags or hollow trees. Adult males are solitary while females and young males travel in groups of 12 or more. White-nosed coatis are most active during mornings and evenings at which times they forage canopies and the ground for fruits, insects, birds, and small mammals (Schmidly and Bradley 2016; Nature Serve 2019). This species may occur within the study area if suitable habitat is available.

REPTILES

Cagle's Map Turtle

The Cagle's map turtle habitat range is limited to the Guadalupe and San Antonio river basins, inhabiting the Guadalupe, San Antonio and San Marcos rivers. This species prefers rivers with slow to moderate flow and silt and gravel substrates. Optimal habitat includes riffles and pools. Like most other turtles, this species basks in the sun on brush piles along river and stream banks (Conant and Collins 1991; Dixon 2013). This species is not anticipated to occur within the study area due to the lack of suitable perennial river habitat.

Texas Horned Lizard

The Texas horned lizard inhabits open, arid to semiarid regions with sparse vegetation including open desert, grasslands, and shrubland containing bunch grasses, cacti and yucca. Preferred soils vary from pure sands and sandy loams to coarse gravels, conglomerates, and desert pavements (Henke and Fair 1998). Texas horned lizards are active between early spring to late summer and thermo-regulate by basking or burrowing into the soil. During winter inactivity periods, this species aestivates beneath the surface six to 12 inches deep under rocks, leaf litter, or abandoned animal burrows. Populations are thought to have decreased because of land use conversions, increased pesticide/herbicide use, collection, and increased fire ant populations. The Texas horned lizard forages primarily on the red harvester ant (*Pogonomyrmex barbatus*), but also consumes grasshoppers, beetles, and grubs (Dixon 2013; Henke and Fair 1998). This species may occur within the study area if suitable habitat is available.

Texas Tortoise

The Texas tortoise is a long-lived species with a shell that has characteristically yellowish-orange, bluntly-horned scutes (shell plates). Habitat preferences include arid brush, scrub woods, and grass-cactus associations with grassy understories (NatureServe 2019). The Texas tortoise is active during March to November and when inactive, it occupies shallow depressions at the base of bushes or cactus, underground burrows, or under other suitable objects such as trash. The tortoise feeds on fruits of prickly pear and other mostly succulent plants (TPWD 2019b). This species may occur within the study area if potential suitable habitat is available.

3.2 Human Resources/Community Values

3.2.1 Land Use

Jurisdiction does not necessarily represent land ownership. Potential conflicts that could arise from crossing jurisdictional boundaries were evaluated in this study. The study area is located within the jurisdictional boundary of Bexar County. A portion of the City of San Antonio is located within the study area.

The study area covers approximately 28 square miles in Bexar County. Land uses within the study area were identified and placed into the following categories: urban/developed, planned land use, agriculture, oil and gas facilities, transportation/aviation/utility features, communication towers, and parks and recreation areas. The primary sources of land use information were obtained from interpretation of aerial photographs, USGS topographical maps, and vehicular reconnaissance surveys from accessible public viewpoints. Planned land use features were limited to known features obtained from governmental entities and mobility authorities.

Residential Areas

The urban/developed classification represents concentrations of surface disturbing land uses, which include habitable structures and other developed areas, characterized with low, medium and high intensities. The various levels of development include a mix of institutional, commercial, and/or industrial land uses. Developed low, medium, and high intensity areas were identified using aerial photograph interpretation and reconnaissance surveys. These classifications are described below:

- **Developed Low Intensity** areas typically include rural settings with single-family housing units.
- **Developed Medium Intensity** areas typically include single-family housing units that are grouped in residential subdivisions and might include peripheral commercial structures.
- **Developed High Intensity** includes highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial parks. Areas with the highest concentration of development are typically located within or near the towns and communities in the study area.

The study area is located within Bexar County and partially within the City of San Antonio. The study area is suburban, with residential development and some industrial and commercial development in the eastern and central portion of the study area. The habitable structures in the study area would be considered medium and low intensity development. Habitable structures were identified using aerial photographs (DigitalGlobe 2019), Google Earth, and reconnaissance surveys. The PUC definition of a habitable structure was used for this routing study. The PUC's Substantive Rules (16 TAC § 25.101(a)(3)) define habitable structures as "structures normally inhabited by humans or intended to be inhabited by humans on a daily or regular basis. 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."

Schools

The study area is located within the Northside Independent School District (ISD) and Boerne ISD. One public elementary school, Dr. Sara B. McAndrew Elementary School, was identified within the study area (Texas Education Agency 2019).

Planned Land Use

The planned land use component identifies objectives and/or policies regarding land use goals and plans, including conservation easements, managed lands, and proposed developments. Cities and counties typically prepare comprehensive land use plans to provide strategic direction by goals and objectives for the individual city or county. City and county websites were reviewed, and correspondence was submitted to local and county officials to identify potential planned land use conflicts. The City of San Antonio also has a Master Plan intended to provide guidance in future decisions related to land use, infrastructure improvements, transportation, and more (City of San Antonio 2019a and 2019b). Additionally, the City of San Antonio has set up zoning districts to provide information on how a property may be developed. No Neighborhood Conservation Districts were identified within the study area, but there are platted subdivisions. Bexar County is implementing a parks master plan. No zoning was identified for Bexar County (Bexar County 2019).

An email response was received from Bexar County on July 03, 2019 containing shape files of data within the study area, including Master Development Plans for numerous neighborhoods and subdivisions. Additional information regarding Master Development Plans was requested on July 17, 2019 from Bexar County. The Master Development Plans are at various stages of development and typically take 20 to 30 years to be fully developed. Refer to Appendix A.

Conservation Easements

A conservation easement is a restriction property owners voluntarily place on specified uses of their property to protect natural, productive or cultural features. The property owner retains legal title to the property and determines the types of uses to allow or restrict. The property can still be bought, sold, and inherited, but the conservation easement is tied to the land and binds all present and future owners to its terms and restrictions. Conservation easement language will vary as to the individual property owner's allowances for additional

developments on the land. The land trusts facilitate the easement and ensure compliance with the specified terms and conditions.

A review of numerous non-governmental groups (e.g., the Nature Conservancy, Texas Land Conservancy [TLC] and the National Conservation Easement Database [NCED]) that are land trusts and databases for conservation easements within Texas indicated four conservation easements within the study area. They are all listed under the same name, Bandera Pass Easement, and held by the Nature Conservancy. They encompass a total of 607 acres in the northeastern portion of the study area (Nature Conservancy 2019; TLC 2019; NCED 2019). The United States Army (Army) has third party contingent rights in the Bandera Pass Easement related to the Army's activities at the Camp Bullis Military Installation. Correspondence from the Army regarding the project is included in Appendix A. Based on landowner communication, the landowner that established the Bandera Pass Easement is considering establishment of additional conservation easements on property located to the west and south of the existing easements. At the time of preparation of the EA, POWER understands that the land acquisition and grant of the easements has not been finalized.

3.2.2 Agriculture

Agriculture is a significant segment of the economy throughout Texas, and the study area county has an active agricultural sector. According to the USDA's National Agricultural Statistics Service's 2012 Census of Agriculture, the total market value for agricultural products sold for Bexar County was $72,387,000, a 14 percent decrease from the 2007 market value of $84,223,000. Livestock sales accounted for 24 percent of agricultural sales in Bexar County, while crop sales accounted for 76 percent of agricultural sales. The number of farms in Bexar County decreased slightly from 2,496 in 2007 to 2,457 in 2012 (a decrease of two percent) (USDA 2012).

3.2.3 Transportation/Aviation

Transportation

Federal, state, and local roadways were identified using TxDOT county transportation maps, Texas Natural Resources Information System data, and field reconnaissance surveys. The roadway transportation system within the study area does not include any US Hwys, SHs, or FM roads. Numerous county roads were identified in the study area, including Scenic Loop Road, Babcock Road, Upper Balcones Road, Cross Mountain Trail, Toutant Beauregard Road, and Boerne Stage Road (TxDOT 2019a).

TxDOT's "Project Tracker," which contains detailed information by county for every project that is or could be scheduled for construction, was reviewed to identify any state roadway projects planned within the study area. The TxDOT Project Tracker indicated no state roadway projects planned within the study area (TxDOT 2019b).

A review of the City of San Antonio Transportation and Capital Improvements did not indicate any city roadway projects planned within the study area (City of San Antonio 2019c).

No railroads were identified within the study area (United States Department of Transportation [USDOT] 2019).

Aviation

POWER reviewed the San Antonio Sectional Aeronautical Chart (FAA 2019a) and the Chart Supplement for the South Central US (formerly the Airport/Facility Directory) (FAA 2019b) to identify FAA registered facilities within the study area subject to notification requirements listed in 14 CFR Part 77.9. Facilities subject to notification requirements listed in 14 CFR Part 77.9 include public-use airports listed in the Airport/Facility Directory (currently the Chart Supplement), public-use or military airports under construction, airports operated by a federal agency or DoD, or an airport or heliport with at least one FAA-approved instrument approach procedure.

The Chart Supplement for the South Central US used in conjunction with the San Antonio Sectional Aeronautical Chart, contains all public-use airports, seaplane bases and public-use heliports, military facilities, and selected private-use facilities specifically requested by the DoD for which a DoD Instrument Approach Procedure has been published in the US Terminal Procedures Publication.

No public-use or military FAA registered airports were identified within the study area. One FAA registered public use airport, Boerne Stage Field Airport, was identified within 20,000 feet of the study area boundary (FAA 2019b).

Although pre-existing landing areas (PELAs) for air ambulance services may exist in the study area, no public-use heliports or heliports with an instrument approach procedure are listed for the study area in the Chart Supplement for the South Central US (FAA 2019b).

In addition, POWER also reviewed the FAA database (FAA 2019c), USGS topographic maps, recent aerial photography, and conducted field reconnaissance from publicly accessible areas to identify private-use airstrips and private-use heliports not subject to notification requirements listed in 14 CFR Part 77.9. There were no private-use airstrips and no private-use heliports identified within the study area.

3.2.4 Communication Towers

Review of the Federal Communication Commission (FCC) database indicated that there are no amplitude modulation radio (AM radio) transmitters within the study area. There are two frequency modulation radio (FM radio) transmitters/microwave towers/other electronic installations identified within the study area. There are two additional FM radio transmitters/microwave towers/other electronic installations within 2,000 feet of the study area boundary (FCC 2019).

3.2.5 Utility Features

Utility features reviewed include existing electrical transmission lines, distribution lines, pipelines, water and gas/oil wells, and water and gas/oil storage tanks. Data sources used to identify existing electrical transmission and distribution lines include utility company and regional system maps, aerial imagery, USGS topographic maps, additional available planning documents, and field reconnaissance surveys. Existing transmission lines identified within the study area include a 138-kV transmission line, Ranchtown to Menger Creek, and a 345-kV transmission line, Kendall to Cagnon Road. Distribution lines are prevalent throughout the developed portions of the study area; however, these features were not mapped or inventoried.

Data was obtained from the RRC (RRC 2019c) which provided a GIS layer for existing oil and gas wells, pipelines, and supporting facilities. The 2019 RRC dataset along with aerial photograph interpretation and field reconnaissance were used to identify and map existing oil and gas related facilities. No pipelines or oil and gas wells were identified within the study area (RRC 2019c).

Water wells are located throughout the study area, with higher density in the eastern portion of the study area. Twelve of the water wells located within the study area are public supply water wells (TWDB 2020).

3.2.6 Socioeconomics

This section presents a summary of economic and demographic characteristics for these counties and describes the socioeconomic environment of the study area. Literature sources reviewed include publications of the United States Census Bureau (USCB), and the Texas State Data Center (TXSDC).

Population Trends

Bexar County experienced a population increase between 2000 and 2010 of 19 percent. By comparison, population at the state level increased by nearly 21 percent during the 2000s (USCB 2000 and 2010).

According to TXSDC projections, Bexar County is projected to experience population growth of 41 percent during the next 30 years, from 2010 to 2040. By comparison, the population of Texas is expected to experience

population increase of 38 percent over the next three decades (TXSDC 2018). Table 3-7 presents the past population trends and projections for the study area county and for the state of Texas.

TABLE 3-7 POPULATION TRENDS

	PAST		PROJECTED		
STATE/COUNTY	2000	2010	2020	2030	2040
Texas	20,851,820	25,145,561	29,677,772	34,894,429	40,686,490
Bexar County	1,392,931	1,714,773	2,093,427	2,502,208	2,912,144

Sources: USCB 2000 and 2010; TXSDC 2018

Employment

From 2000 to 2017, the civilian labor force (CLF) in the study area county increased by 33 percent (318,787 people). By comparison, the CLF at the state level grew by 29 percent (4,087,709 people) over the same time period (USCB 2000 and 2017). Table 3-8 presents the CLF for the study area county and the state of Texas for the years 2000 and 2017.

Between 2000 and 2017, Bexar County experienced a decrease in its unemployment rate from 5.9 percent in 2000, to 5.4 percent in 2017. By comparison, the state of Texas also experienced a decrease in the unemployment rate over the same period. The state's unemployment rate decreased from 6.1 percent in 2000, to 5.1 percent in 2017 (USCB 2000 and 2017). Table 3-8 presents the employment and unemployment data for the study area county and the state of Texas for the years 2000 and 2017. Although we recognize that employment rates have recently decreased due to the virus responsible for COVID-19, we anticipate that these changes in the employment rates are temporary and will return to the mean.

TABLE 3-8 CIVILIAN LABOR FORCE AND EMPLOYMENT

STATE/COUNTY	2000	2017
Texas		
Civilian Labor Force	9,830,599	13,918,308
Employment	9,234,372	13,201,891
Unemployment	596,187	716,417
Unemployment Rate	6.1%	5.1%
Bexar County		
Civilian Labor Force	633,001	951,788
Employment	595,911	900,337
Unemployment	37,090	51,451
Unemployment Rate	5.9%	5.4%

Source: USCB 2000 and 2017

Leading Economic Sectors

The major occupations in Bexar County in 2017 are listed under the category of management, business, science, and arts occupations, followed by sales and office occupations (USCB 2017). Table 3-9 presents the number of persons employed in each occupation category during 2017 in the study area county.

TABLE 3-9 OCCUPATIONS IN THE COUNTY OF THE STUDY AREA

OCCUPATION	BEXAR COUNTY
Management, business, science, and arts occupations	319,947
Service occupations	172,444
Sales and office occupations	228,895
Natural resources, construction, and maintenance occupations	83,808
Production, transportation, and material moving occupations	95,243

Source. USCB 2017

In 2000 and 2017, the industry group employing the most people in Bexar County was educational services, and health care and social assistance (USCB 2000 and 2017). Table 3-10 presents the number of persons employed in each of the industries in the study area county for the years 2000 and 2017.

TABLE 3-10 INDUSTRY IN THE COUNTY OF THE STUDY AREA

INDUSTRY GROUP	BEXAR COUNTY	
	2000	2017
Agriculture, forestry, fishing and hunting, and mining	2,776	8,901
Construction	44,648	73,088
Manufacturing	40,775	51,975
Wholesale trade	21,073	22,981
Retail trade	74,893	106,729
Transportation and warehousing, and utilities	29,114	42,189
Information	20,900	15,563
Finance and insurance, and real estate and rental and leasing	54,432	82,437
Professional, scientific and management, and administrative and waste management services	58,793	101,849
Educational services, and health care and social assistance	127,659	208,751
Arts, entertainment, and recreation, and accommodation and food services	57,456	104,216
Other services, except public administration	30,044	42,183
Public administration	33,348	39,475

Source. USCB 2000 and 2017

3.2.7 Community Values

The term "community values" is included as a factor for the consideration of transmission line route approval under PURA 37.056(c)(4)(A-D); however, the term has not been defined by the PUC. The PUC CCN application requires information concerning the following items related to community values:

- Public open-house meeting.
- Approval or permits required from other governmental agencies.
- Brief description of the area traversed.
- Habitable structures within 300 feet of the centerline for transmission lines of 230 kV or less.
- AM and FM radio, microwave, and other electronic installations in the area.
- FAA-registered public use airstrips, private airstrips, and heliports located in the area.
- Irrigated pasture or croplands utilizing center-pivot or other traveling irrigation systems.
- Parks and recreation areas.
- Historical and archeological sites.

In addition, POWER also evaluated the project for community values and resources that might not be specifically listed by the PUC, but that might be of importance to a particular community as a whole. Although the term "community values" is not formally defined in PUC rules, in several dockets the PUC and Staff have used the following as a working definition: the term "community values" is defined as *a shared appreciation of an area or other natural resource by a national, regional, or local community*. Examples of a community resource would be a park or recreational area, historical or archeological site, or a scenic vista (aesthetics). POWER mailed consultation letters to various local elected and appointed officials, and assisted CPS Energy personnel in hosting a public open house meeting to identify and collect information regarding community values and community resources.

3.3 Recreational and Park Areas

The PUC's CCN application specifically requires reporting of recreational and park areas owned by a governmental body or an organized group, club, or church. Federal and state database searches and county/local maps were reviewed to identify any parks and/or recreational areas within the study area. Reconnaissance surveys were also conducted to identify any additional park or recreational areas.

3.3.1 National/State/County/Local Parks

No national or state parks were identified within the study area (National Parks Service [NPS] 2019a; TPWD 2019c). No county or local parks were identified within the study area (City of San Antonio 2019d). Additional

recreational activities such as hunting and fishing might occur on private properties throughout the study area but are not considered to be open to the general public.

3.3.2 Wildlife Viewing Trails

Review of the TPWD *Great Texas Wildlife Trails Heart of Texas East* indicates that there is one wildlife viewing loop, Cibolo Loop, within the study area. There is one site of interest, Maverick Ranch Fromme Farm, located within the study area (TPWD 2019d).

3.4 Aesthetic Values

PURA § 37.056(c)(4)(C) incorporates aesthetics as a consideration when evaluating proposed electric transmission facilities. There are currently no formal guidelines provided for managing visual resources on private, state, or county owned lands. For the purposes of this study, the term aesthetics is defined by POWER to accommodate the subjective perception of natural beauty in a landscape and measure an area's scenic qualities. The visual analysis was conducted by describing the regional setting and determining a viewer's sensitivity. Related literature, aerial photograph interpretation, and field reconnaissance surveys were used to describe the regional setting and to determine the landscape character types for the area.

Consideration of the visual environment includes a determination of aesthetic values (where the major potential effect of a project on the resource is considered visual) and recreational values (where the location of a transmission line could potentially affect the scenic enjoyment of the area) that would help define a viewer's sensitivity. POWER considered the following aesthetic criteria that combine to give an area its aesthetic identity:

- Topographical variation (hills, valleys, etc.).
- Prominence of water in the landscape (rivers, lakes, etc.).
- Vegetation variety (woodland, meadows).
- Diversity of scenic elements.
- Degree of human development or alteration.
- Overall uniqueness of the scenic environment compared with the larger region.

The study area is primarily suburban, with some rural areas. The predominant land use within the study area is residential. The majority of the study area has been impacted by land improvements associated with residential structures, commercial and industrial activities, local roadways, and various utility corridors. Overall, the study area viewscape consists of medium and low intensity development.

The study area is located within the Texas Hill Country, which is known to be a scenic area of Texas. However, no known high-quality aesthetic resources, designated views, or designated scenic roads or highways were identified within the study area.

The study area is located within the 28-county Texas Independence Trail Region. There are no sites of interest along the trail within the study area (THC 2019a).

A review of the NPS website did not indicate any Wild and Scenic Rivers, National Monuments, National Memorials, National Historic Sites, National Historic Trails, or National Battlefields within the study area (NWSRS 2019; NPS 2019b and 2019c).

Based on these criteria, the study area exhibits a moderate degree of aesthetic quality for the region. The majority of the study area maintains the feel of suburban area. Although some portions of the study area might be visually appealing, the aesthetic quality of the study area overall is not distinguishable from that of other adjacent areas within the region.

3.5 Historical (Cultural Resource) Values

PURA § 37.056(c)(4)(A-D) incorporates historical and aesthetic values as a consideration when evaluating proposed electric transmission facilities. The PUC's CCN application requires that known historical sites within 1,000 feet of an alternative route be listed, mapped, and their distance from the centerline of the alternative route documented in the application filed for consideration. Archeological sites within 1,000 feet of a route are required to be listed and their distance from the centerline documented, but they need not be shown on maps for the protection of the site. Sources consulted to identify known sites (national, state, or local commission) must also be listed.

The THC is the state agency responsible for preservation of the state's cultural resources. The THC, working in conjunction with the TARL, maintains records of previously recorded cultural resources as well as records of previous field investigations. Information from the THC's restricted-access Texas Archeological Sites Atlas (TASA) and Texas Historical Sites Atlas (THSA) was acquired in addition to GIS shapefiles acquired from TARL, to identify and map locations of previously recorded cultural (archeological and historical) resources within the study area. TxDOT's historic bridges database was also reviewed for bridges that are listed or determined eligible for listing on the NRHP. At the national level, NPS websites and data centers were reviewed to identify locations and boundaries for nationally designated historic landmarks, trails, and battlefield monuments.

Together, archeological and historical sites are often referred to as cultural resources. Under the NPS standardized definitions, cultural resources include districts, sites, buildings, structures, or objects important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. For this study, cultural resources have been divided into three major categories: archeological resources, historical resources, and cemeteries. These three categories correlate to the organization of cultural resource records maintained by the THC and TARL.

Archeological resources are sites where human activity has measurably altered the earth and left deposits of physical remains (e.g., burned rock middens, stone tools, petroglyphs, house foundations, trails, trash scatters). Most archeological sites in Texas are Native American (prehistoric), Euro/African American, or Hispanic in origin. Much of the study area has not been studied intensively for archeological resources. Therefore, high probability areas (HPAs) for prehistoric and historic archeological resources were determined based on proximity to perennial water sources, certain topographic features, and the presence of structures on historic maps in currently undeveloped areas.

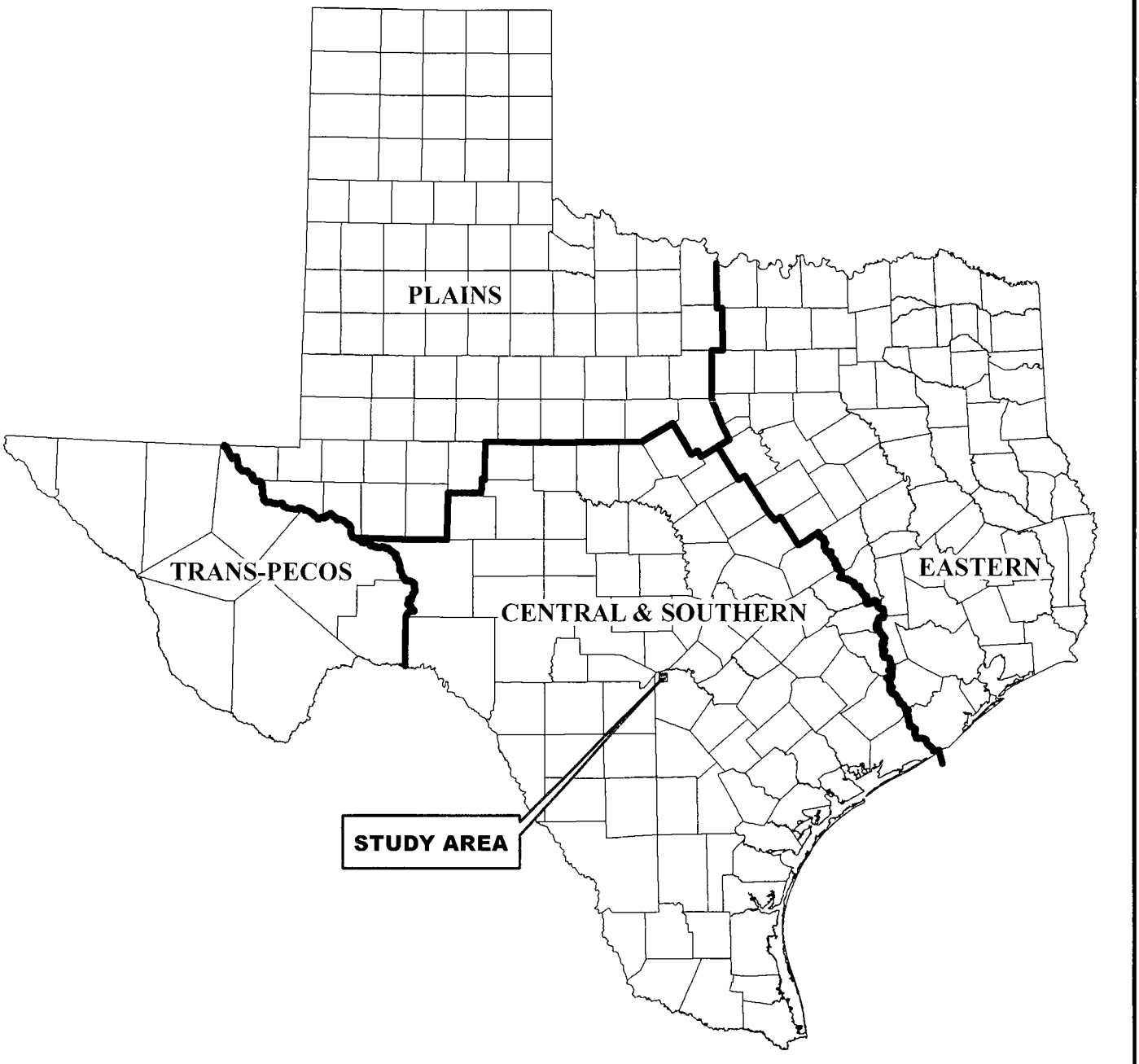
Historical resources include standing buildings or structures (e.g., houses, barns and out buildings), and may also include dams, canals, bridges, transportation routes, silos, etc., and districts that are non-archeological in nature and generally more than 50 years of age.

Cemeteries are locations of intentional human interment and may include large public burial grounds with multiple individuals, small family plots with only a few burials, or individual grave sites. In some instances, cemeteries may be designated as Historic Texas Cemeteries (HTCs) by the THC or recognized with an Official Texas Historical Marker (OTHM). Cemeteries may also be documented as part of the THC Record-Investigate-Protect Program.

3.5.1 Cultural Background

Prehistory

The study area is located within the central and southern cultural resource planning region as shown on Figure 3-4 (Mercado-Allinger et al. 1996). Bexar County is near the border between the South Texas and Central Texas archeological regions, and the Central Texas and the Savannah and Prairie archeological regions as mapped by Pertulla (2004). Although the archeological record within and near the study area is likely to reflect influence and shared traits from all three of the archeological regions, the following discussion focuses on the cultural chronology of central Texas, as presented by (Collins 2004).



0 50 100 200

Miles

Source Mercado - Allinger et al , 1996

Date. 6/29/2020

Legend

Cultural Resource Planning Region Boundary

County Boundary

SCENIC LOOP 138 kV
TRANSMISSION LINE AND
SUBSTATION PROJECT

Figure 3-4
Location of the Study Area In Relation to the Cultural Resources Planning Regions of Texas

The prehistory of the prehistoric occupation of central Texas is most often divided into three broad periods spanning at least the last 11,500 years. These periods include the Paleoindian period, beginning around 11,500 years before present (BP) and lasting approximately 2,700 years. Following the Paleoindian period is the long-lasting Archaic period, which subsumes almost two-thirds of the prehistoric occupation of central Texas from about 8,800 BP until 1,250 BP. The final period before Euroamerican contact is the Late Prehistoric period, which ended with the first Spanish expedition into the region in the late 1600s.

The Paleoindian period in central Texas is divided into the early and late sub-periods. The early Paleoindian period, also called the Clovis cultural horizon, began about 11,500 BP and is the earliest known cultural sequence in the region. Corresponding with the waning years of the Pleistocene era, the early period was characterized by a comparatively cooler, wetter environment. Despite the popular misconception that these early populations were primarily hunters, evidence from the Gault Site in central Texas suggests that their diet was more generalized (Collins 2002). Archeological evidence indicates that these early hunting and gathering populations subsisted on a well-diversified resource base that included not only the last of the mammoth, but also smaller animals, fish, and a variety of reptiles. Site types dating to this period are also varied and include kill, quarry/stone-working, cache, camp, ritual, and burial sites. Artifacts associated with early Paleoindian period sites include large, fluted Clovis spear points, bone and ivory points, and stone bolas. Many of the artifacts were made from exotic stone suggesting a wide-ranging hunting and gathering territory. When the Pleistocene era came to an end around 10,900 BP and the mammoth populations had all but disappeared, prehistoric populations began to focus their hunting efforts on bison, one of the hallmarks of the transition for the early to the late Paleoindian period (Collins 2004).

The late Paleoindian period in central Texas extended from about 10,900 to 8,800 BP. Although the subsistence base now emphasized large game over the more diversified resource base of the early period, small animals, fish, reptiles, and plants remained important food sources. Small groups continued to hunt, gather plants, and obtain raw material for stone tool manufacture over a broad territory. The hallmark Clovis spear points of the early Paleoindian period gave way to the shorter, fluted Folsom points. There was a greater variety of smaller dart points (Collins 2004) including the St. Mary's Hall point, from the St Mary's Hall site (41BX229) and the Brackenridge Park site (41BX1396) in Bexar County (City of San Antonio Office of Historic Preservation [OHP] 2019a).

Archaic Period (8,800 to 1,250 BP)

The Archaic period is subdivided into Early (ca. 8,800 to 6,000 BP), Middle (ca. 6,000 to 4,000 BP), and Late (4,000 to 1,250 BP) sub-periods. The transition from the late Paleoindian period to the Early Archaic is gradual

and is generally characterized as a time when broad territorial hunting and gathering became more localized and artifact assemblages began to show greater diversity than during the late Paleoindian period (Collins 2004). The Brackenridge Park site is considered a transition site having both Paleoindian and Early Archaic tool types. The Higgins site (41BX184) and the Panther Springs site (41BX228), both in Bexar County, also have evidence of early Archaic occupations. Projectile points during this period were much more varied than in the Paleoindian and task-specific tools begin to appear, including Clear Fork tools and Guadalupe bifaces (OHP 2019b). Hallmarks of the Early Archaic include the greater use of groundstone tools and the widespread occurrence of heat-altered rocks, which may have functioned as hearths, ovens, or other features. Although there is a paucity of subsistence data for the Early Archaic in central Texas, there is some evidence that deer, various small animals, fish, and roasted plant bulbs were part of the diet, and bison is absent from the archeological assemblages dating to this sub-period (Collins 2004).

During the early portion of the Middle Archaic, bison hunting is evident in the archeological record. However, by around 5,000 BP, bison are once again absent from the archeological record in central Texas, concomitant with the onset of the driest conditions faced by humans in central Texas (Collins 2004). Near the study area, the Middle Archaic is subdivided further into Clear Fork (early) and Round Rock (late) intervals. In general, projectile points crafted during the Middle Archaic are large and straight-stemmed and sometimes found in large quantities at Middle Archaic sites. This greater density of tools may indicate an increase in population (OHP 2019b). Burned rock middens were prolific in central Texas during this time and in many instances appear to have been used for processing plants adapted to the drier climate such as sotol, a semi-succulent plant used for both food and fiber products (Collins 2004).

The onset of the Late Archaic occurred when central Texas was at its driest, around 4,000 BP. Burned rock middens continued to be a common site type in the earliest years of the sub-period, even increasing in frequency in the eastern region of central Texas. As the desert plants were replaced by plants adapted to a moister climate around 3,500 to 2,500 years ago the number of burned rock middens in east-central Texas decreased, but did not entirely disappear. West-central Texas remained dry and burned rock middens continued to be used to process the plant foods at the same intensity as during the Middle Archaic. There is also evidence of increasing population during the Late Archaic (Collins 2004). Cemeteries are commonly found in central Texas during the Late Archaic including several in Bexar County. Burial goods found with the human remains at these cemeteries, such as worked conch shells, indicate regional trade with coastal communities (OHP 2019b).

Late Prehistoric Period (1,250 to 300 BP)

The onset of the Late Prehistoric period has been arbitrarily set by some archaeologists around 1,250 BP, but may have started as recently as 800 BP. Little changed in subsistence patterns during the late Prehistoric; the hunting and gathering strategy continued as did the processing of plants in burned rock middens. The most notable shift from the Late Archaic to the Late Prehistoric was the introduction and subsequent prevalence of arrow points over dart and spear points in the archeological record. There also appears to be an increase in intergroup violence, possibly as a result of increasing population pressure, as evidenced by numerous skeletal remains exhibiting fatal arrow wounds. Pottery and evidence for small-scale agriculture begin to appear in the archeological assemblages dating to the latter part of the late Prehistoric period (Collins 2004).

Shortly before the arrival of Europeans to Central Texas, native groups were living in small band-sized encampments and large, diffuse camps comprised of people with multiple tribal affiliations. Hunting focused on bison, but also included deer and antelope. Group mobility patterns were governed by the seasonal movements of the native animals and availability of resources, and, later affected by the newly introduced horse. The presence of Caddoan ceramics at several central Texas sites indicates a long pattern of Hasinai Caddo interaction with groups indigenous to central Texas (Collins 2004).

Historic Period (ca. 500 to 50 BP)

Direct European contact in this region began with exploratory expeditions in the late seventeenth and early eighteenth centuries. The earliest contact came in 1691 when Domingo Terán de los Ríos and Damián Massanet travelled through on an expedition to East Texas (Jasinski 2019). During this expedition, the Spanish explorers encountered an indigenous population that came to be known as Payaya and established the name of San Antonio de Padua for an indigenous village and nearby river. In 1709, another expedition led by Antonio de san Buenaventura y Olivares and Isidro Félix de Espinosa came through the region (Chipman 2019a), after which the area was frequently revisited by exploratory expeditions (Chipman 2019b).

Beginning in 1718 and continuing through the 1720s, Spanish occupation intensified as population increased following the construction of the presidio of San Antonio de Bexar and multiple missions (Handbook of Texas Online 2019). Olivares founded the Mission San Antonio de Valero on May 1st at its original location west of San Pedro Springs. Days later, the presidio of San Antonio de Béxar was founded near the mission by Martín de Alcarón, governor of Coahuila y Texas (Jasinski 2019). Both the presidio and the mission were relocated to their latest locations in 1722 and 1724, respectively, with the presidio on the west bank of the San Antonio River directly across from the mission on the east bank. Additional missions were established as the population of the area steadily rose (Schoelwer 2019).

Development of the area continued to intensify as construction projects grew to support the population and the responsibilities of the newly established government. The San Fernando de Béxar settlement was founded in 1731, the first civil government in Texas. By 1773, San Fernando became the capital of Spanish Texas (de la Teja 2019).

San Fernando de Béxar initially consisted of military personnel and civilians including Mexican frontiersman, resident families, and Native Americans living at the missions. Later, it evolved into a castas, or an organization of social hierarchy based on racial divisions. This society was typical in North American Spanish colonies and consisted of Europeans and European descendants, Native Americans, African descendants, and mixed-race groups (Jasinski 2019).

During the late eighteenth and early nineteenth centuries San Fernando suffered a hostile period. Surrounding Native American communities such as the Apache and Comanche put pressure on communication networks and the surrounding farmland, and there were military upheavals in the city as well (de la Teja 2019). In 1811, Captain Juan Bautista de las Casas assumed governorship of Texas in what was known as the Casas Revolt. The revolt was short-lived, however, and ended with the incumbent governor, Manuel María de Salcedo re-instated, and the city was recaptured in 1813 (Caldwell 2019). This tumultuous period eventually led to the re-organization of the provinces of Texas and Coahuila into one state governed out of Saltillo (de la Teja 2019). During the initial stages of the Texas Revolution, San Fernando de Béxar was besieged and occupied by rebel forces. By 1837, it had been renamed San Antonio and was county seat of Bexar County (de la Teja 2019).

The impetus for the Texas Revolution began when several Mexican states rebelled against President Antonio Lopez de Santa Anna's reformation that replaced the constitution of 1824 with a new government. Coahuila y Tejas were among the rebelling states, and on February 23, 1836, the Mexican army under Santa Anna retaliated against the Texian rebels by laying siege to San Antonio. The resulting became known as the Battle of the Alamo. This rebellion ultimately ended on April 21, 1836 with the independence of Texas and the subsequent removal of Mexican forces from San Antonio (Barker and Pohl 2019).

Following the war for independence, San Antonio became the seat of Bexar County within the Republic of Texas, hostilities with Comanches persisted, such as the Council House Fight in 1840 (Dickson Schilz 2019), and San Antonio was seized twice by Mexico in 1842 (Jasinski 2019). Hostilities with Mexico only intensified after Texas was annexed by the US in 1845 and the Mexican-American War began in 1846. The US military established a headquarters in San Antonio in 1848 but was forced to surrender it to militia forces in 1861 when Texas seceded from the Union at the outset of the American Civil War (Jasinski 2019).

North of the city limits, in the Texas Hill Country area, many Western European immigrants, particularly Germans, settled near the study area beginning in the 1840s (Cooper 2008). Nearby Helotes was settled in the 1850s by German and Mexican immigrants (Massey 2019). The Maverick Ranch was established in 1869, by German immigrants Ernst Hermann and Emma, in the northern portion of the Study Area (Fenstermaker 2019). By the 1890s, one third of San Antonio's population was German (Ezell et al. 2011).

After the Civil War, San Antonio became a prosperous hub supporting multiple industries and growing in population. Cattle trail drives were an integral part of the San Antonio economy, as well as the wool from the nearby hill country. In 1877, the Galveston, Harrisburg and San Antonio Railway reached San Antonio. A second railroad, the International-Great Northern, reached San Antonio in 1881. The railroads fueled local industries, and five additional railroads connected San Antonio to distant markets by 1900 (Jasinski 2019).

3.5.2 Literature and Records Review

Historical and archeological data for the study area were reviewed online through the THSA and TARL. GIS shapefiles identifying the locations of previously recorded archeological sites were obtained from TARL on March 28, 2019 and used to map archeological site locations within the study area. Previously recorded cultural resource site data available online from the THSA were obtained to identify locations of designated historical sites, State Antiquities Landmarks (SALs), cemeteries, HTCs, and OTHMs within the study area, as well as previously conducted cultural resource investigations. The TxDOT historic bridges database was also reviewed for bridges that are listed or determined eligible for listing on the NRHP (TxDOT 2019c.) The NPS databases and websites pertaining to NRHP, National Historic Trails, and National Historic Landmark properties were also reviewed to locate and define boundaries for historic properties recorded at the national level (NPS 2019d). The results of the review are summarized in Table 3-11.

TABLE 3-11 RECORDED CULTURAL RESOURCES WITHIN THE STUDY AREA

ARCHEOLOGICAL SITES	NRHP-LISTED RESOURCES	NRHP DETERMINED - ELIGIBLE RESOURCE	STATE ANTIQUITIES LANDMARKS	CEMETERIES	OTHM
36	3	1	0	11	1

Source. THC 2019b.

Review of the THC and NPS data indicated that three NRHP-listed resources, are recorded in the study area: two NRHP Districts known as the R. L. White Ranch Historic District and the Heidemann Ranch Historic District, and the address-restricted Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm Historic District. The R. L. White Ranch includes thirty buildings, structures, and sites on its 3,500 acres, 28 of which are contributing

resources due to their unaltered state, continued historic integrity, and construction during the ranch's period of significance (1926-1958) (Cooper 2008). The ranch was developed by Ryall Luther White beginning in the mid-1920s. Site 41BX1609, a segment of dry-stone masonry that has been determined ineligible for listing on the NRHP, is recorded within this District.

The Heidemann Ranch Historic District contains 12 contributing resources, including a dogtrot plan log house with an infilled stone central bay, a stone barn with frame addition, a stone smokehouse, a capped well and the Heidemann family cemetery, important for their association with German immigration into the area (Ezell et al. 2011). A 1937 stone ranch house and a postwar workshop with asbestos siding built using salvaged ammunition crates are also contributing resources. Overall, the preservation of rural vernacular structures within the Heidemann Ranch dating from the mid-nineteenth to mid-twentieth centuries represent a high degree of historical integrity.

The Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm Historic District contains prehistoric and historic archeological sites. Archeological sites 41BX493 and 41BX494 prehistoric sites with burned rock middens and debitage, and snails. Site 41BX495 contains scattered burned rock, debitage, and a biface fragment. Site 41BX496 is the remains of the Maverick-Altgelt Ranch, a historic complex with a possible root cellar lined with tabular limestone slabs, a stone school building, a log structure, stone kitchen, gazebo, stone main house, and a wooden barn dating to the nineteenth century. An addition to the house was constructed in the 1930s. The earliest historic portion of the Maverick-Altgelt Ranch District, the residential complex was established in 1869 by Ernst Hermann and Emma Altgelt. The original house, built by Ernst and Emma, follows the *Fachwerk* style of German Vernacular Architecture which consists of half-timbering and, in this case, limestone. Other contemporary structures within the historic district are associated with George and Maria Obert (Fenstermaker 2019).

The Obert homestead (41BX497), southeast of the Maverick-Altgelt residential complex, consists of a stone foundation with partly standing walls, high stone pens for cattle, and a well. The George and Maria Obert homestead was an overnight stop for cattle drives. In 1883, the Obert land was sold to Emma Altgelt (Fenstermaker 2019). In 1907, George Madison and Mary Vance Maverick bought the ranch and constructed several barns, a cottage, and additional pens for livestock. The ranch continued to be operated by the Maverick family as late as 1985 when they started raising longhorn cattle (Fenstermaker 2019).

The review of the TASA (THC 2019b), and TARL data indicates that 36 archeological sites have been previously recorded in the study area (see Table 3-12). Of these, 24 are prehistoric in age, 11 are historic, and one contains historic and prehistoric components. Seven sites have been determined ineligible for listing in the NRHP. One

archeological site, 41BX496, has been determined eligible for listing in the NRHP. Site 41BX496, discussed above, is the Maverick-Altgelt Ranch within the Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm Historic District. The prehistoric sites in the study area largely consist of burned rock scatters or middens and debitage.

Ten cemeteries are recorded in the study area (Table 3-13), none of which are designated HTCs. An additional cemetery, the Huntress Lane Cemetery was reported in the study area by a landowner. Two cemeteries are located within the Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm Historic District. These are the Altgelt Cemetery (also known as BX-C314 and 41BX99) and the La Cerca Cemetery (also known as BX-C106 or 41BX98). These cemeteries are associated with the residents of the nearby sites, the Altgelts and Oberts.

The single OTHM recorded in the study area commemorates the Scenic Loop, Boerne Stage, and Toutant Historic Corridor. The Scenic Loop, Boerne Stage and Toutant Beauregard roads intersect near the marker. According to the marker, area treasures such as "the exceptional and historic rural atmosphere, vistas, waterways, wildlife, and natural features" prompted the Texas legislature to bestow historic designation to the roads (THC 2019b). Paleoindian groups lived in the area more than 10,000 years ago, and early Spanish explorers found Jumano and Coahuiltecan in the area. Lipan Apache and Comanche tribes controlled the area by the late eighteenth century, deterring Spanish, Mexican and Anglo settlement into the mid-nineteenth century.

In 1851, the von Plehwe family from Prussia settled at Leon Springs near a leg of the Boerne Stage Road, which ran from San Antonio to San Diego, California (THC 2019b). Stagecoach stops, ranch complexes dating from the mid-19th to early 20th century, homesteads of various cultural groups, and historic cemeteries abut the road. In the 1860s, drovers created the Great Western Cattle Trail next to the Boerne Stage Road and during the 1920s, the transcontinental Old Spanish Trail Automobile Highway followed the Boerne Stage Road west from San Antonio. In the late 1920s, a 46-mile scenic driving loop from downtown San Antonio was created, and 13 miles of that original scenic driving loop still exist through Helotes, Grey Forest, and Leon Springs (THC 2019b). The OTHM is located within TXDOT ROW and is not proposed within any of the alternative routes ROW; therefore, not significant impacts are anticipated to the OTHM.

TABLE 3-12 RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP STATUS	SITE DESCRIPTION	AGE
41BX75	Undetermined	campsite with burned rock, debitage, and several bifaces	Prehistoric, possibly Archaic
41BX76	Undetermined	campsite with burned rock, debitage, and one formal tool made from cortex	Prehistoric, possibly Archaic

TABLE 3-12 RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP STATUS	SITE DESCRIPTION	AGE
41BX77	Undetermined	campsite with burned rock midden, cores, projectile points	Prehistoric, Archaic
41BX78	Undetermined	campsite with burned rock midden with one projectile point and debitage	Prehistoric, Archaic
41BX79	Undetermined	campsite with burned rock, debitage, and biface	Prehistoric, Archaic
41BX80	Undetermined	campsite with burned rock, debitage, and bifaces	Prehistoric, possibly Archaic
41BX81	Undetermined	campsite with burned rock, debitage, two bifaces, and one core	Prehistoric, possibly Archaic
41BX82	Undetermined	campsite with burned rock, debitage, and one biface	Prehistoric, possibly Archaic
41BX83	Undetermined	campsite with burned rock, debitage, and three bifaces including the base of a Frio projectile point	Prehistoric, Archaic
41BX84	Undetermined	lithic scatter of debitage, two projectile points (Perdiz and Fairland), and one biface	Prehistoric, Late-Transitional Archaic
41BX85	Undetermined	campsite with burned rock, debitage, utilized flakes, and one Middle Archaic square base point reshaped into drill	Middle Archaic
41BX86	Undetermined	campsite with burned rock, bifaces, scrapers, debitage and projectile points including Frio, Pedernales, and Castroville	Late Archaic
41BX87	Undetermined	lithic scatter with debitage, utilized flakes, bifaces, and two projectile points	Prehistoric,
41BX88	Undetermined	lithic scatter with debitage and unifaces	Prehistoric
41BX89	Undetermined	campsite with burned rock, debitage, one Montell projectile point	Late Archaic
41BX493	Undetermined	campsite with burned rock, debitage and terrestrial snail shells near a small spring	Prehistoric
41BX494	Undetermined	campsite with burned rock midden, debitage, and terrestrial snail shells	Prehistoric
41BX495	Ineligible	campsite with burned rock, debitage, and biface fragment	Prehistoric
41BX496	Eligible	historic complex with possible root cellar lined with tabular L. S. slabs, a stone school building, a log structure, stone kitchen, gazebo, main house of stone, and a wooden barn dating to 19th century with a 1930s addition to the house	Historic
41BX497	Undetermined	complex with house foundation with partly erect walls, well, and scatter of square nails, cans, glass, earthenware, stoneware, bucket, and whiteware	Historic
41BX498	Undetermined	cemetery (Obert Can) with limestone fence and limestone blocks moved to nearby barn	Historic
41BX499	Undetermined	cemetery (Altgelt Cemetery) with concrete wall, granite, and modern stones	Historic
41BX561	Undetermined	campsite with burned rock midden, debitage, and projectile point fragments	Prehistoric
41BX962	Undetermined	campsite with burned rock midden with debitage and some bone-tempered sherds	Prehistoric
41BX1590	Ineligible	homestead consisting of concrete foundations, collapsed outbuilding, semi-subterranean lean-to structure, fill-in well, cellar,	Historic

TABLE 3-12 RECORDED ARCHEOLOGICAL SITES WITHIN THE STUDY AREA

TRINOMIAL	NRHP STATUS	SITE DESCRIPTION	AGE
		stacked rock wall, pinewood fencing, and scattered historic and modern trash	
41BX1609	Ineligible	segment of historic dry-stone masonry wall	Historic
41BX1721	Undetermined	campsite with burned rock midden with debitage	Prehistoric
41BX1755	Undetermined	campsite with burned rock midden	Prehistoric
41BX1761	Undetermined	mid-19th century stacked stone fence	Historic
41BX1923	Undetermined	campsite with burned rock scatter	Prehistoric
41BX1924	Undetermined	campsite with burned rock midden/farmstead consisting of a house, barn, long barn, an animal pen and six additional outbuilding foundations	Prehistoric/historic
41BX2000	Undetermined	campsite with burned rock midden	Prehistoric, possibly Archaic
41BX2001	Undetermined	windmill, cistern and associated goat sheds, corrals and concrete lined dipping vat	Historic
41BX2176	Undetermined	farmstead with collapsed stone structure, stone walls, garage, and historic trash scatter	Historic
41BX2177	Undetermined	scatter of bottles, glass, metal fragments, square nails and ceramics	Historic
41BX2178	Undetermined	homestead with house, water silo, windmill foundation, well, corral, pump house, stock tanks and trash dump	Historic

Source: THC 2019b

TABLE 3-13 CEMETERIES RECORDED WITHIN THE STUDY AREA

CEMETERY NUMBER	CEMETERY NAME	COUNTY	COMMENTS
BX-C065	Menchaca-Robles	Bexar	none
BX-C067	Funari	Bexar	none
BX-C068	Heidemann Family Cemetery	Bexar	none
BX-C101	unknown name	Bexar	none
BX-C103	Cheney	Bexar	none
BX-C105	Fromme Cemetery	Bexar	none
BX-C106	La Cerca	Bexar	none
BX-C113	unknown grave	Bexar	none
BX-C314	Altgelt Cemetery	Bexar	41BX99
41BX498	Obert Cemetery	Bexar	none
--	Huntress Lane	Bexar	reported by landowner

Source: THC 2019b

The majority of the prehistoric archeological sites that have been recorded in the study area appear to be campsites with burned rock middens, and/or lithic scatters in close proximity to springs, streams and river channels (e.g., Leon Creek, Pecan Creek, and their unnamed tributaries); or uplands adjacent to these channels. For the few prehistoric sites in the study area that have produced diagnostic artifacts, most date to the Archaic

period, perhaps not unexpected given the preponderance of sites with burned rock middens, which appear in this region beginning in the early Archaic Period and continue to be used into the Late Prehistoric period. Historic sites include cemeteries and the remains of farmsteads and ranches.

3.5.3 Previous Investigations

According to the TASA (THC 2019b), there have been at least seven previously conducted cultural resource investigations within the study area boundaries (see Table 3-14).

TABLE 3-14 PREVIOUS CULTURAL RESOURCE INVESTIGATIONS WITHIN THE STUDY AREA

INVESTIGATING AGENCY NAME	SURVEY/PROJECT NAME	SITE(S) RECORDED/VISITED
PBS&J	A Cultural Resources Survey of a Proposed Electrical Distribution Line on the Maverick Ranch Bexar County, Texas (Nash et al. 2003)	none
PBS&J	No additional information	none
Raba Kistner Environmental, Inc.	Intensive Cultural Resources Survey of a 1.827 Acre Tract of Land for the Proposed Cross Mountain Elevated Storage Tank Project, Bexar County (Held 2010)	none
Raba Kistner Environmental, Inc.	An Intensive Cultural Resources Survey for 24-Inch Water Main Along Cross Mountain Trail (SAWS Job #10-7003), Bexar County (Held and Murray 2010)	none
SWCA	Cultural Resources Survey of the Boerne Stage Road Pipeline Project, Bexar and Kendall Counties, Texas (Peyton 2010)	none
SWCA	Intensive Archaeological Survey of the Boerne Stage Road Improvement Project, Bexar County, Texas (Galindo 2011)	none
Raba Kistner Environmental, Inc.	Cielo Vista Elementary and Middle School Hausman Road Improvements Project	41BX1924

Source. THC 2019b.

3.5.4 High Probability Areas

Review of the previously recorded cultural resource sites data indicates that the study area has not been entirely examined during previous archeological and historical investigations. Consequently, the records review results do not include all possible cultural resources sites within the study area. To further assess and avoid potential impacts to cultural resources, HPAs for prehistoric archeological sites were defined during the route analysis process. HPAs were designated based on a review of the site and survey data within the study area, as well as soils and geologic data, and topographic variables. Within the study area, the prehistoric HPAs typically occur near and along streams, at the heads of major draws, near springs and at outcroppings of chert gravels suited to stone tool manufacture. Terraces and topographic high points that would provide flats for camping and expansive landscape

views as well as access to fresh water sources are also considered to have a high probability for containing prehistoric archeological sites.

Historic age resources are likely to be found near water sources. However, they will also be located in proximity to primary and secondary transportation routes (e.g., trails, roads, and railroads) which provided access to the sites. Buildings and cemeteries are also more likely to be located within or near historic communities.

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4.0 ENVIRONMENTAL IMPACTS OF THE ALTERNATIVE ROUTES

Potential impacts of the project that could occur from, and are unique to, the construction and operation of a transmission line are discussed separately in this section of the EA. Evaluation of the potential impacts of the alternative routes identified in Section 3.0 was conducted by tabulating the data for each of the 48 evaluation criteria in Table 2-2 for each alternative routing segment and each primary alternative route. The data tabulation for land use and environmental criteria for each alternative route are presented in Table 4-1 and for each segment in Table 4-2.

4.1 Impacts on Natural Resources/Environmental Integrity

4.1.1 Impacts on Physiography and Geology

Construction of the proposed transmission line is not anticipated to have any significant adverse effects on the physiographic or geologic features and resources of the area. Erection of the pole structures proposed for the project will require the excavation and/or minor disturbance of small quantities of near-surface materials, but should have no measurable impacts on the geologic resources or features along any of the alternative routes.

None of the alternative routes occur near the locations of the three documented caves within the study area, with the closest cave (Some Monk Chanted Evening Cave) being approximately 0.73 mile away from Segment 56 in Alternative Routes O, S, and W. No impacts to these features are anticipated to occur from the project. Due to the potential of karst occurrence generally within the study area a site-specific karst survey will be conducted for the PUC approved route in accordance with the USFWS, Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys for Endangered Karst Invertebrates in Central Texas. Surveys will include a review of available existing information on regional caves, soils, historical land use practices, topography, and geology of the project area and vicinity, a pedestrian survey to identify karst features, and the description and assessment of identified features. The pedestrian survey will be conducted by walking transects, no more than 50 feet apart. The scope of this survey will not include an evaluation of the structural development or subgrade extent of the biological content (i.e., presence/absence of endangered cave invertebrate species) of potential karst features. Surface karst features may indicate the potential presence of suitable habitat for federally listed, endangered cave invertebrates, and a Section 10(a)(1)(A) permit would be required to further investigate a feature to determine the presence of suitable habitat.

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4.1.2 Impacts on Soils

Potential impacts to soils from the construction, operation, and maintenance of electric transmission lines include erosion and compaction. Such impacts can be avoided by CPS Energy's implementation of appropriate mitigative measures during construction. No conversion of prime farmland soils is anticipated because of the project.

The highest risk for soil erosion and compaction is associated with the clearing and construction phases of the project. In accordance with CPS Energy standard construction specifications, woody vegetation will be cleared within the ROW, as necessary to achieve the conductor to ground clearances of the transmission line. Areas with vegetation removed will have the highest potential for soil erosion and the movement of heavy equipment down the cleared ROW creates the greatest potential for soil compaction. Prior to construction, CPS Energy will develop a SWPPP to minimize potential impacts associated with soil erosion, compaction, and off ROW sedimentation. Implementation of this plan will incorporate temporary and permanent best management practices to minimize soil erosion on the ROW during rainfall events. The SWPPP will also establish the criteria for mitigating soil compaction and re-vegetation to maintain soil stabilization during the construction and post construction phases. The native herbaceous layer of vegetation will be maintained, to the extent practical, during construction. Denuded areas will be seeded and/or further stabilized with the implementation of permanent soil berms or interceptor slopes to stabilize disturbed areas and minimize soil erosion potential. The ROW will be inspected during and post construction to identify potential high erosion areas and that best management practices are implemented and maintained.

The potential for erosion and compaction will be minimized by CPS Energy's development and implementation of a SWPPP for the project. The magnitude of potential soil impacts is considered equivalent for all of the alternative routes.

4.1.3 Impacts on Surface Water

All of the alternative routes cross surface waters within the study area. CPS Energy proposes to span all surface waters crossed by any of the alternative routes and construct any structures outside of the ordinary high-water marks for any surface waters. CPS Energy will limit the removal of woody vegetation as necessary to meet the necessary conductor to ground clearances. The shorter understory and herbaceous layers of vegetation will remain, where allowable, and best management practices will be implemented in accordance with the SWPPP for the project to reduce the potential for sedimentation into surface waters. Since CPS Energy intends to span all surface waters and a SWPPP plan will be implemented during construction, no significant impacts to surface waters are anticipated for any of the alternative routes. The lengths of each alternative route crossing open water

(lakes, ponds), number of streams and rivers crossed by each of the alternative routes, and lengths paralleling (within 100 feet) streams or rivers are provided in Table 4-1.

None of the alternative routes cross open water. The number of stream and river crossings for the alternative routes range from three for Alternative Routes A, E, H, and X, to 12 for Alternative Route U. The length of each alternative route parallel (within 100 feet) to streams or rivers ranges from zero (0) mile for Alternative Routes C and X, to approximately 0.26 mile for Alternative Routes K and BB. These calculations are based on the NHD and since the dataset's inception the hydrology of some stream features may have been altered by construction of drainage ditches, impoundments, and residential areas.

4.1.4 Impacts on Ground Water

All alternative routes occur entirely within the Edwards Aquifer Contributing Zone. Due to the project's location within the Edwards Aquifer Contributing Zone, CPS Energy will consult with the TCEQ Edwards Aquifer Protection Program to ensure compliance with program requirements. The construction, operation, and maintenance of the project are not anticipated to adversely affect groundwater resources within the study area.

During construction activities, a potential impact for groundwater resources is related to fuel and/or other chemical spills. Avoidance and minimization measures of potential contamination of water resources will be identified in the SWPPP. CPS Energy will take all necessary precautions to avoid the occurrence of these spills. If an unauthorized discharge occurs during construction, CPS Energy will comply with TCEQ and EAA notification requirements.

4.1.5 Impacts on Floodplains

The construction of any of the alternative routes is not anticipated to impact the overall function of a floodplain within the study area, or adversely affect adjacent or downstream properties. Engineering design should alleviate the potential of construction activities to adversely impact flood channels and proper structure placement will minimize any flow impedance during a major flood event. Typically, the small footprint of pole structures as proposed for the project does not significantly alter the flow of water within a floodplain.

The length of each alternative route ROW across mapped 100-year floodplains ranges from approximately zero (0) mile for Alternative Routes V and W, to approximately 1.40 miles for Alternative Route M. CPS Energy will coordinate with the Bexar County floodplain administrator as necessary to acquire any necessary permits.

4.1.6 Impacts on Wetlands

None of the alternative routes cross NWI mapped wetlands. No NWI mapped wetlands were identified within the study area; however, unmapped wetlands still have the potential to occur within the study area. Removal of vegetation in wetlands increases the potential for erosion and sedimentation, which can be detrimental to downstream plant communities and aquatic life. Wetland areas also provide habitat to a number of species and are often used as migration corridors for wildlife. Mitigation measures with best management practices, will be implemented, as appropriate, in identified areas of wetland potential during construction activities to further avoid and minimize impacts to those areas. CPS Energy proposes to implement best management practices as a component of their SWPPP to prevent off ROW sedimentation and degradation of potential wetland areas. With the use of these avoidance and minimization measures, none of the alternative routes are anticipated to have a significant impact on potential wetlands.

The temporary and/or permanent placement of fill material within jurisdictional waterways and wetlands may require a permit from the USACE under Section 404 of the CWA. If necessary, CPS Energy will coordinate with the USACE – Fort Worth District prior to clearing and construction to ensure compliance with Section 404 of the CWA.

4.1.7 Impacts on Coastal Natural Resources Areas

The study area is not located within the CMZ boundary as defined by 31 TAC § 503.1, which excludes the Project from CMP conditions.

4.1.8 Impacts on Vegetation

Potential impacts to vegetation will result from clearing the ROW of woody vegetation and/or mowing/clearing of herbaceous vegetation. These activities facilitate ROW access for structure construction, line stringing, and future maintenance activities of the proposed transmission line.

Impacts to vegetation will generally be limited to the transmission ROW. Additional clearing might be necessary in temporary easements outside of the ROW to facilitate the construction of the transmission line. The clearing activities will be completed while minimizing the impacts to existing groundcover vegetation when practical. Future ROW maintenance activities might include periodic mowing and/or herbicide applications to maintain an herbaceous vegetation layer within the ROW.

Clearing trees and shrubs from woodland areas typically generates a degree of habitat fragmentation. The magnitude of habitat fragmentation was minimized to the extent possible during the routing process by paralleling

existing linear features such as roadways. During the route development process, consideration was given to avoid wooded areas and/or to maximize the length of the routes parallel to existing linear features. Vegetation clearing will occur only where necessary to provide access, workspace, and future maintenance access to the ROW.

The lengths of each alternative route crossing upland woodlands/brushlands and bottomland/riparian woodlands are provided in Table 4-1. None of the alternative routes cross bottomland/riparian woodlands. The length of each alternative route ROW across upland woodlands/brushlands ranges from approximately 3.41 miles for Alternative Route C, to approximately 6.52 miles for Alternative Route V.

4.1.9 Impacts on Wildlife

The primary impacts of construction activities on wildlife species are typically associated with temporary disturbances from construction activities, and with the removal of vegetation (habitat modification). Increased noise and equipment movement during construction might temporarily displace mobile wildlife species from the immediate workspace area. These impacts are considered short-term and normal wildlife movements would be expected to resume after construction is completed. Potential long-term impacts include those resulting from habitat modifications and/or fragmentation. All the alternative routes cross areas of upland woodlands/brushlands, which can represent the highest degree of habitat fragmentation by converting the area within the ROW to an herbaceous habitat. During the routing process, POWER attempted to minimize potential woodland habitat fragmentation by paralleling existing linear features and avoiding paralleling streams to the extent feasible.

Construction activities might impact small, immobile, or fossorial (living underground) animal species through incidental impacts or from the alteration of local habitats. Incidental impacts of these species might occur due to equipment or vehicular movement on the ROW by direct impact or due to the compaction of the soil if the species is fossorial. Potential impacts of this type are not typically considered significant and are not likely to have an adverse effect on any species population dynamics.

If ROW clearing occurs during bird nesting seasons, potential impacts could occur within the ROW area related to bird eggs and/or nestlings. Increases in noise and equipment activity levels during construction could also potentially disturb breeding or other activities of species nesting in areas immediately adjacent to the ROW. If ROW clearing activities are necessary during the migratory bird nesting season (March 15 to September 15), CPS Energy will comply with state (Texas Parks and Wildlife Code Chapter 64) and federal (MBTA) regulations regarding avian species by having a qualified biologist conduct surveys for active nests prior to vegetation clearing.

Transmission lines can also present additional hazards to birds due to electrocutions and/or collisions. Measures will be implemented to minimize this risk with transmission line engineering designs. The electrocution risk to birds will not be significant since the engineering design distance between conductors, conductor to structure, or conductor to ground wire for the proposed transmission line is greater than the wingspan of any bird typically within the area (i.e., greater than eight feet). The risk for avian collisions with the shield wire can be minimized by installing bird flight diverters or other marking devices on the line within determined high bird use areas.

4.1.10 Impacts on Aquatic Resources

Potential impacts to aquatic resources would include potential effects of erosion, siltation, and sedimentation. Vegetation clearing of the ROW might result in increased suspended solids entering surface waters traversed by the project. Increases in suspended solids might adversely affect aquatic organisms that require relatively clear water for foraging and/or reproduction. Physical aquatic habitat loss or alteration could result wherever riparian vegetation is removed and at temporary crossings required for access. Increased levels of siltation or sedimentation might also potentially impact downstream areas primarily affecting filter feeding benthic and other aquatic invertebrates. Implementation of a SWPPP utilizing best management practices will minimize these potential impacts. No significant adverse impacts are anticipated to any aquatic habitats crossed or located adjacent to the ROW for any of the alternative routes.

Construction of the project is not anticipated to have significant impacts to wildlife and aquatic resources within the study area. Direct impacts would be associated with the loss of woodland/brushland habitat, which is reflected in the vegetation analysis discussed above. Habitat fragmentation was minimized for all the alternative routes within woodland areas by paralleling existing linear features to the extent feasible. While highly mobile animals might temporarily be displaced from habitats near the ROW during the construction phase, normal movement patterns should return after project construction is complete. Implementation of a SWPPP utilizing best management practices will minimize potential impacts to aquatic habitats.

4.1.11 Impacts to Threatened and Endangered Species

In order to determine potential impacts to threatened or endangered species, POWER utilized available information for the species under review. Known occurrence data from TXNDD for the study area and project scoping comments from TPWD were reviewed. A USFWS IPaC consultation, TPWD county listings, and USFWS designated critical habitat locations were included in the review.

The TXNDD data provides a data record of state-listed, rare, and federally threatened/endangered species and rare vegetation communities that have been documented within a given area. The absence of species within the

TXNDD database is not a substitute for a species-specific field survey. Prior to construction, a field survey will be completed of the PUC approved route to determine if suitable habitat for threatened and endangered species is present. Additional consultation with USFWS and TPWD might be required if suitable habitat is observed during field surveys.

Threatened and Endangered Plant Species

Texas wild-rice is not anticipated to occur within the study area due to lack of potential suitable habitat. The Bracted twistflower is a candidate species that may occur within the study area if suitable habitat is available. Federally-listed and candidate plant species are only afforded federal protection from take if they are located on federal lands and/or federal funding or actions are associated with the project. If necessary, CPS Energy will coordinate with the USFWS regarding the Bracted twistflower. Construction of the proposed transmission line is not anticipated to have any adverse effects on federally-listed threatened or endangered plant species.

Threatened and Endangered Animal Species

Review of the TPWD (2019b) and USFWS (2020) data identified 40 animal species that are federally- and/or state-listed or have candidate status, for Bexar County (see Table 3-6 in Section 3.1.10). None of the alternative routes cross critical habitat for the Madla Cave meshweaver or Karst Zone 1. Of the 29 alternative routes, Alternative Routes A, B, C, D, E, H, I, M, T, X, Y, and Z are entirely located within Karst Zone 5. Alternative Routes AA, G, and J are primarily located within Karst Zone 5, except for approximately 650 feet of the west end of each route, which occurs in Karst Zone 3. Approximately 30 to 50 percent of Alternative Routes BB, CC, F, K, N, P, Q, and R occur within Karst Zone 5, with their remaining portions occurring within a matrix of Karst Zones 2, 3, and 4. Approximately 25 to 35 percent of Alternate Routes L and U occur within Karst Zone 5, with their remaining portions occurring within a matrix of Karst Zones 2, 3, and 4. Alternative Routes S, V, and W are mostly located within a matrix of Karst Zones 2, 3, and 4, except for approximately 0.25 mile of the east end of each route, which occurs in Karst Zone 5. Alternative Route O is mostly located within a matrix of Karst Zones 2, 3, and 4, except for approximately 0.80 mile of the east end of the route, which occurs in Karst Zone 5 (refer to page 3-21 for a description of each karst zone). A field survey for potential suitable habitat for federally protected species will be completed after PUC approval of an alternative route.

Federally-Listed and Candidate Species

As indicated in Table 4-1, none of the alternative route lengths cross critical habitat of federally-listed endangered or threatened species.

The study area is located outside of the recognized/known distributions of the San Marcos salamander, Texas blind salamander, Braken Bat Cave meshweaver, Cokendolpher Cave harvestman, Government Canyon Bat Cave

meshweaver, Government Canyon Bat Cave spider, Robber Baron Cave meshweaver, Peck's Cave amphipod, fountain darter, sharpnose shiner, smalleye shiner, Comal Springs dryopid beetle, Comal Springs riffle beetle, golden orb, Guadalupe orb, Texas fatmucket, and Texas pimpleback. The interior least tern and piping plover are not anticipated to occur within the study area due to the lack of potential suitable habitat. No impacts to these species are anticipated to occur from the project.

The Madla Cave meshweaver, the two unnamed beetles (*Rhadine exilis* and *Rhadine infernalis*), and the Helotes mold beetle may occur within the study area if suitable cave/karst habitat is present and available. CPS Energy will conduct a site-specific karst survey pursuant to USFWS protocols prior to construction to avoid potential impacts to cave-obligate species.

The whooping crane may pass through and potentially occur temporarily within the study area as a rare transient during migration if suitable foraging habitat is available. The project is not anticipated to have any adverse impacts to whooping crane nesting habitat.

The golden-cheeked warbler may occur within the study area if potential suitable habitat is available. Using the Model C habitat model developed by Diamond et al. (2010), the approximate area of proposed ROW across potential golden-cheeked warbler habitat for each alternative route was tabulated in Table 4-1. This modeled habitat indicates only the probability of suitable golden-cheeked warbler habitat and does not indicate the presence of golden-cheeked warblers. For the data tabulation, mapped areas designated with a value of **3** and **4** were combined, as these represent the highest quality of potential suitable habitat. Mapped areas designated with a value of **1** and **2** were combined, as these represent the lowest quality of potential suitable habitat. As described in Section 3.1.11, during the data analysis POWER biologists further evaluated habitat alteration using 2019 aerial imagery and modified the Diamond Model C habitat data.

The area of ROW across golden-cheeked warbler modeled habitat designated as **3**-Moderate High Quality and **4**-High Quality ranges from 2.95 acres for Alternative Routes O and W, to 25.11 acres for Alternative Route P. The area of ROW across golden-cheeked warbler modeled habitat designated as **1**-Low Quality and **2**-Moderate Low Quality ranges from 10.50 acres for Alternative Route BB, to 22.29 acres for Alternative Route U.

A field survey for potential suitable habitat for federally protected species will be completed after PUC approval of an alternative route. CPS Energy will consult with the USFWS regarding avoidance measures and mitigation if suitable habitat for the Madla Cave meshweaver, two unnamed beetles (*Rhadine exilis* and *Rhadine infernalis*), Helotes mold beetle, whooping crane, or golden-cheeked warbler is observed during the survey of the PUC

approved route. If suitable habitat for the golden-cheeked warbler is identified during field surveys of the PUC approved route, CPS Energy may contact the City of San Antonio to enroll in the Southern Edwards Plateau Habitat Conservation Plan in order to achieve compliance with the ESA.

State-Listed Species

The wood stork and Cagle's map turtle are not anticipated to occur within the study area due to the lack of potential suitable habitat. The project is not anticipated to have adverse impacts to these species.

The bald eagle may occur within the study area if suitable habitat is available. Bald eagles and their nests are protected under the MBTA and BGEPA. Nests are protected if they have been used within the previous five nesting seasons. If nests are identified or individuals are observed during the field survey of the PUC approved route, CPS Energy will further coordinate with the TPWD and USFWS to determine avoidance or mitigation measures.

The reddish egret, tropical parula, white-faced ibis, and zone-tailed hawk may occur within the study area if suitable habitat is available. CPS Energy proposes to conduct ROW clearing activities in compliance with state (Texas Parks and Wildlife Code Chapter 64) and federal (MBTA) regulations regarding avian species and appoint a qualified biologist to conduct surveys for active nests prior to vegetation clearing.

The Cascade Caverns salamander, Texas salamander, toothless blindcat, and widemouth blindcat may occur within the study area if suitable aquatic habitat is available. CPS Energy proposes to span all surface waters crossed by the PUC approved route and implement a SWPPP to prevent sedimentation into surface waters.

The Mexican treefrog, Texas horned lizard, and Texas tortoise, as well as the American black bear and white-nosed coati may occur within the study area if suitable habitat is available. If present, species may be susceptible to minor temporary disturbance during construction efforts, but the project is not anticipated to result in significant adverse impacts to these species' populations.

CPS Energy proposes to conduct a site-specific karst survey prior to construction to avoid potential impacts to cave-obligate species and implement best management practices within their SWPPP to minimize impacts to aquatic species. A field survey for potential suitable habitat for state and federal protected species will be completed after PUC approval of a route for the project. Additional consultation with TPWD and the USFWS for avoidance and mitigation measures may be required if suitable habitat is observed during the field survey of the PUC approved route.

4.2 Impacts on Human Resources/Community Values

4.2.1 Impacts on Land Use

The magnitude of potential impacts to land use resulting from the construction of a transmission line is determined by the amount of land (land use type) temporarily or permanently displaced by the actual ROW and by the compatibility of the facility with adjacent land uses. During construction, temporary impacts to land uses within the ROW might occur due to the movement of workers, equipment, and materials through the area. Construction noise and dust, as well as temporary disruptions of traffic flow, might also temporarily affect local residents and businesses in the area immediately adjacent the ROW. Coordination between CPS Energy, their respective contractors, and landowners regarding ROW access and construction scheduling should minimize these disruptions.

The evaluation criteria used to compare potential land use impacts include overall alternative route length, route length parallel to existing linear features (including apparent property boundaries), route proximity to habitable structures, route proximity to park and recreational areas, and route length across various land use types. An analysis of the existing land use within and adjacent to the proposed ROW is required to evaluate the potential impacts.

Alternative Route Length

The length of an alternative route can be an indicator of the relative magnitude of land use impacts. Generally, all other things being equal, the shorter the route, the less land is crossed, which usually results in the least amount of potential impacts. The total lengths of the alternative routes vary from approximately 4.58 miles for Alternative Route Z, to approximately 6.91 miles for Alternative Route L. The differences in route lengths reflect the direct or indirect pathway of each alternative route between the project endpoints. The length of the alternative routes may also reflect the effort to parallel existing transmission lines, other existing linear features and apparent property boundaries, and the geographic diversity of the alternative routes. The approximate lengths for each of the alternative routes are presented in Table 4-1.

Compatible ROW

PUC Substantive Rule 25.101(b)(3)(B) requires that an applicant for a CCN, and ultimately the PUC, consider whether new transmission line routes are within existing compatible ROWs and/or are parallel to existing compatible ROWs, apparent property lines, or other natural or cultural features. Criteria were used to evaluate the use of existing transmission line ROW, length parallel and adjacent to existing transmission line ROW, length of route parallel to other existing linear ROWs, and length of ROW parallel and adjacent to apparent property lines. It should also be noted that if a segment parallels more than one existing linear corridor it was only tabulated once

(e.g., a segment that parallels both an apparent property line and a roadway, will only be tabulated as paralleling the roadway).

None of the alternative routes utilize or parallel existing transmission line ROW. The two existing transmission lines within the study area run perpendicular to the direction of the project and is the tap point for the project.

The alternative routes with lengths parallel to other existing ROW (roadways, railways, canals, etc.) range from approximately 0.51 mile for Alternative Route T, to approximately 3.01 miles for Alternative Route Y. The lengths of ROW parallel to other existing ROW for each of the alternative routes are presented in Table 4-1.

All of the alternative routes have lengths of ROW parallel and adjacent to apparent property lines to the extent feasible in the absence of other existing linear features. The length of alternative routes parallel and adjacent to apparent property lines ranges from approximately 0.34 mile for Alternative Routes J and AA, to approximately 4.05 miles for Alternative Route T. The lengths paralleling apparent property boundaries for each of the alternative routes are presented in Table 4-1.

Typically, a more representative account for the consideration of whether new transmission line routes are parallel to existing compatible ROWs, apparent property lines, or other natural or cultural features is demonstrated with the percentage of each total route length parallel to any of these existing linear features. These percentages can be calculated for each alternative route by adding up the total length parallel to existing transmission lines, other existing ROW, and apparent property lines and then dividing the result by the total length of the alternative route. All of the alternative routes parallel existing linear features for some portion of their lengths. The percentage of the alternative routes paralleling existing linear features ranges from 46 percent for Alternative Route AA, to 83 percent for Alternative Route A.

Developed and Residential Areas

Typically, one of the most important measures of potential land use impacts is the number of habitable structures located in the vicinity of each alternative route. Based on direction provided by the PUC, habitable structure identification is included with the CCN application. POWER determined the number of habitable structures located within 300 feet of the centerline of each alternative route and the distance from the centerline through the use of GIS software, interpretation of aerial photography, and verification during reconnaissance surveys.

Due to the nature of the study area, all 29 of the alternative routes have habitable structures located within 300 feet of their centerlines. Alternative Routes Q, R, and U have the least number of habitable structures located

within 300 feet of their centerline at four each. Alternative Route A has the most habitable structures located within 300 feet of its centerline at 69.

Tables 4-6 through 4-34 present detailed information on habitable structures. The number of habitable structures located within 300 feet of each of the alternative route centerlines are presented in Table 4-1. All known habitable structure locations are shown on Figure 4-1 located in Appendix E (map pocket).

Lands with Conservation Easements

As discussed in Section 3.2.1, there are four known conservation easements within the study area collectively known as the Bandera Pass Easement. POWER initially identified an alternative route segment across the southern boundary of the Bandera Pass Easement. As noted in Section 3.0, the Army has a third party interest in the Bandera Pass Easement. The correspondence from the Army included in Appendix A clearly states that the Army will oppose CPS Energy obtaining an easement across the Bandera Pass Easements. Because CPS Energy will not be able to obtain an easement across the conservation easements where the Army holds an interest, alternative route segments across that property have been removed. Thus, none of the alternative routes cross the Bandera Pass Easement. The project will have no significant impact on the Bandera Pass Easement or any other lands with conservation easements that may be designated during the pendency of the project. Further, CPS Energy will coordinate with landowners during transmission line construction and operation for continued operation of any ongoing or existing land management activities.

4.2.2 Impacts on Agriculture

Impacts to agricultural land uses can generally be ranked by degree of potential impact, with the least potential impact occurring in areas where cultivation is not the primary use (pastureland/rangeland), followed by cultivated croplands, which have a higher degree of potential impact. Most existing agricultural land uses may be resumed within the ROW following construction.

None of the alternative routes cross any length of cropland. The project will have no significant impact on cropland.

Twenty-eight of the 29 alternative routes cross some length of pastureland/rangeland; however, because the ROW for this project will not be fenced or otherwise separated from adjacent lands, there will be no significant long-term displacement of farming or grazing activities. Alternative route lengths crossing pastureland areas range from approximately zero (0) mile for Alternative Route V, to approximately 1.69 miles for Alternative Route C.

None of the alternative routes cross lands with known mobile irrigation systems (rolling or pivot type). The lengths of each of the alternative routes crossing cropland, pastureland/rangeland, and land with known mobile irrigation systems are presented in Table 4-1.

4.2.3 Impacts on Transportation/Aviation Features

Transportation Features

Potential impacts to transportation could include temporary disruption of traffic or conflicts with future proposed roadways and/or utility improvements. Traffic disruptions would include those associated with the movement of equipment and materials to the ROW, and slightly increased traffic flow and/or periodic congestion during the construction phase of the project. In the rural portions of the study area, these impacts are typically considered minor, temporary, and short-term. In the urban portions of the study area, the temporary impacts to traffic flow can be significant during construction; however, none of the alternative routes are located in areas that are considered as urban. CPS Energy will coordinate with the agencies in control of the affected roadways to address these traffic flow impacts. As mentioned in Section 3.2.3, there were no state roadway projects within the study area.

None of the alternative routes cross US Hwys or SHs. Additionally, none of the alternative routes cross any FM roads.

Aviation Facilities

According to FAA regulations, Title 14 CFR Part 77, the construction of a transmission line requires FAA notification if tower structure heights exceed the height of an imaginary surface extending outward and upward at a slope of 100:1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of a public or military airport having at least one runway longer than 3,200 feet. The FAA also requires notification if tower structure heights exceed a 50:1 slope for a horizontal distance of 10,000 feet from the nearest runway of a public or military airport where no runway is longer than 3,200 feet in length, and if tower structure heights exceed a 25:1 slope for a horizontal distance of 5,000 feet for heliports.

There is one public FAA registered airport with at least one runway longer than 3,200 feet located within 20,000 feet of the ROW centerline for all 29 of the alternative routes (the Boerne Stage Field Airport). The nearest segment to Boerne Stage Field Airport (Figure 4-1 Map ID 301) is Segment 29, at approximately 7,210 feet from the airport. The estimated runway length at Boerne Stage Field Airport is 5,000 feet and the 50:1 slope is not expected to be exceeded by the proposed poles heights for the project. There are no FAA registered airports having no runway longer than 3,200 feet located within 10,000 feet of any of the alternative routes. Although

there may be PELAs designated within the study area, there are no known heliports within 5,000 feet of the ROW centerline for any of the alternative routes.

Following PUC approval of a route for the proposed transmission line, CPS Energy will make a final determination of the need for FAA notification, based on specific route location and structure design of the approved route. The result of this notification, and any subsequent coordination with the FAA, could include changes in the line design and/or potential requirements to mark the conductors and/or light the structures.

There are also no known private airstrips located within 10,000 feet of the ROW centerline of any of the alternative routes.

Tables 4-6 through 4-34 present detailed information on airports, airstrips, and heliports. The number of airports, airstrips, and heliports for each of the alternative routes are presented in Table 4-1. The distance for each airport/airstrip from the nearest route was measured using GIS software and aerial photography interpretation. All known airport/airstrip locations are shown on Figures 2-4 and 4-1 located in Appendix D and E (map pockets). None of the alternative routes are anticipated to have a significant impact on aviation activities within the study area.

4.2.4 Impacts on Communication Towers

None of the alternative routes are anticipated to have a significant impact on electronic communication facilities or operations in the study area. All known facilities, including fifth generation (5G), licensed with the FCC have been identified. No commercial AM radio transmitters were identified within 10,000 feet of the ROW centerline for any of the alternative routes. However, there is one other electronic communication facility located within 2,000 feet of each of the ROW centerlines for Alternative Routes C, D, I, J, M, O, S, T, V, W, Y, Z, AA, and CC.

Tables 4-3 and 4-34 present detailed information on the electronic communication facilities. The number of other communication facilities located within 2,000 feet of the alternative routes is presented in Table 4-1. The distance to the electronic communication facilities from the closest segment was measured using GIS software and aerial photograph interpretation (see Table 4-3). The communication facilities' locations are shown on Figures 2-4 and 4-1 located in Appendix D and E (map pockets).

TABLE 4-3 ELECTRONIC COMMUNICATION FACILITIES

FIGURE 4-1 MAP ID	TOWER TYPE	NEAREST SEGMENT	DISTANCE FROM NEAREST SEGMENTS (FEET)*
501	CellTex Site Services, Ltd.	32	279
502	Global Tower, LLC	16	521

*POWER aerial photo and USGS interpretation; FCC 2019.

4.2.5 Impacts on Utility Features

Utility features include existing electrical transmission lines, distribution lines, water wells, pipelines, and oil and gas wells. Numerous water wells were identified within the study area and were mapped and avoided to the extent practicable. The number of identifiable existing water wells within 200 feet of the ROW centerline and substation sites range from zero (0) for Alternative Route V, to six for Alternative Route A. None of the water wells located within 200 feet of the alternative routes are public supply water wells. If these utility features are crossed by or are in close vicinity to the alternative route centerline approved by the PUC, CPS Energy will coordinate with the appropriate entities to obtain necessary permits or permission as required. The number of known water wells within 200 feet of each of the alternative route is presented in Table 4-1.

Two existing electric transmission lines were identified within the study area, the Ranchtown to Menger Creek 138 kV transmission line and the Kendall to Cagnon Road 345 kV transmission line. All of the alternative routes connect into but do not cross the Ranchtown to Menger Creek 138 kV transmission line.

No oil and gas wells and associated treatment facilities or pipelines were identified within the study area. Thus, the project will have no impacts on oil and gas wells and associated treatment facilities or pipelines. Further, if any unknown oil and gas wells and associated treatment facilities or pipelines are discovered during construction, CPS Energy will notify and coordinate with pipeline companies as necessary during transmission line construction and operation.

None of the alternative routes cross or parallel known oil or gas pipelines or are within 200 feet of any oil and gas wells. Additionally, none of the alternative routes cross gravel pits, mines, or quarries.

4.2.6 Impacts on Socioeconomics

Construction and operation of the project is not anticipated to result in a significant change in the population or employment rate within the study area. For this project, some short-term employment would be generated. CPS Energy normally uses contract labor supervised by each entity's respective employees during the clearing and

construction phases of transmission line projects. Construction workers for the project would likely commute to the work site on a daily or weekly basis instead of permanently relocating to the area. The temporary workforce increase would likely result in an increase in local retail sales due to purchases of lodging, food, fuel, and other merchandise for the duration of construction activities. No additional CPS Energy staff will be required for line operations and maintenance.

4.2.7 Impacts on Community Values

Adverse effects upon community values are defined as aspects of the project that would significantly and negatively alter the use, enjoyment, or intrinsic value attached to an important area or resource by a community. This definition assumes that community concerns are applicable to this specific project's location and characteristics, and do not include objections to electric transmission lines in general.

Potential impacts to community resources can be classified into direct and indirect effects. Direct effects are those that would occur if the location and construction of a transmission line and stations result in the removal 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 proposed transmission line, structures, or ROW.

4.3 Impacts on Parks and Recreation Areas

Potential impacts to parks or recreation areas include the disruption or preemption of recreation activities. No parks or recreational areas meeting the definition set forth in the PUC application were identified within the study area.

Thus, no significant impacts to the use of parks and recreation facilities are anticipated from any of the alternative routes. Also, no adverse impacts are anticipated for any of the fishing or hunting areas from any of the alternative routes.

None of the alternative routes cross or are located within 1,000 feet of any parks and recreation facilities.

4.4 Impacts on Aesthetic Values

Aesthetic impacts, or impacts to visual resources, exist when the ROW, lines and/or structures of a transmission line system create an intrusion into, or substantially alter the character of the existing view. The significance of the impact is directly related to the quality of the view, in the case of natural scenic areas, or to the importance of the existing setting in the use and/or enjoyment of an area, in the case of valued community resources and recreational areas.

Construction of the project could have both temporary and permanent aesthetic impacts. Temporary impacts would include views of the actual assembly and erection of the tower structures. If wooded areas are cleared, the brush and wood debris could have an additional negative temporary impact on the local visual environment. Permanent impacts from the project would involve the views of the cleared ROW, tower structures, and lines from public viewpoints including roadways, recreational areas, and scenic overlooks.

The study area is located with the Texas Hill Country; however, no designated landscapes protected from legislation or most forms of development exist within the study area. Potential visibility impacts were evaluated by estimating the length of each alternative route that would fall within the foreground visual zones (one-half mile with unobstructed views) of major highways, FM roads, and parks or recreational areas. The alternative route lengths within the foreground visual zone of US highways, state highways, FM roads, and parks or recreational areas were tabulated and are discussed below.

None of the alternative routes have any portion of the routes located within the foreground visual zone of IHs, US Hwys, and SHs. None of the alternative routes have any portion of the routes located within the foreground visual zone of FM roads. Also, none of the alternative routes have any portion of the routes located within the foreground visual zone of parks or recreational areas.

Overall, the character of the study area maintains a suburban feel characteristic of the Texas Hill Country region. The residential and commercial developments within the study area have already impacted the aesthetic quality within the region from public viewpoints. The construction of any of the alternative routes is not anticipated to significantly impact the aesthetic quality of the landscape.

4.5 Impacts on Historical (Cultural Resources) Values

Methods for identifying, evaluating, and mitigating impacts to cultural resources have been established for federal projects or permitting actions, primarily for purposes of compliance with the National Historic Preservation Act (NHPA). Similar methods are often used when considering cultural resources affected by state-regulated undertakings. In either case, this process generally involves identification of significant (i.e., national- or state-designated) cultural resources within a project area, determining the potential impacts of the project on those resources, and implementing measures to avoid, minimize, or mitigate those impacts.

Impacts associated with the construction, operation, and maintenance of transmission lines can affect cultural resources either directly or indirectly. Construction activities associated with any proposed project can adversely impact cultural resources if those activities alter the integrity of key characteristics that contribute to a property's

significance as defined by the standards of the NRHP or the Antiquities Code of Texas. These characteristics might include location, design, setting, materials, workmanship, feeling, or association for architectural and engineering resources or archeological information potential for archeological resources.

4.5.1 Direct Impacts

Typically, direct impacts could be caused by the actual construction of the line or through increased vehicular and pedestrian traffic and excavation for towers during the construction phase. If construction is required near historic structures, landscapes, or districts, proper mitigation and avoidance measures will avoid adversely impacting such features during construction of a transmission line. Additionally, an increase in vehicular and/or pedestrian traffic might damage surficial or shallowly buried sites. Excavation for transmission structures could impact shallow or deeply buried archeological sites. Direct impacts might also include isolation of a historic resource from or alteration of its surrounding environment.

4.5.2 Indirect Impacts

Indirect impacts include those affects caused by the project that are farther removed in distance or that occur later in time but are reasonably foreseeable. These indirect impacts might include introduction of visual or audible elements that are out of character with the resource or its setting. Indirect impacts might also occur as a result of alterations in the pattern of land use, changes in population density, accelerated growth rates, or increased pedestrian or vehicular traffic. Absent best management practices, proper mitigation, and avoidance measures, historic buildings, structures, landscapes, and districts are among the types of resources that could be adversely impacted by the indirect impact of a transmission line.

The preferred form of mitigation for direct and indirect impacts to cultural resources is avoidance through project modifications. Additional mitigation measures for direct impacts might include implementing a program for data recovery excavations if an archeological site cannot be avoided. Indirect impacts on historical properties and landscapes can be lessened through careful design and landscaping considerations, such as using vegetation screens or berms if practicable. Additionally, relocation might be possible for some historic structures.

4.5.3 Summary of Cultural Resource Impacts

The distance of each recorded site located within 1,000 feet from the nearest routing segment and alternative route was measured using GIS software and aerial photography interpretation (see Tables 4-6 through 4-34). A review of the THSA and TASA (THC 2019b) records and NPS data (NPS 2019d) described in Section 3.5, indicated that 17 archeological sites and three NRHP-listed resources are recorded within 1,000 feet of the alternative routes (Tables 4-4 and 4-5). These resources are discussed below. The Heiden Cemetery is recorded 593 feet from

Alternative Routes B, C, D, G, I, J, M, T, Y, A, and AA. The cemetery is a contributing element of the NRHP-listed Heidemann Ranch Historic District. The Huntress Lane Cemetery, a cemetery reported by a landowner, is 128 feet from Alternative Routes F, N, P, Q, R, T, and U.

TABLE 4-4 ARCHEOLOGICAL SITES RECORDED WITHIN 1,000 FEET OF THE ALTERNATIVE ROUTE CENTERLINES

SITE TRINOMIAL	DISTANCE IN FEET FROM CENTERLINE	PRIMARY ALTERNATIVE ROUTE(S)
41BX75	**0**	**F, N, Q, R, U**
	352	P, T
41BX76	163	F, N, Q, R, U
	582	P, T
41BX77	172	F, N, Q, R, U
41BX78	**50**	**F, N, Q, R, U**
41BX80	627	F, N, Q, R, U
41BX81	323	P, T
	414	F, N, Q, R, U
41BX82	241	P, T
	340	F, N, Q, R, U
41BX83	115	P, T
	226	F, N, Q, R, U
41BX84	836	F, N, Q, R, U
	955	P, T
41BX85	798	F, N, Q, R, U
	895	P, T
41BX86	**12**	**P, T**
	106	F, N, Q, R, U
41BX87	259	F, N, P, Q, R, T, U
41BX88	444	F, N, P, Q, R, T, U
41BX89	675	F, N, P, Q, R, T, U
41BX1923	266	Y, C
	329	B, D, G, I, J, M, T, Z, AA
	814	E, X
41BX1924	86	B, D, G, I, J, M, Z, T, AA
	150	C, X
	817	E, Y
41BX2176	**0**	**V**
41BX2177	**44**	**O, S, W**
41BX2178	**72**	**O, S, W**

Note: Bold entries will be crossed by 100-foot-wide ROW

TABLE 4-5 NRHP-LISTED RESOURCES RECORDED WITHIN 1,000 FEET OF THE ALTERNATIVE ROUTE CENTERLINES

RESOURCES NAME	NRHP NUMBER	DISTANCE IN FEET FROM CENTERLINE	PRIMARY ALTERNATIVE ROUTE(S)
Heidemann Ranch	11000423	50	B, G
R.L. White Ranch	**08000474**	**0**	**F, K, L, N, O, P, Q, R, S, U, V, W, BB, CC**
Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm	79002915	50	A, B, E, G, H, X

Note Bold entries will be crossed by 100-foot-wide ROW.

Of the 17 archeological sites recorded within 1,000 feet of the alternative routes, four are crossed by the routes. Alternative Routes F, N, Q, R, and U cross archeological Sites 41BX75 and 41BX78. Sites 41BX75 and 41BX78 are campsites with burned rock, bifaces and debitage. Site 41BX78 is mapped as a point 50 feet from the alternative route centerlines but is described as a large site. The sites have not been formally assessed for listing on the NRHP, although the site recorders recommended additional work at the sites. Alternative Routes P and T cross site 41BX86, a campsite with Pedernales, Frio, and Castroville projectile points, bifaces, burned rock, and debitage that has not been formally assessed for listing on the NRHP. Alternate Route V crosses archeological Site 41BX2176. Site 41BX2176 is the remains of the Sebastien Chapa farmstead, a multicomponent historic site with the remains of a small, collapsed dry-stacked limestone structure dating to the 1800s, a mid-1900s house and garage, and stone walls, a pool, dams on a nearby stream, and multiple pile and scatters of domestic and agricultural implements. The collapsed stone structure is approximately 70 feet from the alternative route centerlines. The site has not been formally assessed for listing on the NRHP, but the recorders of the site recommend that is ineligible for listing on the NRHP. Alternative Routes O, S, and W cross site 41BX2177, and are 72 feet from site 41BX2178. Sites 41BX2177 and 41BX2178 are scatters of historic artifacts deemed by the recorders to be ineligible e for listing on the NRHP. Historic structures were observed near 41BX2178. Neither site has been evaluated for listing on the NRHP.

Alternative Routes B, D, G, I, J, M, T, Z, and AA are 329 feet and 86 feet from archeological sites 41BX1923 and 41BX1924, respectfully. Site 41BX1923 is a prehistoric campsite with a widely dispersed scatter of burned rocks. The site has not formally evaluated for listing on the NRHP, but the recorders recommend that the shallowly buried and surficial scatter of burned rock is not eligible for listing on the NRHP. Site 41BX1924 is multicomponent site with the remains of ten structures, including a house, barn, long barn and animal pen, , a cistern and associated artifact scatters, all dating to as early as the early to mid-1900s. A concentration of burned rock and ash, potentially a prehistoric hearth, was also observed at the site. The site has not been formally assessed for listing on the NRHP. Additionally. Alternative Routes Y and C are 266 feet from site 41BX1923, and Alterative Routes E and X are 814 feet from the site. Alternative Routes C and X are 150 feet and Alternative Routes E and Y are 817 feet from site 41BX1924.

Alternative Routes F, N, P, Q, R, T, and U are within 1,000 feet of, but do not cross, sites 41BX76, 41BX81, 41BX82, 41BX83, 41BX84, 41BX85, 41BX86, 41BX87, 41BX88, and 41BX89. Additionally, Alternative Routes P and T are within 1,000 feet of site 41BX75 and Alternate Routes F, N, Q, R, and U are within 1,000 feet of 41BX77 and 41BX80. Sites 41BX87 and 41BX88 are lithic scatters and the remaining sites are campsites. None of these prehistoric sites within 1,000 feet of the alternate routes have been formally assessed for listing on the NRHP. However, as mentioned above, additional work has been recommended for site 41BX75.

Portions of Alternative Routes F, K, L, N, O, P, Q, R, S, U, V, W, BB, and CC cross the NRHP-listed R.L. White Ranch. These routes extend less than 105 feet into the eastern boundary of the 3,500-acre NRHP boundary, connecting into an existing transmission line running generally north to south along the NRHP border. The ranch was developed by Ryall Luther White beginning in 1926 and used for entertainment purposes. Twenty-five contributing resources and five noncontributing resources are listed in the NRHP (2008) nomination form, divided into three groups: the principal guest and residential compound; agricultural features including barns fields, and sheds; and engineering/water retention features. All three concentrations of the resources are over one mile from the alternative routes. No adverse impacts to known elements of the district are anticipated due to the distance between contributing elements and the alternative route centerlines.

The centerlines for Alternative Routes B and G are 50 feet from the NRHP-listed Heidemann Ranch District, approximately nine acres of a larger ranch purchased in 1856 by William Heidemann (NRHP 2011). Twelve contributing elements, including the Heidemann Cemetery, and one non-contributing element are listed in the district nomination form. Of these, the Well house, Garage, and Outhouse are nearest to the alternative route centerlines, at approximately 86 feet, 188 feet, and 216 feet, respectively. The 1937 house is approximately 280 feet from the centerlines. The log house and three surrounding structures, all dating to the 1860s, are over 500 feet from the proposed centerlines. No adverse impacts to known elements of the district are anticipated due to the distance between contributing elements and the alternative centerlines.

Alternative Routes A, B, E, G, H, and X are 50 feet from the over 1,100-acre Maverick-Altgelt Ranch and Fenstermaker-Fromme Farm Historic District. The district consists of two separate but adjoining areas: the Maverick-Altgelt Ranch headquarters, outbuildings and lands, including the George Obert site; and the Fenstermaker-Fromme Farm structures and lands, plus three prehistoric and four historic archeological sites. The nearest component, archeological site 41BX498, the mapped location of the Obert Cemetery, is over 2,000 feet from the alternative route centerlines. No adverse impacts to known elements of the district are anticipated due to the distance between contributing elements and the alternative centerlines.

No systematic cultural resource surveys have been conducted along the alternative routes. Thus, the potential for undiscovered cultural resources does exist along all alternative routes. To assess this potential, a review of geological, soils, and topographical maps was undertaken by a professional archeologist to identify areas along the alternative routes where unrecorded prehistoric archeological resources have a higher probability to occur. These HPAs for prehistoric archeological sites were identified near unnamed streams in the study area and adjacent to closed depressions that may have held fresh water. To facilitate the data evaluation and alternative route comparison, each HPA was mapped using GIS and the length of each alternative route crossing these areas was tabulated. Historic HPA were mapped near previously recorded historic sites and NRHP properties, and near structures depicted on historic topographic maps.

All of the alternative routes cross HPAs for cultural resources. Alternative Routes H, E, X, and A cross the least amount of HPA, with 1.44, 1.49, 1.59, and 1.73 miles, respectively. Alternative Routes L and U cross the most HPA, with 4.55 and 4.75 miles of HPA crossed, respectively. Table 4-1 shows the amount of HPA crossed by each route.

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5.0 AGENCY CORRESPONDENCE

A list of federal, state, and local regulatory agencies, elected officials and organizations was developed to receive a consultation letter regarding the project. The purpose of the letter was to inform the various agencies and officials of the project and provide them with an opportunity to provide information regarding resources and potential issues within the study area. Various federal, state and local agencies and officials that may have potential concerns and/or regulatory permitting requirements for the proposed project were contacted. POWER utilized websites and telephone confirmations to identify local officials. Copies of all correspondence with the various state/federal regulatory agencies and local/county officials and departments are included in Appendix A.

Federal, state and local agencies/officials contacted include:

- Federal Aviation Administration (FAA)
- Federal Emergency Management Agency (FEMA) – Region 6
- National Park Service (NPS)
- Natural Resource Conservation Service (NRCS) – Texas Office
- United States Department of the Air Force
- United States Army Corps of Engineers (USACE) – Fort Worth District
- United States Department of the Army
- United States Department of Defense Siting Clearinghouse
- United States Environmental Protection Agency (USEPA) – Region 6
- United States Fish and Wildlife Service (USFWS)
- Applicable United States Congressman
- Applicable Texas Senators
- Applicable Texas House Members
- Railroad Commission of Texas (RRC)
- Texas Commission on Environmental Quality (TCEQ)
- Texas Department of Transportation (TxDOT) – Aviation Division, Environmental Affairs Division, Planning & Programming, and San Antonio District Engineer
- Texas General Land Office (GLO)
- Texas Historical Commission (THC)
- Texas Parks and Wildlife Department (TPWD)
- Texas Water Development Board (TWDB)
- Bexar County Judge and Commissioners Court
- Bexar County Economic Development
- Bexar County Floodplain Administrator

- Bexar County Historical Commission
- Bexar County Manager
- City of San Antonio Officials
- Alamo Area Council of Governments
- Alamo Soil and Water Conservation District
- Edwards Aquifer Authority Chairman
- San Antonio River Authority
- San Antonio World Heritage Office
- Northside Independent School District (ISD)
- City of Fair Oaks Ranch Officials
- City of Grey Forest Officials
- The Nature Conservancy (TNC) – Texas
- Texas Land Trust Council
- Texas Land Conservancy
- Texas Agricultural Land Trust
- Texas Cave Management Association

In addition to letters sent to the agencies listed, POWER also requested and reviewed TXNDD Element Occurrence Records from TPWD (TXNDD 2019). POWER also requested and reviewed previously recorded archeological site information from TARL and reviewed the THC's TASA for additional cultural resource information. As of the date of this document, written responses to letters sent in relation to the study area that were received are listed and summarized below.

The FAA responded with a letter dated August 13, 2019, stating that if CPS Energy is planning to sponsor any construction or alterations that may affect navigable airspace, they must file FAA Form 7460-1.

The NRCS responded with a letter dated July 3, 2019, providing a Custom Soil Resources Report and encouraged the use of acceptable erosion control method during the construction of the project.

The USACE submitted a response email letter dated June 26, 2019, stating that they had assigned a regulatory project manager and assigned Project Number SWF-2019-00231.

The USACE submitted an additional email dated July 17, 2019, recommending an environmental and wetland delineation survey. Once they have reviewed the wetland delineation survey, the USACE can determine the

permit type required for the project. If no work occurs within the waters of the US, then in most cases no permit would be required.

The DoD Siting Clearinghouse responded with a letter dated September 11, 2019, stating that the proposed project located in Bexar County, Texas, will have minimal impact on military operations conducted in this area.

The Army and US Air Force (Air Force) provided a letter dated March 26, 2020, to counsel for CPS Energy in response to an inquiry regarding the potential for the project to cross the Bandera Pass Easement in which the Army holds a third party beneficiary interest. In the letter, the Army and Air Force stated that they were opposed to the granting of an easement for the project across the Bandera Pass Easement.

The TCEQ responded with an email dated June 25, 2019, stating that the project will be located in the Edwards Aquifer Protection Program Contributing Zone. They also stated that a Contributing Zone Plan or an Exception Request will be the two permit options that might apply to the proposed project, but that additional information is needed to make a final determination.

TxDOT responded with an email dated June 26, 2019, stating that they do not have any proposed projects or specific concerns within the study area.

TXDOT Aviation responded with an email dated July 10, 2019, stating that once a route is selected the coordinates should be ran through the FAA's Obstruction Evaluation/Airport Airspace Analysis website. The website will indicate whether the airport approaches or navigational aids will be affected.

The THC responded with a letter dated July 1, 2019, stating that a NRHP District is located within the area. They also said that that much of the area had not previously undergone archeological surveys and may contain additional historic and archeological resources. The THC recommended that the area be surveyed by a professional archeologist prior to any ground disturbance.

The TPWD responded with a letter dated August 1, 2019, providing several recommendations. In summary, TPWD recommended avoiding or minimizing potential impacts to water bodies, nesting migratory birds, listed or rare species, and native vegetation.

Bexar County responded with an email dated July 3, 2019, providing aerial and shape file data that showed planned development, platted areas, floodplain areas, wetland areas, Karst Zones, and the City of San Antonio Land Use Control Areas.

The City of San Antonio Edwards Aquifer Protection Program responded with an email dated July 2, 2019, providing shapefiles for properties that are either owned by the City of San Antonio or held under a conservation easement.

The City of San Antonio OHP responded with an email dated July 8, 2019, stating that prehistoric and historic archeological resources had been identified within the study area.

6.0 PUBLIC INVOLVEMENT

CPS Energy hosted a public meeting within the study area to solicit comments, concerns and input from residents, landowners, public officials, and other interested parties. The purpose of this meeting was to:

- Promote a better understanding of the project, including the purpose, need, potential benefits and impacts, and the PUC CCN application approval process.
- Inform the public with regard to the routing procedure, schedule, and decision-making process.
- Ensure that the decision-making process adequately identifies and considers the values and concerns of the public and community leaders.

The public meeting was held on October 3, 2019 from 5:30 p.m. to 7:30 p.m. at Cross Mountain Church, 24891 Boerne Stage Road in San Antonio, Texas. Invitation letters were sent to landowners who owned property within 300 feet from a preliminary alternative route segment. CPS Energy mailed 592 invitation letters to landowners. Each landowner that received an invitation letter also received a map of the study area depicting the preliminary alternative route segments as well as a map showing the location of the public meeting. An advertisement for the open house was also published in the *San Antonio Express News* on September 22 and 29, 2019.

At the meeting, engineers, GIS analysts, biologists, project managers, and regulatory professionals were available from CPS Energy and POWER to answer questions regarding the project. Manned information stations were set up that provided typical 138 kV pole types, a list of agencies contacted, land-use and environmental criteria for transmission lines, and an environmental and land use constraints map on aerial base. POWER also provided four GIS interactive stations operated by GIS analysts. These computer stations allowed attendees to view more-detailed digital maps of preliminary alternative route segments and submit comments digitally and spatially. The information station format is advantageous because it facilitates one-on-one discussions and encourages personalized landowner interactions. Several digital comments were received in addition to questionnaires. Respondent digital comments assisted in identifying structures and other land use concerns.

Each individual in attendance was offered the opportunity to sign their name on the sign-in sheet and given three handouts. The first handout was an information brochure that provided general information about the project. The second handout was a questionnaire that solicited comments on the project and an evaluation of the information presented at the public meeting. Individuals were asked to fill out the questionnaire after visiting the information stations and speaking with POWER and CPS Energy personnel. The third handout was a Frequently Asked Questions document providing an overview of the project as well as a description of the regulatory process. Copies of the public notice letter with map, brochure, questionnaire, and Frequently Asked Questions are located in Appendix B.

A total of 172 individuals signed in as attendees at the public meeting and 146 submitted questionnaire responses at or after the public meeting. In addition to the questionnaires received at or shortly after the open house meeting, 40 additional questionnaires, as well as letters and e-mails, were received from individuals after the meeting, some of whom did not attend the open house meeting. CPS Energy received numerous emails and letters from citizens expressing their concerns about the potential project, a significant number of which addressed potential impacts on the area near Huntress Lane. A total of 186 questionnaires were received by CPS Energy as of April 1, 2020. Results from the questionnaires were reviewed and analyzed. Table 6-1 summarizes general response information from the questionnaires. CPS Energy also received an additional six questionnaires providing similar responses as those summarized below.

TABLE 6-1 GENERAL RESPONSE SUMMARY FROM QUESTIONNAIRES

GENERAL INFORMATION RESPONSES	PERCENTAGE (%) OF RESPONDENTS
Was the need for the project clearly explained?	
Strongly Agree	9%
Agree	37%
Neutral	22%
Disagree	12%
Strongly Disagree	16%
The project team responded to and answered questions about the project.	
Strongly Agree	10%
Agree	32%
Neutral	24%
Disagree	11%
Strongly Disagree	16%
The exhibits at the open house were helpful.	
Strongly Agree	10%
Agree	36%
Neutral	22%
Disagree	4%
Strongly Disagree	10%

Respondents were then presented with a list of 15 factors that are taken into consideration for a routing study (see a complete list of the criteria on the questionnaire in Appendix B). They were asked to rank each of these criteria, with **1** being the most important factor and **5** being the least important factor. Of those attendees that ranked the criteria, the three criteria that were ranked by the respondents as being the most important are listed in descending order:

- Impact to residences: 108 (58%)
- Visibility of structures: 11 (6%)
- Proximity to schools, places of worship, cemeteries: 4 (2%)

- Impact to endangered species and their habitat: 4 (2%)

Respondents were asked if there are other factors that should be considered when identifying and evaluating the preliminary alternative route segments and substation sites. Written responses included:

- Concerns about the impact to the community.
- Concerns about view.
- Concerns about health impacts.
- Concerns about distance to homes.
- Concerns about property values.
- Suggestion to situate the site in a more rural area.
- Concerns about ranching operations.
- Suggestion to use solar panels.
- Suggestion to conceal the substation site.

Respondents were asked if they had a preference for the type of finish on the transmission line structure that is being proposed for the project, the following responses were received:

- 17% (31 responses) prefer option A (galvanized finish)
- 31% (58 response) prefer option B (rust finish)
- 24% (45 responses) had no preference

Respondents were then asked if there are other features that should be added to the Land Use and Environmental Constraints map. Written responses included:

- Concerns about health effects.
- Suggest installing the lines underground.
- Concerns about flooding and runoff.
- Concerns about wildlife, trees, streams, and wetlands.
- Suggest adding population density to the maps.

Respondents were asked to identify the preliminary alternative route segments and substation sites that they most preferred and least preferred. Segments 12 and 23 received the most positive comments (28 each), followed by Segment 40 (27). Segment 15 received the most negative comments (50), followed by Segments 26 (41) and 16 (34). Substation Site 1 received the most positive comments (47) and Substation Site 5 received the most negative comments (22). Table 6-2 summarizes the preliminary alternative route segments and substation site that received the most responses to this question, both positive and negative.

TABLE 6-2 SCENIC LOOP SEGMENT/SUBSTATION SITE COMMENTS

SEGMENT/SUBSTATION	12	23	40	15	26	16	SUB 1	SUB 2	SUB 3	SUB 4	SUB 5
Positive Comments	28	28	27	3	3	4	47	6	7	5	10
Negative Concerns	0	0	17	50	41	34	7	17	13	15	22

When asked which of four situations applied to them, written responses were as follows:

- 147 indicated that a potential segment is near their home/business
- 55 indicated that a potential segment crosses their property
- 63 indicated that a potential substation site is near to their property
- 17 answered "Other"

Respondents were also asked if there any other concerns they have with the preliminary alternative route segments or if there were any other information they would like the project team to know or take into consideration when evaluating the preliminary alternative route segments for the new line, responses included:

- Concerns about the distance to homes.
- Suggest situating the site in a more commercial area.
- Concerns about health impacts.
- Concerns about property values.
- Concerns about the view.
- Suggest installing the lines underground.
- Concern about the history of the area.
- Suggest allowing blackouts.

6.1 Modifications to the Preliminary Alternative Route Segments

Information received by CPS Energy and POWER from the public, officials, and agencies resulted in modifications and deletions to some of the preliminary alternative route segments as well as the identification of new route segments, which are described in detail below. The preliminary alternative segments shown at the Scenic Loop open house meeting are presented in Figure 2-2. The primary alternative route segments resulting from the segment revisions described below are shown in Figure 2-3.

6.1.1 Segment Additions

Segment 48 was added west of Toutant Beauregard Road as an option that would connect Segments 41 and 42. As a result of adding Segment 48, a node was added near the middle of Segment 42 relabeling the western portion of the segment as Segment 49. Adding Segment 48 also resulted in adding a node along Segment 41, relabeling the western portion of that segment as Segment 46. The eastern portion of Segment 42 was modified by shifting it to the north to address landowner comment that they would donate the ROW for this portion of the segment if the modification was made. Segment 49 was modified by shifting it to the north in three separate locations due to engineering constraints (Figure 6-1).

Substation Site 6 was added as a substation site option due to the landowner's willingness to sell the property to CPS Energy. As a result of adding Substation Site 6, a node was added near the end of Segment 8 relabeling the southern portion of that segment as Segment 50 (Figure 6-2).

Substation Site 7 was added as a substation site option due to the landowner's willingness to sell the property to CPS Energy. As a result of adding Substation Site 7, a node was added near the middle of Segment 14 relabeling the western portion of that segment as Segment 54 (Figure 6-3).

Segment 56 was added primarily along the west side of Scenic Loop Road. As a result of adding Segment 56, a node was added near the middle of Segment 16 relabeling the central portion of that segment as Segment 55. The central portion of Segment 55 was modified by shifting it to the southeast to increase the distance away from a habitable structure and an identified constraint. Also, as a result of adding Segment 56, a node was added near the end of Segment 16 relabeling the southern portion of that segment as Segment 57 (Figure 6-4).

6.1.2 Segment Modifications

The central portion of Segment 15 was modified by shifting it to the southeast to avoid a previously unknown cemetery (Figure 6-5).

The eastern portion of Segment 25 was modified by slightly shifting it to the south to better parallel a property line. As a result of shifting Segment 25, the node between Segments 21 and 22 was moved to the south, increasing the length of Segment 21 and decreasing the length of Segment 22 (Figure 6-6).

The central portion of Segment 26 was modified by shifting it to the north due to engineering constraints (Figure 6-7).

The western portion of Segment 27 was modified by shifting it to the north and the central portion was modified by shifting it to the northeast. Both modifications were due to engineering constraints (Figure 6-8).

The northern portion of Segment 28 was modified by shifting it to the west to better parallel a property boundary due to information from the landowner that the property was proposed to become part of the adjacent conservation easement (Figure 6-9).

The southern portion of Segment 29 was modified by shifting it to the west to better parallel a property boundary due to information from the landowner that the property was proposed to become part of the adjacent conservation easement. As a result of shifting Segments 28 and 29, the node between Segments 28, 29, and 30 was moved to the west, decreasing the length of Segment 30 (Figure 6-10).

Segment 37 was modified by shifting it to the south and the eastern portion was further modified by adding an angle and shifting it to the southeast due to engineering constraints. As a result of shifting Segment 37, the node between Segments 38 and 43 was moved to the south, decreasing the length of Segment 38 and increasing the length of Segment 43 (Figure 6-11).

Segment 39 was modified by shifting it the west to better parallel a property boundary. As a result of shifting Segment 39, the node between Segments 26, 38, and 39 was removed, increasing the length of Segment 26. Also, as a resulting of shifting Segment 39, a node was added to the eastern portion of Segment 43, decreasing the length of Segment 43. The label for Segment 38 was moved to the new portion of the segment between the nodes for Segments 26, 37, and 43. Shifting Segment 39 also shifts the node with Segment 44 to the west side, decreasing the length of Segment 44 (Figure 6-12).

The central portion of Segment 40 was modified by shifting it to the north side of Toutant Beauregard Road to address landowner comment. The two locations in the eastern portion of the segment were modified by shifting it to the west and then to the north. Both modifications were due to engineering constraints (Figure 6-13).

The central portion of Segment 43 was modified by shifting it to the south due to engineering constraints (Figure 6-14).

Segment 44 was modified by shifting it to the north due to engineering constraints. As a resulting of shifting Segment 44, a node was added to the southern portion of Segment 39, decreasing the length of Segment 39 and relabeling the southern portion of that segment as Segment 53 (Figure 6-14).

The eastern portion of Segment 45 was modified by shifting it to the west due to engineering constraints. As a result of shifting Segment 45, a node was added near the western end of Segment 27, reducing the length of Segment 27 and relabeling that portion of the segment as Segment 47. A node was also added near the northern end of Segment 45 relabeling that portion of the segment as Segment 51. At the node for Segment 51, another segment was added to the west and labeled as Segment 52. This segment was added due to engineering constraints (Figure 6-15).

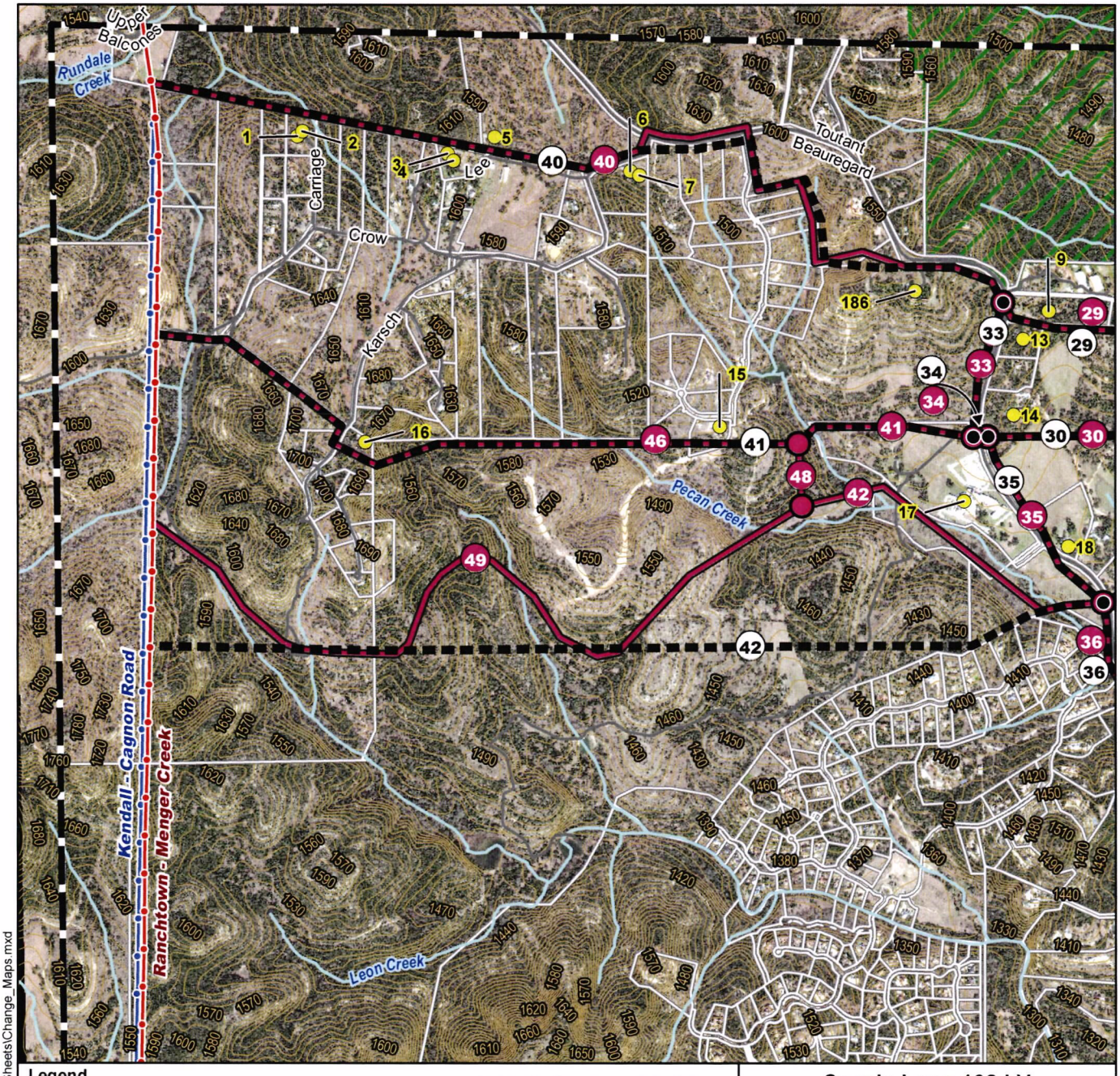
6.1.3 Segment Deletions

Segment 6 was originally proposed to cross Scenic Loop Road between Substation Sites 2 and 3. However, the segment was not utilized in any of the alternative routes; therefore, it was deleted from further consideration. As a result of deleting Segment 6, the node between Segments 4, 6, and 7 was moved to just inside the property boundary of Substation Site 3; decreasing the length of Segment 5 and relabeling the eastern portion of the segment as Segment 4, while the previous location of Segment 4 was deleted from further consideration (Figure 6-16).

Segment 12 was originally proposed to cross the Bandera Pass Easement in which the Army holds a third party beneficiary interest. However, based on official comment received from both the Army and Air Force following the open house meeting, it was deleted from further consideration. As a result of deleting Segment 12, Segments 9 and 11 were also deleted and Substation Site 1 was relocated further south due to the landowner's willingness to sell the property to CPS Energy. As a result of deleting Segment 9 and relocating Substation Site 1, the node between Segments 9 and 2 was removed and Segment 2 was expended into the new location of Substation Site 1 and shifted to the north side of the property line. Also, as a result of deleting Segment 11 and relocating Substation Site 1, the node between Segments 10, 11, and 13 was removed and Segment 10 became part of Segment 13. Segment 13 was also shifted to the north side of the property line (Figure 6-17).

Deleting Segment 12 also resulted in the removal of the node between Segments 17 and 23, relabeling the entire segment as Segment 17 (Figure 6-18).

Segment 18 was originally proposed to parallel a property boundary north of Toutant Beauregard Road. However, due to engineering constraints it was deleted from further consideration. As a result of deleting Segment 18, the node between Segments 17, 18, and 19 was removed, relabeling the entire segment as Segment 17. The southern portion of Segment 17 was also shifted to the southeast due to engineering constraints. Also, as a result of deleting Segment 18, the node between Segments 18, 20, and 24 was removed, relabeling the entire segment as Segment 20. The southern portion of Segment 20 was also shifted to the north to avoid pipeline infrastructure (Figure 6-19).



Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Removed Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node Shown at Open House Meeting
- Preliminary Alternative Route Segment Node Shown at Open House Meeting
- Resulting Alternative Route Segment Label
- Preliminary Alternative Route Segment Label Shown at Open House Meeting
- Habitable Structure within 300 Feet of a Primary Segment
- 138 kV Transmission Line
- 345 kV Transmission Line
- Parcel Boundary
- Local Road
- River or Stream
- 10 foot Contour
- Conservation Easement

6/15/2020

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-1

Addition of 48; Relabel of Western Portion of 42 as 49; Relabel of Western Portion of 41 as 46; Realignment of 42; Realignment of 49 Following the Open House Meeting

CPS ENERGY

POWER ENGINEERS

Feet

0 2,000 4,000

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Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Removed Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node Shown at Open House Meeting
- Preliminary Alternative Route Segment Node Shown at Open House Meeting
- Resulting Alternative Route Segment Label
- Preliminary Alternative Route Segment Label Shown at Open House Meeting
- Habitable Structure within 300 Feet of a Primary Segment
- Parcel Boundary
- Local Road
- 10 foot Contour
- Revised Substation Location

6/15/2020

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-2

Addition of Substation 6; Relabel of Southern Portion of 8 as 50 Following the Open House Meeting

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Feet

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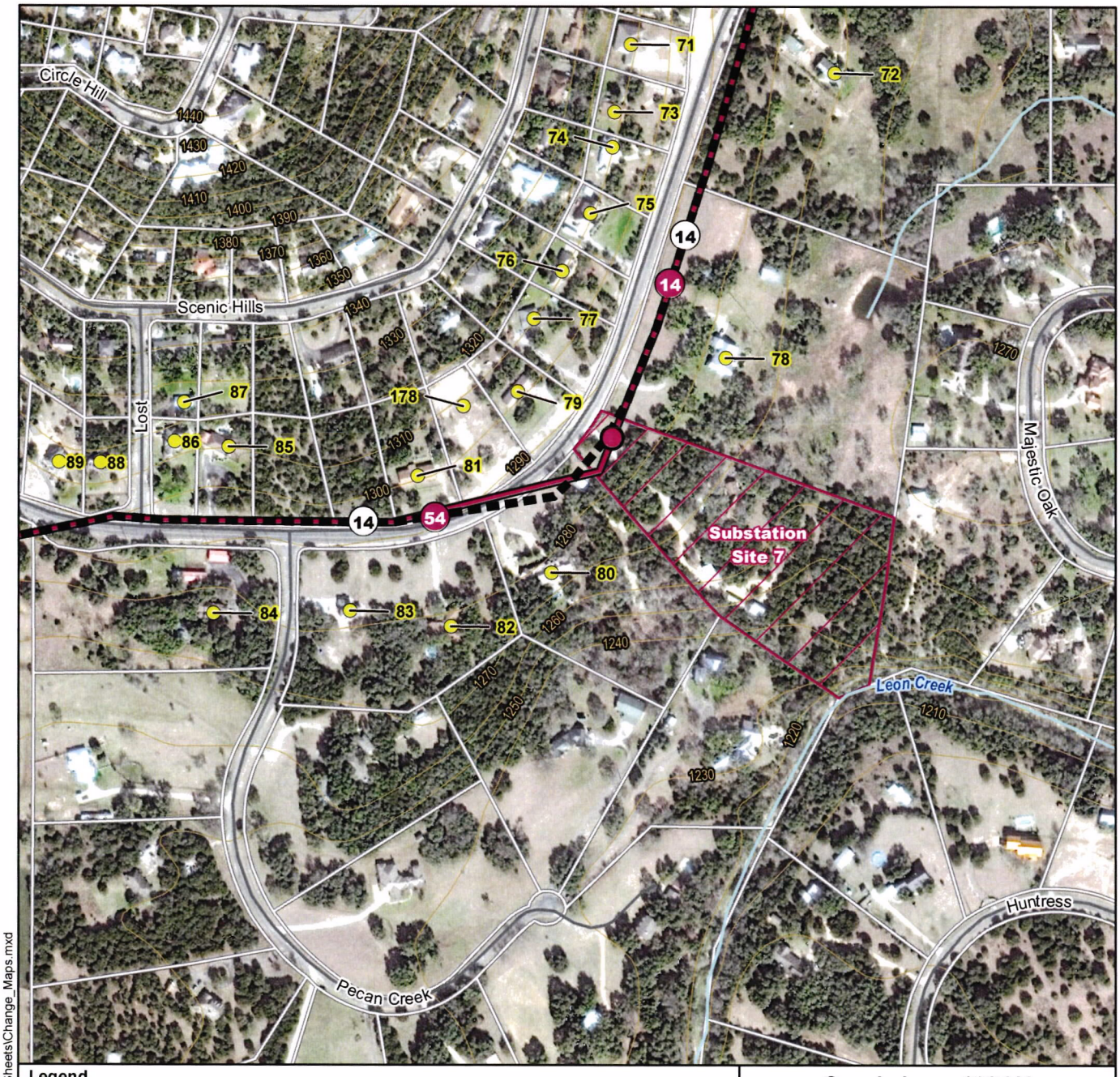

Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Removed Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node Shown at Open House Meeting
- Preliminary Alternative Route Segment Node Shown at Open House Meeting
- Resulting Alternative Route Segment Label
- Preliminary Alternative Route Segment Label Shown at Open House Meeting
- Habitable Structure within 300 Feet of a Primary Segment
- Parcel Boundary
- Local Road
- River or Stream
- 10 foot Contour
- Revised Substation Location

6/15/2020

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-3

Addition of Substation 7; Relabel of Southern Portion of 14 as 54 Following the Open House Meeting

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POWER ENGINEERS

Feet

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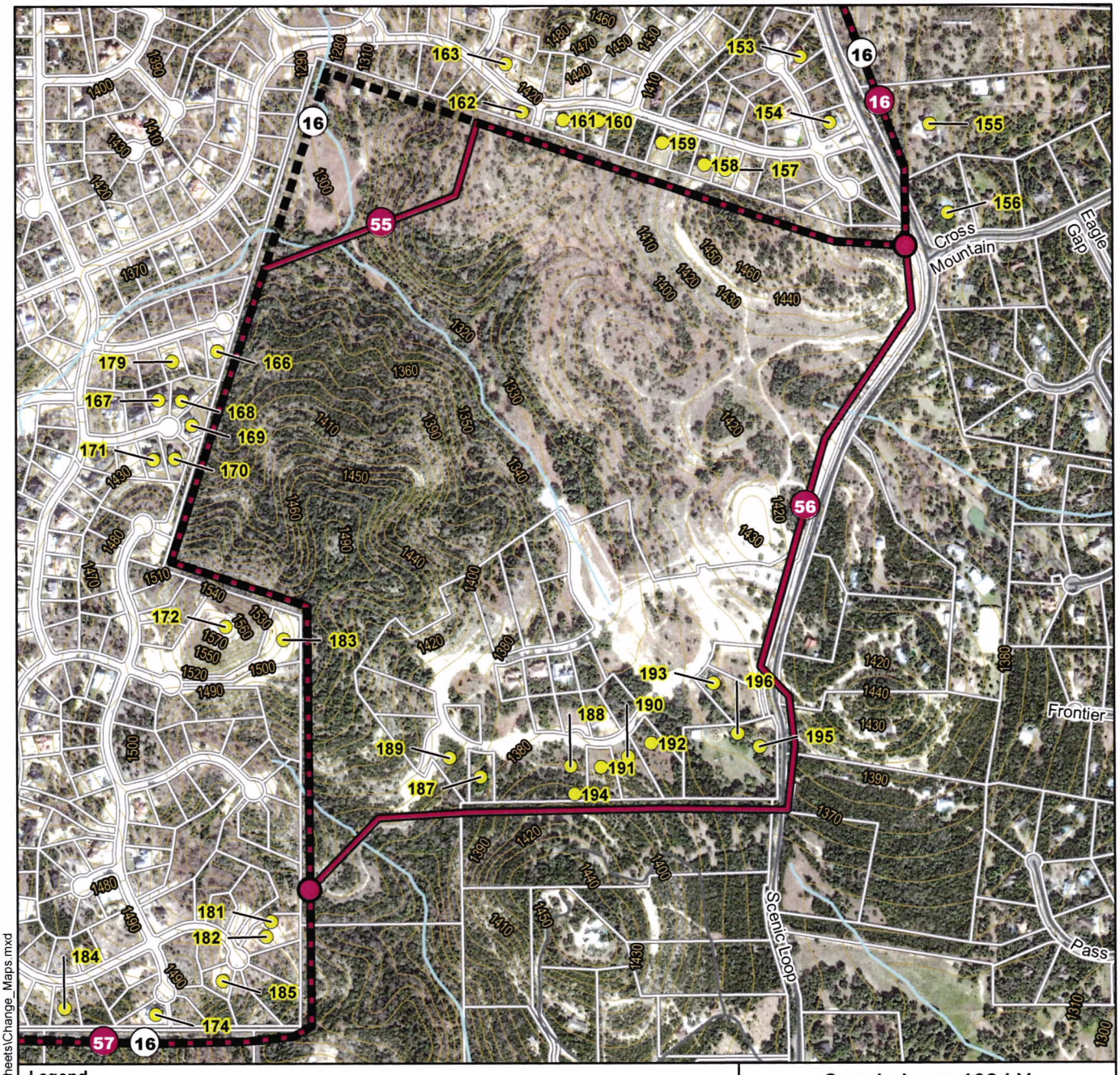

Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Removed Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node Shown at Open House Meeting
- Preliminary Alternative Route Segment Node Shown at Open House Meeting
- (A) Resulting Alternative Route Segment Label
- (A) Preliminary Alternative Route Segment Label Shown at Open House Meeting
- Habitable Structure within 300 Feet of a Primary Segment
- Parcel Boundary
- Local Road
- River or Stream
- 10 foot Contour

6/15/2020

Feet
0 800 1,600

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-4

Addition of Segment 56; Relabel of Middle Portion of 16 as 55 and Realignment of 55; Relabel Southern Portion of 16 as 57 Following Open House Meeting

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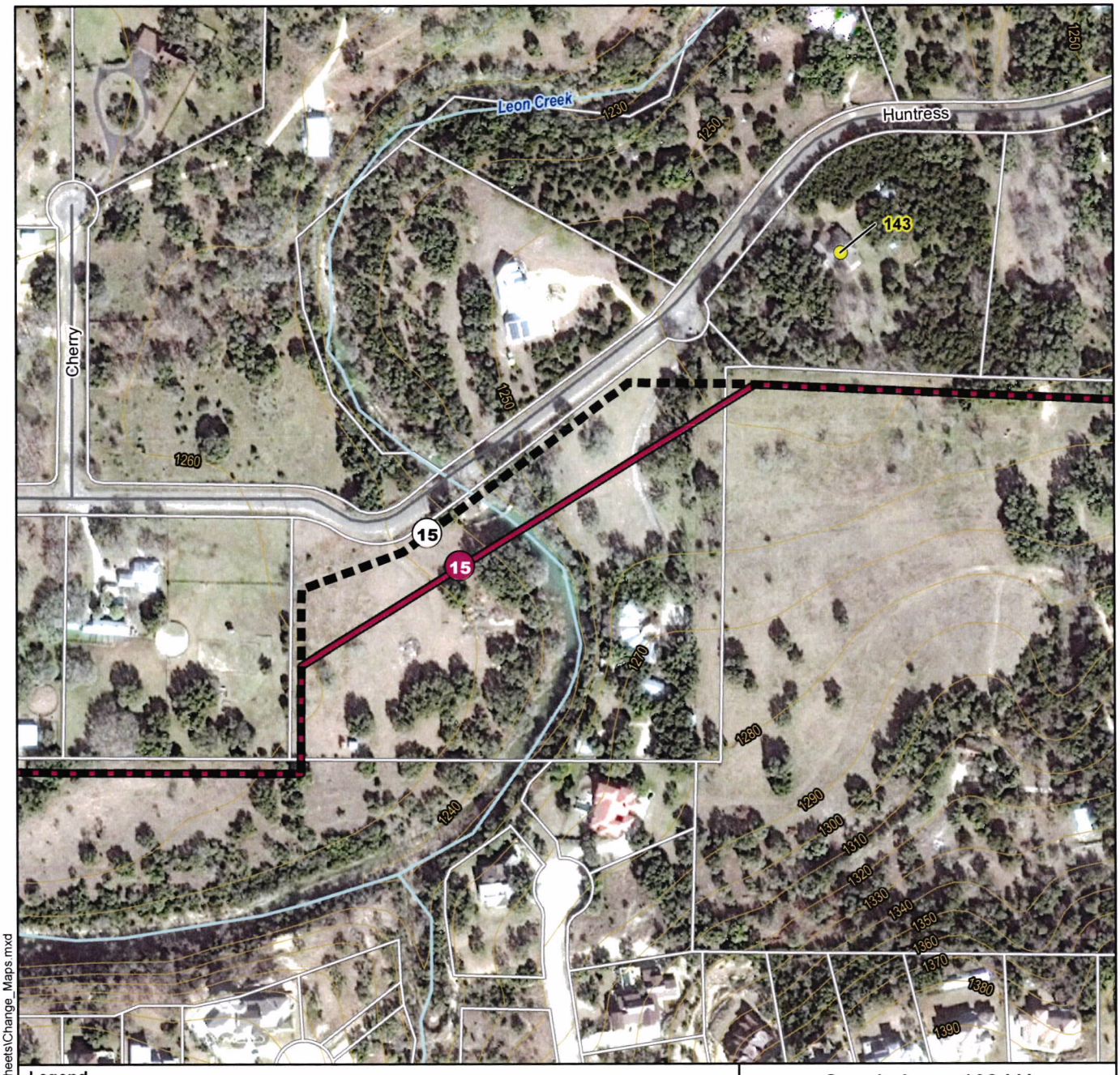

Legend

- Revised or New Alternative Route Segment
- Unchanged Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Removed Portion of Preliminary Alternative Route Segment Shown at Open House Meeting
- Revised or New Alternative Route Segment Node
- Unchanged Alternative Route Segment Node Shown at Open House Meeting
- Preliminary Alternative Route Segment Node Shown at Open House Meeting
- (A) Resulting Alternative Route Segment Label
- (A) Preliminary Alternative Route Segment Label Shown at Open House Meeting
- Habitable Structure within 300 Feet of a Primary Segment
- Parcel Boundary
- Local Road
- River or Stream
- 10 foot Contour

6/15/2020

Scenic Loop 138 kV Transmission Line And Substation Project

Figure 6-5

Realignment of 15 Following the Open House Meeting

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Feet

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