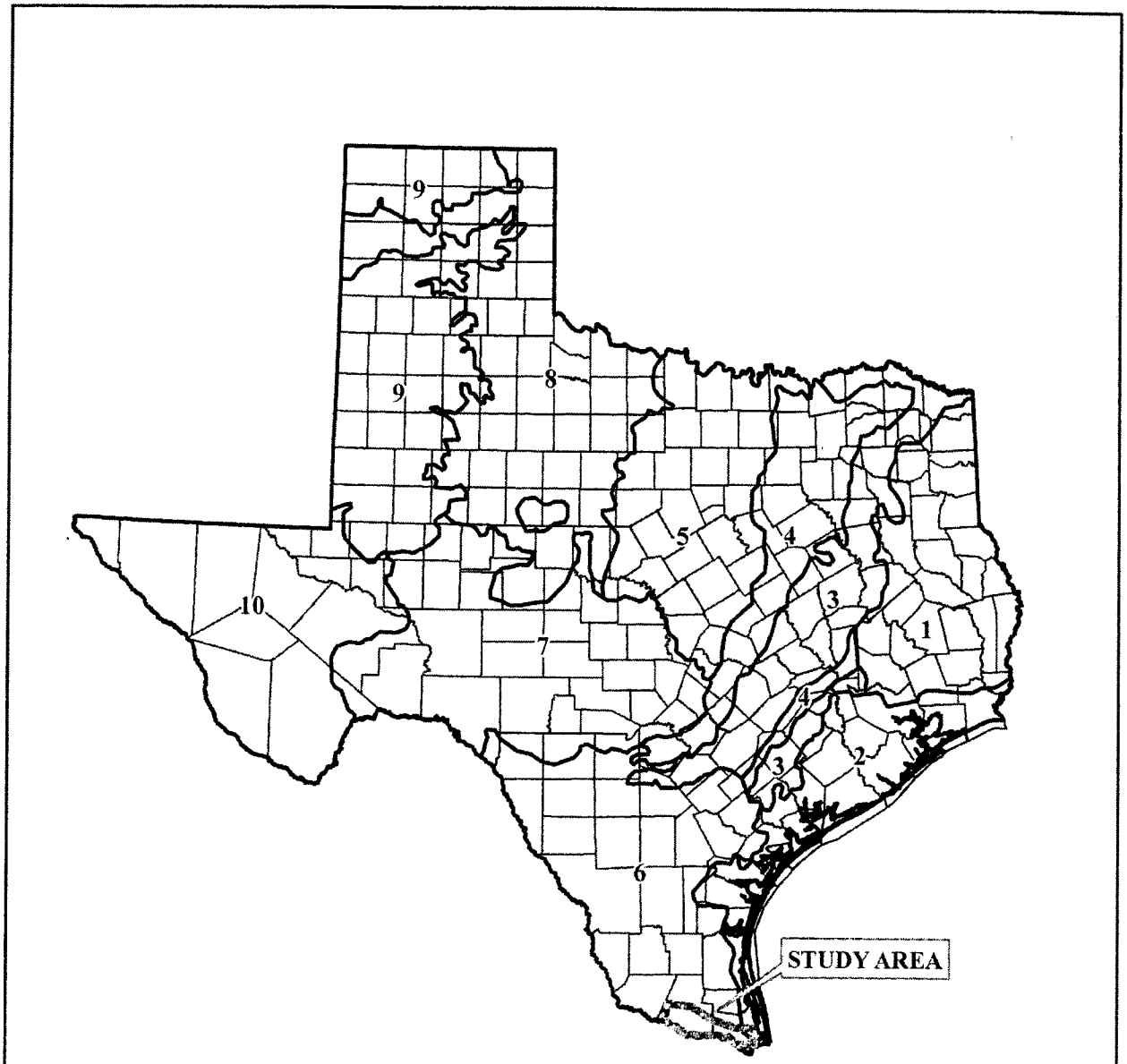


N

0 30 60 120 180 240

Miles

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

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

North Edinburg - Loma Alta
345 kV Transmission Line Project

Figure 2-4
Location of Study Area In Relation to the Vegetational Areas of Texas

ETT Electric Transmission Texas
Date 1/10/2013

Sharyland Utilities

Vegetation in the Laguna Madre Barrier Islands and Coastal Marshes ecoregion may include marsh cordgrass (*Spartina patens*), gulf paspalum (*Paspalum monstachyum*), bulrush (*Scirpus* spp.), and cattails (*Typha* spp.).

Riparian vegetation located within or adjacent to the surface waters within the study area includes species such as sugar hackberry, huisache (cedar elm), and Mexican ash (Griffith et al. 2007). Salt cedar (*Tamarix ramosissima*) has invaded many riparian areas within the region.

2.6.4.3 Wetlands

Mapped wetlands information was incorporated for the study area from the USFWS NWI mapper (USFWS 2012b). NWI maps are based on topography and interpretation of infrared satellite data and color aerial photographs and are classified under the Cowardian System (1979). Mapped wetlands types identified within the study area include palustrine forested (PFO), palustrine shrub/scrub (PSS), palustrine emergent (PEM), and estuarine emergent (E2EM). Within the study area the PFO and PSS wetland types were combined and were located within or bordering resacas and/or the Rio Grande. Emergent wetlands were also mapped associated with these features and extensively mapped within the eastern extent of the study area north of the Brownsville Ship Channel. Emergent estuarine wetlands are mapped associated with the Goose Island and San Martin Lake area (USFWS 2012b).

Wetland vegetation within the palustrine emergent areas typically includes a variety of bulrushes and sedges including California bulrush (*Scirpus californicus*), Olney bulrush (*Scirpus americanus*), American bulrush (*Scirpus pungens*), spikerushes (*Eleocharis* spp.), flatsedges (*Cyperus* spp.), cattails, white-topped sedges (*Rhynchospora* spp.), paspalums (*Paspalum* spp.), Gulf cordgrass (*Spartina spartinae*), common reed (*Phragmites australis*), giant reed (*Arundo donax*), and other water-tolerant grasses.

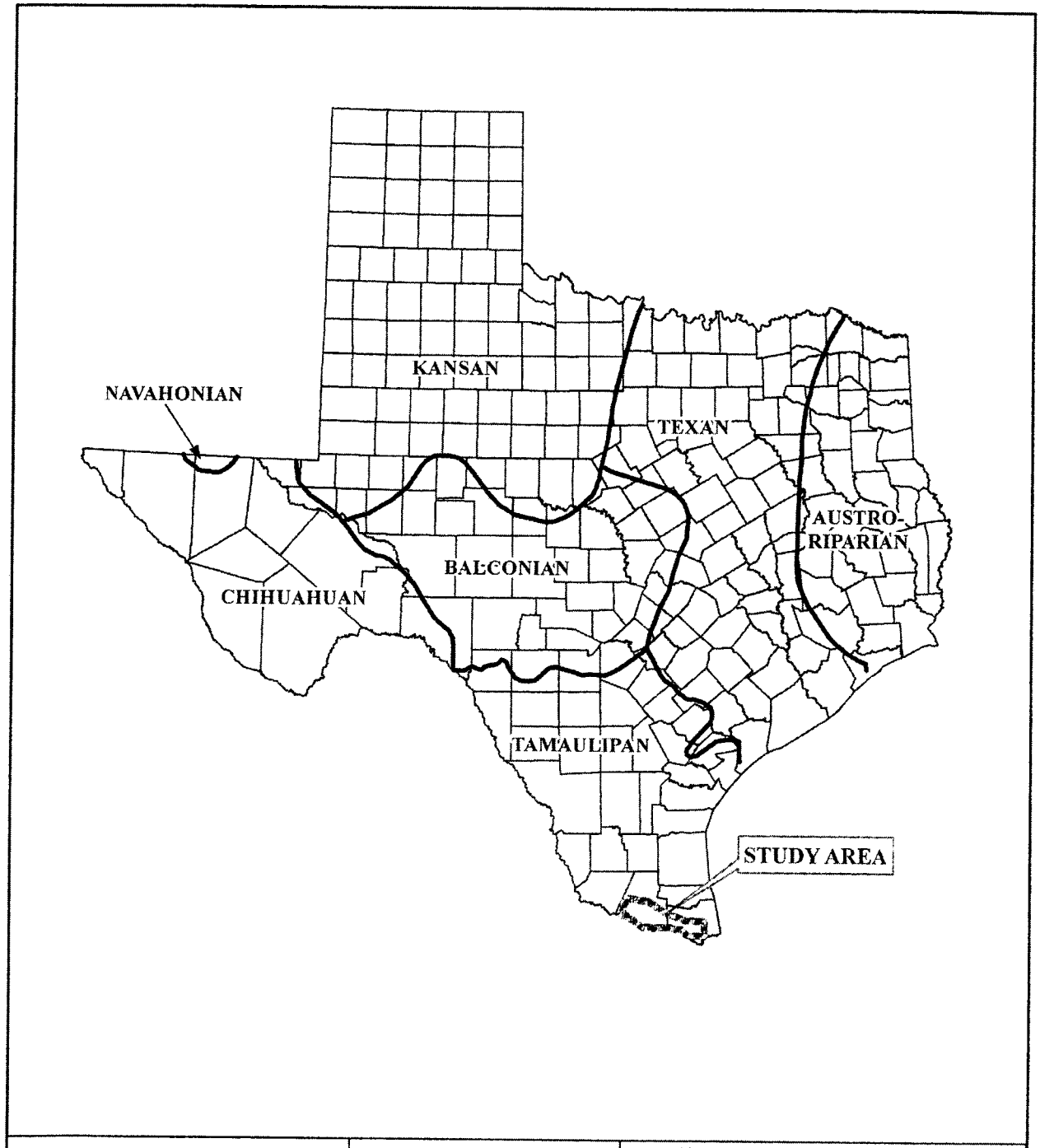
2.6.4.4 Wildlife and Fisheries

Wildlife

The study area is located within the Tamaulipan Biotic Province (see Figure 2-5) as described by Blair (1950). At the time of this publication, species diversity within the Tamaulipan Biotic Province was noted to include 18 different anurans (frogs and toads), three urodeles (salamanders and newts), 29 snake species, 22 lizards, six land turtles, and 58 species of mammals. Bird species occurring within the study area include resident and summer/winter resident migratory species.

Amphibians

Amphibian species (frogs, toads, salamanders, and newts) that might occur within the study area are listed in Table 2-12 (Texas Cooperative Wildlife Collection [TCWC] 2013; Dixon 2000). Frogs and toads might occur in all vegetation types while salamanders and newts are typically restricted to moist or hydric habitats.



0 30 60 120 180 240
Miles

Source Blair 1950 modified

Legend

Biotic Province Boundary

County Boundary

North Edinburg - Loma Alta
345 kV Transmission Line Project

Figure 2-5
Location of Study Area
In Relation to the
Biotic Provinces
of Texas

ETT Electric Transmission Texas
Date 1/10/2013

Sharyland Utilities

TABLE 2-12 AMPHIBIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Frogs/Toads	
American bullfrog	*Lithobates catesbeianus*
Cane toad	*Rhinella marina*
Couch's spadefoot	*Scaphiopus couchi*
Eastern cricket frog	*Acris crepitans crepitans*
Eastern green toad	*Anaxyrus debilis debilis*
Green tree frog	*Hyla cinerea*
Gulf Coast toad	*Ollotis nebulifer*
Hurter's spadefoot	*Scaphiopus hurterii*
Mexican tree frog	*Smilisca baudinii*
Plains spadefoot	*Spea bombifrons*
Rio Grande chirping frog	*Eleutherodactylus cystignathoides campi*
Rio Grande leopard frog	*Lithobates berlandieri*
Sheep frog	*Hypopachus variolosus*
Spotted chorus frog	*Pseudacris clarkii*
Texas toad	*Anaxyrus speciosus*
Western narrowmouth toad	*Gastrophryne olivacea*
White-lipped frog	*Leptodactylus fragilis*
Woodhouse's toad	*Bufo woodhousii*
Salamander/Newt	
Barred tiger salamander	*Ambystoma mavortium*
Black-spotted newt	*Notophthalmus meridionalis*
Rio Grande lesser siren	*Siren intermedia*

Sources: TCWC 2013, Dixon 2000.

Reptiles

Reptiles (turtles, lizards, and snakes) that might occur in the study area are listed in Table 2-13 (TCWC 2013 and Dixon 2000). These include those species that are more commonly observed near water (e.g., aquatic turtles) and those that are more common in terrestrial habitats.

TABLE 2-13 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Turtles	
Ornate box turtle	*Terrapene ornata ornata*
Red-eared slider	*Trachemys scripta elegans*
Rio Grande cooter	*Pseudemys gorzugi*
Texas spiny soft-shelled turtle	*Apalone spinifera emoryi*
Texas tortoise	*Gopherus berlandieri*
Yellow mud turtle	*Kinosternon flavescens flavescens*
Crocodilian	
American alligator	*Alligator mississippiensis*
Lizards	
Blue spiny lizard	*Sceloporus cyanogenys*
Brown anole	*Anolis sagrei*
Eastern six-lined racerunner	*Aspidoecelis sexlineata sexlineata*
Great plains skink	*Plestidon obsoletus*
Green anole	*Anolis carolinensis*
Laredo striped whiptail	*Aspidoscelis laredoensis*

TABLE 2-13 REPTILIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Little brown skink	*Scincella lateralis*
Long-lined skink	*Plestidon tetragrammus tetragrammus*
Mediterranean gecko	*Hemidactylus turcicus turcicus*
Mesquite lizard	*Sceloporus grammicus microlepidotus*
Northern keeled earless lizard	*Holbrookia propinqua propinqua*
Prairie lizard	*Sceloporus consobrinus*
Reticulate collared lizard	*Crotaphytus reticulatus*
Texas banded gecko	*Coleonyx brevis*
Texas greater earless lizard	*Cophosaurus texanus texanus*
Texas horned lizard	*Phrynosoma cornutum*
Texas rose-bellied lizard	*Sceloporus variabilis marmoratus*
Texas spiny lizard	*Sceloporus olivaceus*
Texas spotted whiptail	*Aspidoscelis gularis gularis*
Texas tree lizard	*Urosaurus ornatus ornatus*
Western slender glass lizard	*Ophisaurus attenuatus*
Western spiny-tailed iguana	*Ctenosaura pectinata*
Snakes	
Black-striped snake	*Coniophanes imperialis imperialis*
Bullsnake	*Pituophis catenifer sayi*
Cat-eyed snake	*Leptodeira septentrionalis*
Desert kingsnake	*Lampropeltis getula splendida*
Desert massasauga	*Sistrurus catenatus edwardsii*
Diamond-backed watersnake	*Nerodia rhombifer rhombifer*
Florida watersnake	*Nerodia fasciata pictiventris*
Gulf Coast ribbonsnake	*Thamnophis proximus orarius*
Great plains ratsnake	*Pantherophis emoryi*
Long-nosed snake	*Rhinocheilus lecontei*
Mexican hog-nosed snake	*Heterodon kennerlyi*
Mexican milksnake	*Lampropeltis triangulum annulata*
Mexican racer	*Coluber constrictor oaxaca*
Northern speckled racer	*Drymobius margaritiferus margaritiferus*
Plains black-headed snake	*Tantilla nigriceps*
Plains threadsnake	*Leptotyphlops dulcis dulcis*
Prairie kingsnake	*Lampropeltis calligaster calligaster*
Rough greensnake	*Opheodrys aestivus*
Ruthven's whipsnake	*Coluber schotti ruthveni*
Southern groundsnake	*Sonora semiannulata taylori*
Texas coralsnake	*Micrurus tener*
Texas glossy snake	*Arizona elegans arenicola*
Texas indigo snake	*Drymarchon melanurus erebennus*
Texas nightsnake	*Hypsiglena texana jani*
Texas patch-nosed snake	*Salvadora grahamiae lineate*
Texas ratsnake	*Elaphe obsoletus*
Texas scarletsnake	*Cemophora coccinea lineri*
Western coachwhip	*Coluber flagellum testaceus*
Western diamond-backed rattlesnake	*Crotalus atrox*

Sources: TCWC 2013; Dixon 2000.

Birds

Numerous avian species might be present within the study area as year-round residents (see Table 2-14), winter residents (see Table 2-15) or summer residents (see Table 2-16) (Lockwood and Freeman 2004). Winter and summer resident species migrate to the area for nesting (spring/summer) or to overwinter. Both the Central and Mississippi flyways funnel through the southern tip of Texas and many species of birds reach their extreme southernmost range during winter migration and northernmost range during their fall migrations in this region. Nearly 500 bird species, including neo-tropical migratory birds, shorebirds, raptors, and waterfowl, can be located in the region, making the LRGV a popular area for birding. The likelihood for occurrence of each bird species within the study area will depend upon the availability of suitable habitat and the season.

TABLE 2-14 RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Altamira oriole	*Icterus gularis*
American coot	*Fulica americana*
Anhinga	*Anhinga anhinga*
Aplomado falcon	*Falco femoralis*
Ash-throated flycatcher	*Myiardus cinerascens*
Audubon's oriole	*Icterus graduacauda*
Barn owl	*Tyto alba*
Bewick's wren	*Thryomanes bewickii*
Black-bellied whistling duck	*Dendrocygna autumnalis*
Black-chinned hummingbird	*Archilochus alexandri*
Black-crested titmouse	*Baeolophus atricristatus*
Black-crowned night heron	*Nycticorax nycticorax*
Black-necked stilt	*Himantopus mexicanus*
Black rail	*Laterallus jamaicensis*
Black-throated sparrow	*Amphispiza bilineata*
Black skimmer	*Rycnchops niger*
Black vulture	*Coragyps atratus*
Bronzed cowbird	*Molothrus aeneus*
Brown-headed cowbird	*Molothrus ater*
Cactus wren	*Campylorhynchus brunneicapillus*
Carolina wren	*Thryothorus ludovicianus*
Caspian tern	*Hydroprogne caspia*
Cassin's sparrow	*Peucaea cassinii*
Cattle egret	*Bubulcus ibis*
Cave swallow	*Petrochelidon fulva*
Clapper rail	*Rallus longirostris*
Clay-colored thrush	*Turdus grayi*
Common ground-dove	*Columbina passerina*
Common moorhen	*Gallinula galeata*
Common pauraque	*Nyctidromus albicollis*
Common yellowthroat	*Geothlypis trichas*
Cooper's hawk	*Accipiter cooperii*
Couch's kingbird	*Tyrannus couchii*
Crested caracara	*Caracara cherivay*
Curve-billed thrasher	*Toxostoma curvirostre*
Eastern meadowlark	*Sturnella magna*

TABLE 2-14 RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Eastern screech owl	*Megascops asio*
Eurasian collared-dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Ferruginous pygmy-owl	*Glaucidium brasilianum*
Forster's tern	*Sterna forsteri*
Golden-fronted woodpecker	*Melanerpes aurifrons*
Gray hawk	*Asturina nitidus*
Great blue heron	*Ardea herodias*
Great egret	*Ardea alba*
Great horned owl	*Bubo virginianus*
Greater roadrunner	*Geococcyx californianus*
Great kiskadee	*Pitangus sulphuratus*
Great-tailed grackle	*Quiscalus mexicanus*
Green heron	*Butorides virescens*
Green jay	*Cyanocorax yncas*
Green kingfisher	*Chloroceryle americana*
Green parakeet	*Aratinga holochlora*
Gull-billed tern	*Gelochelidon nilotica*
Harris's hawk	*Parabuteo unicinctus*
Hooded oriole	*Icterus cucullatus*
Hook-billed kite	*Chondrohierax uncinatus*
Horned lark	*Eremophila alpestris*
House sparrow	*Passer domesticus*
Inca dove	*Columbina inca*
Killdeer	*Charadrius vociferus*
King rail	*Rallus elegans*
Ladder-backed woodpecker	*Picoides scalaris*
Lark sparrow	*Chondestes grammacus*
Laughing gull	*Leucophaeus atricilla*
Least grebe	*Tachybaptus dominicus*
Lesser goldfinch	*Spinus psaltria*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed thrasher	*Toxostoma longirostre*
Mottled duck	*Anas fulviqula*
Mourning dove	*Zenaida macroura*
Neotropical cormorant	*Phalacrocorax brasilianus*
Northern beardless-tyrannulet	*Camptostoma imberbe*
Northern bobwhite	*Colinus virginianus*
Northern cardinal	*Cardinalis cardinalis*
Northern mockingbird	*Mimus polyglottos*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Olive sparrow	*Arremonops rufivirgatus*
Pied-billed grebe	*Podilymbus podiceps*
Plain chachalaca	*Ortalis vetula*
Pyrrhuloxia	*Cardinalis sinnuatus*
Red-crowned parrot	*Amazona viridigenalis*
Red-winged blackbird	Agelaius phoeniceus
Ringed kingfisher	*Megaceryle torquata*

TABLE 2-14 RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Rock pigeon	*Columba livia*
Roseate spoonbill	*Platalea ajaja*
Royal tern	*Thalasseus maximus*
Sandwich tern	*Thalasseus sandvicensis*
Seaside sparrow	*Ammodramus maritimus*
Snowy egret	*Egretta thula*
Tricolored heron	*Egretta tricolor*
Tropical kingbird	*Tyrannus melancholicus*
Tropical parula	*Setophaga pitiayumi*
Turkey vulture	*Cathartes aura*
Verdin	*Auriparus flaviceps*
Vermilion flycatcher	*Pyrocephalus rubinus*
White-eyed vireo	*Vireo griseus*
White-faced ibis	*Plegadis chihi*
White ibis	*Eudocimus albus*
White-tailed hawk	*Bueo albicaudatus*
White-tailed kite	*Elanus leucurus*
White-tipped dove	*Leptotila verreauxi*
White-winged dove	*Zenaida asiatica*
Wild turkey	*Meleagris gallopovo*
Willet	*Tringa semipalmata*
Wood duck	*Aix sponsa*

Source: Lockwood and Freeman 2004.

TABLE 2-15 MIGRANT WINTER RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
American avocet	*Recurvirostra americana*
American bittern	*Botaurus lentiginosus*
American goldfinch	*Spinus tristis*
American kestrel	*Falco sparverius*
American pipit	*Anthus rubescens*
American robin	*Turdus migratorius*
American white pelican	*Pelecanus erythrorhynchos*
American wigeon	*Anas americana*
Belted kingfisher	*Megaceryle alcyon*
Black-and-white warbler	*Mniotilta varia*
Black-legged kittiwake	*Rissa tridactyla*
Black scoter	*Melanitta americana*
Black-throated green warbler	*Setophaga virens*
Black-throated gray warbler	*Setophaga nigrescens*
Blue-gray gnatcatcher	*Polioptila caerulea*
Blue-headed vireo	*Vireo solitarius*
Blue winged teal	*Anas discors*
Bonaparte's gull	*Chroicophalus philadelphia*
Brewer's blackbird	*Euphagus cyanocephalus*
Bufflehead	*Bucephala albeola*
Burrowing owl	*Athene cunicularia*

TABLE 2-15 MIGRANT WINTER RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
California gull	*Laurus californicus*
Canada goose	*Branta canadensis*
Canvasback	*Aythya valisineria*
Cedar waxwing	*Bombycilla cedrorum*
Chipping sparrow	*Spizella passerina*
Cinnamon teal	*Anas cyanoptera*
Clay-colored sparrow	*Spizella pallida*
Common goldeneye	*Bucephala clanqula*
Common loon	*Gavia immer*
Common black-hawk	*Buteogallus anthracinus*
Double-crested cormorant	*Phalacrocorax auritus*
Dunlin	*Calidris alpina*
Eared grebe	*Podiceps nigricollis*
Eastern bluebird	*Sialia sialis*
Eastern phoebe	*Sayornis phoebe*
Field sparrow	*Spizella pusilla*
Gadwall	*Anas strepera*
Glaucous gull	*Larus hyerboreus*
Grasshopper sparrow	*Ammodramus savannarum*
Gray catbird	*Dumetella carolinensis*
Greater scaup	*Aythya marila*
Greater yellowlegs	*Tringa melanoleuca*
Greater white-fronted goose	*Anser albifrons*
Green-winged teal	*Anas crecca*
Hermit thrush	*Catharus guttatus*
Herring gull	*Larus argentatus*
Hooded merganser	*Lophodytes cucullatus*
House wren	*Tryglodytes aedon*
Lark bunting	*Calamospiza melanocorys*
Le Conte's sparrow	*Ammodramus leconteii*
Least sandpiper	*Calidris minutilla*
Lesser black-backed gull	*Larus fuscus*
Lesser scaup	*Aythya affinis*
Lesser yellowlegs	*Tringa flavipes*
Lincoln's sparrow	*Melospiza lincolnii*
Little blue heron	*Egretta caerulea*
Long-billed curlew	*Numenius americanus*
Long-billed dowitcher	*Limnodromus scolopaceus*
Long-tailed duck	*Clanqula hyemalis*
Marbled godwit	*Limosa fedoa*
Marsh wren	*Cistothorus palustris*
Merlin	*Falco columbarius*
Nashville warbler	*Oreothlypis ruficapilla*
Nelson's sparrow	*Ammodramus nelsoni*
Northern flicker	*Colaptes auratus*
Northern harrier	*Circus cyaneus*
Northern parula	*Setophaga americana*
Northern pintail	*Anas acuta*

TABLE 2-15 MIGRANT WINTER RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Northern waterthrush	*Parkesia noveboracensis*
Orange-crowned warbler	*Oreothlypis celata*
Osprey	*Pandion haliaetus*
Ovenbird	*Seiurus aurocapilla*
Peregrine falcon	*Falco peregrinus*
Pine siskin	*Spinus pinus*
Pine warbler	*Septophaga pinus*
Piping plover	*Charadrius melodus*
Red-breasted merganser	*Mergus serrator*
Redhead	*Aythya americana*
Red knot	*Calidris canutus*
Red-shouldered hawk	*Buteo lineautus*
Red-tailed hawk	*Buteo jamaicensis*
Ring-billed gull	*Larus delawarensis*
Ring-necked duck	*Aythya collaris*
Ross's goose	*Chen rossii*
Ruby-crowned kinglet	*Regulus calendula*
Ruddy duck	*Oxyura jamaicensis*
Ruddy turnstone	*Arenaria interpres*
Rufous hummingbird	*Selasphorus rufus*
Sanderling	*Calidris alba*
Sandhill crane	*Grus canadensis*
Savannah sparrow	*Passerculus sandwichensis*
Say's phoebe	*Sayornis saya*
Semipalmated plover	*Charadrius semipalmatus*
Sharp-shinned hawk	*Accipiter striatus*
Short-billed dowitcher	*Limnodromus griseus*
Short-eared owl	*Asio flammeus*
Snow goose	*Chen caerulescens*
Solitary sandpiper	*Tringa solitaria*
Sora	*Porzana carolina*
Spotted sandpiper	*Actitis macularius*
Spotted towhee	*Pipilo maculatus*
Sprague's pipit	*Anthus spragueii*
Stilt sandpiper	*Calidris himantopus*
Summer tanager	*Piranga rubra*
Surf scoter	*Melinitta perspicillata*
Swamp sparrow	*Melospiza georgiana*
Tree swallow	*Tachycineta bicolor*
Vesper sparrow	*Pooecetes gramineus*
Virginia rail	*Rallus limicola*
Western meadowlark	*Sturnella neglecta*
Western sandpiper	*Calidris mauri*
White-crowned sparrow	*Zonotrichia leucophrys*
White-winged scoter	*Melanitta fusca*
Wilson's snipe	*Gallinago delicata*
Wilson s warbler	*Cardellina pusilla*
Yellow-breasted chat	*Icteria virens*

TABLE 2-15 MIGRANT WINTER RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Yellow-bellied sapsucker	*Sphyrapicus varius*
Yellow-rumped warbler	*Setophaga coronata*
Yellow-throated warbler	*Setophaga dominica*
Zone-tailed hawk	*Buteo albonotatus*

Source: Lockwood and Freeman 2004.

TABLE 2-16 MIGRANT SUMMER RESIDENT BIRD SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Bank swallow	*Ripana riparia*
Barn swallow	*Hirundo rustica*
Blue grosbeak	*Passerina caerulea*
Botteri's sparrow	*Peucaea botteri*
Brown-crested flycatcher	*Myiarchus tyrannulus*
Buff-bellied hummingbird	*Amazilia yucatanensis*
Chimney swift	*Chaetura pelagica*
Cliff swallow	*Petrochelidon pyrrhonota*
Common nighthawk	*Chordeiles minor*
Dickcissel	*Spiza americana*
Elf owl	*Micranthene whitneyi*
Fulvous whistling-duck	*Dendrocygna bicolor*
Groove-billed ani	*Crotophaga sulcirostris*
Least bittern	*Ixobrychus exilis*
Least tern	*Sternula antillarum*
Lesser nighthawk	*Chordeiles acutipennis*
Painted bunting	*Passerina ciris*
Purple gallinule	*Porphyrio martinica*
Purple martin	*Progne subis*
Scissor-tailed flycatcher	*Tyrannus forficatus*
Snowy plover	*Charadrius nivosus*
Varied bunting	*Passerina versicolor*
Western kingbird	*Tyrannus verticalis*
Wilson's plover	*Charadrius wilsonia*
Yellow-billed cuckoo	*Coccyzus americanus*
Yellow-crowned night heron	*Nyctanassa violacea*

Source: Lockwood and Freeman 2004

Mammals

Mammals that might occur in the study area are listed in Table 2-17 (Schmidly 2004). The occurrence of each species within the study area is dependent on availability of suitable habitat.

TABLE 2-17 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
American badger	*Taxidea taxus*
American beaver	*Castor canadensis*
Big free-tailed bat	*Nyctinmops macrotis*
Black-tailed jackrabbit	*Lepus californicus*
Bobcat	*Lynx rufus*

TABLE 2-17 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Brazilian free-tailed bat	*Tadarida brasiliensis*
Cave myotis bat	*Myotis velifer*
Collared peccary	*Tayassu tajacu*
Common gray fox	*Urocyon cinereoargenteus*
Common raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Desert cottontail	*Sylvilagus audubonii*
Desert shrew	*Notiosorex crawfordi*
Eastern cottontail	*Sylvilagus floridanus*
Eastern fox squirrel	*Sciurus niger*
Eastern hog-nosed skunk	*Conepatus leuconotus*
Eastern mole	*Scalopus aquaticus*
Eastern pipistrelle	*Pipistrellus subflavus*
Eastern red bat	*Lasiurus borealis*
Eastern spotted skunk	*Spilogale putorius*
Evening bat	*Nycticeius humeralis*
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	*Lasiurus cinereus*
House mouse	*Mus musculus*
Jaguarundi	*Felis yaguarondi*
Least shrew	*Cryptotis parva*
Long-tailed weasel	*Mustela frenata*
Marsh rice rat	*Oryzomys palustris*
Merriam's pocket mouse	*Perognathus merriami*
Mexican ground squirrel	*Spermophilus mexicanus*
Mexican long-tongued bat	*Choeronycteris mexicana*
Mexican spiny pocket mouse	*Lyomys irroratus*
Mountain lion	*Felis concolor*
Nine-banded armadillo	*Dasypus novemcinctus*
Northern grasshopper mouse	*Onychomys leucogaster*
Northern pygmy mouse	*Baiomys taylori*
Northern yellow bat	*Lasiurus intermedius*
Norway rat	*Rattus norvegicus*
Nutria	*Myocastor coypus*
Ocelot	*Felis pardalis*
Ord's kangaroo rat	*Dipodomys ordii*
Ringtail	*Bassariscus astutus*
Roof rat	*Rattus rattus*
Southern plains woodrat	*Neotoma micropus*
Southern yellow bat	*Lasiurus ega*
Spotted ground squirrel	*Spermophilus spilosoma*
Striped skunk	*Mephitis mephitis*
Texas pocket gopher	*Geomys personatus*
Virginia opossum	*Didelphis virginiana*

TABLE 2-17 MAMMALIAN SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
White-footed mouse	*Peromyscus leucopus*
White-nosed coati	*Nasua narica*
White-tailed deer	*Odocoileus virginianus*
Yellow-faced pocket gopher	*Cratogeomys castanops*

Source: Schmidly 2004.

Fisheries

In Texas, the divisions of the biotic provinces were separated on the basis of terrestrial vertebrate distributions; however; the distribution of freshwater fishes generally corresponds with the terrestrial province boundaries (Hubbs 1957). Areas showing the greatest deviation from this general rule include northeast Texas and the coastal zone. Aquatic habitats within the study area are associated with the Rio Grande, numerous resacas, reservoirs and smaller lakes, streams and ponds. Fisheries might also be associated with the irrigation and drainage canals located within the study area. While freshwater fish species will occur within the majority of the surface waters within the study area, brackish water and/or saltwater species may occur at coastal locations (e.g., Brownsville Ship Channel and San Martin Lake).

The intermittent flowing tributary streams support aquatic species primarily adapted to ephemeral pool habitats. Because the streams consist of small headwater drainages, persistent flow is unlikely to be sufficient to support any substantial stream fishery assemblage. Aquatic species in this habitat type are typically adapted to rapid dispersal and life cycle completion within in pool habitats typically having fine-grained substrates. In stream reaches dominated by scoured, sandy-clay bottoms, accumulations of woody debris of leaf pack provide the most important feeding and refuge areas for invertebrates and forage fish. The 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 aquatic trophic levels.

The perennial streams and larger lakes provide consistent aquatic habitat for all trophic levels with fish the most prominent. The relatively stable water levels of the reservoirs and the constant pools and flow of the streams facilitate stable population growth. Species with flowing water or pooled area habitat requirements will utilize perennial streams and those adapted for deeper waters will utilize the reservoirs, smaller lakes and pond environments. The larger populations of fish also attract fish eating bird species. Table 2-18 indicates the fish species potentially occurring within the study area (Thomas et al. 2007).

TABLE 2-18 FISH SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Alligator gar	*Atractoteus spatula*
Amazon molly	*Poecilia formosa*
American eel	*Anguilla rostrata*
Black bullhead	*Amelurus melas*
Black crappie	*Poximus nigromaculatus*
Blacktail shiner	*Cyprinella venusta*
Blue catfish	*Ictalurus furcatus*
Bluegill	*Lepomis macrochirus*

TABLE 2-18 FISH SPECIES POTENTIALLY OCCURRING WITHIN THE STUDY AREA

COMMON NAME	SCIENTIFIC NAME
Blue sucker	*Cycleptus elongatus*
Blue tilapia	*Oreochromis aurea*
Bullhead minnow	*Pimephales vigilax*
Channel catfish	*Ictalurus punctatus*
Common carp	*Cyprinus carpio*
Fathead minnow	*Pimephales promelas*
Flathead catfish	*Pylodictis olivaris*
Freshwater drum	*Aplodinotus grunniens*
Ghost shiner	*Notropis buchanani*
Gizzard shad	*Dorosoma cepedianum*
Golden shiner	*Notemigonus crysoleucas*
Goldfish	*Carassius auratus*
Grass carp	*Ctenopharyngodon idella*
Green sunfish	*Lepomis cyanellus*
Gulf killifish	*Fundulus grandis*
Inland silverside	*Menidia beryllina*
Largemouth bass	*Micropterus salmoides*
Longear sunfish	*Lepomis megalotis*
Longnose killifish	*Fundulus similis*
Longnose gar	*Lepisosteus oseus*
Mexican tetra	*Astyanax mexicanus*
Mountain mullet	*Agonostomus monticola*
Orangespotted sunfish	*Lepomis humilis*
Rainwater killifish	*Lucania parva*
Redbreast sunfish	*Lepomis auritus*
Redear sunfish	*Lepomis microlophus*
Red shiner	*Cyprinella lutrensis*
Redspotted sunfish	*Lepomis miniatus*
Rio Grande cichlid	*Cichlasoma cyanoguttatum*
Rio Grande shiner	*Notropis jemezanus*
Rio Grande silvery minnow	*Hybognathus amarus*
River carpsucker	*Cariodes carpio*
Rough silverside	*Membras martinica*
Sailfin molly	*Poecilia latipinna*
Sheepshead minnow	*Cyprinodon variegatus*
Smallmouth buffalo	*Ictiobus bubalus*
Speckeled chub	*Macrhybopsis aestivalis*
Striped bass	*Morone saxatilis*
Striped mullet	*Mugil cephalus*
Tamaulipas shiner	*Notropos braytoni*
Threadfin shad	*Dorosoma petenense*
Yellow bullhead	*Ameiurus natalis*
Warmouth	*Lepomis gulosus*
Western mosquitofish	*Gambusia affinis*
White bass	*Morone chrysops*
White crappie	*Poximus annularis*

Source: Thomas et al. 2007

2.6.4.5 Threatened and Endangered Species

For this routing study, emphasis was placed on obtaining documented occurrences of special status species and/or their designated critical habitat within the study area. The documented occurrences of species of concern and/or other unique vegetative communities within the study area were also reviewed. Special status species include those listed by the USFWS as threatened, endangered, or candidate; and those species listed by TPWD as threatened or endangered. Species of concern include those listed as rare by TPWD. A GIS data layer of historical known occurrences for listed species and/or sensitive vegetative communities was obtained from the TXNDD (2012). For the purpose of this study, the TXNDD information is not used as a substitute for a presence/absence survey, but as an indication of previous occurrences within suitable habitat for the species.

The USFWS regulates activities affecting plants and animals designated as endangered or threatened under the ESA (16 U.S.C. § 1531 et seq.). By definition, an endangered species is in danger of extinction throughout all or a significant portion of its range. A threatened species is defined as likely to become endangered within the near foreseeable future throughout all or a significant portion of its range. Candidate species are those that have sufficient information on their biological vulnerability and threat(s) to support listing as threatened or endangered and might be proposed for listing in the near foreseeable future. The ESA also provides for the conservation of "designated critical habitat," which is defined by the USFWS 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. USFWS data regarding designated critical habitat areas were reviewed (USFWS 2013b).

The TPWD also regulates plants and animals designated as endangered or threatened (Chapters 67 and 68 of the Texas Parks and Wildlife Code (TPWC) and 31 TEX. ADMIN. CODE §§ 65.171 - 65.176; and Chapter 88 of the TPWC and 31 TEX. ADMIN. CODE §§ 69.01 - 69.9). Under Texas law, endangered animal species are those deemed to be "threatened with statewide extinction" and endangered plant species are those "in danger of extinction throughout all or a significant portion of its range." Threatened animal and plant species are those deemed to be likely to become endangered within the foreseeable future.

The USFWS and TPWD maintain listings by county for all special status species pursuant to federal and state law (USFWS 2013; TPWD 2013e). A review of each threatened and endangered species listed within the study area, as well as species of concern, is provided in the sections that follow.

Threatened and Endangered Plant Species

There are four federal/state plant species listed as endangered within the study area (see Table 2-19). A review of each plant's status, brief life history and status of documented occurrence within the study area was completed and is summarized below.

TABLE 2-19 LISTED THREATENED AND ENDANGERED PLANTS FOR HIDALGO AND CAMERON COUNTIES, TEXAS

PLANT SPECIES		COUNTY LISTED		LEGAL STATUS	
Common Name	Scientific Name	Hidalgo	Cameron	USFWS[1]	TPWD[2]
South Texas ambrosia	*Ambrosia cheiranthifolia*		X	E	E
Star cactus	*Astrophytum asterias*	X	X	E	E
Texas ayenia	*Ayenia limitaris*	X	X	E	E
Walker's manioc	*Manihot walkerae*	X		E	E

Notes: Legal Status abbreviation: E - Endangered.
Sources: [1]USFWS 2013; [2]TPWD 2013e

South Texas ambrosia
South Texas ambrosia (*Ambrosia cheiranthifolia*) inhabits grasslands and mesquite dominated shrublands on various soil types primarily on the Beaumont formation within the coastal plains. The plant flowers from July through November and has characteristic gray foliage during the growing season (Poole et al. 2007). Threats to the species include agricultural conversion of coastal prairies and invasive grasses. The species has been recorded within Cameron County from historical records (Richardson and King 2011; TXNDD 2012).

Star cactus
Star cactus (*Astrophytum asterias*) resembles a sand dollar in shape with a small, spineless, dull brown to greenish, dome- or disk-shape. The cactus blooms from March through May with yellow flowers with orange centers. Fruits are green, pink, or grayish-red oval, fleshy berries covered with dense wooly hairs. During dry periods, plants become brown and can sink into or below ground. Star cactus occurs on gentle slopes and flats between shrub thickets, among sparse, low shrubs, grasses, and halophytic plants within mesquite grasslands and mesquite-blackbrush thorn shrublands (Poole et al. 2007). Threats to the species include habitat destruction, collecting and foraging by cottontail rabbits (Richardson and King 2011). No occurrences of the star cactus have been recorded within the study area (TXNDD 2012).

Texas ayenia
Texas ayenia (*Ayenia limitaris*) is a thornless, medium-sized shrub that can flower year-round with flowers comprised of five green, pink, or cream colored petals. Fruits are round, five-celled capsules covered with short, curvy, sharp prickles. Texas ayenia grows in partially-shaded sites in shrubby savannas and on the edges of brush thickets and arroyos. Plants occur under or among taller shrubs in subtropical thorn woodland or tall shrubland on loamy soils (Hidalgo and Wilacy Series) of the Rio Grande Delta. Associated shrubs and trees include Texas ebony, coma (*Sideroxylon celastrinum*) and anacua, Vasey's adelia (*Adelia vaseyi*), elbowbush (*Forestiera angustifolia*), crucita (*Chromolaena odorata*), blue mist-flower (*Tamaulipa azurea*), and amantillo (*Abutilon trisulcatum*) (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Walker's manioc
Walker's manioc (*Manihot walkerae*) is a perennial, many-branched, cyanide-smelling forb that grows up to six feet tall and flowers from April to September with male and female flowers occurring on the same plant. It grows in sandy, calcareous soil, shallowly overlying caliche and conglomerate on xeric slopes and uplands. Woody plant associates include calderona, blackbrush, Texas sage, Mission fiddlewood (*Citharexylum spathulatum*), coyotillo (*Karwinskia humboldtiana*), and tasajillo (*Opuntia leptocaulis*) (Poole et al. 2007). The carrot-shaped tubers are often eaten by feral hogs

(Richardson and King 2011). No occurrences of this species have been documented within the study area (TXNDD 2012).

Plant Species of Concern

There are 12 plant species listed as species of concern within the study area, as summarized in Table 2-20. A brief review of each plants life history and documented occurrence within the study area was completed and is summarized below.

TABLE 2-20 TPWD PLANT SPECIES OF CONCERN FOR HIDALGO AND CAMERON COUNTIES, TEXAS

PLANT SPECIES		COUNTY LISTED	
Common Name	Scientific Name	Hidalgo	Cameron
Bailey's ballmoss	*Tillandsia baileyi*	X	X
Chihuahua balloon-vine	*Cardiospermum dissectum*	X	
Falfurrias milkvine	*Matelea radiata*	X	
Gregg's wild-buckwheat	*Eriogonum greggii*	X	
Green Island echeandia	*Echeandia texensis*		X
Lila de los llanos	*Echeandia chandleri*		X
Mexican mud-plantain	*Heteranthera mexicana*	X	X
Plains gumweed	*Grindelia oopepis*		X
Runyon's cory cactus	*Coryphantha macromeris var. runyonii*	X	X
Runyon's water-willow	*Justicia runyonii*	X	X
Shinner's rocket	*Thelypodiopsis shinnersii*		X
St. Joseph's staff	*Manfreda longiflora*	X	

Source: TPWD 2013

Bailey's ballmoss

Bailey's ballmoss *(Tillandsia baileyi)* is a perennial epiphytic forb on trees and tall shrubs occurring in live oak mottes on dunes and flats with in the coastal areas, though it also can be found in evergreen subtropical woodlands along resacas of the LRGV. Bailey's ballmoss produces conspicuous tubular purple flowers from April to May (Poole et al. 2007). The forb has an affinity for Texas ebony trees and a growing threat is related to the introduced fox squirrel (Richardson and King 2011). This forb species has been documented within the study area (TXNDD 2012).

Chihuahua balloon-vine

Chihuahua balloon-vine (*Cardiospermum dissectum*) is a perennial twining vine species that is normally inconspicuous in appearance but during drought conditions the leaves turn a deep reddish-purple. The plant flowers from April to September and its habitat is characterized as thorn shrublands or low woodlands on well to excessively well drained, calcareous, and sandy to gravelly soils in drier uplands of the LRGV (Poole et al. 2007). No known occurrences of this species are recorded within the study area (TXNDD 2012).

Falfurrias milkvine

Falfurrias milkvine (*Matelea radiata*) is a perennial vine that is only known from two specimens. The life history and habitat requirement of this species is poorly understood but it is believed to flower from May to June (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Gregg's wild-buckwheat
Gregg's wild-buckwheat (*Eriogonum greggii)* is a perennial forb that grows in thorn scrubland openings on calcareous flats and slopes, mixed grassland, creosote bush (*Larrea tridentate*), and saltbush communities. The plant occurs on shallow soils along xeric ridges of the Rio Grande on excessively drained, sandy soil over caliche and calcareous sandstones. This species produces yellowish white flowers with prominent reddish-brown to brown midribs and bases from February to July (Poole et al. 2007). No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

Green Island echeandia
Green Island echeandia (*Echeandia texensis*) is a member of the Lily Family which inhabits saline clay lomas along the Gulf Coast near the mouth of the Rio Grande in habitat characterized with herbaceous species with scattered brush and stunted trees or within grassy openings in sub-tropical thorn scrublands (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Lila de los llanos
Lila de los llano (*Echeandia chandleri*) is also a member of the Lily Family and typically inhabits lomas (clay hills) near the Gulf Coast within subtropical thorn shrublands or grass openings near the mouth of the Rio Grande (Poole et al. 2007). No occurrences of this species have been documented within the study area (TXNDD 2012).

Mexican mud-plantain
Mexican mud-plantain (*Heteranthera mexicana*) is an annual forb that produces mauve flowers from June to December. Habitat is characterized as wet clayey soils of resacas and ephemeral wetlands (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Plains gumweed
Plains gumweed (*Grindelia oopepis*) is endemic to the Gulf Coastal Plain of South Texas and inhabits coastal prairies often within depressional areas. The species can persist in areas where routine disturbances (mowing) occur and is observed within utility ROW and cemeteries (Poole et al. 2007). No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

Runyon's cory cactus
Runyon's cory cactus (*Coryphantha macromeris* var. *runyonii*) is a profusely branched cactus that produces low or hemispheric mounds and tuberculate branches with projecting spines. Large, bright rose-pink or magenta flowers bloom from February to September. Habitat is characterized as on gentle hills, slopes, and flats in Chihuahuan desert scrub and Tamaulipan thorn scrub (Poole et al. 2007). Occurrences of this species have been recorded within the study area (TXNDD 2012).

Runyon's water-willow
Runyon's water-willow (*Justicia runyonii*) is a perennial subshrub that produces flowers from September to November. Habitat is characterized as margins and openings of subtropical woodlands or thorn shrublands (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Shinner's rocket
Shinner's rocket (*Thelypodiopsis shinnersii*) is an annual forb that produces white flowers on racemes from March to April. Habitat is characterized as canyon sides, rocky arroyo floors, chaparral thickets, scrubs, and dry banks mostly along margins of Tamaulipan thornscrub (Poole et al. 2007). No occurrences of this species have been recorded within the study area (TXNDD 2012).

St. Joseph's staff
St. Joseph's staff (*Manfreda longiflora*) is a succulent species that has spreading green leaves with darker green or brown spots and tough, flexible teeth. White, funnel-shaped flowers bloom from September to October, and turn rose-colored with maturity. Habitat is characterized by thorn shrublands on clay slopes, dry gravelly hills or sandy prairies with soils having various concentrations of salt, caliche, sand, and gravel (Poole et al. 2007). Occurrences of this species have been documented within the study area (TXNDD 2012).

Vasey's adelia
Vasey's adelia (*Adelia vaseyi*) is a perennial shrub that flowers from January to June. It occurs in subtropical evergreen/deciduous woodlands on loamy soils of the Rio Grande Delta, but can also be found in shrublands on more xeric sandy to gravelly upland sites (Poole et al. 2007). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Sensitive Vegetation Communities
Review of TXNDD data also indicated occurrences of sensitive vegetation community types located within the study area. These include the Texas ebony-anacua series and cedar elm-sugarberry series (TXNDD 2012). Both of these communities were recorded within the study area primarily adjacent to the Rio Grande or resacas.

2.6.4.5.2 Threatened and Endangered Animal Species

Threatened and endangered species lists from the USFWS and TPWD were reviewed for both counties within the study area and the information is summarized in Table 2-21 (TPWD 2013e; USFWS 2013). There are 55 animal species that are federally or state listed, have candidate status, or have been federally delisted within the study area counties. These species are summarized below and include five fish, 13 reptiles, five amphibians, three mollusks, 22 birds, and seven mammals (see Table 2-21). A brief description of each species' life history, habitat requirements, and documented occurrences within the study area are summarized below.

TABLE 2-21 LISTED THREATENED AND ENDANGERED SPECIES FOR HIDALGO AND CAMERON COUNTIES, TEXAS

ANIMAL SPECIES		COUNTY LISTED		LEGAL STATUS	
COMMON NAME	SCIENTIFIC NAME	HIDALGO	CAMERON	USFWS[1]	TPWD[2]
Mollusks					
False spike mussel	*Quadrula mitchelli*	X	X	NL	T
Salina mucket	*Potamilus metnecktayi*	X	X	NL	T
Texas hornshell	*Popenaias popei*	X	X	C	T
Fish					
Mexican goby	*Ctenogobius claytonii*		X	NL	T
Opossum pipefish	*Microphis brachyurus*		X	NL	T
Rio Grande silvery minnow	*Hybognathus amarus*	X	X	E	T
River goby	*Awaous banana*	X	X	NL	T

TABLE 2-21 LISTED THREATENED AND ENDANGERED SPECIES FOR HIDALGO AND CAMERON COUNTIES, TEXAS

ANIMAL SPECIES		COUNTY LISTED		LEGAL STATUS	
COMMON NAME	SCIENTIFIC NAME	HIDALGO	CAMERON	USFWS[1]	TPWD[2]
Smalltooth sawfish	*Pristis pectinata*		X	E	T
Reptiles					
Green sea turtle	*Chelonia mydas*		X	E,T	T
Hawksbill sea turtle	*Eretmochelys imbricata*		X	E	E
Kemp's Ridley sea turtle	*Lepidochelys kempii*		X	E	E
Leatherback sea turtle	*Dermochelys coriacea*		X	E	E
Loggerhead sea turtle	*Caretta caretta*		X	E	T
Black-striped snake	*Coniophanes imperialis*	X	X	NL	T
Cat-eyed snake	*Leptodeira septentrionalis septentrionalis*	X	X	NL	T
Northern speckled racer	*Drymobius margaritiferus*	X	X	NL	T
Reticulate collared lizard	*Crotaphytus reticulatus*	X		NL	T
Texas horned lizard	*Phrynosoma cornutum*	X	X	NL	T
Texas indigo snake	*Drymarchon melanurus erebennus*	X	X	NL	T
Texas scarletsnake	*Cemophora coccinea lineri*		X	NL	T
Texas tortoise	*Gopherus berlandieri*	X	X	NL	T
Amphibians					
Black-spotted newt	*Notophthalmus meridionalis*	X	X	NL	T
Mexican treefrog	*Smilisca baudinii*	X	X	NL	T
Sheep frog	*Hypopachus variolosus*	X	X	NL	T
South Texas siren (large form)	*Siren sp 1*	X	X	NL	T
White-lipped frog	*Leptodactylus fragilis*	X	X	NL	T
Birds					
Brown pelican	*Pelecanus occidentalis*		X	DL	E
Cactus ferruginous pygmy-owl	*Glaucidium brasilianum cactorum*	X	X	NL	T
Common black-hawk	*Buteogallus anthracinus*	X	X	NL	T
Eskimo curlew	*Numenius borealis*		X	E	E
Gray hawk	*Asturina nitida*	X	X	NL	T
Interior least tern	*Sterna antillarum athalassos*	X	X	E	E
Northern aplomado falcon	*Falco femoralis septentrionalis*	X	X	E	E
Northern beardless-tyrannulet	*Camptostoma imberbe*	X	X	NL	T
Peregrine falcon	*Falco peregrinus*	X	X	DL	T
Piping plover	*Charadrius melodus*		X	E T	T
Red-crowned parrot	*Amazona viridigenalis*	X	X	C	
Reddish egret	*Egretta rufescens*	X	X	NL	T
Red knot	*Calidris canutus rufa*		X	C	
Rose-throated becard	*Pachyramphus aglaiae*	X	X	NL	T
Sooty tern	*Sterna fuscata*		X	NL	T
Sprague's pipit	*Anthus spragueii*	X	X	C	NL
Texas Botteri's sparrow	*Aimophila botterii texana*	X	X	NL	T
Tropical parula	*Parula pitiayumi*	X	X	NL	T
White-faced Ibis	*Plegadis chihi*	X	X	NL	T

TABLE 2-21 LISTED THREATENED AND ENDANGERED SPECIES FOR HIDALGO AND CAMERON COUNTIES, TEXAS

ANIMAL SPECIES		COUNTY LISTED		LEGAL STATUS	
COMMON NAME	SCIENTIFIC NAME	HIDALGO	CAMERON	USFWS[1]	TPWD[2]
White-tailed hawk	*Buteo albicaudatus*	X	X	NL	T
Wood stork	*Mycteria americana*	X	X	NL	T
Zone-tailed hawk	*Buteo albonotatus*	X	X	NL	T
Mammals					
Coues' rice rat	*Oryzomys couesi*	X	X	NL	T
Gulf Coast jaguarundi	*Puma yagouaroundi cacomitli*	X	X	E	E
Jaguar	*Panthera onca*	X	X	E	E
Ocelot	*Leopardus pardalis*	X	X	E	E
Southern yellow bat	*Lasiurus ega*	X	X	NL	T
West Indian manatee	*Trichechus manatus*		X	E	E
White-nosed coati	*Nasua narica*	X	X	NL	T

Notes: Legal Status abbreviations: E - Endangered, T - Threatened, DL - Federally Delisted, C - Federal Candidate, NL-Not Listed and EXT – Extirpated.
Sources: [1]USFWS 2013; [2] TPWD 2013e

USFWS Listed Species

There are 15 species (two fish, five sea turtles, four birds and four mammals) that are listed by USFWS as threatened or endangered within at least one county in the study area. These species include the Rio Grande silvery minnow (*Hybognathus amarus*), smalltooth sawfish (*Pristis pectinata*), green sea turtle (*Chelonia mydas*), hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's Ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), loggerhead sea turtle (*Caretta caretta*), Eskimo curlew (*Numenius borealis*), interior least tern (*Sterna antillarum athalassos*), northern aplomado falcon (*Falco femoralis septentrionalis)*, piping plover (*Charadrius melodus*), Gulf Coast jaguarundi (*Puma yagouaroundi cacomitli*), ocelot (*Leopardus pardalis*), West Indian manatee (*Trichechus manatus*) and the jaguar (*Panthera onca)* (USFWS 2013). USFWS listed candidate species include the Texas hornshell (*Popenaias popei*), red-crowned parrot (*Amazona viridigenalis*), red knot (*Caldris canutus rufa*) and Sprague's pipit (*Anthus spragueii*) (USFWS 2013). A brief discussion of each species' life history and habitat requirements are provided below.

Rio Grande Silvery Minnow

The Rio Grande silvery minnow is considered extirpated from most of its range, including the study area counties (Thomas et al. 2007). This minnow inhabits pools and backwaters of medium to large streams with low or moderate gradient, having mud, sand, or gravel bottoms. It ingests mud and bottom ooze for algae and other organic matter, and probably spawns on silt substrates within quiet coves. The fish historically occurred within the Rio Grande and Pecos River in Texas, and still occurs within New Mexico. It has been reintroduced to the Rio Grande at Big Bend (USFWS 2013). No occurrences of this species have been recorded in the study area (TXNDD 2012).

Smalltooth sawfish

The smalltooth sawfish historically inhabited Gulf of Mexico coastal waters from Texas to Florida, but the known population range is currently restricted to southern Florida where critical habitat has been designated. Juvenile fish inhabit coastal bays river mouths and threats to the species include commercial bycatch and habitat loss and degradation (National Marine Fisheries Service [NMFS] 2009). No occurrences of the species have been recorded within the study area (TXNDD 2012).

Sea turtles

Adult green sea turtles are herbivorous, feeding primarily on sea grasses and algae. Green sea turtles primarily use three types of habitat: beaches (for nesting), convergence zones in the pelagic (open-ocean), and benthic feeding grounds in coastal areas. Adult females migrate from foraging areas to mainland or island nesting beaches. Hatchlings swim to offshore areas feeding close to the surface on a variety of pelagic plants and animals. Once the juveniles reach a certain age/size range, they leave the pelagic habitat and travel to nearshore foraging grounds to feed on sea grasses and algae (NMFS 2012a).

The unique shape of the head of the hawksbill sea turtle (*Eretmochelys imbricata)* allows the species to feed within the holes and crevices of coral reefs, primarily on sponges and other invertebrates. Hawksbill sea turtles use different habitats at different stages of their life cycle, but are most commonly associated with healthy coral reefs. Post-hatchlings are believed to occupy the pelagic environment, taking shelter in floating algal mats and drift lines of flotsam and jetsam. Small juveniles move into coastal foraging grounds and shift from feeding primarily at the surface to feeding primarily on animals associated with coral reef environments. In the Caribbean, as hawksbills grow they begin exclusively feeding on only a few types of sponges. The ledges and caves of coral reefs also provide shelter for resting turtles. These sea turtles may also utilize rocky outcrops and high energy shoals, which are also optimum sites for sponges. They are also known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent. The primary global threat to hawksbill turtles is the degradation and loss of coral reef communities (NMFS 2012b).

Kemp's ridleys sea turtles feed primarily on swimming crabs but they also consume fish, jellyfish, and mollusks in nearshore waters. Large groups of Kemp's ridleys sea turtles nest on beaches near Rancho Nuevo, Mexico, in the state of Tamaulipas. Nesting has also occurred on beaches in Veracruz, Mexico, and along the Texas Gulf Coast. Occasional nesting has been documented in North Carolina, South Carolina, and on the Gulf and Atlantic coasts of Florida. Juveniles are often associated with floating sargassum (*Sargassum* spp.) seaweed for refuge, rest, and prey items. Adult habitat includes areas of muddy or sandy bottoms where prey can be found (NMFS 2012c).

Leatherback sea turtles feed primarily on soft-bodied prey such as jellyfish and salps. They have pointed tooth-like cusps and sharp edged jaws and backward-pointing spines in their mouth and throat to retain the soft-bodied prey. Leatherback turtle nesting grounds are located around the world, with the closest in the Caribbean, primarily Puerto Rico and the US Virgin Islands, and southeast Florida. Adult leatherbacks are capable of tolerating a wide range of water temperatures, and have been sighted along the entire continental coast of the United States as far north as the Gulf of Maine and south to Puerto Rico, the US Virgin Islands, and into the Gulf of Mexico. Juvenile behavior is poorly understood and it is assumed that they require warmer waters (NMFS 2012d).

Loggerhead sea turtles feed on hard-shelled prey including whelks and conch. Loggerheads typically nest on high energy beaches with narrow, steeply sloped, coarse-grained sands. Post-hatchling loggerheads utilize sargassum mats and feed on a variety of floating items. Juvenile loggerhead sea turtles are then transported by ocean currents within the Gulf of Mexico and North Atlantic for several years and then migrate to nearshore coastal areas and continue maturing until adulthood. To a large extent, the adult habitats overlap with the juvenile stage, the exception being most of the bays, sounds, and estuaries along the Atlantic and Gulf coasts of the United States which are infrequently used by adults (NMFS 2012e).

Similar threats affecting all sea turtle populations include commercial exploitation, habitat degradation, harvest of eggs and individuals, and incidental capture in fishing gear. No occurrences of any of the sea turtle species have been documented within the study area (TXNDD 2012) and none of these species are anticipated to occur within the study area due to its distance from the barrier islands.

Eskimo curlew

The Eskimo curlew population migrated from South American wintering grounds to nesting grounds in the Canadian and Alaskan arctic tundra. The species would flock in large groups during migration feeding within grassland areas along the way. Extensive overharvesting and conversion of grasslands to agricultural fields along the migratory route and wintering grounds decimated the species (TPWD 2013a). The last confirmed siting of an individual within the United States was in 1987 in Nebraska (USFWS 2011a). No occurrences have been documented within the study area (TXNDD 2012).

Interior Least Tern

The interior least tern is a subspecies that nests inland along sand and gravel bars within braided streams and rivers. It is also known to nest on areas of disturbances (inland beaches, wastewater treatment plants, gravel quarries, etc.). The bird preys on small fish and crustaceans, and forages within a few hundred feet of nesting colony. Breeding begins as early as April and is completed by late August (Campbell 2003). No occurrences of this species are recorded within the study area (TXNDD 2012).

Northern Aplomado Falcon

The northern aplomado falcon has a steel grey back, red breast, black "sash" on its belly, and striking black markings on its head. The species is common within its range in Mexico and within South Texas. It historically used coastal prairie and marsh habitats that supported small islands of trees and shrubs or that interfaced with woodlands along freshwater drainages and estuaries. The northern aplomado falcon disappeared from the South Texas area in the 1930s and reintroduction of the species to the region has been ongoing since 1985 (Campbell 2003). Occurrences of this species have been recorded within the study area (TXNDD 2012).

Piping plover

The piping plover is a small migratory shorebird that nests within the Great Lakes, Northern Great Plains or Atlantic Coast. The species overwinters along the Gulf of Mexico coastline and critical habitat for this species has been designated east and south of the study area boundary near the Brownsville Ship Channel (USFWS 2013). Occurrences of the species have been documented within the study area (TXNDD 2012).

Gulf Coast Jaguarundi

The Gulf Coast jaguarundi (*Puma yagouaroundi cacomitli*) is a feline slightly larger than a domestic cat and has a solid rusty-brown or charcoal gray coat with a long tail. Jaguarundis hunt primarily during the day with peak activity occurring at mid-day, preying on birds, rabbits, and small rodents. Typical habitat includes a patchwork of bunchgrass pastures with dense thornscrub brush areas nearby. Thornscrub species include brasil (*Condalia hookeri*), desert yaupon (*Schaefferia cuneifolia*), wolfberry (*Lycium berlandieri*), lotebush (*Ziziphus obtusifolia*), amargosa (*Castela erecta*), white-brush (*Aloysia gratissima*), catclaw (*Acacia greggii*), blackbrush, lantana (*Lantana achyranthifolia*), guayacan (*Guajacum angustifolium*), cenizo, elbowbush (*Forestiera angustifolia*), and Texas

persimmon (*Diospyros texana*). Trees that may be interspersed within the thornscrub include mesquite, live oak (*Quercus* sp.), ebony, and sugar hackberry. Riparian habitats along rivers or creeks are sometimes used for hunting areas and as movement corridors (Campbell 2003). The main threats to the jaguarundi throughout its range are habitat loss, degradation, and fragmentation. The last confirmed siting of an individual within Texas was two miles east of Brownsville in 1986 (USFWS 2012). Occurrences of the species have been recorded within the study area (TXNDD 2012).

Jaguar

Historically, the jaguar inhabited dense chaparral and timbered areas and its range extended into Louisiana, but the jaguar was extirpated from Texas in the early twentieth century (Schmidly 2004). One occurrence for the species is documented within the study area from 1946 (TXNDD 2012).

Ocelot

The ocelot is a feline that has cream-colored fur with reddish-brown spots outlined in black, with two stripes extending from the corners of their eyes over the back of their head. The ocelot avoids open areas and prefers dense (75-95% canopy coverage), thorny, low brush such as spiny hackberry, lotebush, and blackbrush, and dense chaparral thickets, mesquite-thorn scrub, and live oak mottes habitats. The ocelot hunts at night and preys on rabbits, small rodents and birds. Estimated minimum habitat patch size to sustain an ocelot is 65 acres. The ocelot was once distributed throughout South Texas, the southern Edwards Plateau, and along the Coastal Plain, but its current range is restricted to the Rio Grande Plains and lower Rio Grande Valley (Campbell 2003). Only two known populations consisting of approximately 50 individuals total are documented within Texas. One population inhabits the Laguna Atascosa NWR and the other is located on private property within Willacy County (USFWS 2009). Neither population is located within the study area; however, the Laguna Atascosa Wildlife Refuge is located north of the eastern extent of the study area. Occurrences of this species have been recorded within the study area (TXNDD 2012).

West Indian manatee

Manatees are aquatic herbivores typically found in the temperate and equatorial waters of the southeastern United States, the Caribbean basin, northern and northeastern South America, and equatorial West Africa. The West Indian species is subdivided into two subspecies, the Antillean manatee (*Trichechus manatus manatus*) and the Florida manatee (*Trichechus manatus latirostris*). Historically, the winter range of the Florida manatee was thought to focus on south Florida, with some animals ranging north on Florida's east and west coasts seasonally. The extent of their range is limited by their intolerance to colder temperatures during the winter months. With the expansion of submerged exotic vegetation and the creation of warm-water refugia (electrical generating station cooling water canals) their range has expanded further north. Range extremes extend north to Virginia on the Atlantic Coast and west to Louisiana on the Gulf Coast. Manatee mortalities include collisions with large and small boats, being crushed by barges, flood gates or canal locks, entanglement in nets and lines, entrapment in culverts, poaching, and entanglement in and ingestion of marine debris (e.g., monofilament line) (NMFS 2012f). No occurrences of this species have been documented within the study area (TXNDD 2012) and none are anticipated due to the location of the study area.

Candidate Species

The four USFWS listed candidate species include the Texas hornshell (*Popenaias popei*), red-crowned parrot (*Amazona viridigenalis*), red knot (*Caldris canutus rufa*) and Sprague's pipit (*Anthus*

spragueii). No occurrences of these species are recorded within the study area (TXNDD 2012). Only USFWS listed threatened or endangered species are afforded federal protection under the ESA. A brief description of each species is presented below.

Texas hornshell
The Texas hornshell is a freshwater mussel that inhabits both ends of narrow shallow runs over bedrock, in areas where small-grained materials collect in crevices, along river banks, and at the base of boulders, and is not known from impoundments (Howells et al. 1996). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Red-crowned parrot
The red-crowned parrot is a mid-sized parrot with bright green plumage, yellow-green cheeks, bright red crowns and lores, and violet-blue bands extending from behind each eye. This species generally occurs in tropical lowland forests and pine-oak ridges. It is endemic to Northeastern Mexico; however escapees of caged birds might be enhancing the populations (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Red knot
The red knot is a migratory bird which nests in the drier arctic tundra areas and overwinters along shorelines along the Gulf of Mexico coastline and into Central and South America. A spring migratory stopover is located in Delaware Bay where the species gorges on horseshoe crab eggs (USFWS 2007). No occurrences of the species have been documented within the study area (TXNDD 2012).

Sprague's pipit
Sprague's pipit is a small grassland bird that avoids edge habitats and is strongly associated with native prairies. In Texas, Sprague's pipit inhabits native upland prairie and coastal grasslands during migration and winter (Alsop 2002 and USFWS 2011). No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

TPWD Listed Species
The list of TPWD threatened and endangered species reflects the federally listed species previously discussed above; this section provides life history and habitat information for the additional species that TPWD has listed as threatened or endangered (see Table 2-21) for Hidalgo and Cameron counties. A brief description of each species is provided below.

MOLLUSKS
False spike mussel
The false spike mussel (*Quadrula mitchelli*) inhabits surface waters in the Rio Grande, Guadalupe, Colorado and Brazos river systems, in substrates varying from mud through mixtures of sand, gravel and cobble (Howells et al. 1996). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Salina mucket
The Salina mucket (*Potamilus metnecktayi*) inhabits lotic waters and submerged soft sediment (clay and silt) along river banks of the Rio Grande Basin (Howells et al. 1996). No occurrences of this species have been recorded within the study area (TXNDD 2012).

FISH

Mexican goby

The Mexican goby (*Ctenogobius claytonia*) inhabits fresh and brackish lagoons, coastal streams, and rivers with moderate to no current. Substrates include mud, clay or gravel with vegetation sparse (Natureserve 2012). No occurrences of this species have been documented within the study area (TXNDD 2012).

Opossum pipefish

The opossum pipefish (*Oostethus lineatus*) is a small slender anadromus species that breeds in freshwater and lives in the ocean taking cover within patches of *Sargassum* algae (Natureserve 2012). No occurrences of this species have been documented within the study area (TXNDD 2012).

River goby

The river goby *(Awaous banana)* is a newly-described species that occurs in southern coastal waters (Froese and Pauly 2011). This species inhabits clear water with a slow to moderate current, sandy or hard bottom, and little or no vegetation (Hubbs et al. 2008). No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

REPTILES

Black-striped snake

The black-striped snake (*Coniophanes imperialis*) inhabits warm, moist micro-habitats and loose, sandy soils (Hammerson et al. 2007b). This proficient burrower crawls in leaf-litter, burrows into soil, or hides under logs or other vegetative debris or trash during inactive states. South Texas is the extreme northeastern extent of its range (Werler and Dixon 2007). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Northern cat-eyed snake

The northern cat-eyed snake (*Leptodeira septentrionalis)* is a nocturnal serpent that inhabits semi-arid scrub forest, tropical deciduous woodlands and chaparral bordering ponds and streams where anuran prey would be abundant (Werler and Dixon 2007; Uetz and Hallerman 2012). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Speckled racer

The speckled racer (*Drymobius margaritiferus*) inhabits dense thickets near water, Texas palm groves, and riparian woodlands with abundant leaf litter and debris. South Texas represents the northeastern most extent of its range (Werler and Dixon 2007). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Reticulate collared lizard

The reticulate collared lizard (*Crotaphytus reticulatus*) inhabits scattered flat rocks below escarpments or isolated rock outcrops among scattered clumps of prickly pear and mesquite. The general habitat associated with this species includes open brush-grasslands and thorn-scrub vegetation on well-drained rolling terrain with shallow gravel, caliche, or sandy soils (Hammerson et al. 2007a). The lizard has a patchy distribution with a range restricted to southern Texas and northern Mexico. No occurrences of this species have been recorded within the study area (TXNDD 2012).

Texas horned lizard
The Texas horned lizard (*Phrynosoma cornutum*) inhabits a variety of habitats including open desert, grasslands and shrubland in arid and semiarid habitats that contain bunch grasses, cacti and yucca on soils varying from pure sands and sandy loams to coarse gravels, conglomerates, and desert pavements (Henke and Fair 1998). Their primary prey item is the harvester ant and they will aestivate beneath the soil during winter periods. No occurrences of this species have been documented within the study area (TXNDD 2012).

Texas indigo snake
The Texas indigo snake (*Drymarchon melanurus erebennus)* inhabits thornbush-chaparral woodlands of South Texas, south of the Guadalupe River and Balcones Escarpment (Lee et al. 2007). This species is one of the largest snakes in Texas and requires moist microhabitats for shelter (burrows) and feeds on vertebrate prey including rodents, frogs, snakes, and birds (Werler and Dixon 2007). Documented occurrences of this species have been recorded within the study area (TXNDD 2012).

Texas scarletsnake
The Texas scarletsnake (*Cemophora coccinea lineri*) is a semi-fossorial species that inhabits mixed hardwood scrub on loose sandy soils (Hammerson 2007). This species forages at night, feeding on small lizards and reptile eggs (Werler and Dixon 2007). No occurrences of this species have been documented within the study area (TXNDD 2012).

Texas tortoise
The Texas tortoise (*Gopherus berlandieri*) has a shell with yellowish-orange, "horned" scutes (plates) and is a long-lived, charismatic species that prefers open brush habitats with a grass understory and avoids areas only having open grass and bare ground. The Texas tortoise is active during March to November and when inactive, it occupies shallow depressions at the base of a bush or cactus, underground burrows, or under objects. The Texas tortoise feeds on fruits of prickly pear and other mostly succulent plants (TPWD 2013e). Occurrences of this species have been recorded within the study area (TXNDD 2012).

AMPHIBIANS
Black-spotted newt
The black-spotted newt (*Notophthalmus meridionalis*) inhabits wet or seasonally wet areas, such as arroyos, canals, ditches, or even shallow depressions. During dry periods, the black-spotted newt aestivates in the ground (TPWD 2013e). Occurrences of this species have been recorded within the study area (TXNDD 2012).

Mexican treefrog
The Mexican treefrog (*Smilisca baudinii*) is nocturnal, and seeks shelter under loose tree bark or in damp soil during the heat of the day. It breeds from May to October during rainy periods and lays eggs in temporary rain pools, ponds, canals, and flooded fields (TPWD 2013e). Occurrences of this species have been recorded within the study area (TXNDD 2012).

Sheep frog
The sheep frog (*Hypopachus variolosus*) inhabits moist sites in arid areas, predominantly grassland and savanna habitats, and feeds on ants and termites. The sheep frog hides most of the year, but might emerge at night or with heavy rains in late summer. The frog prefers subterranean burrows, such as those of rats. This species also burrows under fallen tree limbs and remains in these burrows

for most of the year (TPWD 2013e). Occurrences of this species have been documented within the study area (TXNDD 2012).

South Texas siren – large form
The South Texas siren (large form; *Siren* sp *1*) is nocturnal and inhabits warm wet areas, such as arroyos, canals, ditches, or even shallow depressions. It burrows into the silt and debris during the day and feeds on crawfish, worms, and mollusks at night. This species breeds from February to June and covers its body with mucous and aestivates in the ground during dry periods (TPWD 2013e). Within the study area, documented occurrences of this species have been recorded (TXNDD 2012).

White-lipped frog
The white-lipped frog (*Leptodactylus fragilis*) inhabits grasslands, cultivated fields, roadside ditches, and a wide variety of other habitats. This species often hides under rocks or in burrows under clumps of grass (TPWD 2013e). No occurrences of this species have been documented within the study area (TXNDD 2012).

BIRDS
Brown Pelican
Brown pelicans (*Pelecanus occidentalis*) were recently federally delisted as the population has recovered beyond the federal ESA listing criteria. Within Texas, the 2008 population was estimated at over 6,000 breeding pairs which is more than the historical population estimation. Brown pelicans feed by diving into the water with a diet primarily of menhaden, sheepshead (*Archosargus probatocephalus*), pigfish (*Orthopristis chrysoptera*), mullet (*Mugulis cephalus*), topminnows (*Fundulus* spp.), and silversides (*Menida beryllina*). Pelicans are social and gregarious, congregating in large flocks for much of the year (USFWS 2013a). No occurrences of this species have been documented within the study area (TXNDD 2012).

Cactus ferruginous pygmy-owl
The cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*) is a small owl that inhabits cottonwood riparian and mesquite thickets. The bird is most active at dusk and dawn and roosts in dense cover, small caves or recesses on slopes of low hills. The bird feeds on insects and arachnids and other small vertebrates (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Common black-hawk
The common black-hawk (*Buteogallus anthracinus*) inhabits cottonwood riparian areas of rivers and streams and willow tree groves on the lower Rio Grande floodplain (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Gray hawk
The gray hawk (*Buteo nitidus*) prefers mature riparian woodlands and adjacent semiarid mesquite and scrub grasslands. This hawk often perches along roadsides to prey on lizards, snakes, rabbits and small rodents (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Northern beardless-tyrannulet
The northern beardless-tyrannulet (*Camptostoma imberbe*) inhabits mesquite woodlands and cottonwood, willow, and elm. In these habitats, the bird forages on insects and small berries (Alsop

2002). No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

Peregrine falcon
The peregrine falcon (*Falco peregrinus*) is a state-threatened species and the listing includes two subspecies: the American peregrine falcon (*F. p. anatum*) and arctic peregrine falcon (*F. p. tundrius*) due to similarities in appearance (TPWD 2013e). The American peregrine falcon inhabits nests in tall cliff eyries and occupies many kinds of habitats during migration, including urban. Stopover habitat during migration typically includes lake shores, coastlines, and barrier islands and the falcon is also a resident breeder in west Texas (TPWD 2013e). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Reddish egret
The reddish egret (*Egretta rufescens*) is a wading bird with blue legs and a pink bill, and might occur as white (white phase) or gray with a reddish or rusty colored head and neck (dark phase) (TPWD 2013e). The reddish egret is a permanent resident of the Texas Gulf Coast and inhabits brackish marshes and shallow salt ponds and tidal flats (Alsop 2002). This species nests on the ground or in trees or bushes on dry coastal islands in brushy thickets of yucca and prickly pear (TPWD 2013e). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Rose-throated becard
The rose-throated becard (*Pachyramphus aglaiae*) is a neo-tropical migrant that inhabits riparian trees, woodlands, open forest, scrub, and mangroves. The bird feeds on insects, fruits, and berries (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Sooty tern
The sooty tern (*Sterna fuscata*) is a pelagic species that spends over half its life at sea and comes to land only to breed. The birds track predatory fish schools and feed on fish jumping from the water to escape predation from the fish below. The birds nest along the barrier islands of the coast (Texas Breeding Bird Atlas [TBBA] 2013). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Texas Botteri's sparrow
The Texas Botteri's sparrow (*Aimophila botterii texana*) inhabits grassland and short-grass plains with scattered bushes or shrubs, sagebrush, mesquite, or yucca. This species nests in low clumps of grasses on the ground and feeds on insects and seeds (Alsop 2002). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Tropical parula
The tropical parula (*Parula pitiayumi*) 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). No occurrences of this species have been recorded within the study area (TXNDD 2012).

White-faced Ibis
The white-faced ibis (*Plegadis chihi)* prefers freshwater marshes, swamps, ponds, rivers, sloughs, and irrigated rice fields, but will also use brackish and saltwater habitats (TPWD 2013e). This species is a

colonial nester and forages on insects, newts, leeches, earthworms, snails, crayfish, frogs, and fish (TPWD 2013e). This species breeds and winters along the Gulf Coast of Texas. No occurrences of this species have been recorded within the study area (TXNDD 2012).

White-tailed hawk

The white-tailed hawk (*Buteo albicaudatus*) inhabits prairies, cordgrass flats, and scrub-live oak habitats near the coast. Farther inland, the white-tailed hawk prefers prairies, mesquite and oak savannas, and mixed savanna-chaparral habitats (TPWD 2013e). No occurrences of this species have been recorded within the study area (TXNDD 2012).

Wood stork

The wood stork (*Mycteria americana*) 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 formerly nested in Texas (TPWD 2013e). Occurrences of this species have been recorded within the study area (TXNDD 2012).

Zone-tailed hawk

The zone-tailed hawk (*Buteo albonotatus*) inhabits arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains. This species nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions (TPWD 2013e). No occurrences of this species have been recorded within the study area (TXNDD 2012).

MAMMALS

Coues' rice rat

The Coues' rice rat (*Oryzomys couesi*) has short, reddish-yellow fur and is dorsally buff-colored. This species prefers salt and freshwater cattail-bulrush marshes and aquatic, grassy zones near resacas (TPWD 2013e). Globular nests are built in cattails and small trees near or above water and made of leaves, twigs, small vines, and cattail. No documented occurrences of this species have been recorded within the study area (TXNDD 2012).

Southern yellow bat

The southern yellow bat (*Lasiurus ega*) is medium-sized with dull, sooty yellow fur and a dorsally furred tail membrane. This species roosts primarily beneath the hanging dead fronds of palm trees year-round but also uses ornamental palm trees elsewhere. The bat is insectivorous, generally solitary, inhabits subtropical areas, and occurs year round in South Texas (Schimdly 2004). No occurrences of this species have been recorded within the study area (TXNDD 2012).

White-nosed coati

The white-nosed coati (*Nasua narica*) inhabits woodlands, riparian corridors, and canyons. This very sociable, omnivorous species forages on the ground and in trees during twilight, and is a member of the Procyonidae (raccoon) family (Schmidly 2004). Within the study area, occurrences are recorded within Hidalgo County (TXNDD 2012).

STATE LISTED ANIMAL SPECIES OF CONCERN

While not regulated, TPWD also maintains a list of animal species of concern within each county (TPWD 2013e). TPWD generally recommends consideration for these species when routing linear

utility corridors. Table 2-22 summarizes these species for each county within the study area and a brief description of habitat requirements is provided below. No recorded occurrences for any of the species of concern have been recorded within the study area; however, any of these species of concern might occur within the study area where suitable habitat exists.

TABLE 2-22 TPWD LISTED SPECIES OF CONERN FOR HIDALGO AND CAMERON COUTNIES, TEXAS

ANIMAL SPECIES		COUNTY LISTED	
Common Name	Scientific Name	Hidalgo	Cameron
Insects			
A mayfly	*Campsurus decoloratus*	X	
A royal moth	*Sphingicampa blanchardi*	X	X
A tiger beetle	*Tetracha affinis angustata*	X	
Arroyo darner	*Aeshna dugesi*	X	
Los Olmos tiger beetle	*Cicindela nevadica olmosa*	X	
Manfreda giant-skipper	*Stallingsia maculosus*	X	X
Neojuvenile tiger beetle	*Cicindela obsoleta neojuvenilis*	X	
Rawson's metalmark	*Calephelis rawsoni*	X	
Smyth's tiger beetle	*Cicindela chlorocephala smythii*		X
Subtropical blue-black tiger beetle	*Cicindela nigrocoerulea subtropica*	X	X
Tamaulipan agapema	*Agapema galbina*	X	X
Fish			
American eel	*Anguilla rostrata*	X	X
Rio Grande shiner	*Notropis jemezanus*	X	X
Reptiles			
Keeled earless lizard	*Holbrookia propinqua*		X
Spot-tailed earless lizard	*Holbrookia lacerata*	X	
Birds			
Audubon's oriole	*Icterus graduacauda audubonii*	X	X
Brownsville common yellowthroat	*Geothlypis trichas insperata*	X	X
Hook-billed kite	*Chondrohierax uncinatus*	X	
Mountain plover	*Charadrius montanus*	X	
Sennett's hooded oriole	*Icterus cucullatus sennetti*	X	X
Southeastern snowy plover	*Charadrius alexandrinus tenuirostris*	X	X
Western burrowing owl	*Athene cunicularia hypugaea*	X	X
Western snowy plover	*Charadrius alexandrinus nivosus*	X	X
Mammals			
Cave myotis bat	*Myotis velifer*	X	
Ghost-faced bat	*Mormoops megalophylla*	X	X
Mexican long-tongued bat	*Choeronycteris mexicana*	X	X
Plains spotted skunk	*Spilogale putorius interrupta*	X	X

Source: TPWD 2013e.

INSECTS

A mayfly

A mayfly (*Campsurus decoloratus)* is possibly associated with clay substrates; and the adult stage is usually found in shoreline vegetation (TPWD 2013e).

A royal moth
A royal moth (*Sphingicampa blanchardi*) occurs in woodland-hardwood habitats, preferably Tamaulipan thornscrub where Texas ebony is present, as this species is the caterpillar's host plant (TPWD 2013e).

A tiger beetle
A tiger beetle (*Tetracha affinis angustata*) inhabits open sandy areas, beaches, open paths or lanes, or mudflats; and its larvae are found in hard-packed ground in vertical burrows (TPWD 2013e).

Arroyo darner
Arroyo darner (*Aeshna dugesi*) inhabits creeks with high to moderate gradients from the desert to pine-oak zone. Adults forage widely in pools and streams; and lay eggs in aquatic plants, after which larvae attach themselves to pool and stream bottoms (TPWD 2013e).

Los Olmos tiger beetle
Little specific information is known about the Los Olmos tiger beetle (*Cicindela nevadica olmosa*), though tiger beetles in general are active, have bright colors, and are found in open, sunny areas. Adult and larval stages are both predaceous and feed on small insects; larvae live in vertical burrows in the soil of dry paths, fields, or sandy beaches (TPWD 2013e).

Manfreda giant-skipper
Manfreda giant-skipper (*Stallingsia maculosus*) inhabits subtropical thorn forest or pine forest with a lot of tuberose (*Manfreda* spp.) (NatureServe 2012). Little specific information is known, but most skippers are small, stout-bodied, and have fast, erratic flight. Skipper larvae usually feed inside a leaf shelter and pupae use a cocoon made of leaves and silk (TPWD 2013e).

Neojuvenile tiger beetle
Neojuvenile tiger beetle (*Cicindela obsoleta neojuvenilis*) inhabits bare or sparsely vegetated, dry, hard-packed soil, often in previously disturbed areas (TPWD 2013e).

Rawson's metalmark
Rawson's metalmark (*Calephelis rawsoni*) inhabits moist, shaded limestone outcrops in Central Texas, desert scrub or oak woodland in foothills, or along rivers. The larval hosts for Rawson's metalmark are white mistflower (*Eupatorium havanense)* and Boothill eupatorium (*E greggii)* (TPWD 2013e).

Smyth's tiger beetle
Little specific information is known for Smyth's tiger beetle (*Cicindela chlorocephala smythii*). Most tiger beetles are active and brightly colored with adults and larval stages predaceous on other insects (TPWD 2013e).

Subtropical blue-black tiger beetle
Little specific information is known for the subtropical blue-black tiger beetle (*Cicindela nigrocoerulea subtropica*), but tiger beetles in general are active, have bright colors, and are found in open sunny, areas. Adult and larval stages are both predaceous and feed on small insects; larvae live in vertical burrows in the soil of dry paths, fields, or sandy beaches (TPWD 2013e).

Tamaulipan agapema
Tamaulipan agapema (*Agapema galbina*) inhabits Tamaulipan thornscrub with adequate densities of the caterpillar foodplant *Condalia hookeri hookeri*. Tamaulipan agapema are in the adult stage from September to October, and eggs hatch two weeks later (TPWD 2013e).

FISH

American eel
American eel (*Anguilla rostrata*) has an olive-green to greenish yellow, snake-like body with a long dorsal fin and a light gray to white underbelly. This species occurs in aquatic habitats having ocean access in coastal waterways below reservoirs to the Gulf of Mexico. In Texas, dams have impeded access to upstream spawning areas. This species has been eliminated from most of central and western Texas (TPWD 2013e).

Rio Grande shiner
The Rio Grande shiner (*Notropis jemezanus*) inhabit large, open, weedless rivers or large creeks having a bottom of rubble, gravel, and sand that is often covered with silt. The Rio Grande shiner is distributed in the Rio Grande and upper Pecos River basins (TPWD 2013e).

REPTILES

Keeled earless lizard
The keeled earless lizard (*Holbrookia propinqua*) inhabits coastal dunes, barrier islands, and other sandy areas. This species eats insects and probably other small invertebrates. Most eggs are laid underground from May to August, but can occur anytime between March and September (TPWD 2013e).

Spot-tailed earless lizard
The spot-tailed earless lizard (*Holbrookia lacerata*) occurs in open prairie-brushland habitats in central and southern Texas and adjacent Mexico. This species prefers flat and sparsely vegetated areas, including disturbed areas. The spot-tailed earless lizard eats small invertebrates and lays its eggs underground (TPWD 2013e).

BIRDS

Audubon's oriole
Audubon's oriole (*Icterus graduacauda audubonii*) inhabits scrub and mesquite habitats and nests in dense trees and thickets, often along water courses (TPWD 2013e).

Brownsville common yellowthroat
The Brownsville common yellowthroat (*Geothlypis trichas insperata*) inhabits tall grasses and bushes near ponds, marshes, and swamps. This species breeds from April to July (TPWD 2013e).

Hook-billed kite
The hook-billed kite (*Chondrohierax uncinatus*) inhabits dense tropical and subtropical forests, as well as open woodlands. This species is uncommon to rare in most of its range, and is accidental in South Texas (TPWD 2013e).

Mountain plover
The mountain plover (*Charadrius montanus*) non-breeding habitat includes shortgrass prairie and bare ground, including plowed fields. This species nests on the ground in shallow depressions in high plains or shortgrass prairie habitats. The mountain plover is mostly insectivorous (TPWD 2013e).

Sennett's hooded oriole
Sennett's hooded oriole (*Icterus cucullatus sennetti*) builds nests in and made of Spanish moss (*Tillandsia unioides*). This species breeds from March to August and feeds on invertebrates, fruit, and nectar (TPWD 2013e).

Southeastern snowy plover
The southeastern snowy plover (*Charadrius alexandrinus tenuirostris*) inhabits Texas Gulf Coast beaches and bayside mud or salt flats during the winter (TPWD 2013e).

Western burrowing owl
The western burrowing owl (*Athene cunicularia hypugaea*) inhabits open grasslands, such as prairie, plains, and savanna, and sometimes open areas, including vacant lots near human habitation or airports. This species nests and roosts in abandoned burrows (TPWD 2013e).

Western snowy plover
The western snowy plover (*Charadrius alexandrinus nivosus*) inhabits beaches, dry mud or salt flats, and sandy shores of rivers, lakes, and ponds (NatureServe 2012). The western snowy plover winters along the Texas coast and is a potential migrant species (TPWD 2013e).

MAMMALS
Cave myotis bat
The cave myotis bat (*Myotis velifer*) is a cave-dwelling species, but might also roost in rock crevices, old buildings, carports, under bridges, and in abandoned cliff swallow (*Hirundo pyrrhonota*) nests. This insectivorous species forages over dense riparian vegetation and dry desert washes in areas dominated by creosote bush, palo verde, brittlebush, and cactus. The cave myotis bat roosts in colonies of up to thousands of individuals (TPWD 2013e).

Ghost-faced bat
The ghost-faced bat (*Mormoops megalophylla*) has conspicuous folds of skin that reach between the ear and across the chin. Roosting is in caves, crevices, abandoned mines, and buildings in colonies of up to half a million. The ghost-faced bat feeds on large-bodied moths and forages along canyons and arroyos, and sometimes open water. This species is known to many habitats including desert scrub, mixed boreal-tropical forests, tropical rain forests, and riparian areas with mature cottonwood, sycamore, and willow in oak-woodlands (TPWD 2013e).

Mexican long-tongued bat
The Mexican long-tongued bat (*Choeronycteris mexicana*) has a leaf-like projection on the tip of its nose, short ears, and a tail. This species inhabits thorn scrub, palo verde-saguaro desert, semidesert grassland, oak woodland and tropical deciduous forests and usually are mostly detected in desert canyons, but can also be in oak and ponderosa pine habitats up to 6,200 feet. The bat roosts in caves and mine tunnels of deep canyons in small colonies of up to 40 to 50 bats, but can also be found in rock crevices and abandoned buildings. The bat forages on nectar and pollen of night-blooming

plants including agaves and columnar cacti, and might also eat the fruit of columnar cacti and incidental insects on plant parts (TPWD 2013e).

Plains spotted skunk

The plains spotted skunk (*Spilogale putorius interrupta*) is a universal species that prefers wooded, brushy areas and tallgrass prairie, but can also inhabit open fields, croplands, fence rows, farmyards, and forest edges (TPWD 2013e).

Yuma myotis bat

The Yuma myotis bat (*Myotis yumanensis*) is a small, gray, brown, or pale tan bat that is associated with permanent sources of water, often rivers and streams. This species inhabits riparian, scrubland, desert and forest habitats and roosts in caves, abandoned mine tunnels, bridges, cliff crevices, buildings, and trees. The Yuma myotis bat primarily forages on aquatic emergent insects including caddis flies, midges, small moths, and small beetles (TPWD 2013e).

3.0 ALTERNATIVE ROUTE DEVELOPMENT

The objective of this EA was to develop and evaluate an adequate number of geographically diverse alternative routes that comply with the routing criteria in PURA § 37.056(c)(4)(A)-(D) and P.U.C. SUBST. R. 25.101(b)(3)(B), including the PUC's policy of prudent avoidance. This section describes the alternative route development process, which began with mapping constraints and 341 preliminary alternative links. Considering input received from an initial series of six public open-house meetings and from various governmental agencies, the preliminary alternative links were modified and 348 preliminary alternative links were presented at an additional open-house meeting. The additional open-house meeting was held to provide information to and receive input from newly impacted landowners potentially affected by modifications and additions to the preliminary alternative links presented at the initial open-house meetings. Following the additional open-house meeting, further modifications were made to the preliminary alternative links, resulting in development of 367 primary alternative links. Ultimately, all of the 367 primary alternative links were used to develop 32 alternative routes. Each phase of this alternative route development process is described in detail below.

3.1 CONSTRAINTS MAPPING

In an effort to minimize potential impacts to sensitive environmental and land use features, the alternative route development process began with a constraints mapping process wherein POWER initially identified and mapped the geographic locations of environmentally sensitive and other restrictive areas within the study area. This mapping process resulted in an environmental and land use "composite constraints map" for the study area.

POWER considered the following in development of the composite constraints map:

- **Resource Value**: A measure of rarity, intrinsic worth, singularity, or diversity of a resource within a particular area.
- **Protective Status**: A measure of the formal concern as expressed by legal protection or special status designation.
- **Present and Known Future Uses**: A measure of the level of potential conflict with land management and land use policies.
- **Hazards**: A measure of the degree to which construction and operation of the transmission line could be affected by a known resource hazard.

Through the constraints mapping process, POWER identified both constraint areas and areas of potential routing possibilities, and used the composite constraints map to develop and refine possible alternative links. To the extent feasible and practicable, POWER avoided identified constraints to minimize potential impacts or conflicts.

In accordance with PURA § 37.056(c) and P.U.C. SUBST. R. 25.101(b)(3)(B)(i)-(iii), POWER also considered opportunities to parallel or utilize existing compatible linear land uses, and identified numerous such opportunities. Locating a transmission line adjacent to linear land uses typically minimizes environmental impacts due to existing adjacent disturbances, improved access, and decreased habitat fragmentation. Examples of linear land uses identified within the study area include electrical transmission lines, roadways (though habitable structures are frequently located near these features), railways, pipelines, and apparent property boundaries.

3.2 ALTERNATIVE ROUTE IDENTIFICATION

3.2.1 *Preliminary Alternative Links*

The POWER planning team—comprised of technical experts within the resource fields of land use, aesthetics, ecology, and cultural resources—used the composite constraints map, in conjunction with existing aerial photography, to identify preliminary alternative links to connect the Project's endpoints while passing through a circular area in proximity to the AEP TCC South McAllen Substation. To the extent practicable, the POWER planning team sought to maximize the use of opportunity areas while avoiding areas of higher environmental constraint or conflicting land uses. Information that was used to identify the preliminary alternative links included the following:

- Input received from correspondence with local officials, regulatory agencies, and others;
- Results of reconnaissance surveys of the study area;
- Aerial photography;
- Findings of various data collection activities;
- Environmental and land use constraints data;
- Apparent property boundaries;
- Existing compatible linear land use opportunities; and
- Location of existing development

To comply with PURA § 37.056(c)(4)(A)-(D) and P.U.C. SUBST. R. 25.101, POWER identified an adequate number of environmentally acceptable and geographically diverse preliminary alternative links while also considering such factors as community values, parks and recreation areas, historical and aesthetic values, environmental integrity, route length parallel to existing compatible corridors or parallel to apparent property boundaries, and the PUC's policy of prudent avoidance. The proposed links also were reviewed by ETT, Sharyland, and POWER from an engineering and constructability standpoint.

ETT, Sharyland, and POWER identified 341 preliminary alternative links. These preliminary alternative links were presented at public open-house meetings as further discussed below (see Figure 3-1 and the open-house handout map in Appendix B).

3.2.2 *Initial Public Meetings*

ETT and Sharyland initially hosted six public open-house meetings within the affected communities to solicit comments from landowners, public officials, and other interested residents and parties regarding the preliminary alternative links. These meetings were held on the following dates at the following locations:

- October 8, 2012, McAllen Convention Center, 700 Convention Center Blvd., McAllen, Texas
- October 9, 2012, McAllen Convention Center, 700 Convention Center Blvd., McAllen, Texas
- October 10, 2012, Rio Grande Valley Livestock Show, 1000 N. Texas Ave., Mercedes, Texas
- October 11, 2012, Rio Grande Valley Livestock Show, 1000 N. Texas Ave., Mercedes, Texas
- October 15, 2012, Casa de Amistad, 1204 Fair Park Blvd., Harlingen, Texas
- October 16, 2012, Brownsville Event Center, 1 Events Center Blvd., Brownsville, Texas

Landowners along each of the preliminary alternative links as identified from the Hidalgo and Cameron County Appraisal Districts' tax rolls were invited to attend. ETT and Sharyland also

informed local and other elected officials of the open house meetings. The purpose of the meetings was to:

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

A public open-house meeting notice, in both English and Spanish, was submitted to 12,198 landowners who own property located within 500 feet of the preliminary alternative link centerlines. This notice included maps of the study area depicting the preliminary alternative links, a question and answer document, and a diagram of typical 345 kV transmission line structures. An example of the notice letter and a copy of the attachments are provided in Appendix B.

Rather than a formal presentation in a speaker-audience format, each public meeting was held in an open-house format. Several information stations were set up around the meeting room. Each station was devoted to a particular aspect of the routing study and was manned by representatives of ETT, Sharyland, Black & Veatch (Sharyland's engineering consultant), ROW Services, Inc. (ETT and Sharyland's property research consultant), CDS Muery (ETT and Sharyland's survey and property mapping consultant), and/or POWER. Large displays of maps, illustrations, photographs, and/or text explaining each particular topic were presented at the stations. In addition to the manned stations, each meeting had an optional 10 minute video which provided an overview of the Project and highlighted the topics from each station.

Interested citizens and property owners were encouraged to first view the video and then visit each station in a particular order so the entire process and general Project development sequence could be explained clearly. The open-house or information station format is advantageous because it facilitates one-on-one discussions and encourages personalized landowner interactions. The open-house format also encourages more interaction from landowners who might be hesitant to participate in a speaker-audience format. Spanish speaking representatives were also available at each information station.

When individuals arrived at the open-house meetings they were asked to sign a sign-in sheet and were provided a questionnaire. The questionnaire provided information to assist the landowner in locating their property(s) on the aerial map boards and solicited comments on the Project and an evaluation of the information presented at the public meeting. A Spanish version of the questionnaire was also available. Example copies of the questionnaires are provided in Appendix B.

After visiting the information stations, individuals were asked to complete the questionnaire. Completed questionnaires were returned either at the meeting or later by mail; however, not all respondents answered every question.

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Figure 3-1 Preliminary Alternative Links
(Sheet 1)

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Figure 3-1 Preliminary Alternative Links
(Sheet 2)

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Figure 3-1 Preliminary Alternative Links
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Figure 3-1 Preliminary Alternative Links
(Sheet 4)

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3.2.2.1 McAllen Open-House (October 8, 2012)

A total of 121 individuals attended the October 8, 2012 McAllen public open-house meeting according to the sign-in sheet, with 73 submitting questionnaire responses at the meeting. Results from the questionnaires were reviewed and analyzed, and 67 (92%) of the respondents agreed that the need for the Project was adequately explained, while one (1%) of the respondents said it was not. Eighty-nine percent of respondents were pleased with the open-house format of the meetings and 82% felt that the information provided was helpful to their understanding of the Project. Seventy-four percent of respondents found the video to be helpful.

The questionnaire presented a list of 16 factors that are taken into consideration for a routing study (a complete list of the criteria listed on the questionnaire is provided in Appendix B). Respondents were asked to rank each of these criteria (with **1** being the least important factor, and **5** being the most important factor). The five criteria that were ranked by the respondents as being the most important, in descending order, were:

- Maximize distance from residences — Most Important: 56 (77%)
- Maximize distance from public facilities (e.g., parks and schools) — Most Important: 52 (71%)
- Maintain reliable electric service — Most Important: 49 (67%)
- Maximize length along property boundary lines — Most Important: 44 (60%)
- Minimize loss of trees — Most Important: 40 (55%)

Respondents were also asked if there are other factors that should be considered, and if they had any comments regarding the listed factors. Responses included:

- Safety concerns for humans and livestock;
- Selection of a route away from residential areas, homes, croplands, and schools;
- Requests for Project updates and notices for additional open houses;
- Selection of routes other than Links 62, 121, and 166;
- Concerns about economic impact on residential property values;
- Concerns about increased property taxes;
- Selection of a route near proposed housing developments (Tanglewood and Retama Village);
- Concerns about aesthetics;
- Interference with existing and future land uses or development;
- Selection of a route farther to the north or south;
- Preference for using existing lines to reduce costs;
- Selection of a route along expressway frontage road;
- Selection of a route that minimizes length through undeveloped land;
- Selection of a route through undeveloped land near Expressway 281;
- Concerns about loss of prime retail property;
- Concerns about reduction in usable property and resulting loss of current/future income;
- Selection of a route that does not bisect towns or residential properties;
- Unclear about Project purpose; and
- Medical issues.

Respondents were also asked if there are other features in the study area that are important, and if so, to please describe them, their locations, and to mark them on the maps attached to the questionnaire. Features marked on maps were taken into consideration. Written responses included:

- Main entrance to Retama Village Subdivision (Link 82);
- Bentsen Rio Grande World Birding Center (Links 82 and 84);
- Bentsen Rio Grande Valley state park (Links 82 and 84);
- North American National Butterfly Center (Link 84);
- Mission Bike and Hike path (Links 84 and 85);
- IDEA and other schools (Links 28, 62, 83, 84, 85, and 121);
- National wildlife area and endangered species (Link 84);
- Floodway property – preferred route option between Bentsen Rd. and 23rd St. (Link 104);
- Floodway – avoid (Link 101)
- Open pit mining (Links 41, 49, and 59);
- Existing or future residences, residential developments, or subdivisions (Links 54, 57, 59, 62, 84, 85, 111, 121, 141, 142, and 143);
- Farming operations (Links 97 and 105);
- Rio Grande Valley Veterans Cemetery (Link 85);
- City of Mission Municipal Park and Sports Complex (Link 85);
- Irrigation canal (Link 179);
- Existing and proposed utility lines/facilities (Links 105, 115, and 155);
- City of Palmview and municipal buildings (Link 62); and
- Existing or future businesses or commercial developments (Link 137).

When asked if respondents had concerns with any particular links, respondents listed multiple links. Links 62, 84, 85, and 121 were the most listed links (by four or more respondents). Other links specified were 6, 41, 59, 82, 83, 115, 137, 142, 158, and 166 (by two or three respondents). Nineteen other links were also specified as having a particular concern by one respondent each.

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

- 51% indicated that a potential link is near their home;
- 12% indicated that a potential link is near their business;
- 44% indicated that a potential link crosses their land; and
- 0% answered "Other."

(Due to multiple responses on some questionnaires, totals do not equal 100%.)

The questionnaire provided examples of two possible structures for the Project. Respondents were asked which of the two structures, wide-based lattice tower or monopole, they preferred. Of the questionnaires received, 60% said they would prefer the monopole structure, while 10% said they preferred the lattice structure, and 30% did not respond to this question. When asked why they preferred one structure over another, respondents felt that the monopole structure would take up less space; have less impact on aesthetics, property values, and existing land uses; cost less; have less impact on humans and the environment from electromagnetic radiation; have fewer impacts overall; and looked sturdier. Those that preferred the lattice structure noted that it looked sturdier and safer.

When asked what cost difference would be significant enough to justify using a structure other than the type selected as most preferable, respondents indicated a 0 to 50% cost difference.

Respondents were asked if an increase in the size (height and width) of structures to reduce the number of structures located on their property would factor into their desired structure selection. Respondents were also asked to comment on the importance of reducing the number of structures located on their property. Comments and responses to these questions generally favored no structures or fewer structures, and also considered the width of the ROW as an important factor.

The questionnaire also provided a space for respondents to include any additional remarks and comments. Comments and responses included:

- Concern about reduction in usable property;
- Safety concerns;
- Concerns about economic impact to property values;
- Concerns about aesthetics;
- Selection of route that does not impact respondent; and
- Request for an additional meeting to discuss questions verbally (provide translators as needed).

3.2.2.2 McAllen Open-House (October 9, 2012)

A total of 96 individuals attended the October 9, 2012 McAllen public open-house meeting according to the sign-in sheet, with 54 submitting questionnaire responses at the meeting. Results from the questionnaires were reviewed and analyzed, and 47 (87%) of the respondents agreed that the need for the Project was adequately explained, while three (6%) respondents said it was not. Eighty-seven percent of respondents were pleased with the open-house format of the meetings and 81% felt that the information provided was helpful to their understanding of the Project. Sixty-nine percent of respondents found the video to be helpful.

Respondents were asked to rank the 16 factors that are taken into consideration for a routing study (see Appendix B), with **1** being the least important factor and **5** being the most important factor. Due to ties, the six criteria that were ranked by the respondents as being the most important are listed in descending order:

- Maximize distance from residences — Most Important: 39 (72%)
- Maximize length along property boundary lines — Most Important: 33 (61%)
- Maximize distance from public facilities (e.g., parks and schools) — Most Important: 30 (56%)
- Maximize length through undeveloped land — Most Important: 26 (48%)
- Minimize visibility of the lines — Most Important: 25 (46%)
- Minimize loss of trees — Most Important: 25 (46%)

When asked if there are other factors that should be considered, and if they had any comments regarding the listed factors, respondents provided the following:

- Selection of a route away from residential and commercial areas, homes, schools, croplands, pastures, and high-value undeveloped property;