Tier I Site Assessment

Main CSJ: 0902-90-117, 0902-90-061
Form Prepared By: Clint Wardlow, Cox|McLain Environmental Consulting, Inc.
Date of Evaluation: December 1, 2020
Proposed Letting Date: July 2021
☐ *Project not assigned to TxDOT under the NEPA Assignment MOU*
District(s): Fort Worth
County(ies): Tarrant
Roadway Name: Glade Road
Limits From: Northbound SH 360 Frontage Road
Limits To: West Airfield Drive
Project Description: See project description in ECOS.

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 9, 2019, and executed by FHWA and TxDOT.

1. No — Is the project limited to a maintenance activity exempt from coordination?
http://txdot.gov/inside-txdot/division/environmental/maintenance-program.html

2. No — Has the project previously completed coordination with TPWD?

3. Yes — Is the project within range of a state threatened or endangered species or SGCN and suitable habitat is present?

*Explain:

The project is within range and suitable habitat is present for 1 state-listed threatened species:
a) Reptiles - alligator snapping turtle (Macrochelys temminckii)

The project is within range and suitable habitat is present for 21 species of greatest conservation need (SGCN)s:
a) Amphibians - Strecker's chorus frog (Pseudacris streckeri) and Woodhouse's toad (Anaxyrus woodhousii).
b) Birds - western burrowing owl (Athene cunicularia hypuhaea)
c) Reptiles - eastern box turtle (Terrapene carolina), slender glass lizard (Ophisaurus attenuatus), smooth softshell (Apalone mutica), Texas garter snake (Thamnophis sirtalis annectens), timber (canebrake) rattlesnake (Crotalus horridus), and western box turtle (Terrapene ornata).
c) Mammals - American badger (Taxidea taxus), big brown bat (Eptesicus fuscus), big free-tailed bat (Nyctinomops macrotis), cave myotis bat (Myotis velifer), eastern spotted skunk (Spilogale putorius), long-tailed weasel (Mustela frenata), Mexican free-tailed bat (Tadarida brasiliensis), mink (Neovision vision), tricolored bat (Perimyotis subflavus), and western hog-nosed skunk (Conepatus leuconotus).
d) Plants - earleaf false foxglove (Agalinis auriculata) and Texas milk vetch (Astragalus reflexus).

Date TPWD County List Accessed: September 23, 2020

Date that the NDD was accessed: October 16, 2020

What agency performed the NDD search? TPWD

NDD Search Results for EOIDs and Tracked Managed Areas

EOID Number	Common Name	Scientific Name	Listing Status	Buffer Zone
	See file: 0902-90-117_TPWD NDD_File_10-16-2020 for TxNDD figure and EOID Table	*Please note, TxNDD Data was acquired using the TPWD mimic provided to Cox|McLain.*		1.5 Mile

No — Does the BMP PA eliminate the requirement to coordinate for all species?

Comments:

The BMP PA does not include BMPs for the following SGCNs:
a) Amphibians - Strecker's chorus frog and Woodhouse's toad
b) Reptiles - eastern box turtle, western box turtle, and slender glass lizard
c) Mammals - American badger, big brown bat, eastern spotted skunk, long-tailed weasel, Mexican free-tailed bat, mink, tricolored bat, and western hog-nosed skunk.

4. No — NDD and TCAP review indicates adverse impacts to remnant vegetation?

Comments:

Although a few remnant pockets of rare native vegetation were mapped by the NDD within a 10-mile buffer of the project area, no remnant vegetation was observed within the project area; therefore, the proposed project is not anticipated to have any adverse impacts to remnant vegetation.

5. Yes — Does the project require a NWP with PCN or IP by USACE?

*Explain:

The project will require NWP 14 with a PCN for discharge into a special aquatic site, a forested wetland.

6. No — Does the project include more than 200 linear feet of stream channel for each single and complete crossing of one or more of the following that is not already channelized or otherwise maintained:

7. No — Does the project contain known isolated wetlands outside the TxDOT ROW that will be directly impacted by the project?

8. Yes — Would the project impact at least 0.10 acre of riparian vegetation?

*Explain:

The project will impact approximately 2.28 acres of riparian vegetation. See document titled "0902-90-117_13_EMST Impacts Table_10.10.2020" in ECOS.

9. Yes — Does project disturb a habitat type in an area equal to or greater than the area of disturbance indicated in the Threshold Table Programmatic Agreement?

*Explain:

The project will impact approximately 2.28 acres of riparian vegetation, exceeding the PA Threshold of 0.1 acres of impacts to riparian vegetation. The project will impact approximately 1.77 acres of Crosstimbers: Woodland and Forest vegetation, exceeding the PA Threshold of 1 acre for Crosstimbers: Woodland and Forest vegetation.

*Attach associated file of EMST output (Mapper Report or other Excel File which includes MOU Type, Ecosystem Name, Common/Vegetation Type Name) in ECOS

Excel File Name:

0902-90-117_13_EMST Impacts Table_10.10.2020

9.1. Yes Is there a discrepancy between actual habitat(s) and EMST mapped habitat(s)?

*Explain:

The EMST mapped habitats mostly matches the actual observed habitats with a few slight differences. The mapped EMST Crosstimbers: Post Oak Woodland vegetation was observed to be Crosstimbers: Oak Forest and Woodland and was located in roughly the same potions of the project area. The mapped EMST Edwards Plateau: Oak/Hardwood Motte and Woodland vegetation was actually observed to be Crosstimbers: Savanna Grassland and is located in the western portion of the project area (in a pipeline easement) and in a small area of the eastern portion of the project area. Additionally, Blackland Prairie: Disturbance or Tame Grassland vegetation was observed in the central portion of the project area (within a pipeline easement) and was not mapped by EMST. Urban High Intensity vegetation was observed throughout the project area and was not mapped by EMST. The Urban Low Intensity vegetation observed mostly within the eastern portion of the project area and generally matches what is mapped by EMST.

Attach file showing discrepancy between actual and EMST mapped habitat(s).
File Name:

0902-90-117_12_EMST_Figure_20201130, 0902-90-117_15_Observed Vegetation 12.1.2020, and 0902-90-117_17_GladeRd_Biological Resources Photos and Photolocation Figure_20201015

Is TPWD Coordination Required?

Yes

☒ Early Coordination

☐ Administrated Coordination - Must be conducted through ENV-NRM

BMPs Implemented or EPICs included (as necessary):

The project is within range and suitable habitat is present for 1 state-listed threatened species:
a) Reptiles - alligator snapping turtle

The project is within range and suitable habitat is present for 21 species of greatest conservation need (SGCN)s:
a) Amphibians - Strecker's chorus frog and Woodhouse's toad.
b) Birds - western burrowing owl.
c) Reptiles - eastern box turtle, slender glass lizard, smooth softshell, Texas garter snake, timber (canebrake) rattlesnake, and western box turtle.
c) Mammals - American badger, big brown bat, big free-tailed bat, cave myotis bat, eastern spotted skunk, long-tailed weasel, Mexican free-tailed bat, mink, tricolored bat, and western hog-nosed skunk.
d) Plants - earleaf false foxglove and Texas milk vetch.

The following BMPs are provided for the alligator snapping turtle (state-listed threatened):
1) Minimize impacts to wetland and riverine habitats
2) Aquatic Reptile BMPs

The following Aquatic Reptile BMPs are provided for the alligator snapping turtle and may also apply to the smooth softshell (SGCN):
1) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
2) Minimize impacts to wetland, temporary and permanent open water features, including depressions, and riverine habitats.
3) Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, using erosion control blankets or mats that contain no netting, or only contain loosely woven natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
4) Project specific locations (PSLs) proposed within state-owned ROW should be located in uplands away from aquatic features.
5) When work is directly adjacent to the water, minimize impacts to shoreline basking sites (e.g., downed trees, sand bars, exposed bedrock) and overwinter sites (e.g., brush and debris piles, crayfish burrows) where feasible.
6) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter, which may be refuge for terrestrial amphibians, where feasible.

The following generic Bird BMPs are provided for the SGCN Western Burrowing Owl:
1) Not disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season.
2) Avoiding the removal of unoccupied, inactive nests, as practicable.
3) Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair.
4) Not collecting, capturing, relocating, or transporting birds, eggs, young, or active nests without a permit.

The following Terrestrial Reptile BMPs are provided for the timber (canebrake) rattlesnake (SGCN):
1) Apply hydromulching and/or hydroseeding in areas for soil stabilization and/or revegetation of disturbed areas where feasible. If hydromulching and/or hydroseeding are not feasible due to site conditions, utilize erosion control blankets or mats that contain no netting or contain loosely woven, natural fiber netting is preferred. Plastic netting should be avoided to the extent practicable.
2) For open trenches and excavated pits, install escape ramps at an angle of less than 45 degrees (1:1) in areas left uncovered. Visually inspect excavation areas for trapped wildlife prior to backfilling.
3) Inform contractors that if reptiles are found on project site allow species to safely leave the project area.
4) Avoid or minimize disturbing or removing downed trees, rotting stumps, and leaf litter where feasible.
5) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

Although no species specific BMPs are provided for the eastern box turtle, slender glass lizard, Texas garter snake, and western box turtle the generic Terrestrial Reptile BMPs would be applicable to these species as well.

The following Bat BMPs are provided for the big free-tailed bat (SGCN) and cave myotis bat (SGCN):
1) For roosts where occupancy is strongly suspected but unconfirmed during the initial survey, revisit feature(s) at most four weeks prior to scheduled disturbance to confirm absence of bats.
2) If bats are present or recent signs of occupation (i.e., piles of guano, distinct musky odor, or staining and rub marks at potential entry points) are observed, take appropriate measures to ensure that bats are not harmed, such as implementing non-lethal exclusion activities or timing or phasing of construction.
3) Exclusion devices can be installed by a qualified individual between September 1 and March 31. Exclusion devices should be used for a minimum of seven days when minimum nighttime temperatures are above 50°F AND minimum daytime temperatures are above 70°F. Prior to exclusion, ensure that alternate roosting habitat is available in the immediate area. If no suitable roosting habitat is available, installation of alternate roosts is

recommended to replace the loss of an occupied roost. If alternate roost sites are not provided, bats may seek shelter in other inappropriate sites, such as buildings, in the surrounding area.
4) If feature(s) used by bats are removed as a result of construction, replacement structures should incorporate bat-friendly design or artificial roosts should be constructed to replace these features, as practicable.
5) Conversion of property containing cave or cliff features to transportation purposes should be avoided where feasible.
6) Avoid unnecessary removal of dead fronds on native and ornamental palm trees in south Texas (Cameron, Hidalgo, Willacy, Kenedy, Brooks, Kleberg, Nueces, and San Patricio counties) from April 1 through October 31. If removal of dead fronds is necessary at other times of the year, limit frond removal to extended warms periods (nighttime temperatures~ 55°F for at least two consecutive nights), so bats can move away from the disturbance and find new roosts.
7) Large hollow trees, snags (dead standing trees), and trees with shaggy bark should be surveyed for colonies and, if found, should not be disturbed until the bats are no longer occupying these features. Post-occupancy surveys should be conducted by a qualified biologist prior to tree removal from the landscape.
8) Retain mature, large diameter hardwood forest species and native/ornamental palm trees where feasible.
9) In all instances, avoid harm or death to bats. Bats should only be handled as a last resort and after communication with TPWD.

The big brown bat (SGCN), Mexican free-tailed bat (SGCN), and tricolored bat (SGCN) do not have specific BMPs in the PA, but Bat BMPs would be applicable to these species.

Although no species specific BMPs are provided for the American badger (SGCN), eastern spotted skunk (SGCN), mink (SGCN), long-tailed weasel (SGCN), and western hog-nosed skunk (SGCN) the PA between TXDOT and TPWD under the 2013 MOU (2017 Revision) does include BMPs which may be applied to the species:
1) Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.
2) Minimize impacts to water crossings/drainages, marshes, drainage ditches, and irrigation canals
3) Avoid unnecessary impacts to dens and lodges

The following Species Specific BMPs are provided for the SGCN Texas gartersnake:
Contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered.

The following BMPs are provided to satisfy DFW airport requirements.

1) Between October 1 and February 15, the contractor would remove all old migratory bird nests from any structure that would be affected by the proposed project and complete any bridge work/demolition and/or vegetation clearing. In addition, the contractor would be prepared to prevent migratory birds from building nests by utilizing nest prevention methods, such as bird-deterrent netting and bird-repelling sprays and/or gels, between February 15 and October 1. In the event that migratory birds are encountered on-site during project construction, adverse impacts on protected birds, active nests, eggs, and/or young would be avoided.

2) Not disturbing, destroying, or removing active nests, including ground nesting birds, during the nesting season. Avoid the removal of unoccupied, inactive nest as practicable. Preventing the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures proposed for replacement or repair. Not collecting, capturing, relocating or transporting birds, eggs, young or active nests without a permit. Eagle Protection Act prohibits the taking or possession of and commerce in eagles, parts, feathers, nests, or eggs with limited exceptions. The definition of take include pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. Eagles may not be taken for any purpose unless a permit is issued prior to the taking.

3) The contractor will conduct a pre-construction survey for nesting migratory birds within 5-days of beginning tree clearing or bridge work/demolition. Any active nests will be identified and clearly marked in the field for avoidance by the contractor. Active nests will be avoided until the young have left the nest. A pre-construction

survey summary report will be provided to DFW Airport Environmental Staff for approval prior to work.

TxDOT Contact Information

Name: Elisa Garcia

Phone Number: (817) 370-6718

E-mail: Elisa.Garcia@txdot.gov

Suggested Attachments

Aerial Map (with delineated project boundaries)

USFWS T&E List

TPWD T&E List

Species Analysis Summary

NDD EOID List and Tracked Managed Areas (Required for TPWD Coordination)

EMST Project MOU Summary Table (Required for TPWD Coordination)

TPWD SGCN List

Photos (Required for TPWD Coordination)

Previous TPWD Coordination Documentation (if applicable)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Arlington Ecological Services Field Office
2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247
Phone: (817) 277-1100 Fax: (817) 277-1129
http://www.fws.gov/southwest/es/arlingtontexas/
http://www.fws.gov/southwest/es/EndangeredSpecies/lists/

In Reply Refer To: September 23, 2020
Consultation Code: 02ETAR00-2020-SLI-2970
Event Code: 02ETAR00-2020-E-06164
Project Name: Glade Road Improvements

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, which may occur within the boundary of your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under section 7(a)(1) of the Act, Federal agencies are directed to utilize their authorities to carry out programs for the conservation of threatened and endangered species. Under and 7(a)(2) and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to determine whether their actions may affect threatened and endangered species and/or designated critical habitat. A Federal action is an activity or program authorized, funded, or carried out, in whole or in part, by a Federal agency (50 CFR 402.02).

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For Federal actions other than major construction activities, the Service suggests that a biological evaluation (similar to a Biological Assessment) be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

After evaluating the potential effects of a proposed action on federally listed species, one of the following determinations should be made by the Federal agency:

1. *No effect* - the appropriate determination when a project, as proposed, is anticipated to have no effects to listed species or critical habitat. A "no effect" determination does not require section 7 consultation and no coordination or contact with the Service is necessary. However, the action agency should maintain a complete record of their evaluation, including the steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information.
2. *May affect, but is not likely to adversely affect* - the appropriate determination when a proposed action's anticipated effects are insignificant, discountable, or completely beneficial. Insignificant effects relate to the size of the impact and should never reach the scale where "take" of a listed species occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not be able to meaningfully measure, detect, or evaluate insignificant effects, or expect discountable effects to occur. This determination requires written concurrence from the Service. A biological evaluation or other supporting information justifying this determination should be submitted with a request for written concurrence.
3. *May affect, is likely to adversely affect* - the appropriate determination if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed action, and the effect is not discountable or insignificant. This determination requires formal section 7 consultation.

The Service recommends that candidate species, proposed species, and proposed critical habitat be addressed should consultation be necessary. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy

guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

For additional information concerning migratory birds and eagle conservation plans, please contact the Service's Migratory Bird Office at 505-248-7882.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Arlington Ecological Services Field Office
2005 Ne Green Oaks Blvd
Suite 140
Arlington, TX 76006-6247
(817) 277-1100

Project Summary

Consultation Code: 02ETAR00-2020-SLI-2970

Event Code: 02ETAR00-2020-E-06164

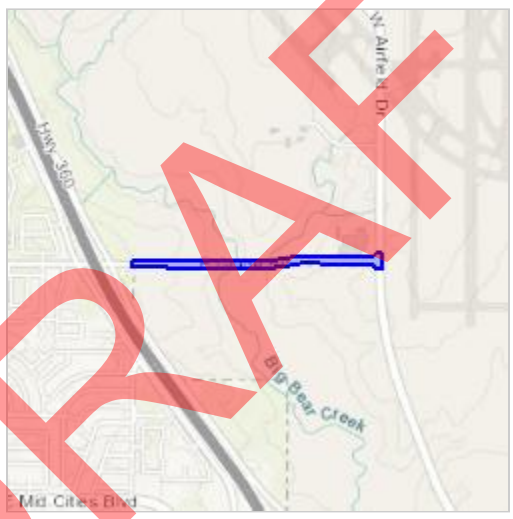
Project Name: Glade Road Improvements

Project Type: TRANSPORTATION

Project Description: Road improvement project

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/32.88127177285792N97.06280150941649W



Counties: Tarrant, TX

Endangered Species Act Species

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Note that 2 of these species should be considered only under certain conditions.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Least Tern *Sterna antillarum*	Endangered
Piping Plover *Charadrius melodus*	Threatened
Red Knot *Calidris canutus rufa*	Threatened
Whooping Crane *Grus americana*	Endangered

Least Tern *Sterna antillarum*
Population: interior pop.
No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/8505

Piping Plover *Charadrius melodus*
Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered.
There is **final** critical habitat for this species. Your location is outside the critical habitat.
This species only needs to be considered under the following conditions:
- Wind Energy Projects

Species profile: https://ecos.fws.gov/ecp/species/6039

Red Knot *Calidris canutus rufa*
No critical habitat has been designated for this species.
This species only needs to be considered under the following conditions:
- Wind Energy Projects

Species profile: https://ecos.fws.gov/ecp/species/1864

Whooping Crane *Grus americana*
Population: Wherever found, except where listed as an experimental population
There is **final** critical habitat for this species. Your location is outside the critical habitat.
Species profile: https://ecos.fws.gov/ecp/species/758

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Last Update: 8/25/2020

TARRANT COUNTY

AMPHIBIANS

Strecker's chorus frog *Pseudacris streckeri*

Terrestrial and aquatic: Wooded floodplains and flats, prairies, cultivated fields and marshes. Likes sandy substrates.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Woodhouse's toad *Anaxyrus woodhousii*

Terrestrial and aquatic: A wide variety of terrestrial habitats are used by this species, including forests, grasslands, and barrier island sand dunes. Aquatic habitats are equally varied.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: SU

BIRDS

bald eagle *Haliaeetus leucocephalus*

Found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3B,S3N

Black Rail *Laterallus jamaicensis*

Salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous years dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Federal Status: PT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S2

Franklin's gull *Leucophaeus pipixcan*

This species is only a spring and fall migrant throughout Texas. It does not breed in or near Texas. Winter records are unusual consisting of one or a few individuals at a given site (especially along the Gulf coastline). During migration, these gulls fly during daylight hours but often come down to wetlands, lake shore, or islands to roost for the night.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S2N

interior least tern *Sternula antillarum athalassos*

Sand beaches, flats, bays, inlets, lagoons, islands. Subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G4T3Q	State Rank: S1B

TARRANT COUNTY

BIRDS

mountain plover *Charadrius montanus*

Breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

piping plover *Charadrius melodus*

Beaches, sandflats, and dunes along Gulf Coast beaches and adjacent offshore islands. Also spoil islands in the Intracoastal Waterway. Based on the November 30, 1992 Section 6 Job No. 9.1, Piping Plover and Snowy Plover Winter Habitat Status Survey, algal flats appear to be the highest quality habitat. Some of the most important aspects of algal flats are their relative inaccessibility and their continuous availability throughout all tidal conditions. Sand flats often appear to be preferred over algal flats when both are available, but large portions of sand flats along the Texas coast are available only during low-very low tides and are often completely unavailable during extreme high tides or strong north winds. Beaches appear to serve as a secondary habitat to the flats associated with the primary bays, lagoons, and inter-island passes. Beaches are rarely used on the southern Texas coast, where bayside habitat is always available, and are abandoned as bayside habitats become available on the central and northern coast. However, beaches are probably a vital habitat along the central and northern coast (i.e. north of Padre Island) during periods of extreme high tides that cover the flats. Optimal site characteristics appear to be large in area, sparsely vegetated, continuously available or in close proximity to secondary habitat, and with limited human disturbance.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2N

Rufa Red Knot *Calidris canutus rufa*

Red knots migrate long distances in flocks northward through the contiguous United States mainly April-June, southward July-October. A small plump-bodied, short-necked shorebird that in breeding plumage, typically held from May through August, is a distinctive and unique pottery orange color. Its bill is dark, straight and, relative to other shorebirds, short-to-medium in length. After molting in late summer, this species is in a drab gray-and-white non-breeding plumage, typically held from September through April. In the non-breeding plumage, the knot might be confused with the omnipresent Sanderling. During this plumage, look for the knot's prominent pale eyebrow and whitish flanks with dark barring. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam (Donax spp.) on beaches and dwarf surf clam (Mulinia lateralis) in bays, at least in the Laguna Madre. Wintering Range includes- Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kennedy, Kleberg, Matagorda, Nueces, San Patricio, and Willacy. Habitat: Primarily seacoasts on tidal flats and beaches, herbaceous wetland, and Tidal flat/shore.

Federal Status: LT	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4T2	State Rank: S2N

western burrowing owl *Athene cunicularia hypugaea*

Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4T4	State Rank: S2

white-faced ibis *Plegadis chihi*

Prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; currently confined to near-coastal rookeries in so-called hog-wallow prairies. Nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S4B

TARRANT COUNTY

BIRDS

whooping crane *Grus americana*

Small ponds, marshes, and flooded grain fields for both roosting and foraging. Potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.

Federal Status: LE	State Status: E	SGCN: Y
Endemic: N	Global Rank: G1	State Rank: S1N

INSECTS

American bumblebee *Bombus pensylvanicus*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G3G4	State Rank: SNR

Comanche harvester ant *Pogonomyrmex comanche*

Habitat description is not available at this time.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G2G3	State Rank: S2

MAMMALS

American badger *Taxidea taxus*

Generalist. Prefers areas with soft soils that sustain ground squirrels for food. When inactive, occupies underground burrow. Young are born in underground burrows.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

big brown bat *Eptesicus fuscus*

Any wooded areas or woodlands except south Texas. Riparian areas in west Texas.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S5

big free-tailed bat *Nyctinomops macrotis*

Habitat data sparse but records indicate that species prefers to roost in crevices and cracks in high canyon walls, but will use buildings, as well; reproduction data sparse, gives birth to single offspring late June-early July; females gather in nursery colonies; winter habits undetermined, but may hibernate in the Trans-Pecos; opportunistic insectivore

Federal Status:	State Status:	SGCN: Y
Endemic:	Global Rank: G5	State Rank: S3

TARRANT COUNTY

MAMMALS

black bear *Ursus americanus*

Generalist. Historically found throughout Texas. In Chisos, prefers higher elevations where pinyon-oaks predominate; also occasionally sighted in desert scrub of Trans-Pecos (Black Gap Wildlife Management Area) and Edwards Plateau in juniper-oak habitat. For ssp. luteolus, bottomland hardwoods, floodplain forests, upland hardwoods with mixed pine; marsh. Bottomland hardwoods and large tracts of inaccessible forested areas.

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

black-tailed prairie dog *Cynomys ludovicianus*

Dry, flat, short grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle; live in large family groups

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4 State Rank: S3

cave myotis bat *Myotis velifer*

Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow (Hirundo pyrrhonota) nests; roosts in clusters of up to thousands of individuals; hibernates in limestone caves of Edwards Plateau and gypsum cave of Panhandle during winter; opportunistic insectivore.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4G5 State Rank: S4

eastern red bat *Lasiurus borealis*

Found in a variety of habitats in Texas. Usually associated with wooded areas. Found in towns especially during migration.

Federal Status: State Status: SGCN: N
Endemic: N Global Rank: G3G4 State Rank: S4

eastern spotted skunk *Spilogale putorius*

Generalist; open fields prairies, croplands, fence rows, farmyards, forest edges & woodlands. Prefer wooded, brushy areas & tallgrass prairies. S.p. ssp. interrupta found in wooded areas and tallgrass prairies, preferring rocky canyons and outcrops when such sites are available.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4 State Rank: S1S3

hoary bat *Lasiurus cinereus*

Known from montane and riparian woodland in Trans-Pecos, forests and woods in east and central Texas.

Federal Status: State Status: SGCN: N
Endemic: N Global Rank: G3G4 State Rank: S4

long-tailed weasel *Mustela frenata*

Includes brushlands, fence rows, upland woods and bottomland hardwoods, forest edges & rocky desert scrub. Usually live close to water.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

TARRANT COUNTY

MAMMALS

Mexican free-tailed bat *Tadarida brasiliensis*

Roosts in buildings in east Texas. Largest maternity roosts are in limestone caves on the Edwards Plateau. Found in all habitats, forest to desert.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

mink *Neovison vison*

Intimately associated with water; coastal swamps & marshes, wooded riparian zones, edges of lakes. Prefer floodplains.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S4

mountain lion *Puma concolor*

Generalist; found in a wide range of habitats statewide. Found most frequently in rugged mountains & riparian zones.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S2S3

plains spotted skunk *Spilogale putorius interrupta*

Generalist; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Federal Status: State Status: SGCN: N
Endemic: N Global Rank: G4T4 State Rank: S1S3

southern short-tailed shrew *Blarina carolinensis*

Found in East Texas pine forests and agricultural land. May favor areas with abundant leaf litter and fallen logs (Baumgardner et al. 1992). Nest sites are probably under logs, stumps and other debris.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S4

swamp rabbit *Sylvilagus aquaticus*

Primarily found in lowland areas near water including: cypress bogs and marshes, floodplains, creeks and rivers.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

thirteen-lined ground squirrel *Ictidomys tridecemlineatus*

Prefers short grass prairies with deep soils for burrowing. Frequently found in grazed ranchland, mowed pastures, and golf courses.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S5

TARRANT COUNTY

MAMMALS

tricolored bat *Perimyotis subflavus*

Forest, woodland and riparian areas are important. Caves are very important to this species.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G2G3 State Rank: S3S4

western hog-nosed skunk *Conepatus leuconotus*

Habitats include woodlands, grasslands & deserts, to 7200 feet, most common in rugged, rocky canyon country; little is known about the habitat of the ssp. telmalestes

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G4 State Rank: S4

woodland vole *Microtus pinetorum*

Include grassy marshes, swamp edges, old-field/pine woodland ecotones, tallgrass fields; generally sandy soils.

Federal Status: State Status: SGCN: Y
Endemic: N Global Rank: G5 State Rank: S3

MOLLUSKS

Louisiana Pigtoe *Pleurobema riddellii*

Occurs in small streams to large rivers in slow to moderate currents in substrates of clay, mud, sand, and gravel. Not known from impoundments (Howells 2010f; Randklev et al. 2013b; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G1G2 State Rank: S1

Sandbank Pocketbook *Lampsilis satura*

Occurs in small streams to large rivers in slow to moderate current in sandy mud to sand and gravel substrate. Can occur in a variety of habitats but most common in littoral habitats such as banks or backwaters or in protected areas along point bars (Randklev et al. 2013b; Randklev et al. 2014a; Troia et al. 2015). [Mussels of Texas 2019]

Federal Status: State Status: T SGCN: Y
Endemic: Global Rank: G2? State Rank: S1

Texas Heelsplitter *Potamilus amphichaenus*

Occurs in small streams to large rivers in standing to slow-flowing water; most common in banks, backwaters and quiet pools; adapts to some reservoirs. Often found in soft substrates such as mud, silt or sand (Howells et al. 1996; Randklev et al. 2017a). [Mussels of Texas 2019]

Federal Status: State Status: T SGCN: Y
Endemic: N Global Rank: G1G3 State Rank: S1

REPTILES

alligator snapping turtle *Macrochelys temminckii*

Aquatic: Perennial water bodies; rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near running water; sometimes enters brackish coastal waters. Females emerge to lay eggs close to the waters edge.

TARRANT COUNTY

REPTILES

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G2G3	State Rank: S2

common garter snake *Thamnophis sirtalis*

Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.

Federal Status:	State Status:	SGCN: N
Endemic:	Global Rank: G5	State Rank: S2

eastern box turtle *Terrapene carolina*

Terrestrial: Eastern box turtles inhabit forests, fields, forest-brush, and forest-field ecotones. In some areas they move seasonally from fields in spring to forest in summer. They commonly enters pools of shallow water in summer. For shelter, they burrow into loose soil, debris, mud, old stump holes, or under leaf litter. They can successfully hibernate in sites that may experience subfreezing temperatures.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

massasauga *Sistrurus tergeminus*

Terrestrial: Shortgrass or mixed grass prairie, with gravel or sandy soils. Often found associated with draws, floodplains, and more mesic habitats within the arid landscape. Frequently occurs in shrub encroached grasslands.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3G4	State Rank: S3S4

slender glass lizard *Ophisaurus attenuatus*

Terrestrial: Habitats include open grassland, prairie, woodland edge, open woodland, oak savannas, longleaf pine flatwoods, scrubby areas, fallow fields, and areas near streams and ponds, often in habitats with sandy soil.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

smooth softshell *Apalone mutica*

Aquatic: Large rivers and streams; in some areas also found in lakes and impoundments (Ernst and Barbour 1972). Usually in water with sandy or mud bottom and few aquatic plants. Often basks on sand bars and mudflats at edge of water. Eggs are laid in nests dug in high open sandbars and banks close to water, usually within 90 m of water (Fitch and Plummer 1975).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

Texas garter snake *Thamnophis sirtalis annectens*

Terrestrial and aquatic: Habitats used include the grasslands and modified open areas in the vicinity of aquatic features, such as ponds, streams or marshes. Damp soils and debris for cover are thought to be critical.

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G5T4	State Rank: S1

TARRANT COUNTY

REPTILES

Texas horned lizard *Phrynosoma cornutum*

Terrestrial: Open habitats with sparse vegetation, including grass, prairie, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive. Occurs to 6000 feet, but largely limited below the pinyon-juniper zone on mountains in the Big Bend area.

Federal Status:	State Status: T	SGCN: Y
Endemic: N	Global Rank: G4G5	State Rank: S3

timber (canebrake) rattlesnake *Crotalus horridus*

Terrestrial: Swamps, floodplains, upland pine and deciduous woodland, riparian zones, abandoned farmland. Limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines, palmetto.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S4

western box turtle *Terrapene ornata*

Terrestrial: Ornate or western box trutles inhabit prairie grassland, pasture, fields, sandhills, and open woodland. They are essentially terrestrial but sometimes enter slow, shallow streams and creek pools. For shelter, they burrow into soil (e.g., under plants such as yucca) (Converse et al. 2002) or enter burrows made by other species.

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G5	State Rank: S3

PLANTS

earleaf false foxglove *Agalinis auriculata*

Known in Texas from one late nineteenth century specimen record labeled -Benbrook-; in Oklahoma, degraded prairies, floodplains, fallow fields, and borders of upland sterile woods; in Arkansas, blackland prairie; Annual; Flowering August - October

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: SH

Engelmann's bladderpod *Physaria engelmannii*

Grasslands and calcareous rock outcrops in a band along the eastern edge of the Edwards Plateau, ranging as far north as the Red River (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G4	State Rank: S3

Glen Rose yucca *Yucca necopina*

Grasslands on sandy soils and limestone outcrops; flowering April-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G1G2	State Rank: S3

TARRANT COUNTY

PLANTS

Hall's prairie clover *Dalea hallii*

In grasslands on eroded limestone or chalk and in oak scrub on rocky hillsides; Perennial; Flowering May-Sept; Fruiting June-Sept

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S2

Osage Plains false foxglove *Agalinis densiflora*

Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

Reverchon's scurfpea *Pediomelum reverchonii*

Mostly in prairies on shallow rocky calcareous substrates and limestone outcrops; Perennial; Flowering Jun-Sept; Fruiting June-July

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3

Shinner's sedge *Carex shinnersii*

Occurs in ditches and swales in prairie landscapes (Carr 2015).

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S2

Texas milk vetch *Astragalus reflexus*

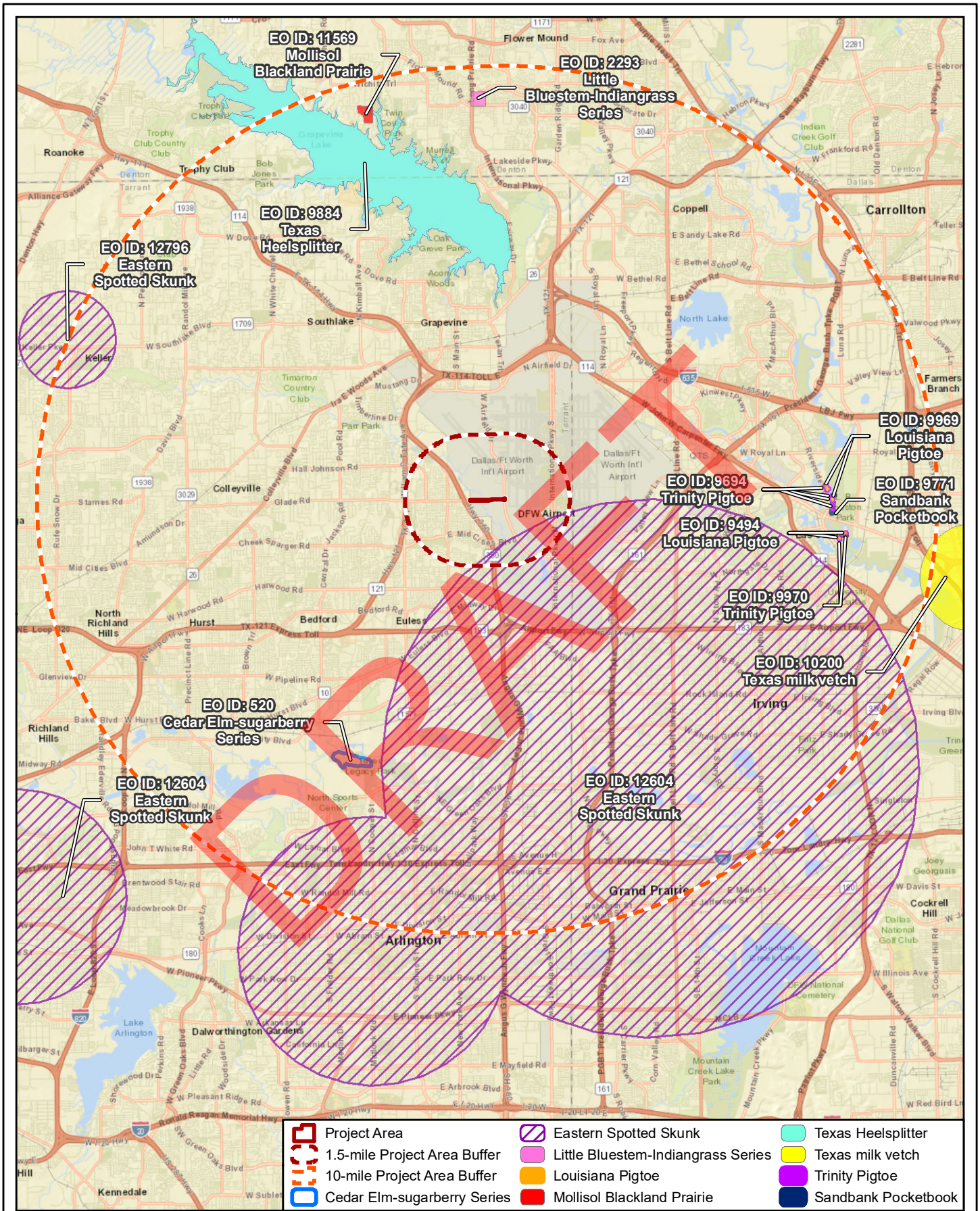
Grasslands, prairies, and roadsides on calcareous and clay substrates; Annual; Flowering Feb-June; Fruiting April-June

Federal Status:	State Status:	SGCN: Y
Endemic: Y	Global Rank: G3	State Rank: S3

Topeka purple-coneflower *Echinacea atrorubens*

Occurring mostly in tallgrass prairie of the southern Great Plains, in blackland prairies but also in a variety of other sites like limestone hillsides; Perennial; Flowering Jan-June; Fruiting Jan-May

Federal Status:	State Status:	SGCN: Y
Endemic: N	Global Rank: G3	State Rank: S3



TXNDD Element Occurrence

CSJ: 0902-90-117, 0902-90-061

Glade Road

Data Source: TPWD (09/25/2020)
Basemap Source: Esri (2020)

0 3 Miles
0 4 Kilometers

1 in = 3 miles
Scale:1:190,080
Date: 9/29/2020

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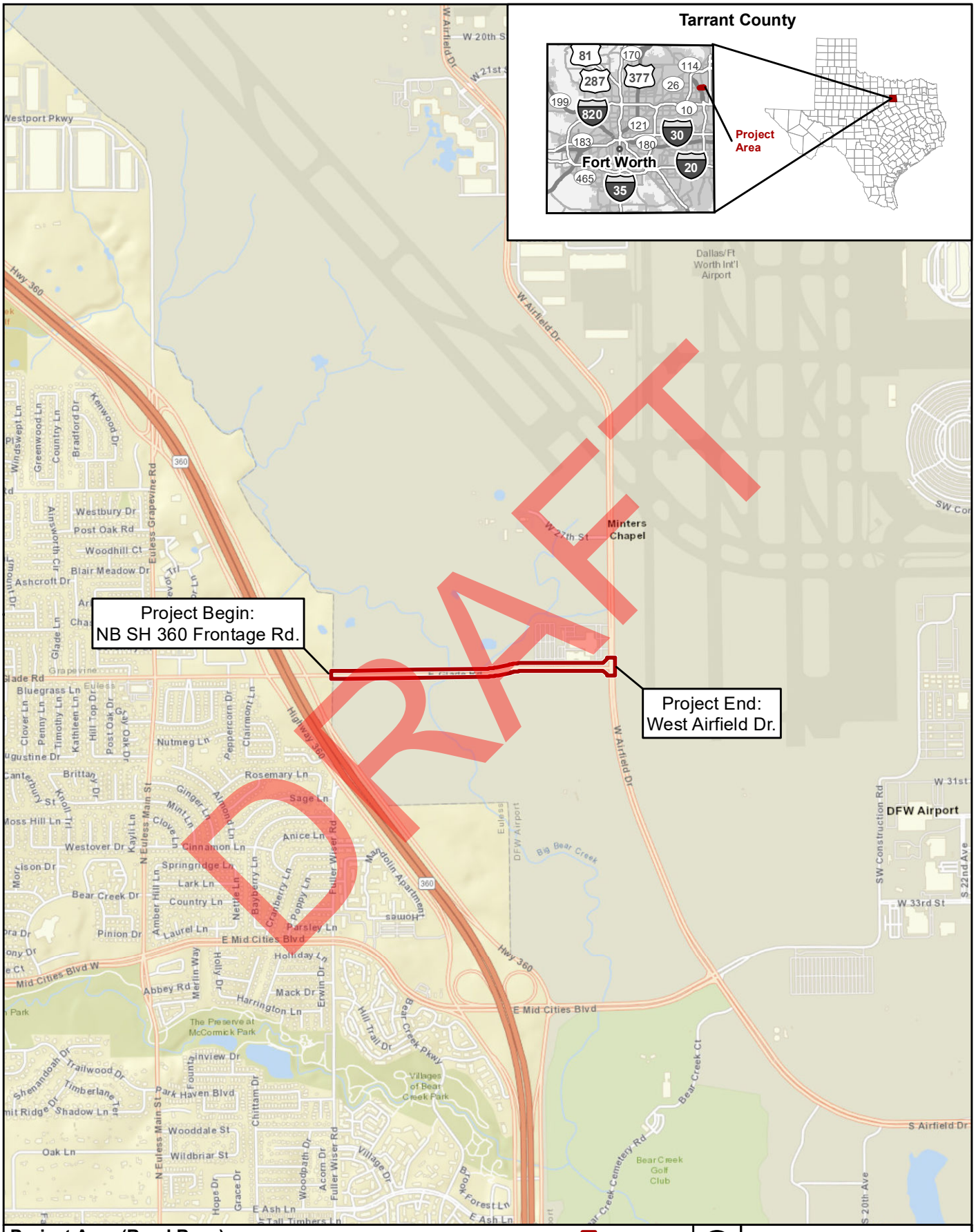
Texas Natural Diversity Database Results
CSJ: 0902-90-117, 0902-90-061

EO ID	Scientific Name	Common Name	Listing Status*	Buffer Zone	Last Observation Date
520	*Ulmus crassifolia-celtis laevigata* series	Cedar Elm-sugarberry Series	NL	10 miles	3/1/1987
2293	*Schizachyrium scoparium-sorghastrum nutans* series	Little Bluestem-Indiangrass Series	NL	10 miles	2/1/1995
9494	*Pleurobema riddellii*	Louisiana Pigtoe	T	10 miles	9/28/2012
9694	*Fusconaia chunii*	Trinity Pigtoe	NL	10 miles	9/1/2013
9771	*Lampsilis satura*	Sandbank Pocketbook	T	10 miles	7/13/2012
9884	*Potamilus amphichaenus*	Texas Heelsplitter	T	10 miles	10/31/1975
9969	*Pleurobema riddellii*	Louisiana Pigtoe	T	10 miles	9/1/2015
9970	*Fusconaia chunii*	Trinity Pigtoe	NL	10 miles	9/28/2012
10200	*Astragalus reflexus*	Texas milk vetch	SGCN	10 miles	4/26/1940
11569	*Schizachyrium scoparium - Andropogon gerardii - Sorghastrum nutans - Bifora americana* Mollisol Grassland	Mollisol Blackland Prairie	NL	10 miles	10/15/2009
12604	*Spilogale putorius*	Eastern Spotted Skunk	SGCN	1.5 miles and 10 miles	3/20/2015
12769	*Spilogale putorius*	Eastern Spotted Skunk	SGCN	10 miles	3/21/2003

* SGCN- Species of Greatest Conservation Neeed, NL- Not Listed, T- Threatened


Tarrant County
Fort Worth
Project Area
Project Begin:
NB SH 360 Frontage Rd.
Project End:
West Airfield Dr.
DRAFT
Minters Chapel
DFW Airport
Dallas/Ft Worth Int'l Airport
Project Area (Road Base)
Project Area
Glade Road
Basemap Source: Esri (2020)
CSJ: 0902-90-117, 0902-90-061
0 2,000 Feet
0 600 Meters
1 in = 2,000 feet
Scale: 1:24,000
Date: 11/23/2020
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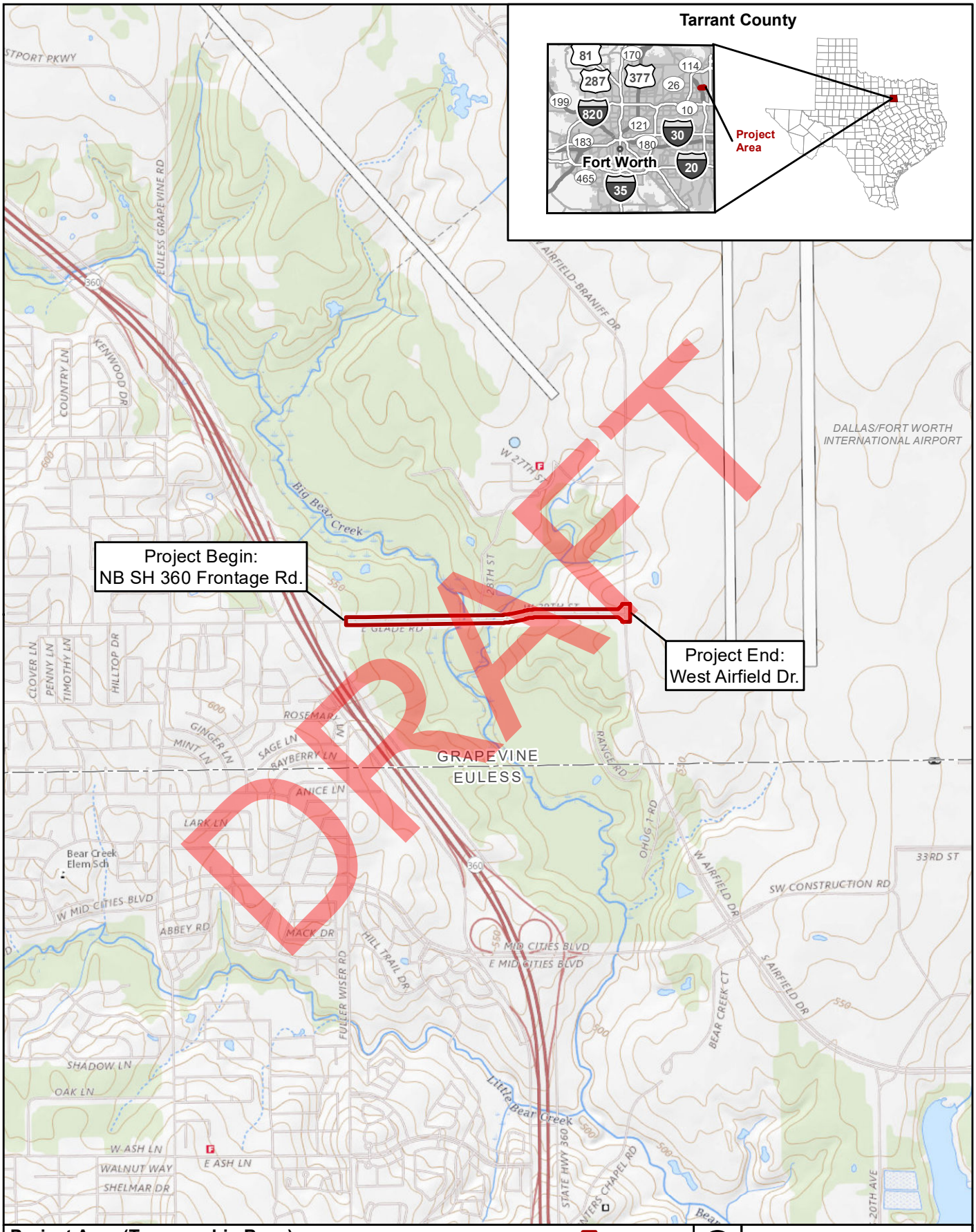

Project Area (Topographic Base)

Project Area

CSJ: 0902-90-117, 0902-90-061

Topographic Source: USGS (2020)
USGS 7.5' Quadrangles: Grapevine, Euless

0 2,000 Feet
0 600 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 11/30/2020

Glade Road

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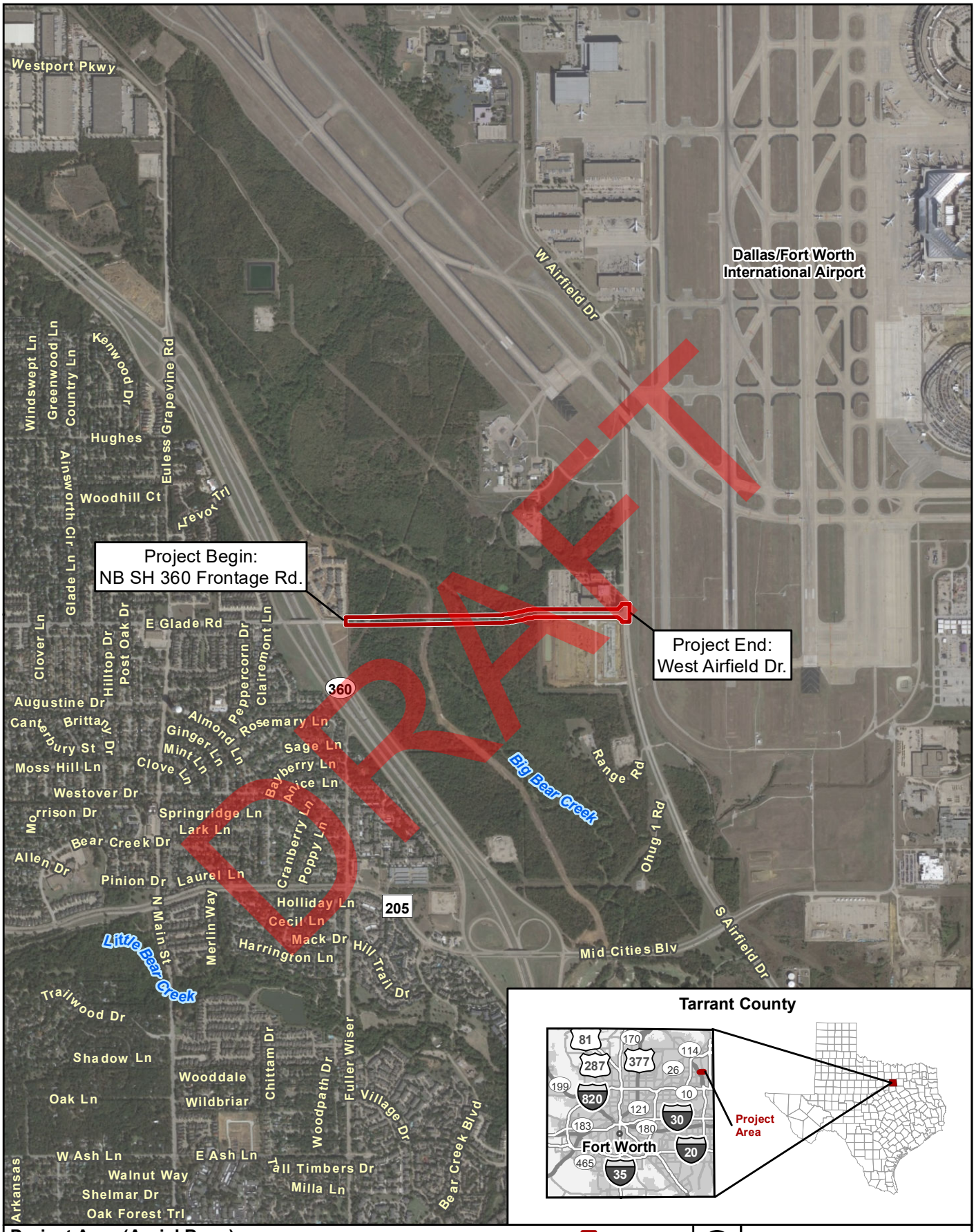

Project Area (Aerial Base)

Project Area

CSJ: 0902-90-117, 0902-90-061

Glade Road

Aerial Source: Google (2019)

0 2,000 Feet
0 600 Meters

1 in = 2,000 feet
Scale: 1:24,000
Date: 11/30/2020

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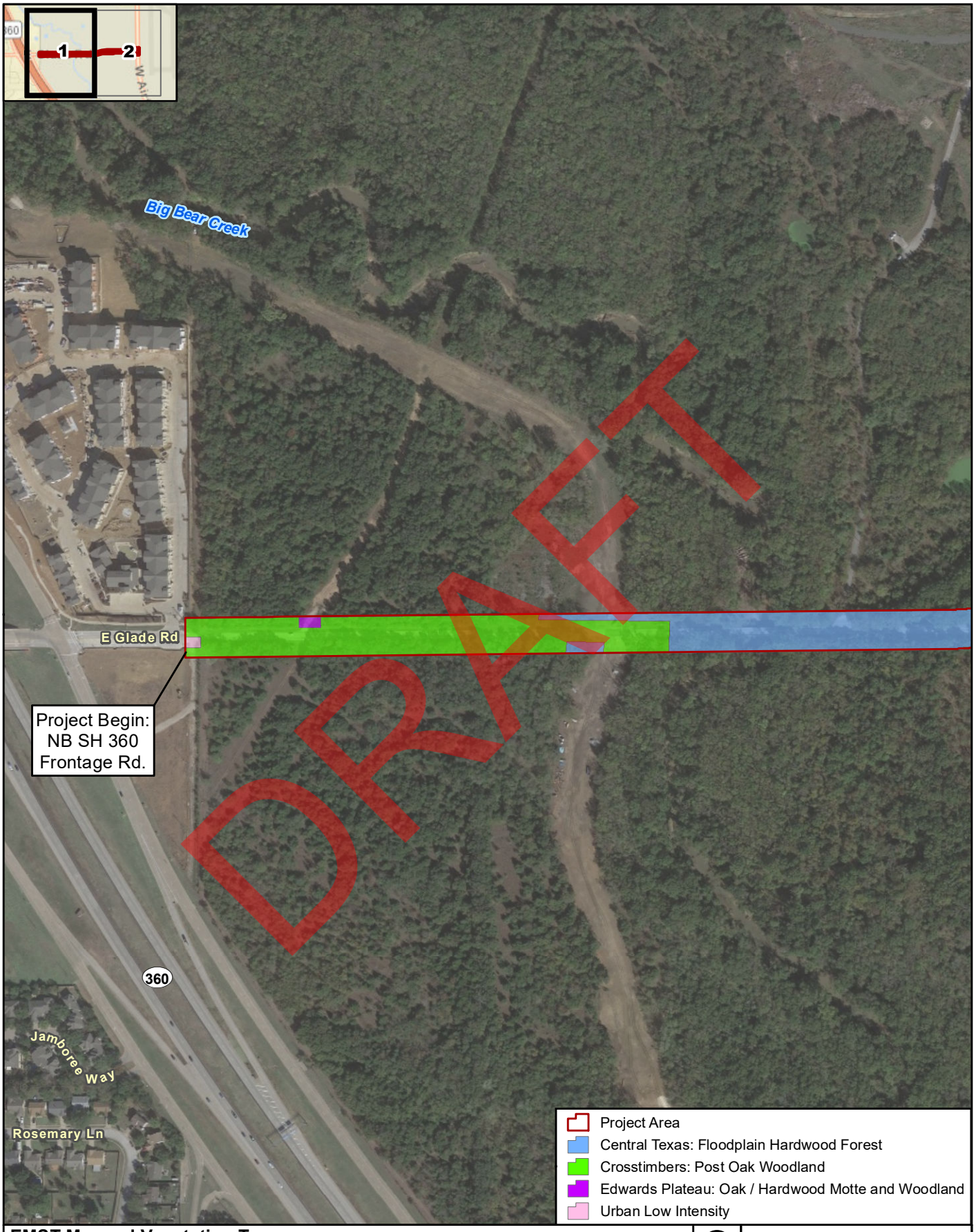

EMST Mapped Vegetation Types
Sheet 1 of 2

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Google (2019)

0 400 Feet
0 120 Meters

1 in = 400 feet
Scale: 1:4,800
Date: 11/30/2020

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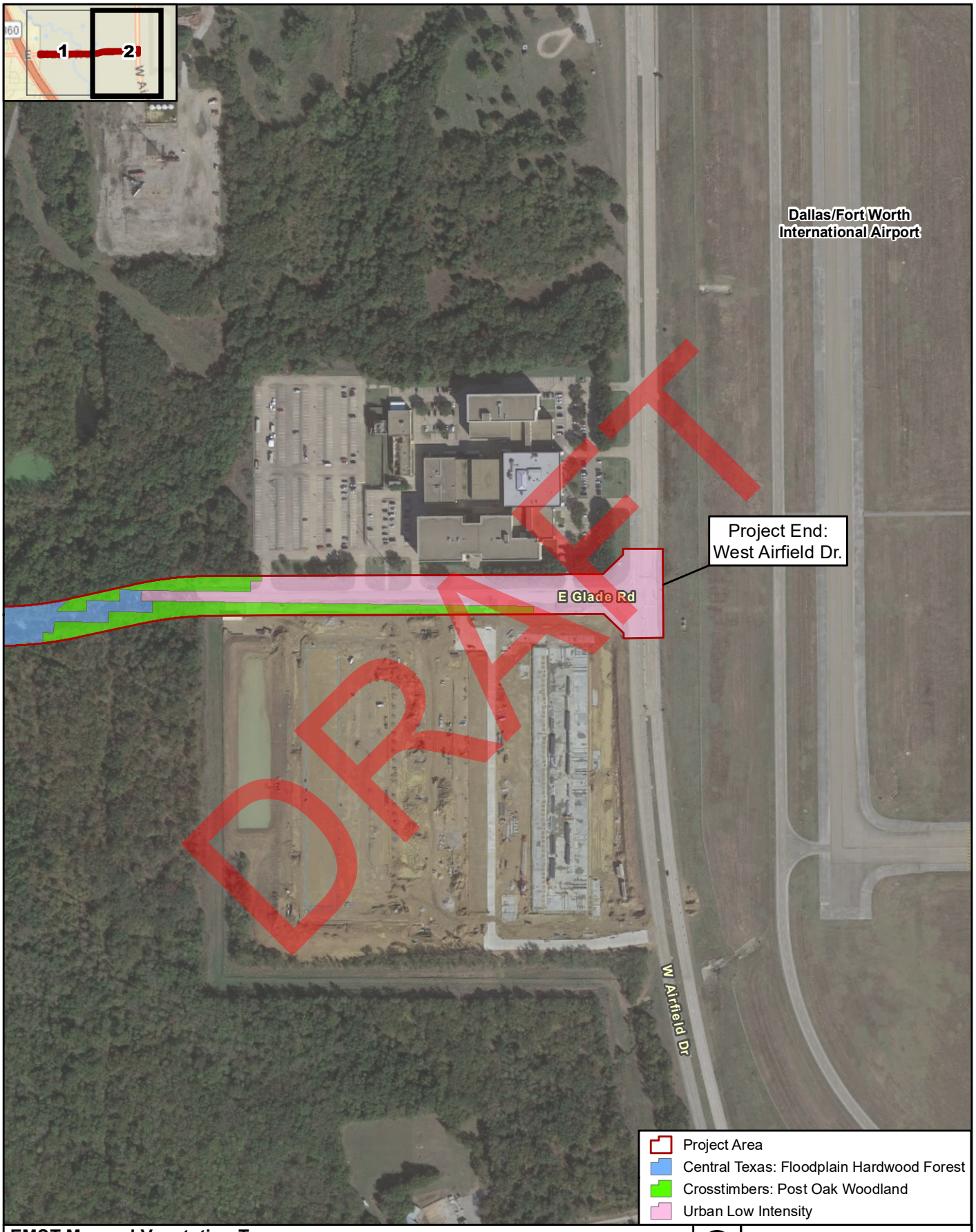

EMST Mapped Vegetation Types
Sheet 2 of 2

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: TxDOT/TPWD EMST/MoRAP (2013)
Aerial Source: Google (2019)

0 400 Feet
0 120 Meters

1 in = 400 feet
Scale: 1:4,800
Date: 11/30/2020

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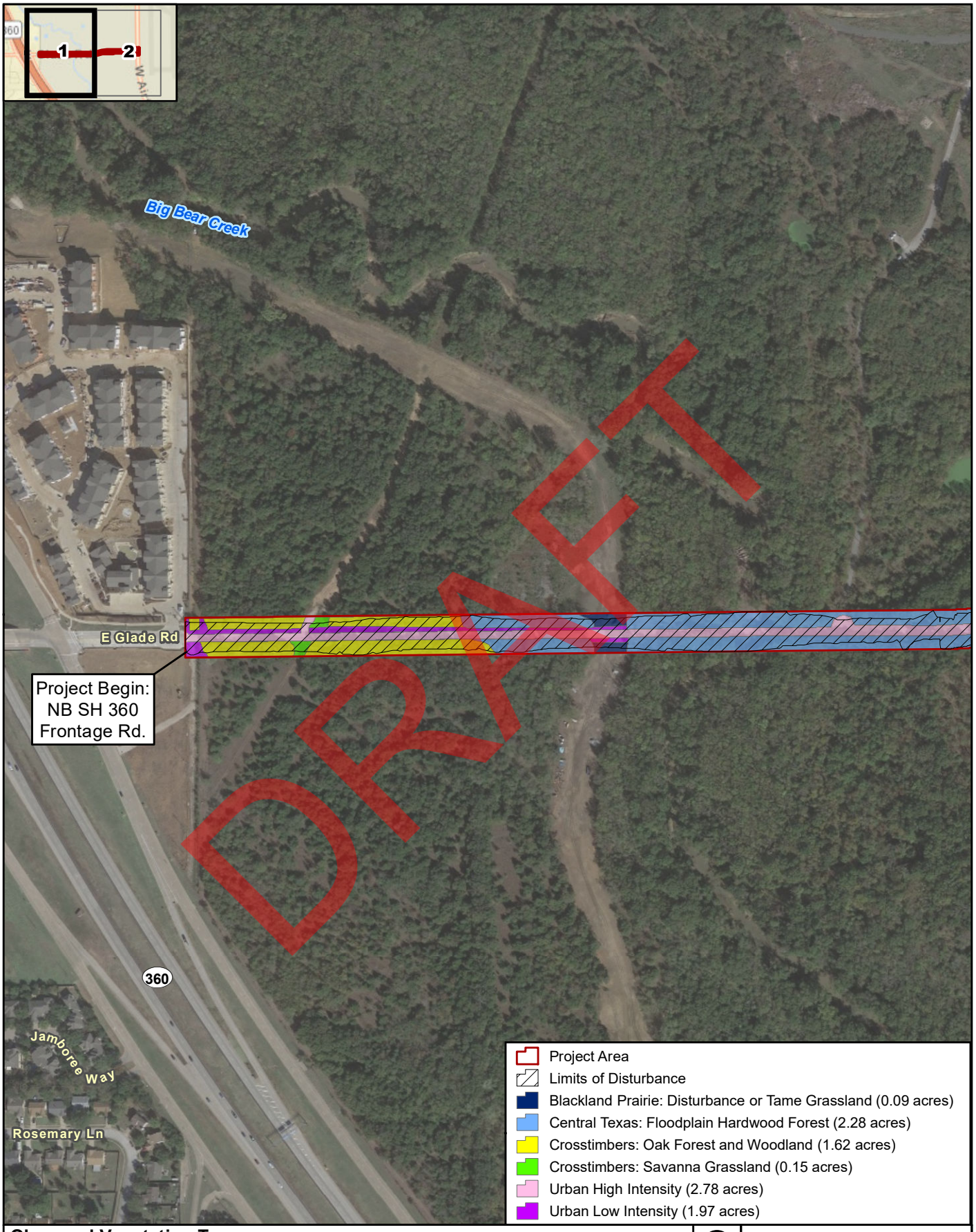
Ecological Mapping System of Texas (EMST) and Observed Vegetation Table
CSJ: 0902-90-117, 0902-90-061

EMST Habitat Type (MOU Type)	Common Name	EMST Mapped Acres	Observed Acres	Impacted Acres	TPWD Threshold	Exceeds Threshold? (Y/N)
Region: Texas Blackland Prairies						
Crosstimbers Woodland and Forest	Crosstimbers: Oak Forest and Woodland	-	2.273	1.617	1	Y
	Crosstimbers: Post Oak Woodland	5.422	-	-		
	Crosstimbers: Savanna Grassland	-	0.186	0.152		
Edwards Plateau Savanna, Woodland, and Shrubland	Edwards Plateau: Oak/Hardwood Motte and Woodland	0.048	-	-	1	N
Riparian	Central Texas: Floodplain Hardwood Forest	3.287	3.190	2.285	0.1	Y
Urban	Urban Low Intensity	3.528	2.845	1.974	-	N/A
	Urban High Intensity	-	3.542	2.775		
Disturbed Prairie	Blackland Prairie: Disturbance or Tame Grassland	-	0.177	0.093	3	N
Scrub, Thornscrub, Shrubland	Native Invasive: Deciduous Shrubland	-	0.073	0.073	2	N
Total:		**12.285**	**12.286**	**8.969**		



Observed Vegetation Types
Sheet 1 of 2

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 400 Feet
0 120 Meters

1 in = 400 feet
Scale: 1:4,800
Date: 11/30/2020

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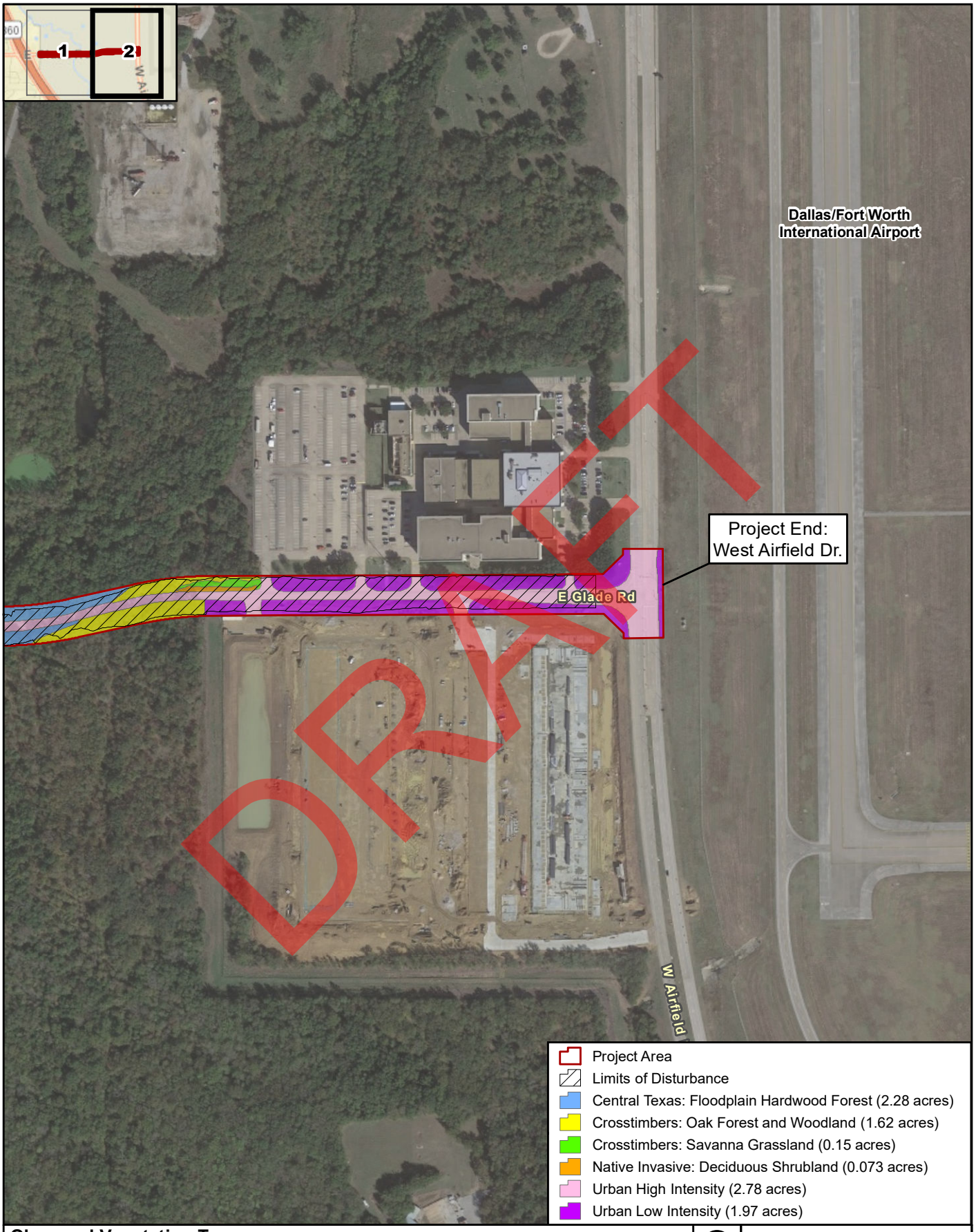

Observed Vegetation Types
Sheet 2 of 2

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 400 Feet
0 120 Meters

1 in = 400 feet
Scale: 1:4,800
Date: 11/30/2020

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Description of Observed Vegetation

Vegetation observed within the project area during the September 2020 field investigation is only slightly represented by the EMST. Observed vegetation generally consists of seven vegetation types within the project area. Existing vegetation within the project area, as observed during the September 2020 field investigations, is described below.

Observed Vegetation Type 1

Urban High Intensity

The majority of the project area (approximately 3.54 acres) was confirmed to be Urban High Intensity. This vegetation type consists of pavement, gravel, and cement (corresponds with MOU Urban habitat type). There is no tree stratum, sapling/shrub stratum, or herbaceous stratum in this vegetation type. Approximately 2.78 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 2

Urban Low Intensity

This vegetation type covers approximately 2.84 acres of the project area. The Urban Low Intensity (corresponds with MOU Urban habitat type) areas consist of maintained grasses. This vegetation type is dominated by Bermudagrass (*Cynodon dactylon*). There tends to be no tree or sapling/shrub stratum. Approximately 1.97 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 3

Central Texas: Floodplain Hardwood Forest

This vegetation type covers approximately 3.19 acres of the project area. These areas are typically characterized by woody overstory and understory vegetation located within a floodplain (corresponds with MOU Riparian habitat type). The tree stratum of this vegetation type is dominated by pecan (*Carya illinoinensis*), American elm (*Ulmus americana*), bur oak (*Quercus macrocarpa*), green ash (*Fraxinus pennsylvanica*), and red mulberry (*Morus rubra*). The sapling/shrub stratum is dominated by green ash, boxelder (*Acer negundo*), cedar elm (*Ulmus crassifolia*), American elm, sugarberry (*Celtis laevigata*), gum bully (*Sideroxylon lanuginosum*), and roughleaf dogwood (*Cornus drummondii*). The sparse herbaceous stratum is dominated by Indian woodoats (*Chasmanthium latifolium*), Virginia wildrye (*Elymus virginiana*), cedar sedge (*Carex planostachys*), and great ragweed (*Ambrosia trifida*). The woody vine stratum is dominated by eastern poison ivy (*Toxicodendron radicans*), saw greenbrier *(Smilax bona-nox*), and summer grape (*Vitis aestivalis*). Approximately 2.28 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 4

Crosstimbers: Oak Forest and Woodland

This vegetation type consists of approximately 2.27 acres of the project area. This vegetation type is typically found in slightly higher elevations throughout the project area (corresponds with MOU Crosstimbers Woodland and Forest habitat type). The tree stratum is dominated by post oak (*Quercus stellata*), eastern redcedar (*Juniperus virginiana*), cedar elm, blackjack oak (*Quercus marilandica*), northern red oak (*Quercus rubra*), and white ash (*Fraxinus americana*). The sapling/shrub stratum is dominated by western soapberry (*Sapindus saponaria* var. *drummondii*), post oak, eastern redcedar, eastern redbud (*Cercis canadensis*), Japanese privet (*Ligustrum japonicum),* Mexican plum (*Prunus mexicana*), yaupon (*Ilex vomitoria*), Osage-orange (*Maclura pomifera*), sugarberry, and slippery elm (*Ulmus rubra*). The sparse herbaceous stratum is dominated by of Texas prickly pear *(Opuntia engelmannii var. lindheimeri*), Virginia wildrye, Indian woodoats, cedar sedge, Scribner's rosette grass (*Dichanthelium oligosanthes* var. *scribnerianum*), and hogwort (*Croton capitatus*). The woody vine stratum is dominated by trumpet creeper (*Campsis radicans*), saw greenbrier, and Virginia creeper (*Parthenocissus quinquefolia*). Approximately 1.62 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 5

Blackland Prairie: Disturbance or Tame Grassland

This vegetation type consists of approximately 0.17 acres of the project area. This vegetation type consists of early successional grass and forb species that have populated a disturbed area associated with a pipeline easement (corresponds with MOU Disturbed Prairie habitat type). The herbaceous stratum consists of great ragweed, witchgrass *(Panicum capillare*), carelessweed (*Amaranthus palmeri*), barnyardgrass (*Echinochloa crus-galli*), Johnsongrass (*Sorghum halepense*), common sunflower (*Helianthus annuus*), spotted sandmat (*Chamaesyce maculate*), and bull thistle (*Cirsium vulgare*). There are no tree, sapling/shrub, or woody vine strata associated with this vegetation type. Approximately 0.09 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 6

Crosstimbers: Savanna Grassland

This vegetation type consists of approximately 0.19 acres of the project area. This vegetation type consists of native grass and forb species that have populated a disturbed area associated with a pipeline easement (corresponds with MOU Crosstimbers Woodland and Forest habitat type). The herbaceous stratum consists of white heath aster (*Symphyotrichum ericoides*), tapered rosette grass (*Dichanthelium acuminatum*), slender lespedeza (*Lespedeza virginica*), hogwort, prairie threeawn (*Aristida oligantha*), Texas prickly pear, yellow bluestem (*Bothriochloa ischaemum*), sidebeak pencilflower (*Stylosanthes biflora*), Cuman ragweed (*Ambrosia psilostachya*), and white tridens (*Tridens albescens*). There are no tree, sapling/shrub, or woody vine strata associated with this vegetation type. Approximately 0.15 acres of this vegetation type are anticipated to be impacted by the project.

Observed Vegetation Type 7

Native Invasive: Deciduous Shrubland

This vegetation type consists of approximately 0.07 acres of the project area. This vegetation type consists of encroaching trees, shrubs, grasses and forbs that have populated an upland man-made drainage ditch (corresponds with MOU Scrub, Thornscrub, Shrubland habitat type). The sapling/shrub stratum consists of cedar elm, black willow (*Salix nigra*), and white ash. The herbaceous stratum consists of downy milkpea (*Galactia volubilis*), great ragweed, Johnsongrass, Texas vervain (*Verbena halei*), and dallisgrass (*Paspalum dilatatum*). The woody vine stratum consists of summer grape. There is no tree stratum associated with this vegetation type. Approximately 0.07 acres of this vegetation type are anticipated to be impacted by the project.

Ecological Mapping System of Texas (EMST) and Observed Vegetation Table
CSJ: 0902-90-117, 0902-90-061

EMST Habitat Type (MOU Type)	Common Name	EMST Mapped Acres	Observed Acres	Impacted Acres	TPWD Threshold	Exceeds Threshold? (Y/N)
Region: Texas Blackland Prairies						
Crosstimbers Woodland and Forest	Crosstimbers: Oak Forest and Woodland	-	2.273	1.617	1	Y
	Crosstimbers: Post Oak Woodland	5.422	-	-		
	Crosstimbers: Savanna Grassland	-	0.186	0.152		
Edwards Plateau Savanna, Woodland, and Shrubland	Edwards Plateau: Oak/Hardwood Motte and Woodland	0.048	-	-	1	N
Riparian	Central Texas: Floodplain Hardwood Forest	3.287	3.190	2.285	0.1	Y
Urban	Urban Low Intensity	3.528	2.845	1.974	-	N/A
	Urban High Intensity	-	3.542	2.775		
Disturbed Prairie	Blackland Prairie: Disturbance or Tame Grassland	-	0.177	0.093	3	N
Scrub, Thornscrub, Shrubland	Native Invasive: Deciduous Shrubland	-	0.073	0.073	2	N
Total:		**12.285**	**12.286**	**8.969**		

Photo 1: The western terminus of the project area; viewing west.

Photo 2: The western terminus of the project area; viewing east.

Photo 3: The project area from the bridge over Big Bear Creek; viewing west.

Photo 4: The project area from the bridge over Big Bear Creek; viewing east.

Photo 5: The project area from the culvert over an unnamed tributary to Big Bear Creek; viewing west.

Photo 6: The project area from the culvert over an unnamed tributary to Big Bear Creek; viewing east.

Photo 7: The eastern terminus of the project area; viewing east.

Photo 8: The eastern terminus of the project area; viewing west.

Photo 9: Airfield Drive at the eastern terminus of the project area; viewing north.

Photo 10: Airfield Drive at the eastern terminus of the project area; viewing south.

General Photo Location Map
Sheet 1 of 3

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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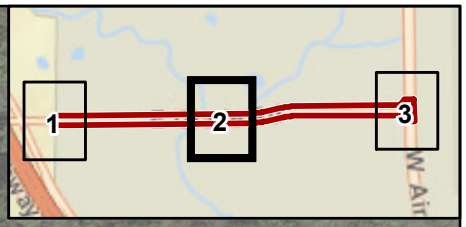

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G3
G4
E Glade Rd
G5
G6

Project Location
Sheet Limits
Photo Location/Direction

General Photo Location Map
Sheet 2 of 3

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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General Photo Location Map
Sheet 3 of 3

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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Photo 1: Representative view of the Urban High Intensity vegetation type observed within the project area.

Photo 2: Representative view of the Urban Low Intensity vegetation type observed within the project area.

Photo 3: Representative view of the Native Invasive: Deciduous Shrubland vegetation type observed within the project area.

Photo 4: Representative view of the Crosstimbers: Savanna Grassland vegetation type observed within the project area.

Photo 5: Representative view of the Crosstimbers: Oak Forest and Woodland vegetation type observed within the project area.

Photo 6: Representative view of the Central Texas: Floodplain Hardwood Forest vegetation type observed within the project area.

Photo 7: Representative view of the Blackland Prairie: Disturbance or Tame Grassland.

Photo 8: Mammal burrow observed within the project area.

Photo 9: Woody debris and dense understory cover located within the project area that may serve as potential habitat to multiple wildlife species.

Photo 10: Invasive mollusk species, Asian clam (*Corbicula fluminea*), observed within Big Bear Creek.

Photo 11: A perennial stream (Big Bear Creek) located within the project area that may serve as habitat to state listed mussel species and other aquatic or semi-aquatic wildlife species.

Photo 12: Representative view of the substrate of Big Bear Creek, within the project area.

Photo 13: Another representative view of the substrate of Big Bear Creek, within the project area.

Photo 14: A tall cottonwood tree (*Populus deltoides*) located within the project area that may serve as potential roosting habitat for migratory and other bird species.

Photo 15: Underside view of the bridge located at Big Bear Creek. It may serve as potential habitat for bat and bird species.

Photo 16: Eastern phoebe (*Sayornis phoebe)* nest located on the underside of the bridge located at Big Bear Creek.

Photo 17: Another perennial stream (an unnamed tributary to Big Bear Creek) and box culvert located within the project area that may serve as habitat to state listed mussel species and other aquatic or semi-aquatic wildlife species.

Photo 18: Eastern phoebe nest located in the box culvert through which runs the second perennial stream.

Photo 19: Another view of the unnamed tributary to Big Bear Creek. It is a perennial stream that may serve as habitat to state listed mussel species and other aquatic or semi-aquatic wildlife species.

Photo 20: Representative view of the substrate of the unnamed tributary to Big Bear Creek.

Photo 21: Potential roosting tree for bats, located near the unnamed tributary to Big Bear Creek.

Biological Resources Photo Location Map
Sheet 1 of 5

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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Biological Resources Photo Location Map
Sheet 2 of 5

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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Biological Resources Photo Location Map
Sheet 3 of 5

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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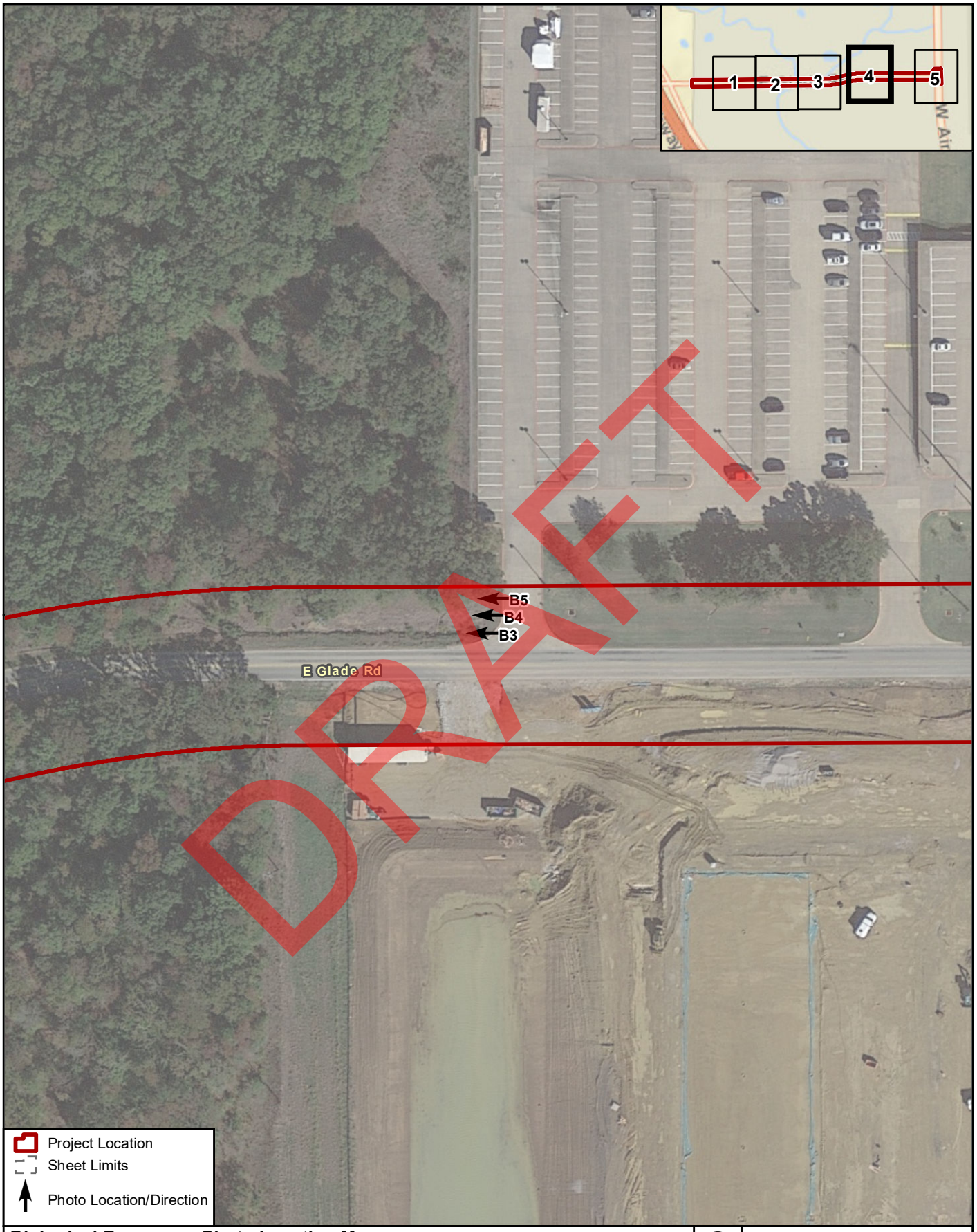

Biological Resources Photo Location Map
Sheet 4 of 5

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

0 100 Feet
0 30 Meters

1 in = 100 feet
Scale: 1:1,200
Date: 10/7/2020

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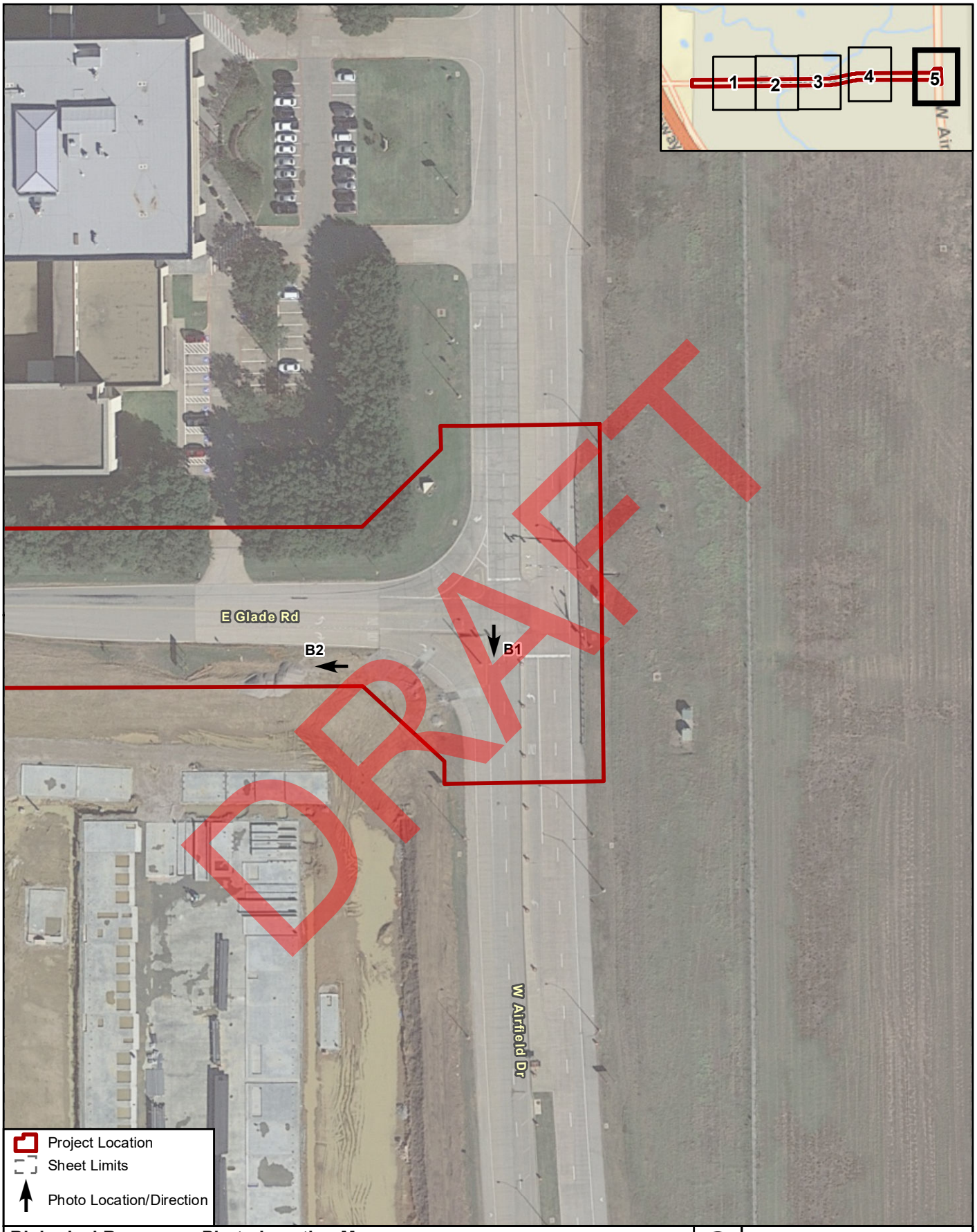

Biological Resources Photo Location Map
Sheet 5 of 5

Glade Road

CSJ: 0902-90-117, 0902-90-061

Data Source: CMEC (2020)
Aerial Source: Google (2019)

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