



# Biological Evaluation Form

**Main CSJ:** 0915-12-585

**Form Prepared By:** Chelsea Miller

**Date of Evaluation:** December 13, 2017

*Project has no Federal nexus.*

**Proposed Letting Date:** October 2018

*Project not assigned to TxDOT under the NEPA Assignment MOU*

**District(s):** San Antonio

**County(ies):** Bexar

**Roadway Name:** Blanco Road

**Limits From:** West Oak Estates Drive

**Limits To:** Borgfeld Drive

**Project Description:** The Alamo Regional Mobility (ARMA) proposes to improve a 3.6 mile segment of Blanco Road between West Oak Estates Drive and Borgfeld Drive in Bexar County from a two-lane roadway to a four-lane roadway with two 12-foot travel lanes and 6-foot shoulders/bike lanes in each direction. The roadway would have a raised median, curb, and a sidewalk on the northbound side of the project.

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 16, 2014, and executed by FHWA and TxDOT.

## Endangered Species Act (ESA)

Yes Is the action area of the proposed project within the range of federally protected species?

Yes Did the USFWS IPaC system identify any endangered species that may occur or could potentially be affected by the proposed project activities?

Date that the [IPaC system](#) was accessed: November 14, 2018

Yes Is the action area of the proposed project in suitable habitat of federally protected species?

Yes Would the proposed project affect protected species and/or their habitat?

**\*Explain:**

Potentially suitable habitat for the Golden-cheeked Warbler (*Denroica chrysoparia*) was observed outside of the project area but within the action area of the project within the abutting Camp Bullis property. No additional ROW is required for this project and therefore the project would not have a direct affect on potential habitat for this species. Therefore, the project may affect, but is not likely to adversely affect, this species.

The project occurs within USFWS karst zone 3, an area that may contain suitable habitat for karst species, of which there are nine federally listed species known to occur within Bexar County. Additionally, the project occurs within the Stone Oak Karst Faunal Region (KFR). Three federally-protected karst species are known to inhabit the Stone Oak KFR: the Madla Cave meshweaver (*Circurina madla*), Rhadine exilis, and Rhadine infernalis. While no suitable habitat for these species was observed within the project area during a karst terrain feature survey, this does not preclude the possibility for karst features of potentially suitable habitat



for any of the nine karst species to be uncovered during the construction of the project. Therefore, the project may affect, but is not likely to adversely affect, these three species.

     No      Would the proposed project impact Critical Habitat as designated by USFWS?

**Resources consulted or activities conducted to make effect determination (if applicable):**

- TPWD County List       USFWS Critical Habitat Maps       Species Expert Consulted
- Aerial Photography       Coastal Areas Maps       Site Visit
- Topographic Map       Species Study Conducted       Karst Zone Maps
- Ecological Mapping System of Texas (EMST)       Natural Diversity Database (NDD)

Other:

Karst Terrain Features Survey

### Migratory Bird Treaty Act (MBTA)

     Yes      Is there potential for nesting birds to be present in the project action area during construction?

     No      Were active nests identified during the site survey?

     Yes      Will BMPs will be incorporated to protect migratory bird nests?

Comments:

Nests were observed within the project area during field investigations but were determined to not be active as no birds were observed nearby. Recommend implementation of bird BMPs: Disturbance to the vegetation within the project area should be done outside of nesting season (May 15 through September 15) if possible. If that is not feasible, a nest survey of the areas to be cleared of vegetation will need to be completed by a permitted biologist prior to any clearing activities. If an active nest is found, a 150-foot buffer around the nest will be observed until the young are able to fly or the nest is abandoned.

### Bald and Golden Eagle Protection Act (BGEPA)

     No      Does the proposed project have the potential to impact Bald or Golden Eagles?

Comments:

The project area does not contain suitable habitat for Bald or Golden Eagles and is therefore not anticipated to impact either species.

### Fish and Wildlife Coordination Act (FWCA)

     Yes      Does the project have impacts on one or more Waters of the U.S. or wetlands?

     Yes      Is the project covered by a Nationwide Permit?



  No   Is the project covered by an Individual Permit from the USACE?

Comments:

All permanent and temporary impacts to waters within the project area will be kept to under one-tenth acre and therefore covered by a Nationwide Permit 14 without a preconstruction notification.

**Executive Order 13112 on Invasive Species**

  Yes   Would the proposed project be in compliance with EO 13112?

Comments:

In accordance with EO 13112 on Invasive Species and the Executive Memorandum on Beneficial Landscaping, seeding and replanting with TxDOT approved seeding specifications that is in compliance with EO 13112 would be done where possible.

**Executive Memorandum on Environmentally and Economically Beneficial Landscaping**

  No   Would landscaping be included in the proposed projects?

Comments:

Aside from re-vegetating disturbed areas, landscaping is not anticipated to be part of the project.

**Farmland Protection Policy Act (FPPA)**

  No   Would the project require new ROW or permanent easements (Do not include temporary easements)?

Comments:

The project will take place entirely within existing ROW along Blanco Road. No additional ROW will be acquired for this project.

**General Comments**

[Empty text box for general comments]



## Findings

### *Endangered Species Act (ESA)*

According to the U.S. Fish and Wildlife Service (USFWS), at least one threatened and/or endangered species is known to occur in the project action area. Based on the information available, the proposed project may affect federally protected species.

Potentially suitable habitat for the Golden-cheeked Warbler (*Denroica chrysoparia*) was observed outside of the project area but within the action area of the project within the abutting Camp Bullis property. No additional ROW is required for this project and therefore the project would not have a direct affect on potential habitat for this species. Therefore, the project may affect, but is not likely to adversely affect, this species.

The project occurs within USFWS karst zone 3, an area that may contain suitable habitat for karst species, of which there are nine federally listed species known to occur within Bexar County. Additionally, the project occurs within the Stone Oak Karst Faunal Region (KFR). Three federally-protected karst species are known to inhabit the Stone Oak KFR: the Madla Cave meshweaver (*Circurina madla*), *Rhadine exilis*, and *Rhadine infernalis*. While no suitable habitat for these species was observed within the project area during a karst terrain feature survey, this does not preclude the possibility for karst features of potentially suitable habitat for any of the nine karst species to be uncovered during the construction of the project. Therefore, the project may affect, but is not likely to adversely affect, these three species.

Consultation with the U.S. Fish and Wildlife Service (USFWS) will be required. The USFWS IPaC website was accessed on November 14, 2018.

### *Essential Fish Habitat (EFH)*

Tidally influenced waters do not occur within the project action area. Coordination with National Marine Fisheries Service is not required.

### *Coastal Barrier Resources Act (CBRA)*

This project is not located within a designated CBRA map unit. Coordination with the U.S. Fish and Wildlife Service (USFWS) is not required.

### *Marine Mammal Protection Act (MMPA)*

Marine mammals are protected under the Marine Mammal Protection Act (MMPA). The Texas coast provides suitable habitat and is within range of several marine mammals including the West Indian Manatee (*Trichechus manatus*), and bottlenose dolphin (*Tursiops truncatus*).

The project area does not contain suitable habitat for marine mammals. Coordination with NMFS is not required.

### *Migratory Bird Treaty Act (MBTA)*

The Migratory Bird Treaty Act (MBTA) states that it is unlawful to kill, capture, collect, possess, buy, sell, trade, or transport any migratory bird, nest, young, feather, or egg in part or in whole, without a federal permit issued in accordance within the Act's policies and regulations.

A site survey did not identify active nests within the project action area. While no impact to migratory birds is expected, TxDOT will take all appropriate actions to prevent the take of migratory birds, their active nests, eggs, or young should they be discovered on the project site. Direction to contractors is provided on the standard EPIC sheet.

### *Bald and Golden Eagle Protection Act (BGEPA)*



The proposed project does not have the potential to impact Bald or Golden Eagles.

*Fish and Wildlife Coordination Act (FWCA)*

The Fish and Wildlife Coordination Act (FWCA) of 1958 requires that federal agencies obtain comments from USFWS and TPWD. This coordination is required whenever a project involves impounding, diverting, or deepening a stream channel or other body of water.

The proposed project is authorized under a Section 404 of the Clean Water Act Nationwide Permit; therefore, no coordination under FWCA would be required.

*Executive Order 13112 on Invasive Species (EO 13112)*

Re-vegetation of disturbed areas would be in compliance with the Executive Order on Invasive Species (EO 13112). Regionally native and non-invasive plants will be used to the extent practicable in landscaping and re-vegetation.

*Executive Memorandum on Beneficial Landscaping*

Landscaping is not part of the proposed project. If revegetation is needed, disturbed areas would be revegetated according to TxDOT's standard practices, which to the extent practicable, complies with Executive Memorandum on Environmentally and Economically Beneficial Landscaping. Direction to contractors is provided on the standard EPIC sheet.

*Farmland Protection Policy Act (FPPA)*

Coordination with the National Resources Conservation Service for FPPA would not be required because the project requires no additional ROW or permanent easements.



## *Suggested Attachments*

**Aerial Map (with delineated project boundaries)**

**USFWS T&E List**

**TPWD T&E List**

**Species Impact Table**

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

**NOAA EFH Mapper Printout**

**USFWS CBRA Mapper Printout**

**EMST Project MOU Summary Table (Required for TPWD Coordination)**

**TPWD SGCN List**

**FPPA Documentation**

**NRCS Web Soil Survey Map**

**Census Bureau Urbanized Area Map**

**Landscaping Plans**

**Photos (Required for TPWD Coordination)**

**Previous TPWD Coordination Documentation (if applicable)**



# Tier I Site Assessment

**Main CSJ:** 0915-12-585

**Form Prepared By:** Chelsea Miller

**Date of Evaluation:** December 13, 2017

**Proposed Letting Date:** October 2018

**District(s):** San Antonio

**County(ies):** Bexar

**Roadway Name:** Blanco Road

**Limits From:** West Oak Estates Drive

**Limits To:** Borgfeld Drive

**Project Description:** The Alamo Regional Mobility (ARMA) proposes to improve a 3.6 mile segment of Blanco Road between West Oak Estates Drive and Borgfeld Drive in Bexar County from a two-lane roadway to a four-lane roadway with two 12-foot travel lanes and 6-foot shoulders/bike lanes in each direction. The roadway would have a raised median, curb, and a sidewalk on the northbound side of the project.

Project is classified as a Categorical Exclusion

Project not assigned to TxDOT under the NEPA Assignment MOU

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 16, 2014, and executed by FHWA and TxDOT.

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

\*Explain:

Field investigations performed within the project area on November 28, 2017 and December 1, 2017 reveal potentially suitable habitat for the following state-listed species of Bexar County: the Plains spotted skunk (*Spilogale putorius-interrupta*), and tree dodder (*Cuscuta exaltata*). Natural Diversity Database data places elemental occurrences for the federally-listed Golden-cheeked Warbler (*Setophaga chrysoparia*) and bracted twistflower (*Streptanthus bracteatus*); and the state-listed Texas salamander (*Eurycea neotenes*) and the Cascade Caverns Salamander (*Eurycea latitans complex*) within the project area. No potentially suitable habitat for these species was observed within the project area. Parcels abutting the project area (and within the action area, a 500-foot buffer around the project area) were observed to contain potentially suitable habitat for the following federally- and state-listed species of Bexar County: Golden-cheeked Warbler, Black-capped Vireo (*Vireo atricapilla*), bracted twistflower, Texas seymeria (*Seymeria texana*), Heller's marbleseed (*Onosmodium helleri*), Plateau milkvine (*Matelea edwardsensis*), Glass Mountains coral root (*Hexalectris nitida*), and Texas amorpha (*Amorpha roemeriana*). The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project, these species are included in the interest of due diligence.

Potentially suitable habitat for the federally-listed Golden-cheeked Warbler is not anticipated to be directly impacted. The project, therefore, may affect, but is not likely to adversely affect, this species.

The project area is within USFWS Karst Zone 3 (an area that may contain karst species and their habitat) as well as the Stone Oak Karst Faunal Region (KFR). Three state SGCN species area known to inhabit the Stone Oak KFR: the Madla Cave meshweaver (*Circurina madla*), Rhadine exilis, and Rhadine infernalis. While no suitable habitat for these species was observed within the project area during a karst terrain feature survey, this does not preclude the possibility for karst features of potentially suitable habitat for these three karst species to be uncovered during the construction of the project. The project may affect, but is not likely to adversely affect, these three federally-listed species.



**Tier I Site Assessment**

Date TPWD County List Accessed: November 14, 2018

Date that the NDD was accessed: October 26, 2017

What agency performed the NDD search? TPWD

What version of the NDD was used? 10/26/2017

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

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

3. No Does the project require a NWP with PCN or IP by USACE?

4. 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:

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

6. No Would the project impact at least 0.10 acre of riparian vegetation?

7. No 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?

\*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:

Blanco\_EMST\_table.xlsx

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

\*Explain:

Observations made during field investigations indicate an increase of Urban vegetation from acreage reported in EMST as well as a decrease in all subtypes of Edwards Plateau Limestone Savanna, Woodland, and Shrubland vegetation. This discrepancy is likely attributed to the increase in housing developments immediately east of the project area, as well as regular maintenance of the landscaping within the ROW of Blanco Road.



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

File Name:

Blanco\_EMST\_table.xlsx

## Is TPWD Coordination Required?

Yes

Early Coordination

Administrated Coordination - Must be conducted through ENV-NRM

BMPs Implemented or EPICs included (as necessary):

For the Plains spotted skunk: contractors will be advised of potential occurrence in the project area, and to avoid harming the species if encountered, and to avoid unnecessary impacts to dens.

## TxDOT Contact Information

Name: Brian M. Witherell

Phone Number: 210-615-5846

E-mail: Brian.Witherell@txdot.gov



## *Suggested Attachments*

**Aerial Map (with delineated project boundaries)**

**USFWS T&E List**

**TPWD T&E List**

**Species Impact Table**

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

**EMST Project MOU Summary Table (Required for TPWD Coordination)**

**TPWD SGCN List**

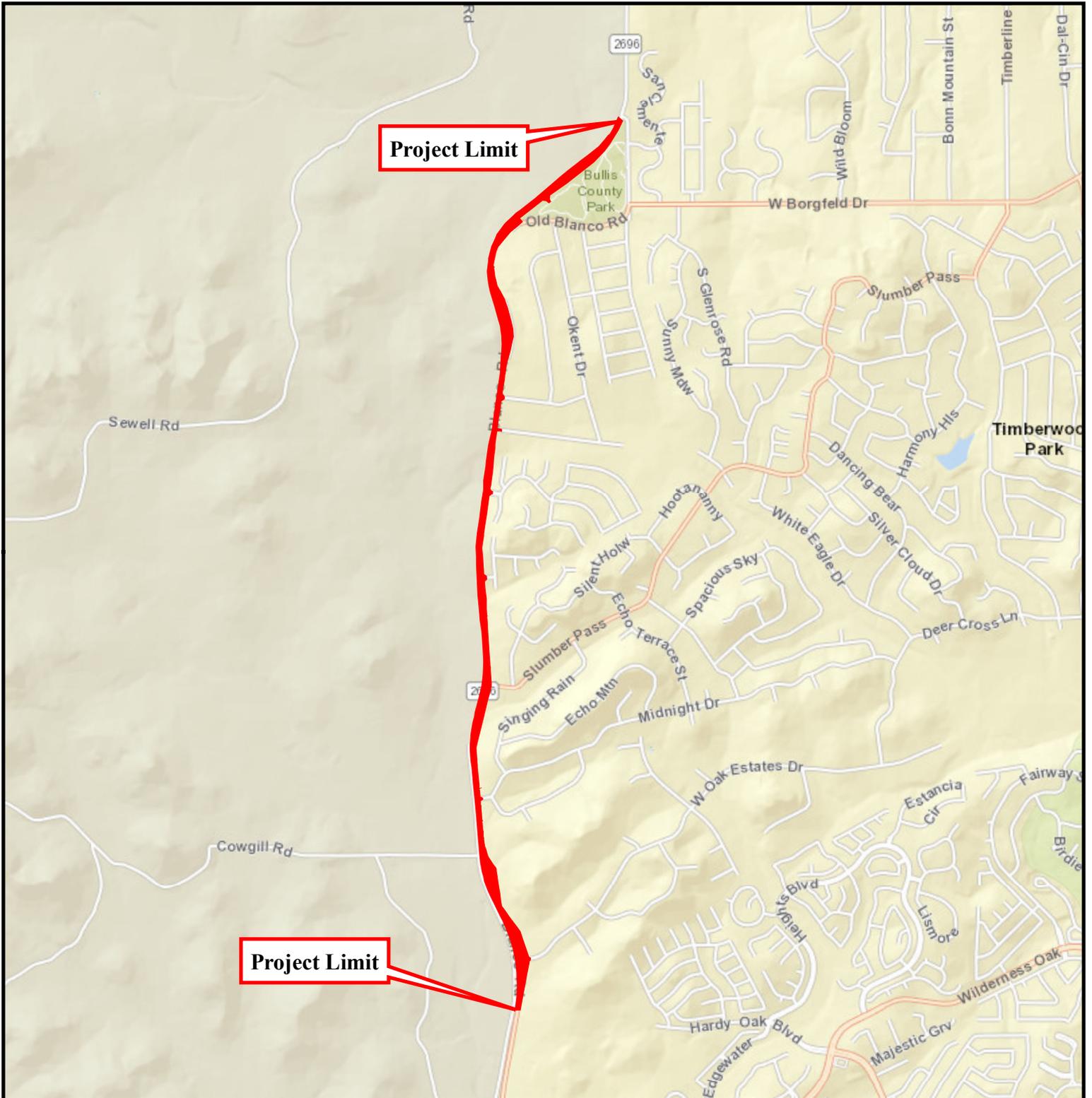
**Photos (Required for TPWD Coordination)**

**Previous TPWD Coordination Documentation (if applicable)**

## Blanco Road Phase II Improvements Biological Evaluation and Tier I Form

<b>Attachment</b>	<b>Page</b>
Exhibits	1
Exhibit 1: Vicinity Map	2
Exhibit 2: Aerial Map	3
Exhibit 3: Topographic Map	6
Exhibit 4: NDD Map	7
Exhibit 5: Karst and Aquifer Map	13
Exhibit 6: Mapped EMST	14
Exhibit 7: Field-Verified EMST	18
IPaC Report (11/14/2018)	22
TPWD SGCN for Bexar County (11/14/2018)	33
Species Impact Table	42
NDD EOID List	58
EMST Project MOU Summary Table	121
Site Photographs	123
Karst Terrain Features Survey	128

# Exhibits



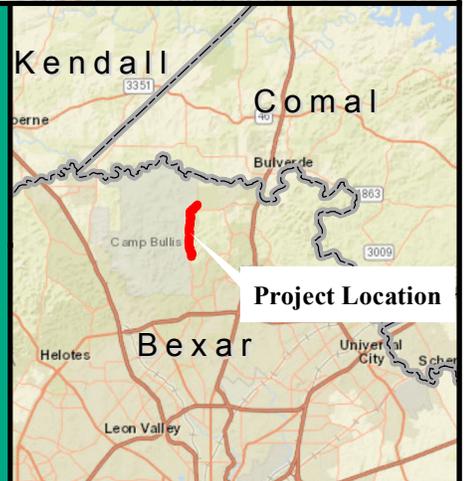
**Project Limit**

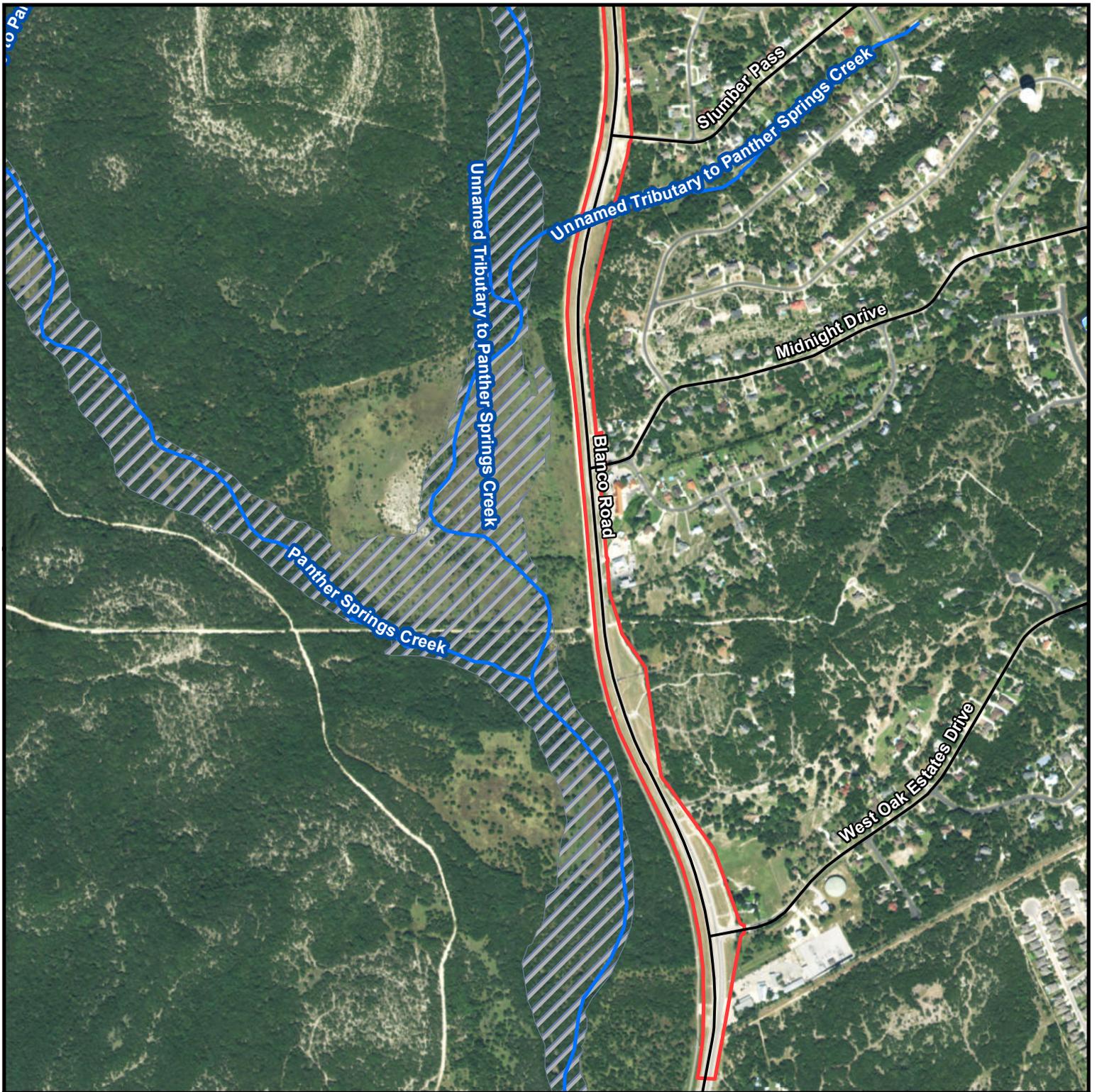
**Project Limit**

# Exhibit 1: Project Vicinity Map Blanco Road Phase II Improvements

Bexar County, Texas  
 CSJ: 0915-12-585  
 From West Oak Estates Drive  
 To Borgfeld Drive

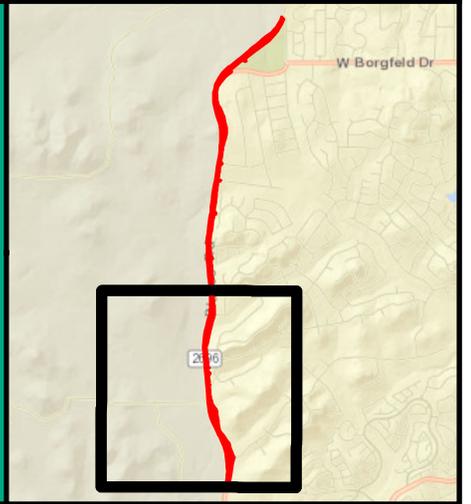
- Project Area
- County Limits





**Exhibit 2a: Aerial Map**  
**Blanco Road Phase II Improvements**  
 Bexar County, Texas  
 CSJ: 0915-12-585  
 From West Oak Estates Drive  
 To Borgfeld Drive

- Project Area
- Major Roadway
- NHD Stream
- NWI Wetland
- 100-year Floodplain





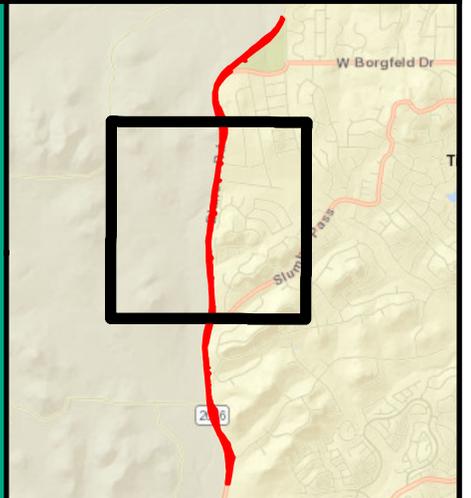
## Exhibit 2b: Aerial Map Blanco Road Phase II Improvements

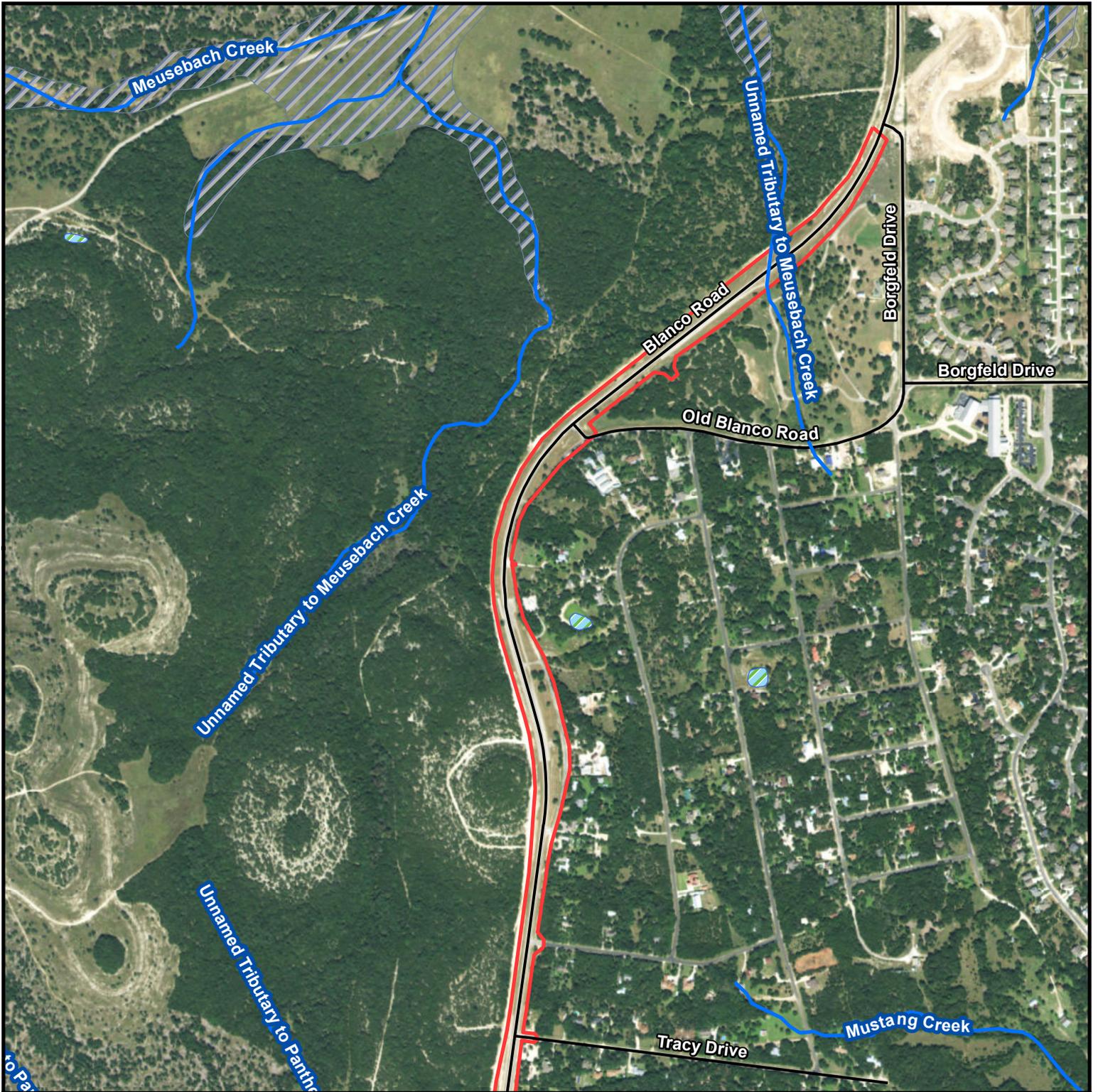
Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive

-  Project Area
-  NWI Wetland
-  Major Roadway
-  100-year Floodplain
-  NHD Stream





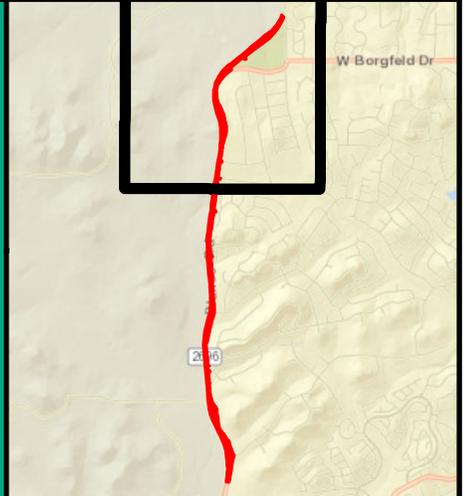
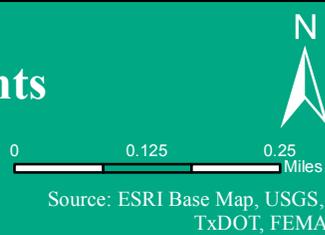
# Exhibit 2c: Aerial Map Blanco Road Phase II Improvements

Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive

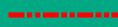
- Project Area
- Major Roadway
- NHD Stream
- NWI Wetland
- 100-year Floodplain





# Exhibit 3: Topographic Map Blanco Road Phase II Improvements

Bexar County, Texas  
CSJ:0915-12-585  
From West Oak Estates Drive  
To Borgfeld Drive

 Project Area



Source: ESRI Base Map, USGS



# Exhibit 4a: NDD Map Blanco Road Phase II Improvements

Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive

— Project Area

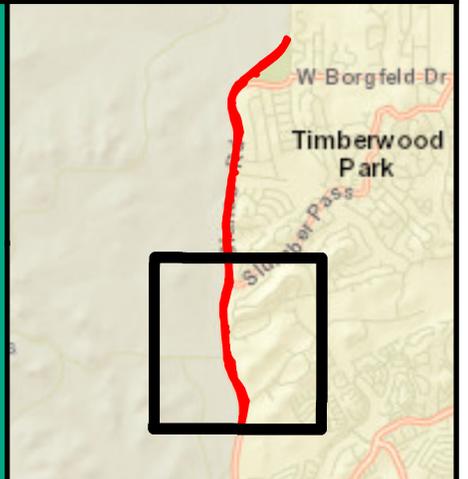
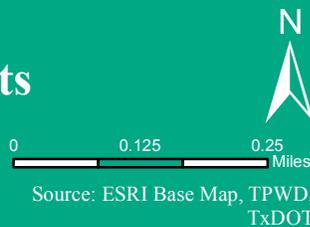


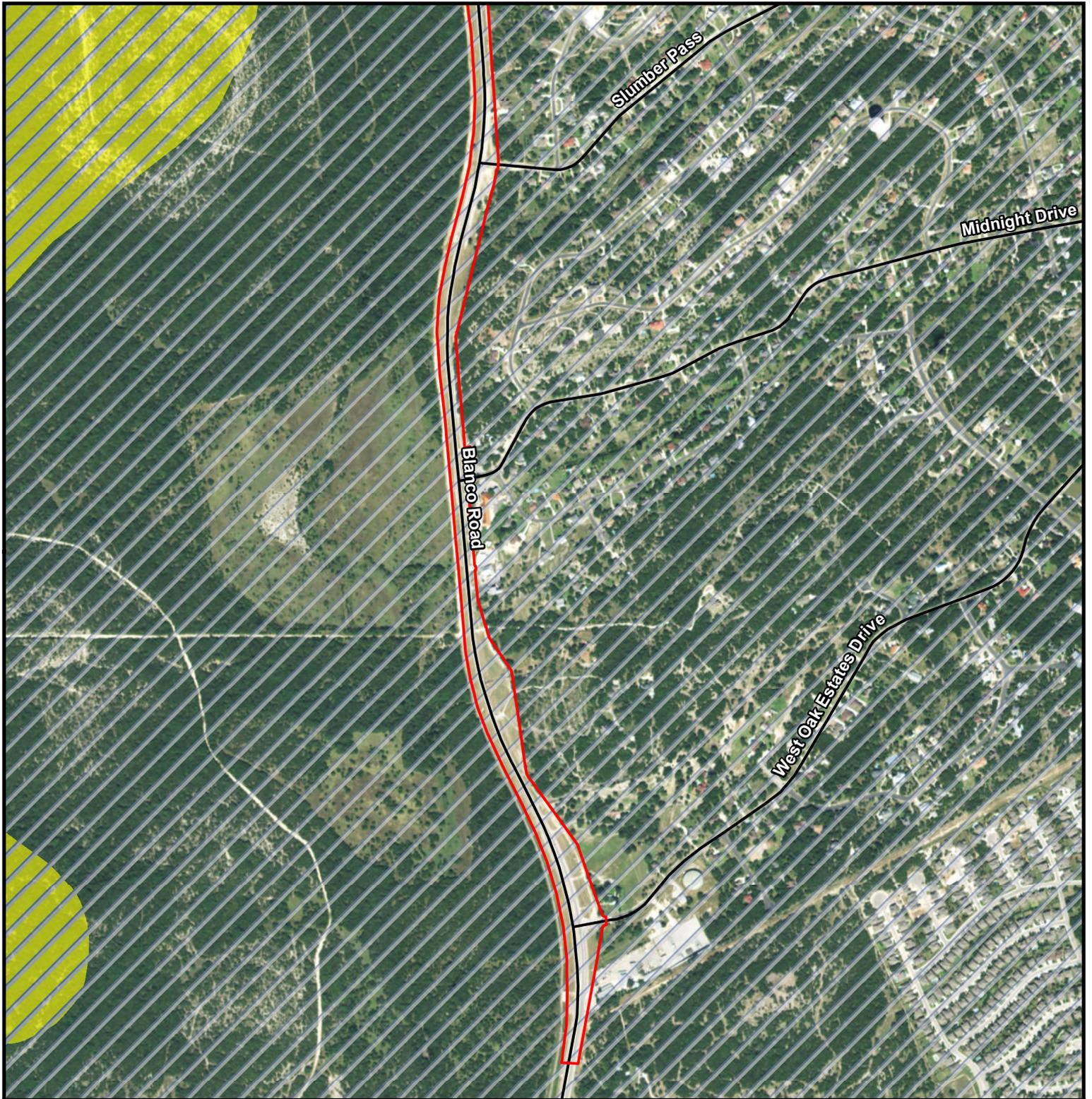
Eurycea latitans

— Major Roadway



Eurycea neotenes





# Exhibit 4b: NDD Map Blanco Road Phase II Improvements

Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD, TxDOT



Project Area



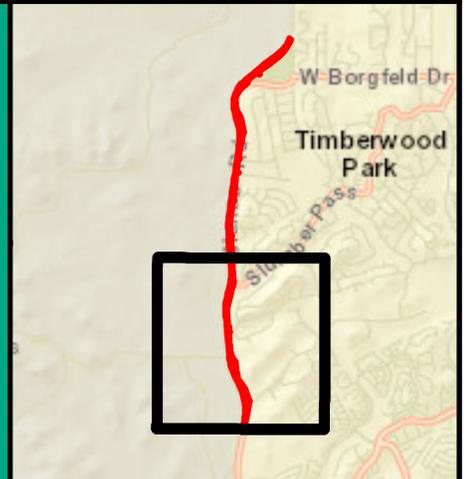
*Setophaga chrysoparia*



Major Roadway



*Streptanthus bracteatus*





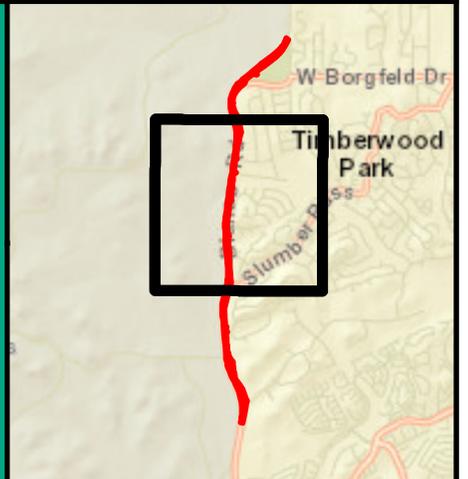
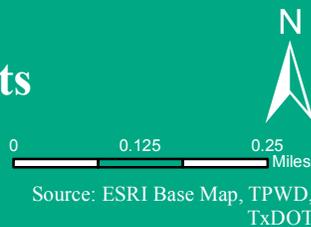
# Exhibit 4c: NDD Map Blanco Road Phase II Improvements

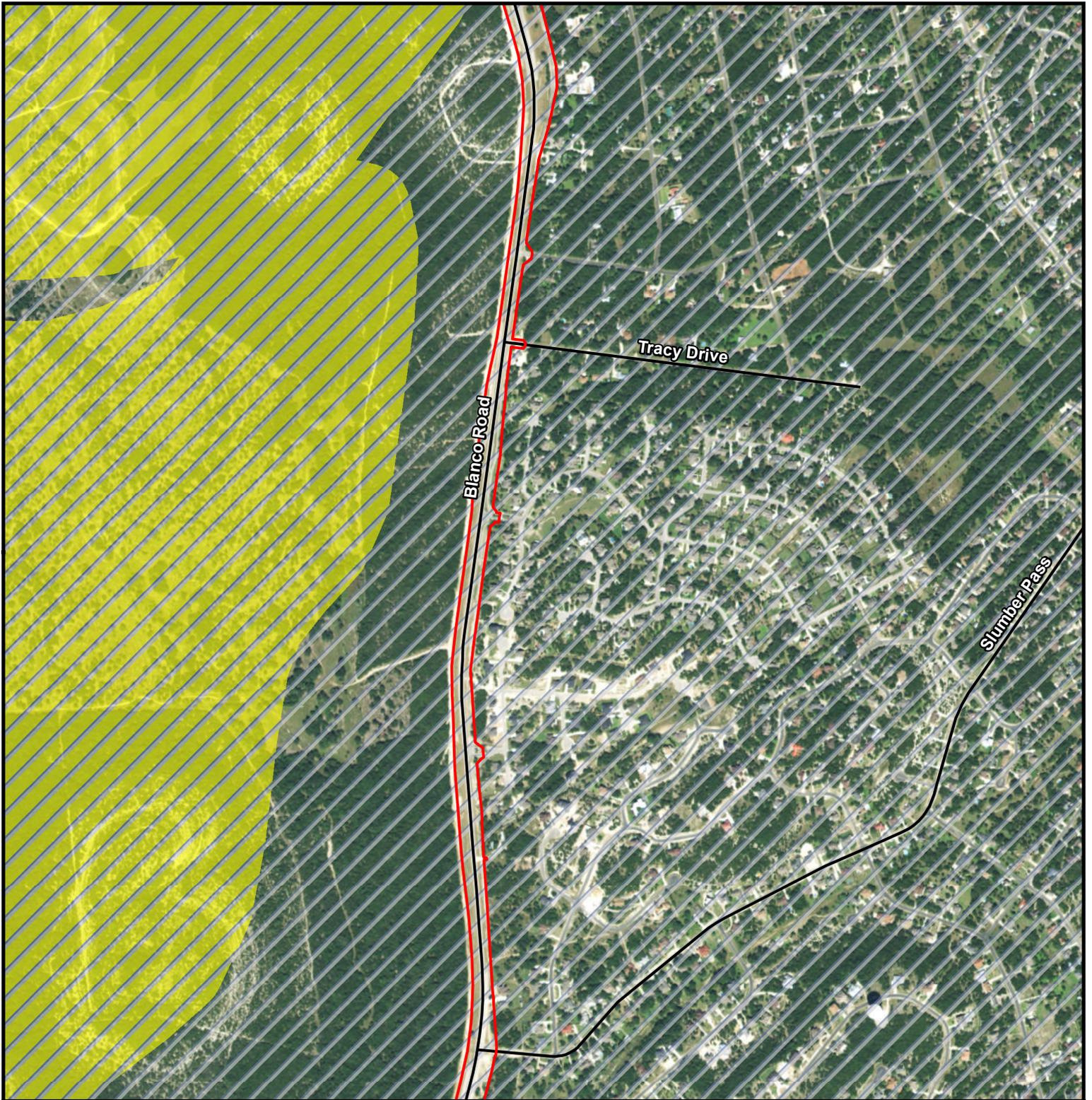
Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive

-  Project Area
-  *Eurycea latitans*
-  Major Roadway
-  *Eurycea neotenes*





# Exhibit 4d: NDD Map Blanco Road Phase II Improvements

Bexar County, Texas

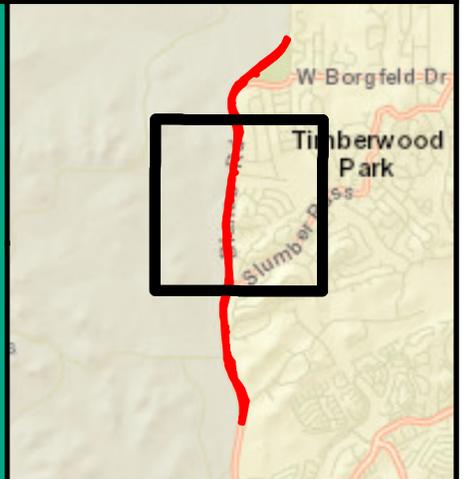
CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD, TxDOT

-  Project Area
-  *Setophaga chrysoparia*
-  Major Roadway
-  *Streptanthus bracteatus*





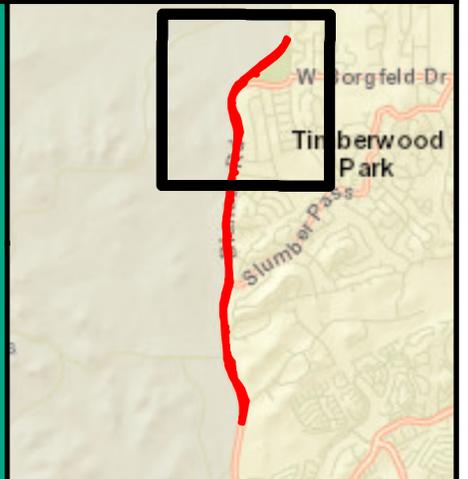
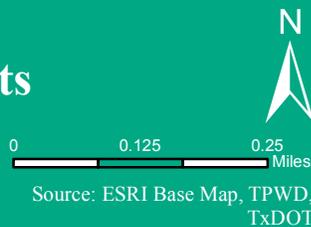
# Exhibit 4e: NDD Map Blanco Road Phase II Improvements

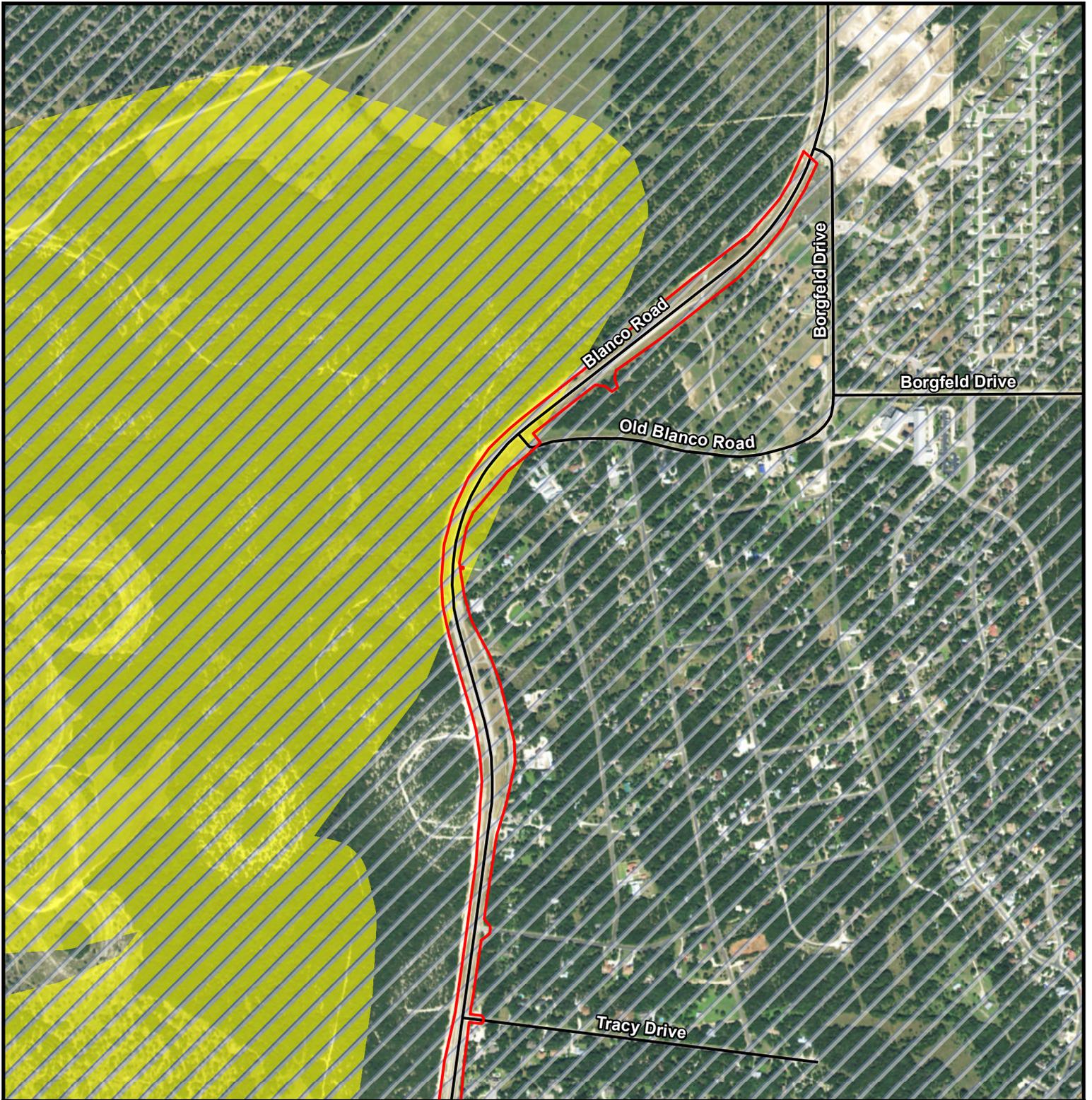
Bexar County, Texas

CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive

-  Project Area
-  Major Roadway
-  *Eurycea latitans*
-  *Eurycea neotenes*





# Exhibit 4f: NDD Map Blanco Road Phase II Improvements

Bexar County, Texas

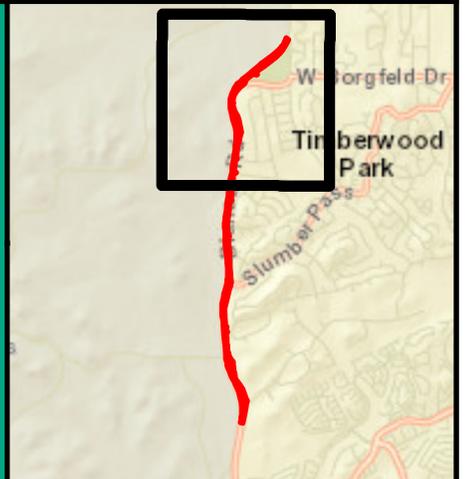
CSJ: 0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD, TxDOT

-  Project Area
-  *Setophaga chrysoparia*
-  Major Roadway
-  *Streptanthus bracteatus*





# Exhibit 5: Karst Zone and Edwards Aquifer Map Blanco Road Phase II Improvements

Bexar County, Texas

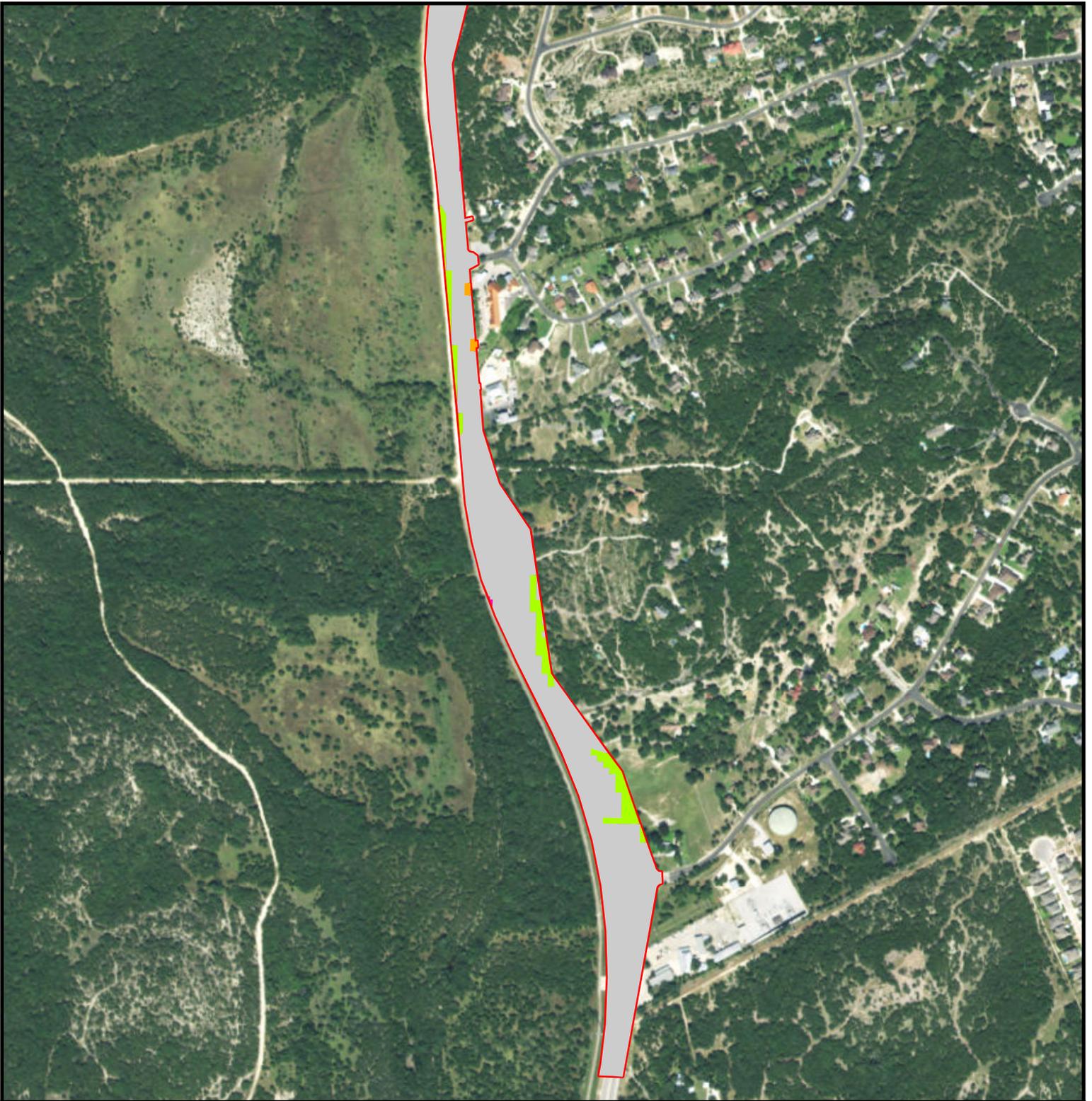
CSJ:0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, USFWS, TxDOT, TCEQ

- Project Area
- USFWS Karst Zone
- Edwards Aquifer Recharge Zone
- Major Roadway
- Edwards Aquifer Contributing Zone



# Exhibit 6a: Mapped EMST Blanco Road Phase II Improvements

Bexar County, Texas

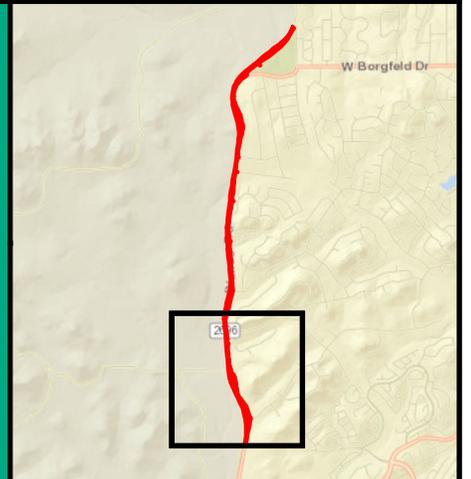
CSJ:0915-12-585

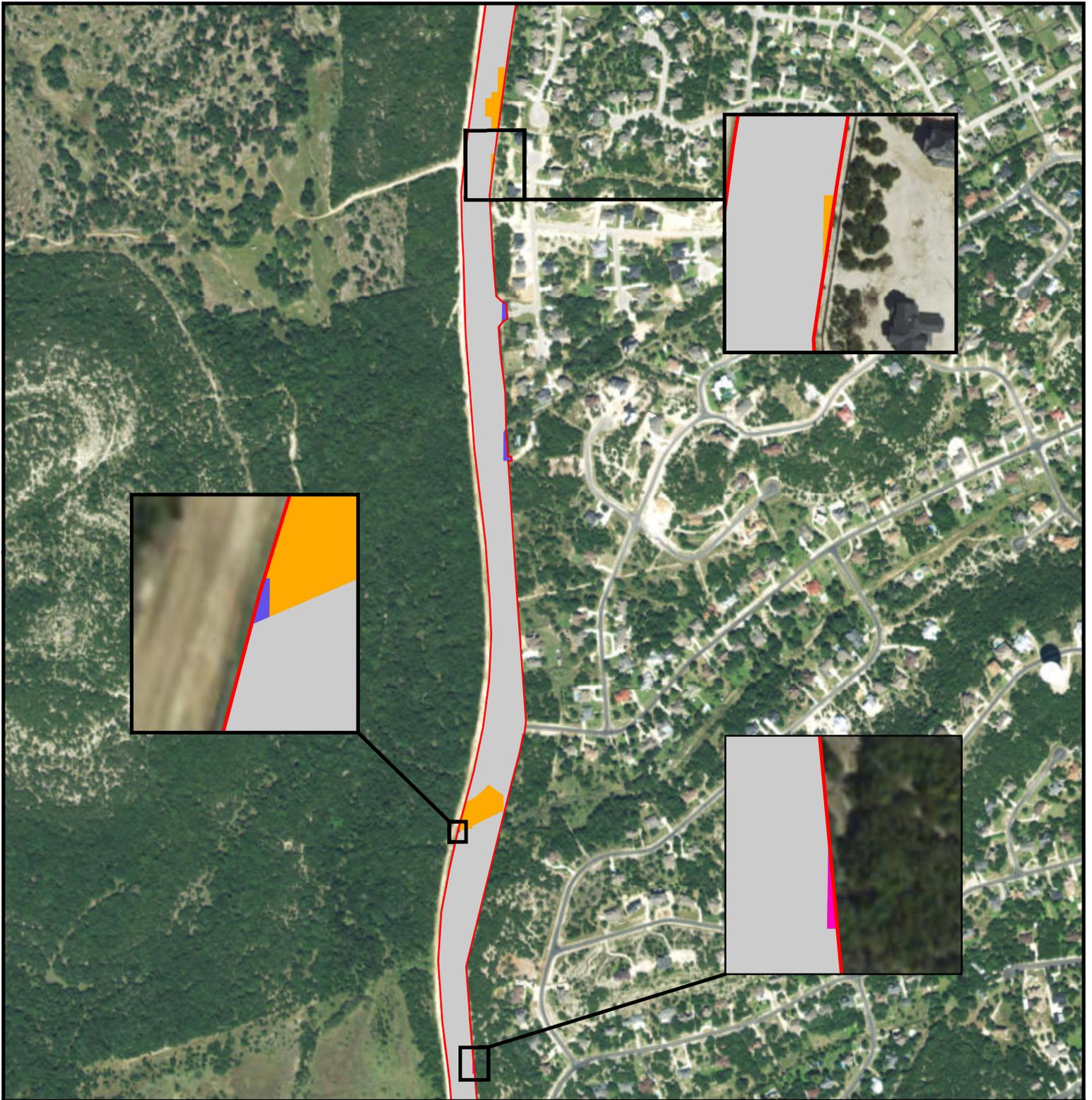
From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD

- Project Area
- Urban High Intensity
- Ashe Juniper Motte and Woodland
- Urban Low Intensity
- Savanna Grassland





# Exhibit 6b: Mapped EMST Blanco Road Phase II Improvements

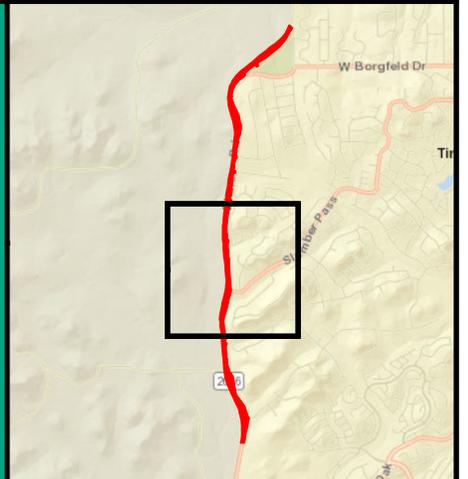
Bexar County, Texas

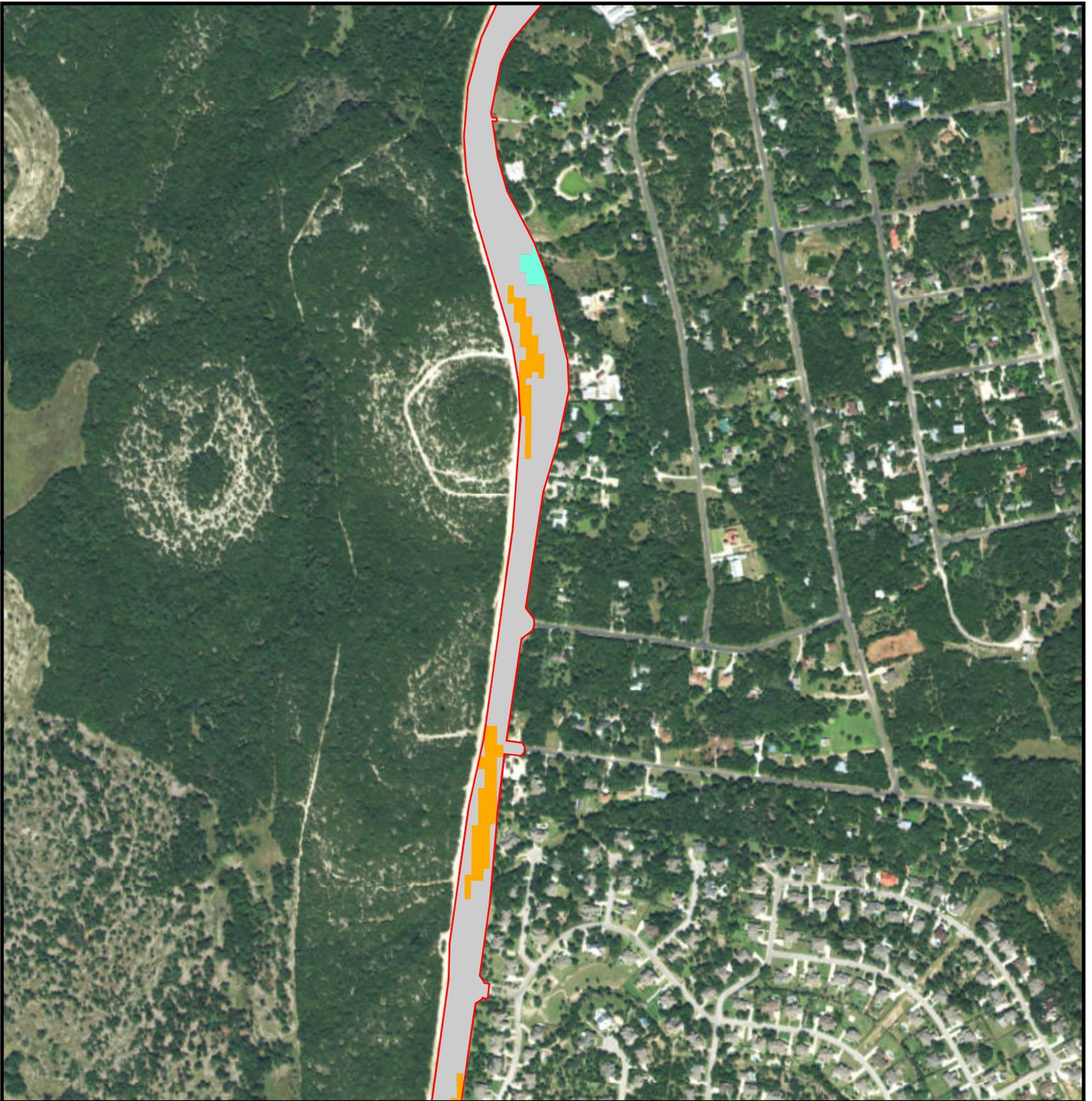
CSJ:0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



- Project Area
- Ashe Juniper Motte and Woodland
- Deciduous Oak - Evergreen Motte and Woodland
- Urban High Intensity
- Urban Low Intensity





# Exhibit 6c: Mapped EMST Blanco Road Phase II Improvements

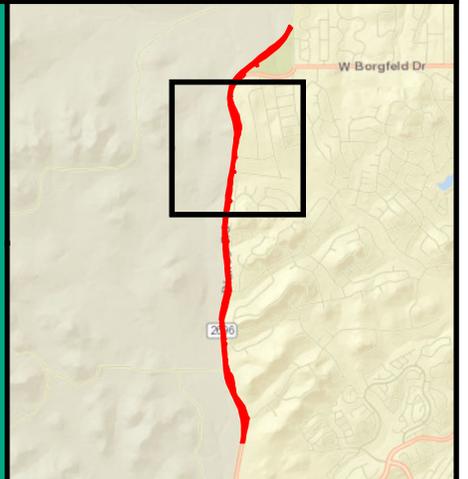
Bexar County, Texas

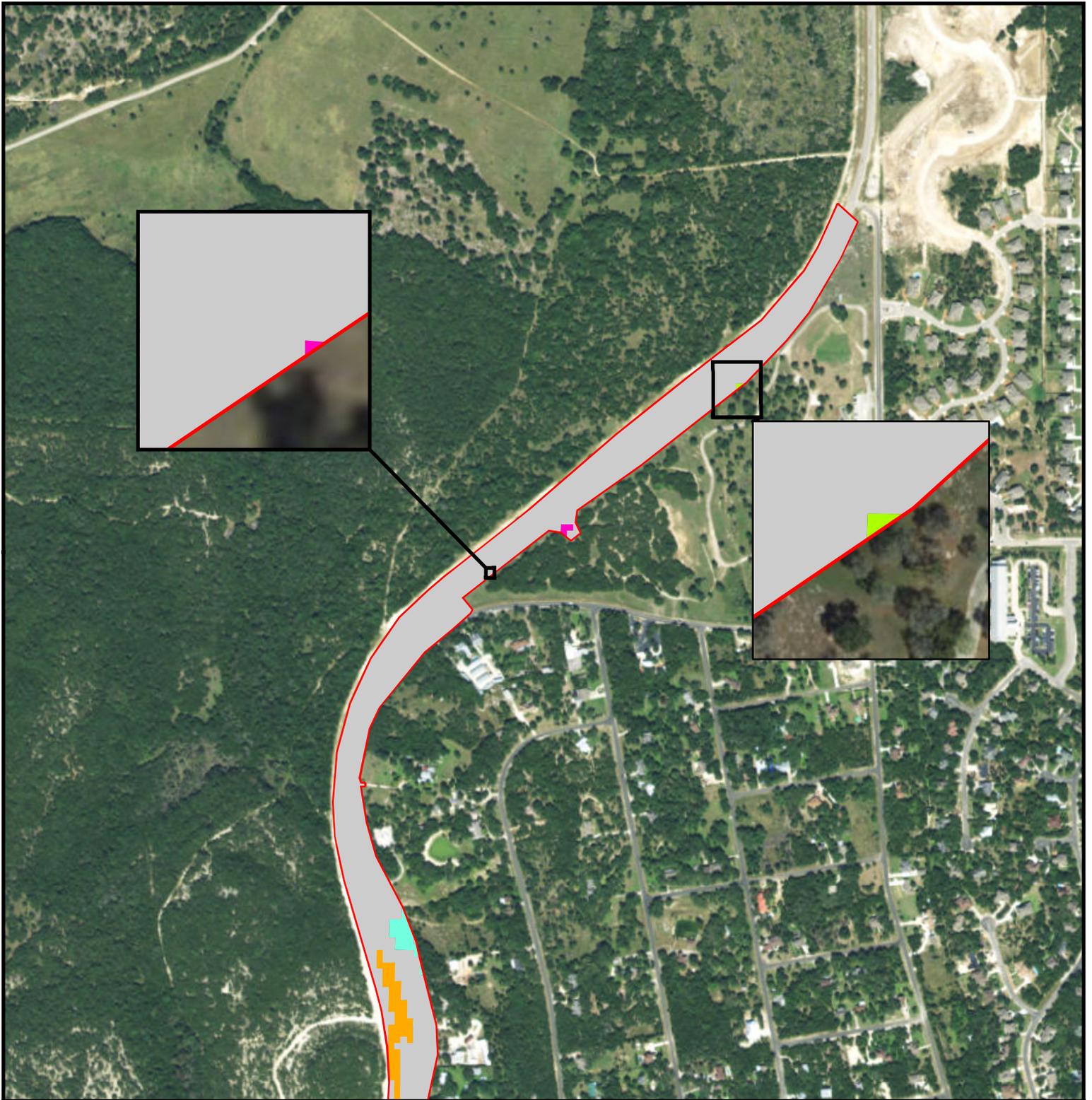
CSJ:0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



-  Project Area
-  Live Oak Motte and Woodland
-  Urban High Intensity
-  Urban Low Intensity





# Exhibit 6d: Mapped EMST Blanco Road Phase II Improvements

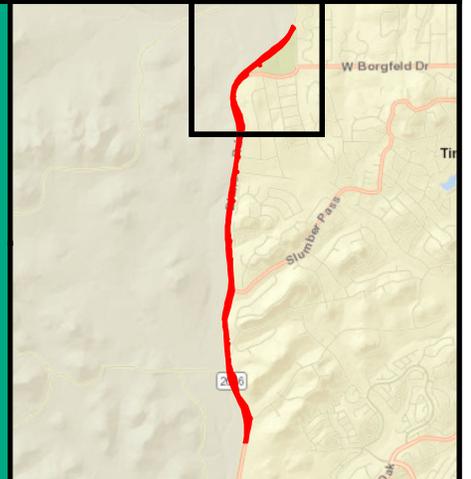
Bexar County, Texas

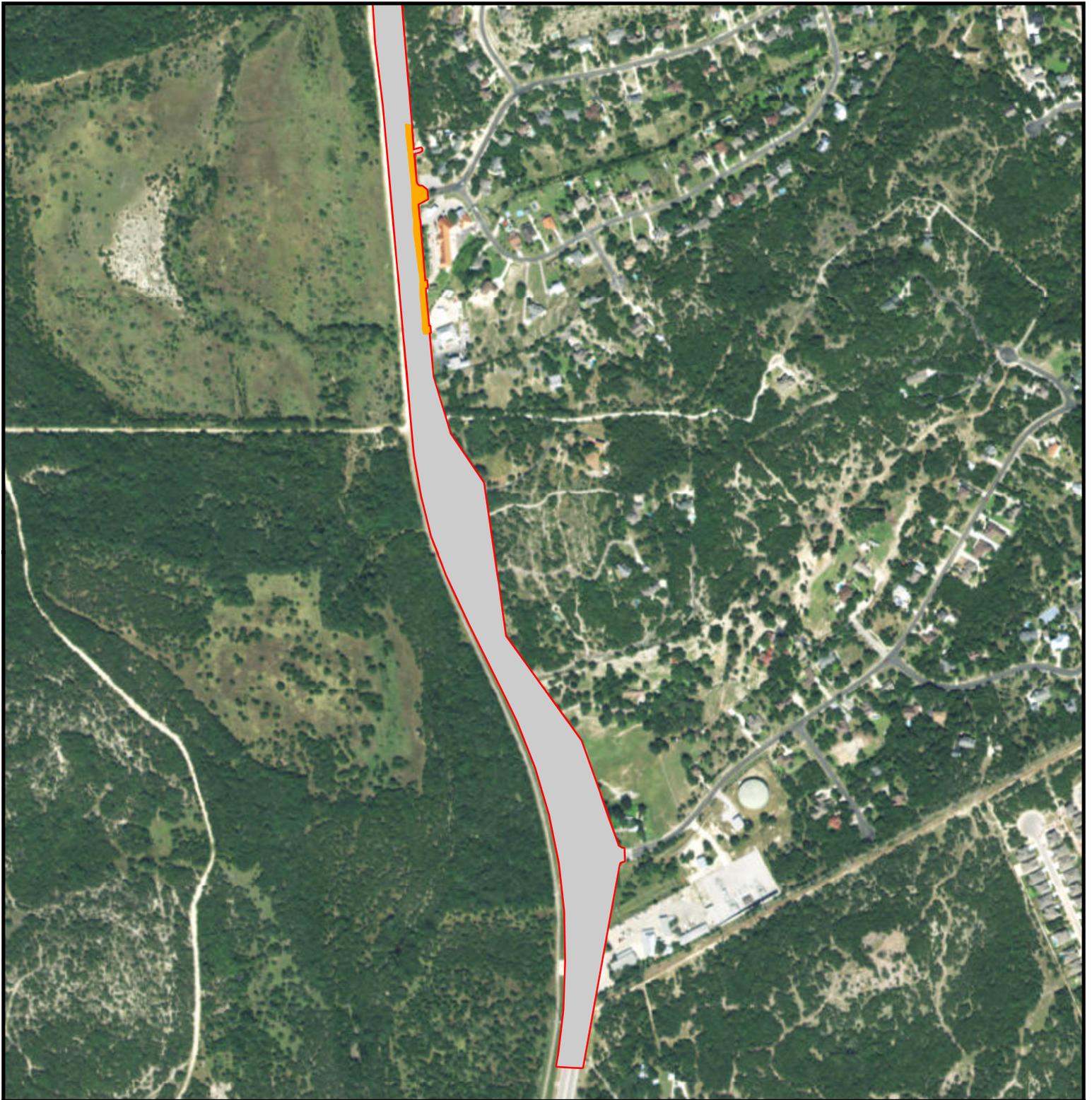
CSJ:0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



- |  |                                 |   |                             |   |                      |
|--|---------------------------------|---|-----------------------------|---|----------------------|
|  | Project Area                    |  | Live Oak Motte and Woodland |  | Urban High Intensity |
|  | Ashe Juniper Motte and Woodland |  | Savanna Grassland           |  | Urban Low Intensity  |





# Exhibit 7a: Field-Verified EMST Blanco Road Phase II Improvements

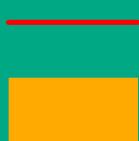
Bexar County, Texas

CSJ:0915-12-585

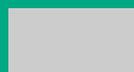
From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD

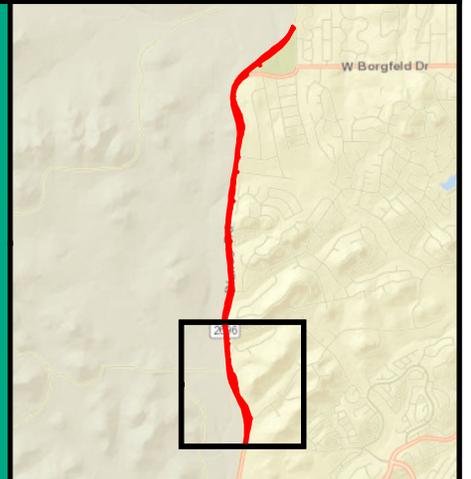


Project Area



Urban Low Intensity

Urban High Intensity





# Exhibit 7b: Field-Verified EMST Blanco Road Phase II Improvements

Bexar County, Texas

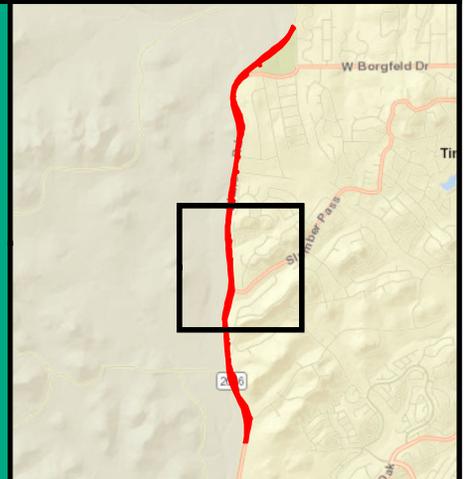
CSJ:0915-12-585

From West Oak Estates Drive  
To Borgfeld Drive



Source: ESRI Base Map, TPWD

-  Project Area
-  Urban Low Intensity
-  Nest





# Exhibit 7c: Field-Verified EMST Blanco Road Phase II Improvements

Bexar County, Texas

CSJ:0915-12-585

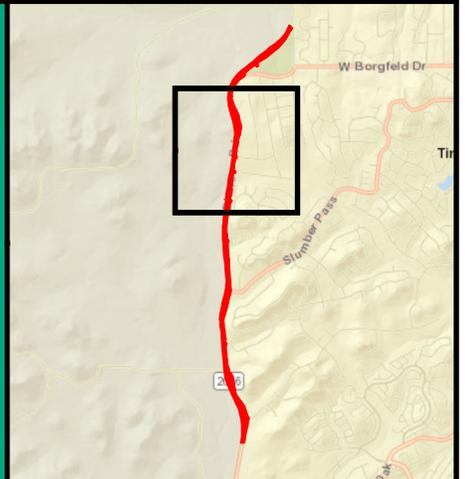
From West Oak Estates Drive  
To Borgfeld Drive

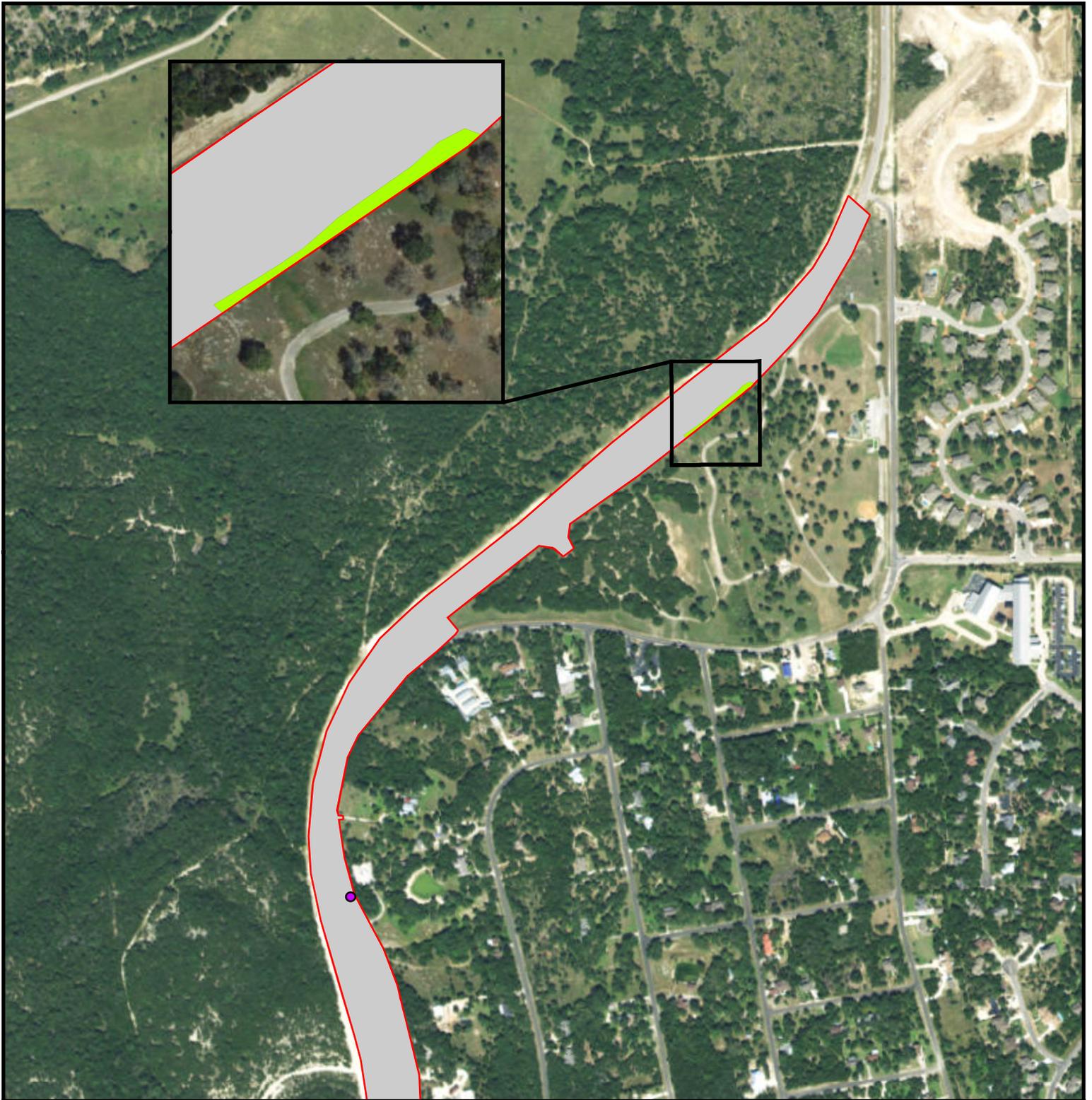


Source: ESRI Base Map, TPWD

 Project Area  Urban Low Intensity

 Nest





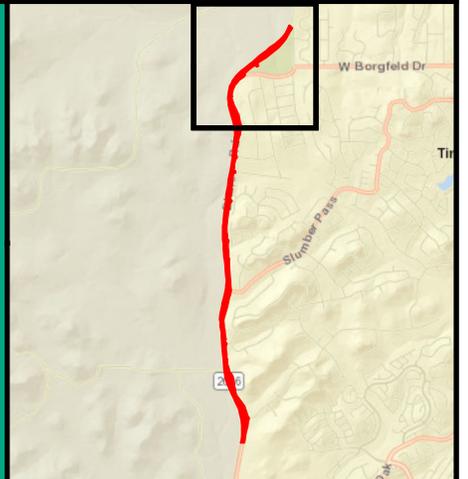
# Exhibit 7d: Field-Verified EMST Blanco Road Phase II Improvements

Bexar County, Texas  
 CSJ:0915-12-585  
 From West Oak Estates Drive  
 To Borgfeld Drive



Source: ESRI Base Map, TPWD

- Project Area
- Nest
- Savanna Grassland
- Urban Low Intensity



**IPaC Report**  
**Generated 11/14/2018**



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

Austin Ecological Services Field Office

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

Phone: (512) 490-0057 Fax: (512) 490-0974

<http://www.fws.gov/southwest/es/AustinTexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>

In Reply Refer To:

November 14, 2018

Consultation Code: 02ETAU00-2018-SLI-0190

Event Code: 02ETAU00-2019-E-00465

Project Name: Blanco Road Phase II Improvements

Subject: Updated 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, that *may* occur within the county of your proposed project and/or may be affected by 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.*).

Please note that new information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. 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. Also 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.

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 sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of federally listed as threatened

or endangered species and to determine whether projects may affect these species and/or designated critical habitat.

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 projects 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.

While a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal Agency must notify the Service in writing of any such designation. The Federal agency shall also independently review and evaluate the scope and content of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by a federally funded, permitted or authorized activity, the agency is required to consult with the Service pursuant to 50 CFR 402. The following definitions are provided to assist you in reaching a determination:

- *No effect* - the proposed action will not affect federally 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, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.
  - *May affect, but is not likely to adversely affect* - the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effect. The Federal agency or the designated non-Federal representative should consult with the Service to seek written concurrence that adverse effects are not likely. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.
  - *Is likely to adversely affect* - adverse effects to listed species may occur as a direct or indirect result of the proposed action. For this determination, the effect of the action is neither discountable nor insignificant. If the overall effect of the proposed action is beneficial to the listed species but the action is also likely to cause some adverse effects to individuals of that species, then the proposed action “is likely to adversely affect” the listed species. The analysis should consider all interrelated and interdependent actions. An “is likely to adversely affect” determination requires the Federal action agency to initiate formal section 7 consultation with our office.
-

Regardless of the determination, the Service recommends that the Federal agency maintain a complete record of the evaluation, including steps leading to the determination of effect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related information. 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>.

### Migratory Birds

For projects that may affect migratory birds, the Migratory Bird Treaty Act (MBTA) implements various treaties and conventions for the protection of these species. Under the MBTA, taking, killing, or possessing migratory birds is unlawful. Migratory birds may nest in trees, brushy areas, or other areas of suitable habitat. The Service recommends activities requiring vegetation removal or disturbance avoid the peak nesting period of March through August to avoid destruction of individuals, nests, or eggs. If project activities must be conducted during this time, we recommend surveying for nests prior to conducting work. If a nest is found, and if possible, the Service recommends a buffer of vegetation remain around the nest until the young have fledged or the nest is abandoned.

For additional information concerning the MBTA and recommendations to reduce impacts to migratory birds please contact the U.S. Fish and Wildlife Service Migratory Birds Office, 500 Gold Ave. SW, Albuquerque, NM 87102. A list of migratory birds may be viewed at <https://www.fws.gov/birds/management/managed-species/migratory-bird-treaty-act-protected-species.php>. Guidance for minimizing impacts to migratory birds for projects including communications towers can be found at: <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/communication-towers.php>. Additionally, wind energy projects should follow the wind energy guidelines

<https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/wind-energy.php> ) for minimizing impacts to migratory birds and bats.

Finally, 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 <https://www.fws.gov/birds/management/project-assessment-tools-and-guidance/guidance-documents/eagles.php>.

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:

**Austin Ecological Services Field Office**

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

(512) 490-0057

---

## Project Summary

Consultation Code: 02ETAU00-2018-SLI-0190

Event Code: 02ETAU00-2019-E-00465

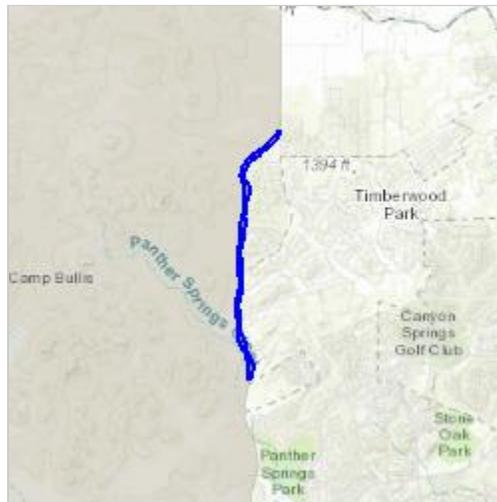
Project Name: Blanco Road Phase II Improvements

Project Type: TRANSPORTATION

Project Description: The Alamo Regional Mobility (ARMA) proposes to improve the segment of Blanco Road between West Oak Estates Drive and Borgfeld Drive in Bexar County from a two-lane roadway to a four-lane roadway with two 12-foot travel lanes and 6-foot shoulders/bike lanes in each direction. The roadway would have a raised median, curb, and sidewalks on the northbound side of the project. The project is currently in early design phase with a proposed letting date of October 2018.

### Project Location:

Approximate location of the project can be viewed in Google Maps: <https://www.google.com/maps/place/29.688113682335615N98.52251819530011W>



Counties: Bexar, TX

---

## Endangered Species Act Species

There is a total of 25 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 3 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<sup>1</sup>, 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.

- 
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
<p>Golden-cheeked Warbler (=wood) <i>Dendroica chrysoparia</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/33">https://ecos.fws.gov/ecp/species/33</a></p>	Endangered
<p>Least Tern <i>Sterna antillarum</i></p> <p>Population: interior pop. No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/8505">https://ecos.fws.gov/ecp/species/8505</a></p>	Endangered
<p>Piping Plover <i>Charadrius melodus</i></p> <p>Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/6039">https://ecos.fws.gov/ecp/species/6039</a></p>	Threatened
<p>Red Knot <i>Calidris canutus rufa</i></p> <p>No critical habitat has been designated for this species. This species only needs to be considered under the following conditions:</p> <ul style="list-style-type: none"> <li>▪ Wind Energy Projects</li> </ul> <p>Species profile: <a href="https://ecos.fws.gov/ecp/species/1864">https://ecos.fws.gov/ecp/species/1864</a></p>	Threatened
<p>Whooping Crane <i>Grus americana</i></p> <p>Population: Wherever found, except where listed as an experimental population There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/758">https://ecos.fws.gov/ecp/species/758</a></p>	Endangered

## Amphibians

NAME	STATUS
<p>San Marcos Salamander <i>Eurycea nana</i></p> <p>There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6374">https://ecos.fws.gov/ecp/species/6374</a></p>	Threatened
<p>Texas Blind Salamander <i>Typhlomolge rathbuni</i></p> <p>No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/5130">https://ecos.fws.gov/ecp/species/5130</a></p>	Endangered

## Fishes

NAME	STATUS
Fountain Darter <i>Etheostoma fonticola</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/5858">https://ecos.fws.gov/ecp/species/5858</a>	Endangered

## Clams

NAME	STATUS
Golden Orb <i>Quadrula aurea</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9042">https://ecos.fws.gov/ecp/species/9042</a>	Candidate
Texas Fatmucket <i>Lampsilis bracteata</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/9041">https://ecos.fws.gov/ecp/species/9041</a>	Candidate
Texas Pimpleback <i>Quadrula petrina</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/8966">https://ecos.fws.gov/ecp/species/8966</a>	Candidate

## Insects

NAME	STATUS
[no Common Name] Beetle <i>Rhadine exilis</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/6942">https://ecos.fws.gov/ecp/species/6942</a>	Endangered
[no Common Name] Beetle <i>Rhadine infernalis</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3804">https://ecos.fws.gov/ecp/species/3804</a>	Endangered
Comal Springs Dryopid Beetle <i>Stygoparnus comalensis</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7175">https://ecos.fws.gov/ecp/species/7175</a>	Endangered
Comal Springs Riffle Beetle <i>Heterelmis comalensis</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/3403">https://ecos.fws.gov/ecp/species/3403</a>	Endangered
Helotes Mold Beetle <i>Batrisodes venyivi</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/1149">https://ecos.fws.gov/ecp/species/1149</a>	Endangered

## Arachnids

NAME	STATUS
Braken Bat Cave Meshweaver <i>Cicurina venii</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7900">https://ecos.fws.gov/ecp/species/7900</a>	Endangered
Cokendolpher Cave Harvestman <i>Texella cokendolpheri</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/676">https://ecos.fws.gov/ecp/species/676</a>	Endangered
Government Canyon Bat Cave Meshweaver <i>Cicurina vespera</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/7037">https://ecos.fws.gov/ecp/species/7037</a>	Endangered
Government Canyon Bat Cave Spider <i>Neoleptoneta microps</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/553">https://ecos.fws.gov/ecp/species/553</a>	Endangered
Madla's Cave Meshweaver <i>Cicurina madla</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2467">https://ecos.fws.gov/ecp/species/2467</a>	Endangered
Robber Baron Cave Meshweaver <i>Cicurina baronia</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/2361">https://ecos.fws.gov/ecp/species/2361</a>	Endangered

## Crustaceans

NAME	STATUS
Peck's Cave Amphipod <i>Stygobromus (=Stygonectes) pecki</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/8575">https://ecos.fws.gov/ecp/species/8575</a>	Endangered

## Flowering Plants

NAME	STATUS
Bracted Twistflower <i>Streptanthus bracteatus</i> No critical habitat has been designated for this species. Species profile: <a href="https://ecos.fws.gov/ecp/species/2856">https://ecos.fws.gov/ecp/species/2856</a>	Candidate
Texas Wild-rice <i>Zizania texana</i> There is <b>final</b> critical habitat for this species. Your location is outside the critical habitat. Species profile: <a href="https://ecos.fws.gov/ecp/species/805">https://ecos.fws.gov/ecp/species/805</a>	Endangered

## **Critical habitats**

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

---

**TPWD SGCN List for Bexar County**  
**Accessed 11/14/2018**

## BEXAR COUNTY

### AMPHIBIANS

	Federal Status	State Status
<b>Cascade Caverns salamander</b> <i>Eurycea latitans</i>		T
endemic; subaquatic; springs and caves in Medina River, Guadalupe River, and Cibolo Creek watersheds within Edwards Aquifer area		
<b>Comal blind salamander</b> <i>Eurycea tridentifera</i>		T
endemic; semi-troglobitic; found in springs and waters of caves		
<b>Texas salamander</b> <i>Eurycea neotenes</i>		
endemic; troglobitic; springs, seeps, cave streams, and creek headwaters; often hides under rocks and leaves in water; restricted to Helotes and Leon Creek drainages		

### ARACHNIDS

	Federal Status	State Status
<b>Bracken Bat Cave meshweaver</b> <i>Cicurina venii</i>	LE	
small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County		
<b>Cokendolpher cave harvestman</b> <i>Texella cokendolpheri</i>	LE	
small, eyeless harvestman; karst features in north and northwest Bexar County		
<b>Government Canyon Bat Cave meshweaver</b> <i>Cicurina vespera</i>	LE	
small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County		
<b>Government Canyon Bat Cave spider</b> <i>Neoleptoneta microps</i>	LE	
small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County		
<b>Madla Cave meshweaver</b> <i>Cicurina madla</i>	LE	
small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County		
<b>Robber Baron Cave meshweaver</b> <i>Cicurina baronia</i>	LE	
small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County		

### BIRDS

	Federal Status	State Status
<b>American Peregrine Falcon</b> <i>Falco peregrinus anatum</i>	DL	T
year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.		

## BEXAR COUNTY

### BIRDS

		Federal Status	State Status
<b>Arctic Peregrine Falcon</b>	<i>Falco peregrinus tundrius</i>	DL	
<p>migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.</p>			
<b>Black-capped Vireo</b>	<i>Vireo atricapilla</i>	DL	E
<p>oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer</p>			
<b>Golden-cheeked Warbler</b>	<i>Setophaga chrysoparia</i>	LE	E
<p>juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer</p>			
<b>Interior Least Tern</b>	<i>Sternula antillarum athalassos</i>	LE	E
<p>The 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</p>			
<b>Mountain Plover</b>	<i>Charadrius montanus</i>		
<p>breeding: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous</p>			
<b>Peregrine Falcon</b>	<i>Falco peregrinus</i>	DL	T
<p>both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.</p>			
<b>Red Knot</b>	<i>Calidris canutus rufa</i>	LT	



## BEXAR COUNTY

### CRUSTACEANS

	Federal Status	State Status
<b>A cave obligate crustacean</b> <i>Monodella texana</i> subaquatic, subterranean obligate; underground freshwater aquifers		

### FISHES

	Federal Status	State Status
<b>Guadalupe bass</b> <i>Micropterus treculii</i> endemic to perennial streams of the Edward's Plateau region; introduced in Nueces River system		
<b>Toothless blindcat</b> <i>Trogloglanis pattersoni</i> troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer		T
<b>Widemouth blindcat</b> <i>Satan eurystomus</i> troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer		T

### INSECTS

	Federal Status	State Status
<b>A ground beetle</b> <i>Rhadine exilis</i> small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	LE	
<b>A ground beetle</b> <i>Rhadine infernalis</i> small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	LE	
<b>Helotes mold beetle</b> <i>Batrisodes venyivi</i> small, eyeless mold beetle; karst features in northwestern Bexar County and northeastern Medina County	LE	
<b>Manfreda giant-skipper</b> <i>Stallingsia maculosus</i> most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk		

### MAMMALS

	Federal Status	State Status
<b>Black bear</b> <i>Ursus americanus</i> bottomland hardwoods and large tracts of inaccessible forested areas		T
<b>Cave myotis</b> <i>Myotis velifer</i> colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow ( <i>Hirundo pyrrhonota</i> ) 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		
<b>Gray wolf</b> <i>Canis lupus</i> extirpated; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands	LE	E

## BEXAR COUNTY

### MAMMALS

	Federal Status	State Status
<b>Plains spotted skunk</b> <i>Spilogale putorius interrupta</i> catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie		
<b>Red wolf</b> <i>Canis rufus</i> extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies	LE	E

### MOLLUSKS

	Federal Status	State Status
<b>Golden orb</b> <i>Quadrula aurea</i> sand and gravel in some locations and mud at others; found in lentic and lotic; Guadalupe, San Antonio, Lower San Marcos, and Nueces River basins	C	T
<b>Mimic cavesnail</b> <i>Phreatodrobia imitata</i> subaquatic; only known from two wells penetrating the Edwards Aquifer		

### REPTILES

	Federal Status	State Status
<b>Spot-tailed earless lizard</b> <i>Holbrookia lacerata</i> central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground		
<b>Texas garter snake</b> <i>Thamnophis sirtalis annectens</i> wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August		
<b>Texas horned lizard</b> <i>Phrynosoma cornutum</i> open, arid and semi-arid regions with sparse vegetation, including grass, 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; breeds March-September		T
<b>Texas indigo snake</b> <i>Drymarchon melanurus erebennus</i> Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter		T
<b>Texas tortoise</b> <i>Gopherus berlandieri</i> open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November		T
<b>Timber rattlesnake</b> <i>Crotalus horridus</i> swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto		T

## BEXAR COUNTY

### PLANTS

Federal Status

State Status

**Big red sage**

*Salvia pentstemonoides*

Texas endemic; moist to seasonally wet, steep limestone outcrops on seeps within canyons or along creek banks; occasionally on clayey to silty soils of creek banks and terraces, in partial shade to full sun; basal leaves conspicuous for much of the year; flowering June-October

**Bracted twistflower**

*Streptanthus bracteatus*

C

Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid April-late May, fruit matures and foliage withers by early summer

**Buckley tridens**

*Tridens buckleyanus*

GLOBAL RANK: G3 ; Occurs in juniper-oak woodlands on rocky limestone slopes; Perennial; Flowering/Fruiting April-Nov

**Burridge greenthread**

*Thelesperma burridgeanum*

GLOBAL RANK: G3; Sandy open areas; Annual; Flowering March-Nov; Fruiting March-June

**Correll's false dragon-head**

*Physostegia correllii*

wet, silty clay loams on streambanks, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September

**Elmendorf's onion**

*Allium elmendorfi*

Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May

**Glass Mountains coral-root**

*Hexalectris nitida*

GLOBAL RANK: G3; Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under *Juniperus ashei* in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept

**Gravelbar brickellbush**

*Brickellia dentata*

GLOBAL RANK: G3; Essentially restricted to frequently-scoured gravelly alluvial beds in creek and river bottoms; Perennial; Flowering June-Nov; Fruiting June-Oct

**Hairy sycamore-leaf snowbell** *Styrax platanifolius* var. *stellatus*

GLOBAL RANK: G3T3; Rare throughout range, in habitats similar to those of var. *platanifolius* - usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-Oct; Fruiting May-Sept

## BEXAR COUNTY

### PLANTS

Federal Status

State Status

**Heller's marbleseed**

*Onosmodium helleri*

GLOBAL RANK: G3; Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons; Perennial; Flowering March-May

**Hill Country wild-mercury**

*Argythamnia aphoroides*

Texas endemic; mostly in bluestem-grama grasslands associated with plateau live oak woodlands on shallow to moderately deep clays and clay loams over limestone on rolling uplands, also in partial shade of oak-juniper woodlands in gravelly soils on rocky limestone slopes; Perennial; Flowering April-May with fruit persisting until midsummer

**Low spurge**

*Euphorbia peplidion*

GLOBAL RANK: G3; Occurs in a variety of vernal-moist situations in a number of natural regions; Annual; Flowering Feb-April; Fruiting March-April

**Narrowleaf brickellbush**

*Brickellia eupatorioides* var. *gracillima*

GLOBAL RANK: G5T3; Moist to dry gravelly alluvial soils along riverbanks but also on limestone slopes; Perennial; Flowering/Fruiting April-Nov

**Net-leaf bundleflower**

*Desmanthus reticulatus*

GLOBAL RANK: G3; Mostly on clay prairies of the coastal plain of central and south Texas; Perennial; Flowering April-July; Fruiting April-Oct

**Osage Plains false foxglove**

*Agalinis densiflora*

GLOBAL RANK: G3; Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct

**Parks' jointweed**

*Polygonella parksii*

Texas endemic; mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November

**Plateau loosestrife**

*Lythrum ovalifolium*

GLOBAL RANK: G4; Banks and gravelly beds of perennial (or strong intermittent) streams on the Edwards Plateau, Llano Uplift and Lampasas Cutplain; Perennial; Flowering/Fruiting April-Nov

**Plateau milkvine**

*Matelea edwardsensis*

GLOBAL RANK: G3 ; Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June

**Sandhill woollywhite**

*Hymenopappus carrizoanus*

Texas endemic; disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations; flowering April-June

**Siler's huaco**

*Manfreda sileri*

GLOBAL RANK: G3; Rare in a variety of grasslands and shrublands on dry sites; Perennial; Flowering April-July; Fruiting June-July

## BEXAR COUNTY

### PLANTS

Federal Status

State Status

**Spreading lestdaisy**

*Chaetopappa effusa*

GLOBAL RANK: G3; Limestone cliffs, ledges, bluffs, steep hillsides, sometimes in seepy areas, oak-juniper, oak, or mixed deciduous woods, 300-500 m elevation; Perennial; Flowering (May) July-Oct

**Sycamore-leaf snowbell**

*Styrax platanifolius ssp. platanifolius*

GLOBAL RANK: G3T3; Rare throughout range, usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-May; Fruiting May-Aug

**Texas almond**

*Prunus minutiflora*

GLOBAL RANK: G3; Wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite; Perennial; Flowering Feb-May & Oct; Fruiting Feb-Sept

**Texas amorphia**

*Amorpha roemeriana*

GLOBAL RANK: G3; Juniper-oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks; Perennial; Flowering May-June; Fruiting June-Oct

**Texas fescue**

*Festuca versuta*

GLOBAL RANK: G3; Occurs in mesic woodlands on limestone-derived soils on stream terraces and canyon slopes; Perennial; Flowering/Fruiting April-June

**Texas peachbush**

*Prunus texana*

GLOBAL RANK: G3; Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun

**Texas seymeria**

*Seymeria texana*

GLOBAL RANK: G3; Found primarily in grassy openings in juniper-oak woodlands on dry rocky slopes but sometimes on rock outcrops in shaded canyons; Annual; Flowering May-Nov; Fruiting July-Nov

**Tree dodder**

*Cuscuta exaltata*

GLOBAL RANK: G3; Parasitic on various *Quercus*, *Juglans*, *Rhus*, *Vitis*, *Ulmus*, and *Diospyros* species as well as *Acacia berlandieri* and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct

## **Species Impact Table**

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
<b>Amphibians</b>						
Cascade Caverns salamander	<i>Eurycea latitans</i>	--	T	Subaquatic species, lives in springs and caves in the Medina River, Guadalupe River, and Cibolo Creek watersheds within Edwards Aquifer area.	NDD data provides known EO for this species within the project area. Project area is within Edwards Aquifer contributing zone and within the Cibolo Creek watershed, but no suitable habitat for this species exists in the project area. No springs or caves exists within the project area. Water Quality BMPs will be implemented as part of the overall project to mitigate any impacts to potentially suitable habitat downstream.	No impact
Comal blind salamander	<i>Eurycea tridentifera</i>	--	T	Semi-troglobitic; found in springs and waters of caves.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No impact
San Marcos salamander	<i>Eurycea nana</i>	T	--	Headwaters of the San Marcos River downstream to approximately ½ mile past IH-35; water over gravelly substrate characterized by dense mats of algae ( <i>Lyng bya</i> ) and aquatic moss ( <i>Leptodictym riparium</i> ), and water temperatures of 21-22 °C; diet includes amphipods, midge larvae, and aquatic snails.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect
Texas blind salamander	<i>Typhlomolge rathbuni</i>	E	--	Troglobitic; water-filled subterranean caverns along a six mile stretch of the San Marcos Spring Fault, in the vicinity of San Marcos; eats small invertebrates, including snails, copepods, amphipods, and shrimp.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect
Texas salamander	<i>Eurycea neotenes</i>	--	SGCN	Troglobitic; preferred habitat of springs, seeps, cave stream, and creek headwaters; often hides under rocks and leaves in water, restricted to Helotes and Leon Creek drainages.	NDD data provides known EO for this species within the project area, but no suitable habitat for this species was observed within the project area during field observations. No springs, seeps, or caves exist within the project area. Additionally, the project area is outside of the listed drainage areas and therefore outside of the species range. Water Quality BMPs will be implemented as part of the overall project to mitigate any impacts to potentially suitable habitat downstream.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/Impact
<b>Arachnids</b>						
Bracken Bat Cave meshweaver	<i>Circurina venii</i>	E	SGCN	A small, eyeless, or essentially eyeless spider; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst terrain features survey.	No effect
Cokendolpher Cave harvestman	<i>Texella cokendolpheri</i>	E	SGCN	A small eyeless harvestman; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst terrain features survey.	No effect
Government Canyon Bat Cave meshweaver	<i>Circurina vespera</i>	E	SGCN	A small, eyeless, or essentially eyeless spider; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst terrain features survey.	No effect
Government Canyon Bat Cave spider	<i>Neoleptema microps</i>	E	SGCN	A small, eyeless, or essentially eyeless spider; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst terrain features survey.	No effect
Madla Cave meshweaver	<i>Circurina madla</i>	E	SGCN	A small, eyeless, or essentially eyeless spider; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3 and within to the Stone Oak Karst Faunal Region. While no suitable habitat for this species was observed within the project area during karst terrain features survey, the species is known to inhabit the Stone Oak Karst Faunal Region and suitable karst features for this species may be encountered during construction.	<b>May affect, not likely to adversely affect</b>
Robber Baron Cave meshweaver	<i>Circurina baronia</i>	E	SGCN	A small, eyeless, or essentially eyeless spider; found in karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst terrain features survey.	No effect
<b>Birds</b>						
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	--	T	Nests in tall cliff eyries; migrant across state; winters along coast and farther south; occupies wide range of habitats, including urban areas; stopovers at lake shores, coastlines, and barrier islands.	No suitable habitat for this species exists in the project area. No cliffs, lakes, coastlines, or barrier islands exist within the project area.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	--	SGCN	Migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.	No suitable habitat for this species exists in the project area. No cliffs, lakes, coastlines, or barrier islands exist within the project area.	No impact
Peregrine Falcon	<i>Falco peregrinus</i>	--	T	Both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies ( <i>F. p. anatum</i> ) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, <i>F.p. tundrius</i> is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.	No suitable habitat for this species exists in the project area. No cliffs, lakes, coastlines, or barrier islands exist within the project area.	No impact
Black-capped Vireo	<i>Vireo atricapilla</i>	--	E	Habitat of oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer.	No suitable habitat for this species exists within the project area. Project area does not contain regions of oak-juniper mottes with thick, well-established, shrubby understory. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and not additional ROW will be acquired for this project.	No impact
Golden-cheeked Warbler	<i>Dendroica chrysoparia</i>	E	E	Habitat of juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	NDD data provides known EO for this species within the project area. Potentially suitable habitat for this species is within the action area of the project (within Camp Bullis property). The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	<b>May affect, not likely to adversely affect</b>

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Sprague's Pipit	<i>Anthus spragueii</i>	--	SGCN	Only in Texas during migration and winter, mid-September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.	No suitable habitat for this species exists in the project area. The project area does not contain native upland prairie or coastal grasslands.	No impact
Mountain Plover	<i>Charadrius montanus</i>	--	SGCN	Breeding habitat: nests on high plains or shortgrass prairie, on ground in shallow depression; nonbreeding habitat: shortgrass plains and bare, dirt (plowed) fields; primarily insectivorous.	No suitable habitat for this species exists in the project area. Project area lacks sufficiently large regions of continuous flat prairieland or any plowed fields.	No impact
Interior Least Tern	<i>Sterna antillarum athalassos</i>	E	E	Nests along sand and gravel bars within braided streams and rivers; also known to nest on manmade structures (inland beaches, wastewater treatment plants, etc).	No suitable habitat for this species exists in the project area. The project area does not contain braided streams and rivers. Species only evaluated for wind energy projects.	No effect
Western Burrowing Owl	<i>Athene cunicularia hypugaea</i>	--	SGCN	Habitat 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.	No suitable habitat for this species exists in the project area. Project area lacks sufficiently large regions of continuous flat prairieland and ROW continuously maintained as to disallow establishment of midgrass brakes necessary for nesting and cover.	No impact
White-faced Ibis	<i>Plegadis chihi</i>	--	T	Species prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats.	No suitable habitat for this species exists in the project area. No freshwater marshes or brackish or saltwater habitats occur within the project area.	No impact
Whooping Crane	<i>Grus americana</i>	E	E	Species is a potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties.	No suitable habitat for this species exists in the project area. No coastal marshes occur within the project area.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Wood Stork	<i>Mycteria americana</i>	--	T	Forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960.	No suitable habitat for this species exists in the project area. No prairie ponds, flooded pastures or fields, ditches or other shallow standing water exists in the project area. Does not currently nest in Texas.	No impact
Zone-tailed Hawk	<i>Buteo albonotatus</i>	--	T	Habitat arid open country, including open deciduous or pine-oak woodland, mesa or mountain country, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; 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.	No suitable habitat for this species exists in the project area. No arid open country or mountainous desert canyons exist in the project area.	No impact
Piping Plover	<i>Charadrius melodus</i>	T	--	Wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats.	No habitat for this species exists in the project area. The project area does not contain beaches or bayside flats. Species only evaluated for wind energy projects.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Red Knot	<i>Calidris canutus rufa</i>	T	SGCN	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. The Red Knot prefers the shoreline of coast and bays and also uses mudflats during rare inland encounters. Primary prey items include coquina clam ( <i>Donax</i> spp.) on beaches and dwarf surf clam ( <i>Mulinia lateralis</i> ) 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.	No habitat for this species exists in the project area. The project area does not contain seacoast habitat. Species only evaluated for wind energy projects.	No effect
<b>Crustaceans</b>						
A cave obligate crustacean	<i>Monodella texana</i>	--	SGCN	Species subaquatic, subterranean obligate; underground freshwater aquifers.	Project area occurs over the Edwards Aquifer. A contributing zone plan is being prepared and water quality BMPs will be implemented; therefore, water quality should not be degraded to the point of impacting species living within the aquifer.	No impact
Peck's Cave amphipod	<i>Stygobromus pecki</i>	E	--	Small, aquatic crustacean; lives underground in the Edwards Aquifer; collected at Comal Springs and Hueco Springs.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect
<b>Fishes</b>						
Guadalupe bass	<i>Microterus treculii</i>	--	SCGN	Species endemic to perennial streams of the Edward's Plateau region; introduced in Nueces River system.	No suitable habitat for this species exists within the project area. No perennial streams exist within the project area.	No impact
Fountain darter	<i>Etheostoma fonticola</i>	E	--	Known only from the San Marcos and Comal rivers; springs and spring-fed streams in dense beds of aquatic plants growing close to bottom, which is normally mucky; feeding mostly diurnal; spawns year-round with August and late winter to early spring peaks.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Toothless blindcat	<i>Trogloglanis pattersoni</i>	--	T	Species troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer.	Project area occurs over the Edwards Aquifer. A contributing zone plan is being prepared and water quality BMPs implemented; therefore, water quality should not be degraded to the point of impacting species living within the aquifer.	No impact
Widemouth blindcat	<i>Satan eurystomus</i>	--	T	Species troglobitic, blind catfish endemic to the San Antonio Pool of the Edward's Aquifer.	Project area occurs over the Edwards Aquifer. A contributing zone plan is being prepared and water quality BMPs will be implemented; therefore, water quality should not be degraded to the point of impacting species living within the aquifer.	No impact
<b>Mammals</b>						
Plains spotted skunk	<i>Spilogale putorius interrupta</i>	--	SGCN	Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.	Potentially suitable habitat for this species occurs in the project area. Project area contains regions of open grassland as well as fence line and edge habitats abutting regions of brushy woodlands.	<b>May impact; apply Plains spotted skunk BMPs</b>
Cave myotis bat	<i>Myotis velifer</i>	--	SGCN	Species colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and even in abandoned Cliff Swallow ( <i>Hirundo pyrrhonota</i> ) 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.	No suitable habitat for this species exist in the project area. The project area does not contain any caves or large abandoned structures with suitable crevices for roosting.	No impact
Grey wolf	<i>Canis lupus</i>	--	E	Extirpated from the wild in Texas; formerly known throughout the western two-thirds of the state in forests, brushlands, or grasslands.	Suitable habitat for this species exists within the project area, however, the red wolf has been extirpated from Texas.	No effect
Red wolf	<i>Canis rufus</i>	--	E	Extirpated from the wild in Texas; formerly known throughout the eastern half of Texas in brushy and forested areas as well as coastal prairies.	No suitable habitat exists for this species in the project area. Additionally, the red wolf has been extirpated from Texas.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Black bear	<i>Ursus americanus</i>	--	T	Bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened.	No suitable habitat exists for this species in the project area. No large tracts of inaccessible forested areas occur within the project area.	No impact
<b>Insects</b>						
A ground beetle	<i>Rhadine exilis</i>	E	SGCN	A small, essentially eyeless ground beetle; karst features in north and northwest Bexar County. Critical habitat for this species is located 0.6 miles from the project alignment.	Project occurs within USFWS karst zone 3 and within to the Stone Oak Karst Faunal Region. While no suitable habitat for this species was observed within the project area during karst terrain features survey, the species is known to inhabit the Stone Oak Karst Faunal Region and suitable karst features for this species may be encountered during construction.	<b>May affect, not likely to adversely affect</b>
A ground beetle	<i>Rhadine infernalis</i>	E	SGCN	A small, essentially eyeless ground beetle; karst features in north and northwest Bexar County.	Project occurs within USFWS karst zone 3 and within the Stone Oak Karst Faunal Region. While no suitable habitat for this species was observed within the project area during karst terrain features survey, the species is known to inhabit the Stone Oak Karst Faunal Region and suitable karst features for this species may be encountered during construction.	<b>May affect, not likely to adversely affect</b>
Helotes mold beetle	<i>Batrisodes venyivi</i>	E	SGCN	A small, essentially eyeless mold beetle; karst features in northwestern Bexar County and northeastern Medina County.	Project occurs within USFWS karst zone 3, but no suitable habitat for this species was observed within the project area during karst survey.	No effect
Comal Springs Dryopid beetle	<i>Stygoparnus comalensis</i>	E	--	Dryopids usually cling to objects in a stream; dryopids are sometimes found crawling on stream bottoms or along shores; adults may leave the stream and fly about, especially at night; most dryopid larvae are vermiform and live in soil or decaying wood.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect
Comal Springs Riffle beetle	<i>Heterelmis comalensis</i>	E	--	Comal and San Marcos Springs.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Manfreda giant-skipper	<i>Stallingsia maculosus</i>	--	SGCN	Most skippers are small and stout-bodied; name derives from fast, erratic flight; at rest most skippers hold front and hind wings at different angles; skipper larvae are smooth, with the head and neck constricted; skipper larvae usually feed inside a leaf shelter and pupate in a cocoon made of leaves fastened together with silk. Habitat is subtropical mesquite scrub with a lot of <i>Manfreda</i> , on sandy or clay soils, either dry or moist. Apparently occasionally pine woodland.	No suitable habitat for this species exists in the project area. The project area does not contain mesquite shrubland with an abundance of <i>Manfreda</i> .	No impact
<b>Mollusks</b>						
Golden orb	<i>Quadrula aurea</i>	C	T	Habitat consists of sand and gravel in some locations and mud at others; found in lentic and lotic; Guadalupe, San Antonio, Lower San Marcos, and Nueces River basins.	No suitable habitat for this species exists in the project area. The project area does not contain permanent water sources with muddy to gravelly substrate.	No effect
Texas fatmucket	<i>Lampsilis bracteata</i>	C	--	Streams and rivers on sand, mud, and gravel substrates; intolerant of impoundment; broken bedrock and coarse gravel or sand in moderately flowing water; Colorado and Guadalupe River basins.	No suitable habitat for this species exists in the project area. The project area does not occur within the Colorado or Guadalupe River basins.	No effect
Texas pimpleback	<i>Quadrula petrina</i>	C	--	Mud, gravel and sand substrates, generally in areas with slow flow rates; Colorado and Guadalupe river basins.	No suitable habitat for this species exists in the project area. The project review area does not occur within the Colorado or Guadalupe River basins.	No effect
Mimic cavesnail	<i>Phreatodrobia imitata</i>	--	SGCN	Species subaquatic; only known from two wells penetrating the Edwards Aquifer.	Project area occurs over the Edwards Aquifer but no suitable habitat for this species was observed within the project area during karst survey.	No impact
<b>Reptiles</b>						
Spot-tailed earless lizard	<i>Holbrookia lacerata</i>	--	SGCN	Found in central and southern Texas and adjacent Mexico; moderately open prairie-brushland; fairly flat areas free of vegetation or other obstructions, including disturbed areas; eats small invertebrates; eggs laid underground.	No suitable habitat for this species exists within the project area. Project area lacks large regions of continuous flat prairieland or large flat regions free of vegetation.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/Impact
Texas garter snake	<i>Thamnophis sirtalis annectens</i>	--	SGCN	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.	No suitable habitat for this species exists in the project area. Project area does not contain any significant source of permanent moisture for sustaining this species' preferred prey of frogs.	No impact
Texas indigo snake	<i>Drymarchon melanurus erebennus</i>	--	T	Texas south of the Guadalupe River and Balcones Escarpment; thornbush-chaparral woodlands of south Texas, in particular dense riparian corridors; can do well in suburban and irrigated croplands if not molested or indirectly poisoned; requires moist microhabitats, such as rodent burrows, for shelter.	No suitable habitat for this species exists within the project area. The project area does not contain any thornbush-chaparral woodlands or dense riparian corridors.	No impact
Texas tortoise	<i>Gopherus berlandieri</i>	--	T	Open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November.	No suitable habitat for this species exist in the project area. The project area does not contain extensive brushy area with grassy understories and lacks an abundance of prickly pear required for this species' diet.	No impact
Texas horned lizard	<i>Phrynosoma cornutum</i>	--	T	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows in soil, enters rodent burrows, or hides under rocks when inactive.	No suitable habitat for this species exists in the project area. Project area well-vegetated with significant regions of woody species and no established cactus population. No red ant populations were observed within the project area during field observations.	No impact
Timber rattlesnake	<i>Crotalus horridus</i>	--	T	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto.	No suitable habitat for this species exists in the project area. The project area does not contain any riparian zones, swamps, or upland pine-deciduous woodlands with dense ground cover.	No impact
<b>Plants</b>						
Hill Country wild-mercury	<i>Argythamnia aphoroides</i>	--	SGCN	Texas endemic; mostly in bluestem-grama grasslands associated with plateaus live oak woodlands on shallow to moderately deep clays and clay loams over limestone on rolling uplands; also in partial shade of oak-juniper woodlands in gravelly soils on rocky limestone slopes.	No suitable habitat for this species exists in the project area. No continuous regions of established little bluestem-grama grasslands exist in the project area.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Plateau milkvine	<i>Matelea edwardsensis</i>	--	SGCN	GLOBAL RANK: G3; Occurs in various types of juniper-oak and oak-juniper woodlands; Perennial; Flowering March-Oct; Fruiting May-June.	No suitable habitat for this species exists in the project area. Project area does not contain oak-juniper woodland mottes with shallow, rocky clay soils over Cretaceous limestones. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No impact
Gravelbar brickellbush	<i>Brickellia dentata</i>	--	SGCN	GLOBAL RANK: G3; Essentially restricted to frequently-scoured gravelly alluvial beds in creek and river bottoms; Perennial; Flowering June-Nov; Fruiting June-Oct.	No suitable habitat for this species exist in the project area. Project area does not contain any frequently scoured gravelly alluvial beds or notable creek beds.	No impact
Narrowleaf brickellbush	<i>Brickellia eupatorioides var. gracillima</i>	--	SGCN	GLOBAL RANK: G5T3; Moist to dry gravelly alluvial soils along riverbanks but also on limestone slopes; Perennial; Flowering/Fruiting April-Nov.	No suitable habitat for this species exists in the project area. Project area does not contain any alluvial gravelly soils or any creek beds or associated exposed limestone slopes	No impact
Heller's marbleseed	<i>Onosmodium helleri</i>	--	SGCN	GLOBAL RANK: G3; Occurs in loamy calcareous soils in oak-juniper woodlands on rocky limestone slopes, often in more mesic portions of canyons; Perennial; Flowering March-May.	No suitable habitat for this species exists in the project area. Project area does not contain regions of oak-juniper woodland over limestone slopes. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No impact
Tree dodder	<i>Cuscuta exaltata</i>	--	SGCN	GLOBAL RANK: G3; Parasitic on various <i>Quercus</i> , <i>Juglans</i> , <i>Rhus</i> , <i>Vitis</i> , <i>Ulmus</i> , and <i>Diospyros</i> species as well as <i>Acacia berlandieri</i> and other woody plants; Annual; Flowering May-Oct; Fruiting July-Oct.	Potentially suitable habitat for this species occurs in the project area. Project area contains small populations of <i>Quercus fusiformis</i> , <i>Rhus virens</i> , <i>Diospyros texana</i> and <i>Ulmus crassifolia</i> , all species known to host tree dodder.	May impact
Plateau loosestrife	<i>Lythrum ovalifolium</i>	--	SGCN	GLOBAL RANK: G4; Banks and gravelly beds of perennial (or strong intermittent) streams on the Edwards Plateau, Llano Uplift and Lampasas Cutplain; Perennial; Flowering/Fruiting April-Nov.	No suitable habitat for this species exists in the project area. Project area does not contain any perennial or strongly intermittent streams.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/Impact
Osage Plains false foxglove	<i>Agalinis densiflora</i>	--	SGCN	GLOBAL RANK: G3; Most records are from grasslands on shallow, gravelly, well drained, calcareous soils; Prairies, dry limestone soils; Annual; Flowering Aug-Oct. Additional research into species notes that known populations occur in regions of tallgrass prairie over sandy-loam soil and associates with <i>Andropogon gerardii</i> , <i>Sorghastrum nutans</i> , and <i>Panicum virgatum</i> .	No suitable habitat for this species exists in the project area. Project area lacks tallgrass prairie on sandy loam soil. Area lacks any species commonly associated with known populations of this species.	No impact
Sycamore-leaf snowbell	<i>Styrax platanifolius ssp. platanifolius</i>	--	SGCN	GLOBAL RANK: G3T3; Rare throughout range, usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-May; Fruiting May-Aug.	No habitat for this species exists in the project review area. The project area does not contain any steep rocky banks along streams.	No impact
Hairy sycamore-leaf snowbell	<i>Styrax platanifolius var. stellatus</i>	--	SGCN	GLOBAL RANK: G3T3; Rare throughout range, in habitats similar to those of var. <i>platanifolius</i> - usually in oak-juniper woodlands on steep rocky banks and ledges along intermittent or perennial streams, rarely far from some reliable source of moisture; Perennial; Flowering April-Oct; Fruiting May-Sept.	No habitat for this species exists in the project review area. The project area does not contain any steep rocky banks along streams.	No impact
Bracted twistflower	<i>Streptanthus bracteatus</i>	C	SGCN	Texas endemic; shallow, well-drained gravelly clays and clay loams over limestone in oak juniper woodlands and associated openings, on steep to moderate slopes and in canyon bottoms; several known soils include Tarrant, Brackett, or Speck over Edwards, Glen Rose, and Walnut geologic formations; populations fluctuate widely from year to year, depending on winter rainfall; flowering mid-April/late May, fruit matures and foliage withers by early summer.	No suitable habitat for this species exists in the project area. Project area does not contain regions of oak-juniper mottes with mixed shortgrass brakes over moderate slopes. NDD data provides known EO for this species within the project area. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No effect
Texas wild-rice	<i>Zizania texana</i>	E	--	Texas endemic; spring-fed river, in clear, cool, swift water mostly less than 1 m deep, with coarse sandy soils rather than finer clays; flowering year-round, peaking March-June.	No suitable habitat for this species exists in the project area. The proposed project occurs outside of the species range.	No effect

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Texas seymeria	<i>Seymeria texana</i>	--	SGCN	GLOBAL RANK: G3; Found primarily in grassy openings in juniper-oak woodlands on dry rocky slopes but sometimes on rock outcrops in shaded canyons; Annual; Flowering May-Nov; Fruiting July-Nov.	No suitable habitat for this species exists in the project area. Project area does not contain oak-juniper woodlands with grassy openings. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No impact
Glass Mountains coral-root	<i>Hexalectris nitida</i>	--	SGCN	GLOBAL RANK: G3; Apparently rare in mixed woodlands in canyons in the mountains of the Brewster County, but encountered with regularity, albeit in small numbers, under <i>Juniperus ashei</i> in woodlands over limestone on the Edwards Plateau, Callahan Divide and Lampasas Cutplain; Perennial; Flowering June-Sept; Fruiting July-Sept.	No suitable habitat for this species exists in the project area. Project area does not contain regions of Ashe juniper mottes over rocky limestone soil. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No impact
Texas fescue	<i>Festuca versuta</i>	--	SGCN	GLOBAL RANK: G3; Occurs in mesic woodlands on limestone-derived soils on stream terraces and canyon slopes; Perennial; Flowering/Fruiting April-June.	No suitable habitat for this species exists in the project area. Project area lacks continuous regions of moist, shady woodlands on rocky slopes.	No impact
Buckley tridens	<i>Tridens buckleyanus</i>	--	SGCN	GLOBAL RANK: G3; Occurs in juniper-oak woodlands on rocky limestone slopes; Perennial; Flowering/Fruiting April-Nov. Further research indicates that this species is documented in regions of continuously moist, shady woodlands on rocky slopes and is known to occur in low-lying or shaded roadside ditches and drainage areas with cooler ambient temperatures and reliable moisture.	No suitable habitat for this species exists in the project area. Project area lacks continuous regions of moist, shady woodlands on rocky slopes.	No impact
Spreading leastdaisy	<i>Chaetopappa effusa</i>	--	SGCN	GLOBAL RANK: G3; Limestone cliffs, ledges, bluffs, steep hillsides, sometimes in seepy areas, oak-juniper, oak, or mixed deciduous woods, 300-500 m elevation; Perennial; Flowering (May) July-Oct.	No habitat for this species exists in the project area. The project area does not contain limestone cliffs, bluffs, or steep hillsides.	No impact
Burridge greenthread	<i>Thelesperma burridgeanum</i>	--	SGCN	GLOBAL RANK: G3; Sandy open areas; Annual; Flowering March-Nov; Fruiting March-June.	No suitable habitat for this species exists in the project area. The project area does not contain any sandy open areas.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Low spurge	<i>Euphorbia peplidion</i>	--	SGCN	GLOBAL RANK: G3; Occurs in a variety of vernal-moist situations in a number of natural regions; Annual; Flowering Feb-April; Fruiting March-April.	No suitable habitat for this species exists in the project area. The project area lacks any vernal-moist regions.	No impact
Texas amorphia	<i>Amorpha roemeriana</i>	--	SGCN	GLOBAL RANK: G3; Juniper-oak woodlands or shrublands on rocky limestone slopes, sometimes on dry shelves above creeks; Perennial; Flowering May-June; Fruiting June-Oct.	No suitable habitat for this species exists in the project area. Project area does not contain oak-juniper woodlands over limestone slopes. It should be noted that abutting parcels contain potentially suitable habitat for this species. The project is not anticipated to impact any abutting parcels and no additional ROW will be acquired for this project.	No impact
Net-leaf bundleflower	<i>Desmanthus reticulatus</i>	--	SGCN	GLOBAL RANK: G3; Mostly on clay prairies of the coastal plain of central and south Texas; Perennial; Flowering April-July; Fruiting April-Oct.	No suitable habitat for this species exists in the project area. The project area does not occur within the coastal plain.	No impact
Correll's false dragon-head	<i>Physostegia correllii</i>	--	SGCN	Wet, silty clay loams on streamsides, in creek beds, irrigation channels and roadside drainage ditches; or seepy, mucky, sometimes gravelly soils along riverbanks or small islands in the Rio Grande; or underlain by Austin Chalk limestone along gently flowing spring-fed creek in central Texas; flowering May-September.	No suitable habitat for this species exists within the project area. The project area does not contain any gently-flowing spring-fed creeks or wet, silty clay loam soils on stream sides and drainage ditches.	No impact
Big red sage	<i>Salvia penstemonoides</i>	--	SGCN	Texas endemic; moist to seasonally wet, steep limestone outcrops on seeps within canyons or along creek banks; occasionally on clayey to silty soils of creek banks and terraces, in partial shade to full sun; basal leaves conspicuous for much of the year; flowering June-October.	No suitable habitat for this species exists in the project area. Project area lacks any consistent source of water, hillside seeps, exposed limestone terraces or creek beds.	No impact
Parks' jointweed	<i>Polygonella parksii</i>	--	SGCN	Texas endemic; mostly found on deep, loose, whitish sand blowouts (unstable, deep, xeric, sandhill barrens) in Post Oak Savanna landscapes over the Carrizo and Sparta formations; also occurs in early successional grasslands, along right-of-ways, and on mechanically disturbed areas; flowering June-late October or September-November.	No suitable habitat for this species exists in the project review area. No deep, loose, whitish sand blowouts occur in project review area.	No impact

**Federally- and State-Listed Species and Species of Greatest Conservation Need of Potential Occurrence in Bexar County  
Potential Effects/Impacts as a Result of the Blanco Road Phase II Project**

Common Name	Scientific Name	Federal Status	State Status	Habitat	Potential for Habitat to Occur in Project Area	Effect/ Impact
Texas almond	<i>Prunus minutiflora</i>	--	SGCN	GLOBAL RANK: G3; Wide-ranging but scarce, in a variety of grassland and shrubland situations, mostly on calcareous soils underlain by limestone but occasionally in sandier neutral soils underlain by granite; Perennial; Flowering Feb-May & Oct; Fruiting Feb-Sept.	No suitable habitat for this species exists in the project area. No limestone slopes or sandy granitic soils exist within the project area.	No impact
Sandhill woollywhite	<i>Hymenopappus carrizoanus</i>	--	SGCN	Texas endemic; disturbed or open areas in grasslands and post oak woodlands on deep sands derived from the Carrizo Sand and similar Eocene formations.	No suitable habitat for this species exists within the project area. No grasslands and post oak woodlands on deep sands occur within the project area.	No impact
Texas peachbush	<i>Prunus texana</i>	--	SGCN	GLOBAL RANK: G3; Occurs at scattered sites in various well drained sandy situations; deep sand, plains and sand hills, grasslands, oak woods, 0-200 m elevation; Perennial; Flowering Feb-Mar; Fruiting Apr-Jun.	No suitable habitat for this species exists in the project area. No well-drained, deep sand or sandhills occur within the project area.	No impact
Siler's huaco	<i>Manfreda sileri</i>	--	SGCN	GLOBAL RANK: G3; Rare in a variety of grasslands and shrublands on dry sites; Perennial; Flowering April-July; Fruiting June-July. Additional research indicates that this species is only known at elevations below 330 ft on sandy soils and only in the Coastal Plains region of Texas.	No suitable habitat for this species exists in the project area. The project area occurs above the preferred habitat elevation of 330 ft and is outside of the known range for this species.	No impact
Elmendorf's onion	<i>Allium elmendorffii</i>	--	SGCN	Texas endemic; grassland openings in oak woodlands on deep, loose, well-drained sands; in Coastal Bend, on Pleistocene barrier island ridges and Holocene Sand Sheet that support live oak woodlands; to the north it occurs in post oak-black hickory-live oak woodlands over Queen City and similar Eocene formations; one anomalous specimen found on Llano Uplift in wet pockets of granitic loam; Perennial; Flowering March-April, May.	No suitable habitat for this species exists in the project review area. There are no oak woodlands over deep, loose, well-draining sands in the project area, and the proposed project does not occur in the Coastal Bend or Llano Uplift.	No impact

Status: E – Endangered; T – Threatened; C – Candidate; SGCN – Species of Greatest Conservation Need

Source: USFWS, 2018; TPWD, 2018.

## **NDD EOID List**

# Element Occurrence Record

**Scientific Name:** Eurycea latitans      **Occurrence #:** 3      **Eo Id:** 4627  
**Common Name:** Cascade Caverns Salamander      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** T  
**Global Rank:** G3      **State Rank:** S1      **Federal Status:**

---

## Location Information:

### Directions

Grosser's Sinkhole; 6.0 miles south-southwest of Bergheim, Comal County, Texas.

---

## Survey Information:

**First Observation:** 1970-07-13      **Survey Date:** 1971-01-16      **Last Observation:** 1971-01-16  
**Eo Type:**      **Eo Rank:** E      **Eo Rank Date:** 1971-01-16

### Observed Area:

---

## Comments:

**General Description:** Limestone cave or sinkhole with considerable water.

**Comments:** There are four additional uncatalogued specimens from this location at Texas Tech University . In addition, on 21 April, 1986, 2 "tridentifera" specimens were collected 11 miles W of Bulverde in Comal County. These could have been from this location. Texas Cooperative Wildlife Collection, Texas A&M University, College Station, TX.; J. M. Mueller (# unknown), Catalog # 65495-65496, 21 April 1986, TCWC.

### Protection

#### Comments:

**Management Comments:** Protect cave ecosystem integrity.

---

## Data:

**EO Data:** 13 July 1970: 14 specimens were collected. 16 January 1971: 4 specimens were collected.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

## Element Occurrence Record

### Citation:

Sweet, Samuel S. 1984. Secondary contact and hybridization in the Texas cave salamanders *Eurycea neotenes* and *Eurycea tridentifera*. *Copeia* 1984(2):428-441.

Sweet, Samuel S. 1978. The Evolutionary Development of the Texas *Eurycea* (Amphibia: Plethodontidae). Ph.D. dissertation. University of California, Berkeley. 450 pp.

Baker, James K. 1961. Distribution of and key to the neotenic *Eurycea* of Texas. *The Southwestern Naturalist* 6(1):27-32.

Hanks, Cullen. 2011. Compilation of *Eurycea* specimen records for Central Texas extracted from online databases.

---

### Specimen:

The Museum of Vertebrate Zoology, University of California, Berkeley, CA; Samuel S. Sweet, N. E. Strenth (# 12467), Catalog # 120597, 16 January 1971, MVZ

The Museum of Vertebrate Zoology, University of California, Berkeley, CA; Samuel S. Sweet, N. E. Strenth (# 2731-2742,12465-12466), Catalog # 120583-120596, 13 July 1970, MVZ

Texas Cooperative Wildlife Collection, Texas A&M University, College Station, TX.; N. Strenth (# 2488), Catalog # 78132, 44487-44488, 16 January 1971, TCWC.

---

# Element Occurrence Record

**Scientific Name:** Eurycea latitans      **Occurrence #:** 27      **Eo Id:** 9313  
**Common Name:** Cascade Caverns Salamander      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** T  
**Global Rank:** G3      **State Rank:** S1      **Federal Status:**

---

## Location Information:

### Directions

Camp Bullis, Bexar County. Camp Bullis caves 1, 3-6, and Bat Cave.

---

## Survey Information:

**First Observation:** 2004-08-12      **Survey Date:** 2007-09-27      **Last Observation:** 2007-09-27  
**Eo Type:**      **Eo Rank:** E      **Eo Rank Date:** 2007-09-27

### Observed Area:

---

## Comments:

**General Description:** Caves.

### Comments:

**Protection Comments:**

**Management Comments:**

---

## Data:

**EO Data:** 12 Aug 2004: 5 specimens were collected. 11 Oct 2004: 1 specimen was collected. 18 Sep 2007: 1 specimen was collected. 27 Sep 2007: 1 specimen was collected.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Hanks, Cullen. 2011. Compilation of Eurycea specimen records for Central Texas extracted from online databases.

---

## Specimen:

## Element Occurrence Record

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp and P. Sprouse (# AGG 825), Catalog # 56719, 12 August 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp and P. Sprouse (# AGG 824), Catalog # 56720, 12 August 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp and P. Sprouse (# AGG 826), Catalog # 56721, 12 August 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp and P. Sprouse (# AGG 823), Catalog # 56722, 12 August 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp and P. Sprouse (# AGG 827), Catalog # 57298, 12 August 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Peter Sprouse (# AGG 1200), Catalog #s unknown, 27 September 2007, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; A. Gluesenkamp, B. Shade (# AGG 1009), Catalog # 56724, 11 October 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Peter Sprouse and Krista McDermid (# AGG 1199), Catalog #s unknown, 18 September 2007, UTA.

---

# Element Occurrence Record

**Scientific Name:** Eurycea neotenes

**Occurrence #:** 10

**Eo Id:** 9312

**Common Name:** Texas Salamander

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G1

**State Rank:** S2

**Federal Status:**

---

## Location Information:

### Directions

Camp Bullis, Comal County. Stealth Cave and Sharon Spring.

---

## Survey Information:

**First Observation:** 2004-07-12

**Survey Date:** 2005-10-15

**Last Observation:** 2005-10-15

**Eo Type:**

**Eo Rank:** E

**Eo Rank Date:** 2005-10-15

**Observed Area:**

---

## Comments:

**General** Stealth Cave and Sharon Spring.

**Description:**

**Comments:**

**Protection**

**Comments:**

**Management**

**Comments:**

---

## Data:

**EO Data:** 12 Jul 2004: 1 specimen was collected. 8 Nov 2004: 3 specimen were collected. 6- 11 Jan 2005: 3 specimens were collected. 10 May 2005: 1 specimen was collected. 15 Oct 2005: 1 specimen was collected. No Date: 8 specimens were collected.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Hanks, Cullen. 2011. Compilation of Eurycea specimen records for Central Texas extracted from online databases.

---

## Specimen:

## Element Occurrence Record

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; M. Jones (# AGG 830-832), Catalog # 57274-57276, 12 July 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Andy Gluesenkamp (# AGG 1014), Catalog # 57299, 8 November 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; unknown (# AGG 1015), Catalog # 57239, 8 November 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Marco Jones (# AGG 1016), Catalog # 57300, 8 November 2004, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Andy Gluesenkamp (# AGG 1029), Catalog # 57261, 6 January 2005, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Andy Gluesenkamp (# AGG 1030-1031), Catalog # 57262-57263, 11 January 2005, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Andy Gluesenkamp (# AGG 1035), Catalog # 57266, 10 May 2005, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; unknown (# AGG 1017-1025), Catalog # 57240-57247, no date, UTA.

Amphibian and Reptile Diversity Research Center, University of Texas at Arlington, TX; Andy Gluesenkamp (# AGG 1716), Catalog #s unknown, 15 October 2005, UTA.

---

# Element Occurrence Record

**Scientific Name:** Eurycea tridentifera      **Occurrence #:** 3      **Eo Id:** 10932  
**Common Name:** Comal Blind Salamander      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** T  
**Global Rank:** G1      **State Rank:** S1      **Federal Status:**

---

## Location Information:

### Directions

GROSSER'S SINKHOLE; 6.0 MILES SOUTH-SOUTHWEST OF BERGHEIM, COMAL COUNTY, TEXAS

---

## Survey Information:

**First Observation:**      **Survey Date:** 1978      **Last Observation:** 1978  
**Eo Type:**      **Eo Rank:** A      **Eo Rank Date:**

### Observed Area:

---

## Comments:

**General Description:** LIMESTONE CAVE OR SINKHOLE WITH CONSIDERABLE WATER

**Comments:** SPECIMENS: MVZ 120583-120597; TT (4 UNCATALOGUED); TCWC 44487-44488; CS 158.

**Protection Comments:** SUPPORT FEDERAL LISTING

**Management Comments:** PROTECT CAVE ECOSYSTEM INTEGRITY

---

## Data:

**EO Data:** A CAVE ADAPTED SALAMANDER. HYBRIDIZES OCCASIONALLY WITH EURYCEA NEOTENES WHEN IN CONTACT. BEHAVIORALLY SUBJECT TO FISH PREDATION WHEN FISH ARE WASHED INTO CAVES FROM SURFACE.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Sweet, Samuel S. 1984. Secondary contact and hybridixation in the Texas cave salamanders Eurycea neotenes and Eurycea tridentifera. Copeia 1984(2):428-441.

Sweet, Samuel S. 1978. The Evolutionary Development of the Texas Eurycea (Amphibia: Plethodontidae). Ph.D. dissertation. University of California, Berkeley. 450 pp.

Baker, James K. 1961. Distribution of and key to the neotenic Eurycea of Texas. The Southwestern Naturalist 6(1):27-32.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Onosmodium helleri

**Occurrence #:** 22

**Eo Id:** 4605

**Common Name:** Heller's marbleseed

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G3

**State Rank:** S3

**Federal Status:**

---

## Location Information:

### Directions

EISENHOWER PARK; BOTTOM OF BROAD MESIC RAVINE ON WEST-FACING SLOPE OF BUSH HILL, WEST SIDE OF PARK, CA. 1.14 AIR MILES EAST OF JUNCTION OF IH-10 AND BULLIS ROAD, 100 FEET SOUTH OF CAMP BULLIS FENCE LINE

---

## Survey Information:

**First Observation:** 1926

**Survey Date:** 1995-05-16

**Last Observation:** 1995-05-16

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

**General Description:** MESIC OAK-JUNIPER WOODLAND IN BOTTOM OF RAVINE AT OR NEAR CONTACT BETWEEN EDWARDS LIMESTONE AND UPPER GLEN ROSE FORMATION

**Comments:**

**Protection**

**Comments:**

**Management**

**Comments:**

---

## Data:

**EO Data:** 100-200 PLANTS SEEN ON 16 MAY 1995, IN YOUNG FRUIT

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

CARR, W.R. 1995. FIELD SURVEY OF EISENHOWER PARK, BEXAR COUNTY, TEXAS, 16 MAY 1995.

RARE PLANT STUDY CENTER, UNIVERSITY OF TEXAS AT AUSTIN. 1976-12-20. REPORT ON ONOSMODIUM HELLERI.

## Element Occurrence Record

### Specimen:

University of Texas at Austin Herbarium. 1995. W.R. Carr #14634 and David Diamond, Specimen # none TEX. 16 May 1995.

---

# Element Occurrence Record

**Scientific Name:** Rhadine exilis      **Occurrence #:** 2      **Eo Id:** 7748  
**Common Name:** A Ground Beetle      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:**  
**Global Rank:** G3      **State Rank:** S1      **Federal Status:** LE

---

## Location Information:

### Directions

JUST SOUTH OF CAMP BULLIS ROAD, HEADQUARTERS AREA

---

## Survey Information:

**First Observation:**      **Survey Date:**      **Last Observation:**

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** THIS SPECIES KNOWN ONLY FROM BLACK CAT CAVE, CHRISTMAS CAVE, HEADQUARTERS CAVE, GOVERNMENT CANYON CAVE, ROBBER'S CAVE, YOUNG CAVE #1, AND THREE FINGERS CAVE

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:**

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

REDDELL, JAMES R. 1993. THE STATUS AND RANGE OF ENDEMIC ARTHROPODS FROM CAVES IN BEXAR COUNTY, TEXAS. FOR THE USFWS AND TPWD.

VENI, GEORGE. 1993. GEOLOGIC CONTROLS ON CAVE DEVELOPMENT AND THE DISTRIBUTION OF ENDEMIC CAVE FAUNA IN THE SAN ANTONIO, TEXAS, REGION. PREPARED FOR TPWD AND USFWS. DRAFT SUBMITTED 22 OCTOBER 1993.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Rhadine infernalis

**Occurrence #:** 2

**Eo Id:** 5656

**Common Name:** A Ground Beetle

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G2G3

**State Rank:** S1

**Federal Status:** LE

---

## Location Information:

### Directions

JUST SOUTH OF CAMP BULLIS ROAD HEADQUARTERS AREA

---

## Survey Information:

**First Observation:**

**Survey Date:**

**Last Observation:**

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

**General** CAVE

**Description:**

**Comments:** SUBSPECIES "EWERSI" ONLY KNOWN WITH CERTAINTY FROM HEADQUARTERS CAVE

**Protection**

**Comments:**

**Management**

**Comments:**

---

## Data:

**EO Data:**

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

REDDELL, JAMES R. 1993. THE STATUS AND RANGE OF ENDEMIC ARTHROPODS FROM CAVES IN BEXAR COUNTY, TEXAS. FOR THE USFWS AND TPWD.

VENI, GEORGE. 1993. GEOLOGIC CONTROLS ON CAVE DEVELOPMENT AND THE DISTRIBUTION OF ENDEMIC CAVE FAUNA IN THE SAN ANTONIO, TEXAS, REGION. PREPARED FOR TPWD AND USFWS. DRAFT SUBMITTED 22 OCTOBER 1993.

# Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Salvia pentstemonoides

**Occurrence #:** 19

**Eo Id:** 8999

**Common Name:** big red sage

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G1

**State Rank:** S1

**Federal Status:**

---

## Location Information:

### Directions

Comanche Springs, at the headwaters of Salado Creek in what is now Camp Bullis.

---

## Survey Information:

**First Observation:** 1849-06

**Survey Date:** 1849-06

**Last Observation:** 1849-06

**Eo Type:**

**Eo Rank:** H

**Eo Rank Date:** 1849-06

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** There are two specimen records in the references, both collected in June of 1849. These may or may not be the same specimen. One was collected at Comanche Spring, the other was collected at San Antonio. It is known that in 1849 Lindhiemer spent time at a Comanche Spring in the headwaters of Salado Creek. Since this location is close to San Antonio, it is possible that it was tagged as San Antonio. According to Bill Ward, the army at Camp Bullis dynamited Comanche Springs at some point. Summer 2013: Some landowners with apparently suitable habitat in the general area of this record were contacted but access was not granted.

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** June 1849: A specimen was collected.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

## Element Occurrence Record

### Citation:

Plant Resources Center, The University of Texas at Austin. 2005. Four specimen records for *Salvia pentstemonoides*, downloaded on 5 January.

Multiple authors. 2005. Multiple correspondences of 7-8, 13 January and 4 March between Texas Parks and Wildlife Dept. botanists; Tom Wendt, University of Texas Herbarium; and Bill Ward, volunteer at Cibolo Nature Center regarding Ferdinand Lindheimer specimens and the location of Comanche Springs.

Blankinship, J. W. 1907. *Plantae Lindheimerianae*. Part III. Annual Report of the Missouri Botanical Garden 18:123-223.

Flores, Manuel. 1985. In search of ... *Salvia penstemonoides*. Texas Native Plant Soc. News 3:2.

Taylor, K. N. and R. J. O'Kennon. 2013. Status update on the ecology, distribution, and threats to *Salvia pentstemonoides* (big red sage) on the Edwards Plateau of Central Texas. Horned Lizard License Plate Grant, submitted to Texas Parks and Wildlife Department, Austin, TX. 11 November 2013.

Ward, Bill. 2009. On the trail of big red sage: Tracking the path of rare sage's discovery in Texas. NPSOT News 27(3):8-9. the Native Plant Society of Texas Newsletter. August-September 2009.

---

### Specimen:

Missouri Botanical Garden, St. Louis, MO; Ferdinand J. Lindheimer (# 1092 (66)), Barcode # MO-847074-76, Accession # 132622, 132623, and 132626, June 1849, MO.

Plant Resources Center, University of Texas, Austin, TX; F. Lindheimer (#1092), Catalog # TEX00022825, June 1849, TEX.

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 146      **Eo Id:** 4193  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

ON CAMP BULLIS MILITARY RESERVATION; NORTH-NORTHWEST OF HARRISON HILL CA. 1.2 AIR MILES; CA. 1.8 AIR MILES NORTH-NORTHEAST OF POND NO. 22

---

## Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** APPEARS TO BE A SERIES OF TRANSECT OBSERVATIONS

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** TWELVE TO FIFTEEN TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 147      **Eo Id:** 8213  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 1.9 AIR MILES EAST-NORTHEAST OF DIETZ ELKHORN ROAD/CAMP BULLIS BOUNDARY INTERSECTION; CA. 0.9 AIR MILE NORTHWEST OF HARRISON HILL; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:**      **Survey Date:** 1990      **Last Observation:** 1990

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** APPEARS TO BE A SERIES OF TRANSECT OBSERVATIONS

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** CA. 6 TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 148      **Eo Id:** 4822  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 1.1 AIR MILES NORTH-NORTHEAST OF HARRISON HILL; CA. 1.7 AIR MILES NORTHWEST OF LEWIS HILL; NORTH SECTION OF CAMP BULLIS MILITARY RESERVATION, SOUTH OF CIBOLO CREEK

---

## Survey Information:

**First Observation:**      **Survey Date:** 1990      **Last Observation:** 1990  
**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

### Observed Area:

---

## Comments:

### General

#### Description:

**Comments:** APPEARS TO BE A SERIES OF TRANSECT OBSERVATIONS

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** CA. 4 TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 149      **Eo Id:** 1674  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

CA. 0.7 AIR MILE NORTHEAST OF HARRISON HILL; CA. 1.1 AIR MILES NORTHWEST OF LEWIS HILL; WEST OF MALABANG TRAIL; CAMP BULLIS MILITARY RESERVATION

---

### Survey Information:

**First Observation:**      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

**Description:**

**Comments:**

#### Protection

**Comments:**

#### Management

**Comments:**

---

### Data:

**EO Data:** ONE OBSERVATION

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

---

### Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 150      **Eo Id:** 1675  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

CA. 2.1 AIR MILES NORTHWEST OF SPECHT ROAD/BLANCO ROAD INTERSECTION; CAMP BULLIS; CA. 0.9 AIR MILE NORTH-NORTHWEST OF LEWIS HILL

---

### Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

#### Description:

**Comments:** APPEARS TO BE A SERIES OF TRANSECT OBSERVATIONS

#### Protection

#### Comments:

#### Management

#### Comments:

---

### Data:

**EO Data:** CA. 6 TERRITORIES

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 151      **Eo Id:** 4361  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 0.3 AIR MILE EAST OF PALMTREE HILL; CA. 0.7 AIR MILE SOUTH OF HARRISON HILL; CAMP BULLIS, WEST OF MALABANG TRAIL

---

## Survey Information:

**First Observation:**      **Survey Date:** 1990      **Last Observation:** 1990  
**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

### Observed Area:

---

## Comments:

### General

#### Description:

#### Comments:

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** ONE OBSERVATION

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 152      **Eo Id:** 4044  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

CA. 1.2 AIR MILES WEST-SOUTHWEST OF SPECHT ROAD/BLANCO ROAD INTERSECTION; CA. 1.6 AIR MILES NORTHWEST OF BORGFELD DRIVE/BLANCO ROAD INTERSECTION; CAMP BULLIS MILITARY RESERVATION, EAST OF MALABANG TRAIL

---

### Survey Information:

**First Observation:** 1991      **Survey Date:** 1992      **Last Observation:** 1992  
**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

#### Observed Area:

---

### Comments:

#### General

#### Description:

**Comments:** APPEARS TO BE A SERIES OF TRANSECT OBSERVATIONS

#### Protection

#### Comments:

#### Management

#### Comments:

---

### Data:

**EO Data:** CA. 2-3 TERRITORIES OVER A THREE YEAR PERIOD

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 153      **Eo Id:** 6480  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

ON MUESEBACH CREEK; CA. 0.7 AIR MILE SOUTH OF LEWIS HILL; CAMP BULLIS; CA. 0.7 AIR MILE NORTHEAST OF BUTTE HILL

---

### Survey Information:

**First Observation:**      **Survey Date:** 1990      **Last Observation:** 1990

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

**Description:**

**Comments:**

#### Protection

**Comments:**

#### Management

**Comments:**

---

### Data:

**EO Data:** ONE OBSERVATION

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

### Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia

**Occurrence #:** 154

**Eo Id:** 207

**Common Name:** Golden-cheeked Warbler

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:** E

**Global Rank:** G2

**State Rank:** S2B

**Federal Status:** LE

---

## Location Information:

### Directions

CAMP BULLIS MILITARY RESERVATION; CA. 0.35 AIR MILE SOUTHEAST OF RANSOM HILL; INCLUDES LISCUM HILL; SOUTHWEST OF MIDDLETON POND

---

## Survey Information:

**First Observation:**

**Survey Date:** 1990

**Last Observation:** 1990

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** APPEARS TO BE OBSERVATIONS ALONG A TRANSECT

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** THREE OBSERVATIONS

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia

**Occurrence #:** 155

**Eo Id:** 1771

**Common Name:** Golden-cheeked Warbler

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:** E

**Global Rank:** G2

**State Rank:** S2B

**Federal Status:** LE

---

## Location Information:

### Directions

HEADWATERS OF SOUTH BRANCH OF MUESBACH CREEK; CA. 0.5 AIR MILE NORTHWEST OF BORGFELD DRIVE AND BLANCO ROAD INTERSECTION; INCLUDES NORTH SLOPES OF KING RIDGE AND GERMAN TANK (POND); CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:**

**Survey Date:** 1992

**Last Observation:** 1992

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** TEN TO 15 TERRITORIES OBSERVED IN THREE YEARS

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 156      **Eo Id:** 5742  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 0.4 AIR MILE SOUTHWEST OF SYKES HILL; CA. 1.2 AIR MILES NORTHWEST OF HOUSTON CUTOFF OF MALABANG TRAIL; INCLUDES CUNNINGHAM HILL, LEWIS CREEK, OTIS RIDGE; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:** 1991      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** NUMEROUS GCW TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

Element Occurrence Record

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 157      **Eo Id:** 3900  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

CAMP BULLIS, PANTHER SPRINGS; CA. 1.8 AIR MILES NORTHEAST OF STOKLEY HILL; CA. 0.6 AIR MILE SOUTHEAST OF GERMAN TANK (POND)

---

### Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

#### Description:

**Comments:** SOME OBSERVATIONS FROM TRANSECT LINES

#### Protection

#### Comments:

#### Management

#### Comments:

---

### Data:

**EO Data:** FIVE TO SEVEN TERRITORIES OVER THREE YEAR PERIOD

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia

**Occurrence #:** 158

**Eo Id:** 7345

**Common Name:** Golden-cheeked Warbler

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:** E

**Global Rank:** G2

**State Rank:** S2B

**Federal Status:** LE

---

### Location Information:

#### Directions

CA. 0.3 AIR MILE SOUTHWEST OF CAVALRY TANK; CA. 1.2 AIR MILES EAST-SOUTHEAST OF WELLS HILL; CAMP BULLIS INCLUDING LIGHT HILL, MEHL HILL, AND CEDAR HILL AROUND COWGILL ROAD

---

### Survey Information:

**First Observation:** 1990

**Survey Date:** 1992

**Last Observation:** 1992

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

**Description:**

**Comments:**

#### Protection

**Comments:**

#### Management

**Comments:**

---

### Data:

**EO Data:** 4 TO 6 TERRITORIES

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

### Specimen:

## Element Occurrence Record

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 159      **Eo Id:** 1305  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

CA. 0.9 AIR MILE SOUTHWEST OF BLANCO ROAD/COWGILL ROAD INTERSECTION; CA. 0.8 AIR MILE WEST-SOUTHWEST OF MALABANG TRAIL/GERONIMO TRAIL INTERSECTION; HEAD CANYONS OF WESTERN BRANCH OF PANTHER SPRINGS CREEK; CAMP BULLIS MILITARY RESERVATION

---

### Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992  
**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

#### Observed Area:

---

### Comments:

#### General

#### Description:

#### Comments:

#### Protection

#### Comments:

#### Management

#### Comments:

---

### Data:

**EO Data:** TWO TERRITORIES

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 160      **Eo Id:** 1306  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

SOUTHEAST SLOPE OF OTIS RIDGE ON CAMP BULLIS MILITARY RESERVATION; CA. 0.6 AIR MILE EAST-NORTHEAST OF LEON HILL "BULLIS" TOWER

---

## Survey Information:

**First Observation:**      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** ONE OBSERVATION

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 161      **Eo Id:** 7194  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 0.5 AIR MILE SOUTHWEST OF COWGILL ROAD/MONTERREY ROAD JUNCTION; CA. 0.5 AIR MILE NORTH-NORTHEAST OF BUTLER HILL; SOUTHEAST OF CAMP STANLEY; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:**      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** TWO TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia

**Occurrence #:** 162

**Eo Id:** 5849

**Common Name:** Golden-cheeked Warbler

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:** E

**Global Rank:** G2

**State Rank:** S2B

**Federal Status:** LE

---

## Location Information:

### Directions

CA. 1.5 AIR MILES SOUTH OF MONTERREY ROAD/COWGILL ROAD INTERSECTION; CA. 0.6 AIR MILE SOUTHWEST OF NEUTZE HILL; INCLUDES MIDDLETON, BULLIS, BRIESE, AND SECOND DIVISION HILLS; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:** 1990

**Survey Date:** 1992

**Last Observation:** 1992

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:**

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

Element Occurrence Record

Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 163      **Eo Id:** 2361  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

### Location Information:

#### Directions

HOGAN AND DAVIS RIDGES; CA. 0.9 AIR MILE NORTHEAST OF NEW LEWIS VALLEY ROAD/MALABANG TRAIL INTERSECTION; CA. 0.5 AIR MILE SOUTHEAST OF SPOFFORD HILL; CAMP BULLIS MILITARY RESERVATION

---

### Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

#### Description:

**Comments:** OBSERVATIONS MADE ALONG TRANSECT LINES

#### Protection

#### Comments:

#### Management

#### Comments:

---

### Data:

**EO Data:** CA. 3-4 TERRITORIES

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 165      **Eo Id:** 1928  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

INCLUDES LAURIN HILL AND PORTIONS OF GOETZ HILL; CA. 1.1 AIR MILES NORTHWEST OF MILITARY HIGHWAY/WILDERNESS ROAD JUNCTION; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:** 1990      **Survey Date:** 1992      **Last Observation:** 1992

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** OBSERVATIONS ARE ALONG TRANSECT LINES

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** NUMEROUS TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

STEWARDSHIP SERVICES. 1991. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1991 SEASON. SUBMITTED TO USFWS.

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

Element Occurrence Record

Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 166      **Eo Id:** 7990  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

CA. 1.7 AIR MILES WEST OF BLANCO ROAD/WILDERNESS TRAIL INTERSECTION; CA. 1.4 AIR MILES NORTHEAST OF MILITARY HIGHWAY/WILDERNESS ROAD INTERSECTION; CAMP BULLIS MILITARY RESERVATION

---

## Survey Information:

**First Observation:**      **Survey Date:** 1990      **Last Observation:** 1990

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** CA. 3 TERRITORIES

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

STEWARDSHIP SERVICES. 1990. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1990 SEASON. SUBMITTED TO USFWS.

---

## Specimen:

---

## Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia

**Occurrence #:** 167

**Eo Id:** 4230

**Common Name:** Golden-cheeked Warbler

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:** E

**Global Rank:** G2

**State Rank:** S2B

**Federal Status:** LE

---

### Location Information:

#### Directions

CA. 0.5 AIR MILE WEST OF CIBOLO CREEK - COMAL/BEXAR COUNTY LINES INTERSECTION; NORTHEAST CORNER OF CAMP BULLIS MILITARY RESERVATION

---

### Survey Information:

**First Observation:**

**Survey Date:** 1992

**Last Observation:** 1992

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

### Comments:

#### General

**Description:**

**Comments:**

#### Protection

**Comments:**

#### Management

**Comments:**

---

### Data:

**EO Data:** ONE OBSERVATION

---

### Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

### Reference:

#### Citation:

STEWARDSHIP SERVICES. 1992. ANNUAL PERMIT REPORT: RARE, THREATENED, AND ENDANGERED SPECIES SURVEYS FOR THE 1992 SEASON. SUBMITTED TO THE USFWS.

---

### Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 219      **Eo Id:** 7803  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

ON SALADO CREEK NORTH OF FM 1604, NORTH-NORTHEAST OF INTERSECTION OF FM 1604 AND FM 1535  
(NORTHWEST MILITARY HIGHWAY)

---

## Survey Information:

**First Observation:** 1999      **Survey Date:**      **Last Observation:** 1999

**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

**Observed Area:**

---

## Comments:

### General

**Description:**

**Comments:**

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** IN 1999, 1-2 GCW PRESENT

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

SWCA, INC. 1999. LETTER TO USFWS RE: 1999 GOLDEN-CHEEKED WARBLER AND BLACK-CAPPED VIREO SURVEY REPORT. 1 DECEMBER 1999.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Setophaga chrysoparia      **Occurrence #:** 231      **Eo Id:** 4669  
**Common Name:** Golden-cheeked Warbler      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G2      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

JUST WEST OF IH-10 AND NORTH OF BABCOCK ROAD, NORTHWEST SAN ANTONIO

---

## Survey Information:

**First Observation:** 2001-05-18      **Survey Date:**      **Last Observation:** 2001-05-24  
**Eo Type:**      **Eo Rank:**      **Eo Rank Date:**

### Observed Area:

---

## Comments:

**General Description:** CA. 150 ACRES OF SUITABLE GCW HABITAT

### Comments:

### Protection Comments:

### Management Comments:

---

## Data:

**EO Data:** 2001, 5 GCW OBSERVED, 2 MALE, 1 FEMALE, 2 HATCH YEAR

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

PBS& J. 2001. CROWNRIDGE GOLDEN-CHEEKED WARBLER AND BLACK-CAPPED VIREO SURVEY, BEXAR COUNTY, TEXAS. JULY 2001. REPORT TO USFWS.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Spilogale gracilis      **Occurrence #:** 12      **Eo Id:** 12837  
**Common Name:** Western spotted skunk      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:**  
**Global Rank:** G5      **State Rank:** S5      **Federal Status:**

---

## Location Information:

### Directions

The specimen label states that it was located in San Antonio.

---

## Survey Information:

**First Observation:** 1988-04-20      **Survey Date:** 1988-04-20      **Last Observation:** 1988-04-20  
**Eo Type:**      **Eo Rank:** H      **Eo Rank Date:** 1988-04-20

### Observed Area:

---

## Comments:

### General

#### Description:

#### Comments:

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** 20 April 1988: Skull only of one male preserved specimen.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Ferguson, Adam. 2014. Texas Skunk Record Database regarding five species of skunk in Texas.

Dragoo, Jerry W., G. D. Baumgardner, D. B. Fagre, and D. J. Schmidly. 1988. Status survey of the Gulf Coast hog-nosed skunk (*Conepatus leuconotus*) in South Texas. Report submitted to Texas Parks and Wildlife Department, Austin, TX. August 1988.

---

## Element Occurrence Record

### Specimen:

Biodiversity Research and Teaching Collections, Texas A & M University, College Station, TX; D. W. Drago (#unknown), Catalog #59541, 20 April 1988, TCWC.

---

# Element Occurrence Record

**Scientific Name:** Spilogale putorius      **Occurrence #:** 8      **Eo Id:** 12661  
**Common Name:** Eastern spotted skunk      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:**  
**Global Rank:** G4      **State Rank:** S1S3      **Federal Status:**

---

## Location Information:

### Directions

The specimen label states that it was located in San Antonio. The georeferenced coordinates, based on VertNet Best Practices Guidelines, were used.

---

## Survey Information:

**First Observation:** 1988-08-16      **Survey Date:** 1988-08-16      **Last Observation:** 1988-08-16  
**Eo Type:**      **Eo Rank:** H      **Eo Rank Date:** 1988-08-16

### Observed Area:

---

## Comments:

### General

#### Description:

#### Comments:

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** 16 August 1988: Skin, skull, and body skeleton of one male preserved specimen.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Ferguson, Adam. 2014. Texas Skunk Record Database regarding five species of skunk in Texas.

---

## Specimen:

Biodiversity Research and Teaching Collections, Texas A & M University, College Station, TX; J. W. Drago (#unknown), Catalog #57880, Special #JWD 440, 16 August 1988, TCWC.

---

## Element Occurrence Record

**Scientific Name:** Streptanthus bracteatus

**Occurrence #:** 23

**Eo Id:** 7551

**Common Name:** bracted twistflower

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G1G2

**State Rank:** S1S2

**Federal Status:** C

---

### Location Information:

#### Directions

On both sides of the border between Camp Bullis and Eisenhower Park, North San Antonio. Directions created by database staff. The directions are generalized as this record consists of multiple observations.

---

### Survey Information:

**First Observation:** 1995-05-02

**Survey Date:** 2015-05-05

**Last Observation:** 2015-05-05

**Eo Type:**

**Eo Rank:** E

**Eo Rank Date:** 2015-05-05

**Observed Area:**

---

### Comments:

**General Description:** 2007: The enclosure is a rocky area that appears to represent a transition zone between a live oak- juniper (Quercus fusiformis-Juniperus ashei) woodland and a canyon. The oak juniper woodland was partially cleared of juniper last year. The area cleared for the fence between Eisenhower park and Camp Bullis: Oak-juniper (Quercus fusiformis- Q. buckleyi- Juniperus ashei) with Cercis canadensis, Rhus virens, R. aromatica, Diospyros texana, Acacia roemeriana, Viguiera dentata, carex planostachys, Matelea sp. Soil: appears to have deeper pockets within otherwise shallow soil on slope. Oak leaf litter on surface; 5 May 2015: Most of the plants were found in Ashe juniper duff on top of limestone rocky outcrop; See the Associated Species tab for other species within the area.

**Comments:** 2001-2013: Seeds collected and accessions made by the Lady Bird Johnson Wildflower Center.

#### Protection

**Comments:**

#### Management

**Comments:**

---

### Data:

## Element Occurrence Record

### EO Data:

2 May 1995: Over 20 plants were observed; April 1998: Two plants were observed, nearly dead due to drought; 23 April 1999: No plants were found; 4 May 2000: A total of 13 plants were found; 1 May 2001: A total of 60 plants were found; 1 April 2002: Three plants were found; 8 April 2003: The enclosure and surrounding area were searched but no plants were found; 29 April 2004: Two plants were found; 3 May 2005: There were 15 plants in the enclosure; 4 with fruit, 3 with flowers, and 8 aborted; 1 May 2006: Exclosure and fenceline were surveyed; no plants were found; 16 April 2007: A total of 57 plants were observed. Almost all of them in bud or flower; 19 June 2007: A total of 20 plants had fruit, 2 had flowers, and 1 plant had buds but no flowers; October 2008: A total of 13 plants were found to have germinated; December 2008: Only 4 plants remained; April 2009: Only two plants were found alive and blooming; June 2009: There were two plants, one 19 cm and the other 26 cm tall; they had 7 siliques and 2 siliques, respectively; 7 October 2009: Over 80 plants had germinated; November 2009: A total of 129 plants were found; November 2009 - May 2010: The population numbers began fluctuating as plants started to die-off. New plants germinated up to the beginning of March. By the end of May, only 38 of the remaining 68 plants had set seed. The number of leaves in the rosette and along the stalk ranged from 3-32. Plants ranged in height from 9 (.3ft)-56 (5.1 ft) cm. Shoot caliper at 2 cm above the ground ranged from .55-9.10 mm. Number of flowers per plant was as high as 89 and the number of siliques per plant was as high as 21. Silique length ranged from 4-11 cm; 29 May 2014: A total of four plants are fruiting. Two plants growing inside the enclosure and 2 outside of it. Siliques outside the enclosure were carefully clipped off and put (in?)side the enclosure; 5 May 2015: A total of 12 plants, 7 fruiting and with 22 siliques, were observed.

---

### Community Information:

Scientific Name:

Stratum:

Dominant:

Lifeform:

Composition Note:

### Reference:

## Element Occurrence Record

### Citation:

- Linam, Lee Ann. 2005. Excel spreadsheets summarizing the number of *Streptanthus bracteatus* plants seen at known locations between 1991 and 2005.
- Linam, Lee Ann. 2002. Final Report Project WER 09(72): Implementation of candidate species monitoring. Grant No. E-9. 1 November 2002.
- Davis, Dick. 1995. Notes on field survey of Camp Bullis, 2 May 1995. Unpublished notes, Espey-Huston & Associates, Inc., Austin, Texas.
- Price, Dana. 2002. Field notebook with raw data on wild plant populations observed throughout Texas from 17 September 2002 to 29 October 2003. 122 pp.
- Price, Dana. 2005. Field notebook with raw data on wild plant populations observed throughout Texas from 15 June 2005 until 6 November 2006. 149 pp.
- Price, Dana. 2006. Field notebook with raw data on wild plant populations observed throughout Texas from 7 November 2006 until 31 July 2007. 98 pp.
- Price, Dana, and Jayne Neal. 2007. Reporting forms and other documentation from a survey of *Streptanthus bracteatus* in Camp Bullis and Eisenhower Park, Bexar County, on 16 April 2007.
- Leonard, Wendy. 2010. Bracted Twistflower (*Sptreptanthus bracteatus*): The ecology of a rare Texas endemic. M.S. thesis. The University of Texas at San Antonio, TX. 102 pp.
- Zippin, David B. 1997. Herbivory and the population biology of a rare annual plant, the bracted twistflower (*Streptanthus bracteatus*). Ph.D. dissertation. University of Texas at Austin, TX. 265 pp.
- Carr, Bill. 2001. Table of mapped geology and soil at known bacted twistflower sites. Submitted to the *Streptanthus bracteatus* working group on 20 August, 2001.
- Leonard, Wendy. 2010. A summary of Eisenhower Park's *Streptanthus bracteatus* data from 2000-2010.
- Leonard, Wendy. 2010. Documentation of a new population of *Streptanthus bracteatus* in the Rancho Diana Natural Area, Bexar County.
- Marr, Minette. 2016. Spreadsheet of seed accessions (2001-2013) for *Streptanthus bracteatus* compiled by the Lady Bird Johnson Wildflower Center.
- City of San Antonio. 2014. Data on *Streptanthus bracteatus* observations on city property, San Antonio, Texas.
- City of San Antonio. 2015. Data on *Streptanthus bracteatus* observations in Bexar, and Medina counties, Texas.
- Pepper, Alan E. 2010. Final Report. Contract #186090: The genetic status of the bracted twistflower, *Streptanthus bracteatus* (Brassicaceae), an imperiled species of the Balcones canyonlands. Grant No. E-89 Endangered and Threatened Species Conservation. Submitted to Texas Parks and Wildlife Department, Austin, TX. 28 February 2010.
- Price, Dana. 2004. Field notebook with raw data on wild plant populations observed throughout Texas from 27 January 2004 until 13 May 2005. 153 pp.
- 

### Specimen:

---

# Element Occurrence Record

**Scientific Name:** Streptanthus bracteatus

**Occurrence #:** 30

**Eo Id:** 3831

**Common Name:** bracted twistflower

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G1G2

**State Rank:** SIS2

**Federal Status:** C

---

## Location Information:

### Directions

'Comanche Spring, on one of the heads of The Salado some 25 miles south of west of New Braunfels' [mapped to upper reaches of Lewis Creek, tributary of Salado Creek, 14 air miles southeast of Comanche Spring].

---

## Survey Information:

**First Observation:** 1849-04

**Survey Date:**

**Last Observation:** 1849-04

**Eo Type:**

**Eo Rank:** H

**Eo Rank Date:** 1849-04

**Observed Area:**

---

## Comments:

### General

#### Description:

**Comments:** There may have been multiple Streptanthus bracteatus specimen collected by Lindheimer in May of 1849. Two of the specimen were apparently assigned Engelmann numbers of 5176 and 5177. The vast majority of Lindheimer's collections are labelled 'Comanche Spring, New Braunfels, etc.'; whether he collected the plant at that precise location, or in the surrounding area, is not certain.

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** April 1849: A specimen was collected.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Damude, Noreen and Jackie M. Poole. 1990. Status Report on Streptanthus bracteatus. December 1, 1990. 92 pages.

Blankinship, J. W. 1907. Plantae Lindheimerianae. Part III. Annual Report of the Missouri Botanical Garden 18:123-223.

## Element Occurrence Record

### Specimen:

Unknown herbarium. Ferdinand Lindheimer (L.19 .)#676, April 1849.

---

# Element Occurrence Record

**Scientific Name:** Styrax platanifolius var. stellatus

**Occurrence #:** 17

**Eo Id:** 12415

**Common Name:** hairy sycamore-leaf snowbell

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G3T3

**State Rank:** S3

**Federal Status:**

---

## Location Information:

### Directions

Camp Bullis; Cibolo Creek, Site BUL5, UTM E053805 N329005.

---

## Survey Information:

**First Observation:** 1994-06-22

**Survey Date:**

**Last Observation:** 1994-06-22

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

**General Description:** On ridge in Crawford & Bexar stony soils. Associates include Quercus fusiformis, Juniperus ashei, and Ulmus crassifolia.

**Comments:** Note that Johnson et al. (1996) did not specify which variety was encountered. In order to get the record into the database, WRC decided to call it var. stellatus

### Protection

**Comments:**

### Management

**Comments:**

---

## Data:

**EO Data:** 1994: common in Juniper-oak woodland.

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

### Citation:

Johnson, F. L., M. D. Proctor, D. L. Benesh, J. R. Estes, and G. D. Schnell. 1996. Floral inventory of Camp Bullis Texas. Final report to U. S. Army Construction Engineering Research Laboratories, Champaign, Illinois. Oklahoma Biological Survey, University of Oklahoma, Norman. 42 pp.

---

## Specimen:

Van Auken, O.W., J.K. Bush, C. Terrones, A. Harris, & J. Estes, (BUL258). 1994. Specimen No. unknown. OKL. (S94VANOKTXUS)

# Element Occurrence Record

**Scientific Name:** Tridens buckleyanus

**Occurrence #:** 31

**Eo Id:** 3475

**Common Name:** Buckley tridens

**Track Status:** Track all extant and selected historical EOs

**Identification Confirmed:** Y - Yes

**TX Protection Status:**

**Global Rank:** G3G4

**State Rank:** S3S4

**Federal Status:**

---

## Location Information:

### Directions

EISENHOWER PARK, ALONG NORTH FENCELINE CA. 500-1000 FEET WEST OF RM 1535

---

## Survey Information:

**First Observation:** 1926

**Survey Date:** 1995-05-16

**Last Observation:** 1995-05-16

**Eo Type:**

**Eo Rank:**

**Eo Rank Date:**

**Observed Area:**

---

## Comments:

**General Description:** FAIRLY DRY PLATEAU LIVE OAK-JUNIPER WOODLAND ON STONY CLAY SOILS ON GENTLE SLOPE

**Comments:**

**Protection**

**Comments:**

**Management**

**Comments:**

---

## Data:

**EO Data:** ONE PLANT SEEN WITH LAST YEARS INFLORESCENCE; A FALL SURVEY MAY REVEAL MANY MORE PLANTS

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

**Citation:**

CARR, W.R. 1995. FIELD SURVEY OF EISENHOWER PARK, BEXAR COUNTY, TEXAS, 16 MAY 1995.

---

## Specimen:

---

# Element Occurrence Record

**Scientific Name:** Vireo atricapilla      **Occurrence #:** 10      **Eo Id:** 2492  
**Common Name:** Black-capped Vireo      **Track Status:** Track all extant and selected historical EOs  
**Identification Confirmed:** Y - Yes      **TX Protection Status:** E  
**Global Rank:** G3      **State Rank:** S2B      **Federal Status:** LE

---

## Location Information:

### Directions

FRIEDRICH WILDERNESS PARK, SAN ANTONIO

---

## Survey Information:

**First Observation:** 1984      **Survey Date:** 1985-05      **Last Observation:** 1991-SPRG  
**Eo Type:**      **Eo Rank:** A      **Eo Rank Date:**

### Observed Area:

---

## Comments:

**General Description:** DWARF WOODLAND OF OAK, SUMAC AND JUNIPER WITH WELL DEVELOPED UNDERSTORY; NO GRAZING

**Comments:** SUCCESS OF NESTS NOT NOTED; HABITAT LOSS AND COWBIRD PARASITISM THREATEN

### Protection

#### Comments:

### Management

#### Comments:

---

## Data:

**EO Data:** 4 TO 6 NESTING PAIRS AND 6 TO 10 TERRITORIAL MALES ESTIMATED (1984); PRESENCE NOTED PREVIOUS YEARS; 1 SINGING MALE NOTED BY G. SCOTT MILLS IN SPRING OF 1991 SURVEY OF ADJACENT LANDS

---

## Community Information:

<u>Scientific Name:</u>	<u>Stratum:</u>	<u>Dominant:</u>	<u>Lifeform:</u>	<u>Composition Note:</u>

---

## Reference:

## Element Occurrence Record

### Citation:

MARSHALL, J. T., R. B. CLAPP AND J. A. GRZYBOWSKI. 1984. INTERIM STATUS REPORT: VIREO ATRICAPILLUS WOODHOUSE, BLACK-CAPPED VIREO. USF& WS, ALBUQUERQUE, NM.

RISKIND, DAVID, PH.D. TEXAS PARKS AND WILDLIFE DEPARTMENT 4200 SMITH SCHOOL ROAD AUSTIN, TEXAS 78744 PH-512/479-4897 (WORK)

MARSHALL, J. T., R. B. CLAPP AND J. A. GRZYBOWSKI. 1985. STATUS REPORT: VIREO ATRICAPILLUS WOODHOUSE (BLACK-CAPPED VIREO). REPORT TO USF& WS, ALBUQUERQUE, NEW MEXICO. 48pp.

MILLS, G. SCOTT, PH.D. 1991. PERSONAL COMMUNICATION TO DORINDA SULLIVAN ON 23 MAY 1991. SWCA ENVIRONMENTAL CONSULTANTS, 1602 EAST FT. LOWELL ROAD, TUCSON, ARIZONA 85719, 602/325-9194.

---

### Specimen:

---

## **EMST Project MOU Summary Table**

EMST Data - Blanco Road Phase II, Bexar County								
Common Name	Ecoregion	MOU Vegetation Type	EMST Mapped Acreage	MOU Acreage	Field Verified Acreage	MOU Field Verified Acreage	Coordination Threshold (acres)	Threshold Met?
Edwards Plateau: Ashe Juniper Motte and Woodland	Edwards Plateau	Edwards Plateau Limestone Savanna, Woodland, and Shrubland	0.08	2.39	0.00	0.17	3	No
Edwards Plateau: Live Oak Motte and Woodland	Edwards Plateau	Edwards Plateau Limestone Savanna, Woodland, and Shrubland	0.46		0.00			
Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland	Edwards Plateau	Edwards Plateau Limestone Savanna, Woodland, and Shrubland	0.11		0.00			
Edwards Plateau: Savanna Grassland	Edwards Plateau	Edwards Plateau Limestone Savanna, Woodland, and Shrubland	1.74		0.17			
Urban High Intensity	Edwards Plateau	Urban	4.29	75.23	0.82	77.44	N/A	N/A
Urban Low Intensity	Edwards Plateau	Urban	70.94		76.62			
		<b>Total</b>	<b>77.61</b>	<b>77.61</b>	<b>77.61</b>	<b>77.61</b>		

# **Site Photographs**



**Photograph 1.** Woodpecker nest (circled in red) found just south of Slumber Pass within the northbound ROW of Blanco Road. No birds were observed near the nest during field investigations.



**Photograph 2.** Woodpecker nest (circled in red) found approximately 0.4 miles north of Rye Drive within the northbound ROW of Blanco Road. No birds were observed near the nest during field investigations.



**Photograph 3.** Birds' nest found just north of the nest in Photograph 2, circled in red. No birds were observed near the nest during field investigations. The tree is outside of the ROW but the canopy extends into the ROW.



**Photograph 4.** Example of the predominant vegetation in the region: urban low intensity consisting of maintained bermudagrass along the roadway with Live Oak-Ashe Juniper edge communities between the abutting neighborhoods.



**Photograph 5:** A larger Live Oak-Ashe Juniper mottle abutting the project area near the northern project limit. Several abutting parcels such as this are potentially suitable habitat for several federally- and state-listed species such as the Golden-cheeked Warbler and Black-capped Vireo.



**Photograph 6:** Fence line habitat (pictured here) lines the project area in several regions and is potentially suitable habitat for the Plains spotted skunk.



**Photograph 7.** Camp Bullis (pictured here) is west-adjacent to the project area and consists of undisturbed Live Oak-Ashe Juniper woodlands and native savanna grassland and is potentially suitable habitat for a variety of federally- and state-listed species.



**Photograph 8.** A region of savanna grassland near the northern project limit. Although the region is maintained, the area is composed of a mix of native grasses rather than the bermudagrass found elsewhere in the ROW.

# **Karst Terrain Features Survey**

# Federally Listed Endangered Karst Invertebrate Species Assessment

---

Blanco Road Phase II from West Oaks Estates to Borgfeld Project  
Bexar County, Texas

Prepared for:

Alamo Regional Mobility Authority



**Alamo Regional Mobility Authority**  
233 N. Pecos, Suite 420  
San Antonio, TX 78207  
(210) 335-7065 office  
(210) 335-6713 fax

Prepared by:

**SWCA, Incorporated**  
Texas Board of Professional Geoscientists Firm Registration No. 50159  
6200 UTSA Boulevard, Suite 102  
San Antonio, TX 78249

December 2017

## **Federally Listed Endangered Karst Invertebrate Species Assessment**

Blanco Road Phase II from West Oaks Estates to Borgfeld Project  
Bexar County, Texas

Prepared for

### **Alamo Regional Mobility Authority**

233 N. Pecos, Suite 420  
San Antonio, TX 78207  
(210) 335-7065 office  
(210) 335-6713 fax

Prepared by

### **SWCA Environmental Consultants**

Texas Board of Professional Geoscientists Firm Registration No. 50159  
6200 UTSA Boulevard, Suite 102  
San Antonio, Texas 78249  
[www.swca.com](http://www.swca.com)

SWCA Project No. 41347-SAN

December 20, 2017

# Table of Contents

---

<b>List of Preparers</b> .....	<b>iii</b>
<b>Acronyms</b> .....	<b>iv</b>
<b>Summary</b> .....	<b>1</b>
<b>Background</b> .....	<b>2</b>
Project Description.....	2
Endangered Species Background.....	2
Bexar County Karst Invertebrates.....	2
<b>Data Collection and Field Investigations</b> .....	<b>4</b>
Identification and Delineation of Potential Endangered Species Habitat.....	4
Conditions Documented Within the Project Site.....	4
Topography and Surface Drainage.....	4
Geology.....	4
Soils.....	5
Federally Listed Endangered Species Assessment.....	6
<b>Findings and Conclusions</b> .....	<b>7</b>
<b>References Cited</b> .....	<b>8</b>

# List of Tables

---

Table 1. Federally Listed Endangered Karst Invertebrate Species in Bexar County, Texas.....2

Table 2. Soil Types .....5

Table 3. Major Land Resource Area and Land Resource Region .....5

Table 4. Mapping Units .....6

Table 5. Assessment of the Potential for the Occurrence of Endangered Species in the  
Project Area .....6

# Appendices

---

Appendix A Location Map and Exhibits

Appendix B U.S. Fish and Wildlife Service Information for Planning and Conservation Trust  
Resources Report

## List of Preparers

---

Christine Westerman	Project Manager
Chris Collins	Biologist
Debbie Duran	Environmental Specialist
Jeff Fox	Environmental Specialist
Phil Pearce	Geologist
Jason Kainer	Geographic Information Systems Specialist

# Acronyms

---

ARMA	Alamo Regional Mobility Authority
BFZ	Balcones Fault Zone
EORs	Element of Occurrence Records
IPaC	Information for Planning and Conservation
KFR	Karst Faunal Region
LRR	Land Resource Region
LRU	Land Resource Unit
MLRA	Major Land Resource Area
NRCS	Natural Resources Conservation Service
NDD	Natural Diversity Database
ROW	Right of Way
TPWD	Texas Parks and Wildlife Department
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

# Summary

---

The Alamo Regional Mobility Authority (ARMA) is proposing improvements to a 3.7-mile segment of Blanco Road between West Oak Estates and Borgfeld Drive in Bexar County, Texas. The proposed improvements will widen Blanco Road from its existing two-lane configuration to a four-lane divided roadway with a raised median, drainage, and operational improvements within the existing variable width right of way (ROW).

SWCA Environmental Consultants (SWCA) conducted a federally endangered karst invertebrate habitat evaluation for the project study area, which included background review and karst terrain features survey of the existing Blanco Road ROW. The following information is provided in support of this evaluation:

- Vicinity Map and Aerial Photograph (Figures 1 and 2, *Appendix A*)
- United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) Trust Resources Report (*Appendix B*)

The USFWS considers nine federally listed endangered cave-dwelling (karst) invertebrate species as potentially occurring or having the potential to be adversely affected by activities occurring in Bexar County, Texas: Madla's Cave meshweaver (*Cicurina madla*), Robber Baron Cave meshweaver (*Cicurina baronia*), Government Canyon Bat Cave meshweaver (*Cicurina vespera*), Braken Bat Cave meshweaver (*Cicurina venii*), Government Canyon Bat Cave spider (*Tayshaneta microps*), Cokendolpher cave harvestman (*Texella cokendolpheri*), Helotes mold beetle (*Batrisodes venyivi*), and two unnamed species of ground beetle—(*Rhadine exilis* and *Rhadine infernalis*).

Prior to conducting field inspections, SWCA reviewed aerial, topographic, karst invertebrate zone, and geologic maps of the project area as well as other published information. A review of the Natural Diversity Database (NDD), which includes element of occurrence records (EORs) provided by the Texas Parks and Wildlife Department (TPWD), indicates that there are two records of endangered karst invertebrates from Camp Bullis, *Rhadine exilis* and *Rhadine infernalis*. These known locations are south of Camp Bullis Road near the headquarters area, over 3 miles from the Blanco Road project limits. Although not included in the NDD, Blanco Cave is known to occur within Blanco Road right of way (ROW) approximately 0.6 mile south of the project limits and is known to be occupied by *Rhadine exilis* (SWCA 2006). Critical Habitat Unit 11e has been delineated by USFWS to encompass Blanco Cave for the protection of *Rhadine exilis*.

SWCA geologists conducted a karst terrain features survey of the project area. The area was inspected for karst features with potential to provide habitat for endangered karst invertebrate species. The project area is located within karst invertebrate zone 3. No karst features were discovered. Therefore, no habitat suitable for endangered karst invertebrates was identified within the project limits. Since the project area occurs in karst invertebrate zone 3, project construction contractors should be made aware that there is potential to encounter below-ground karst features during construction. Should potential karst features be encountered during construction, activities should be halted in the area and the potential karst feature be examined by a qualified geologist or karst invertebrate specialist to determine if the feature may provide habitat for endangered karst invertebrates.

# Background

## Project Description

The Alamo Regional Mobility Authority (ARMA) is proposing improvements to a 3.7-mile segment of Blanco Road between West Oak Estates and Borgfeld Drive in Bexar County, Texas. The proposed improvements will widen Blanco Road from its existing two-lane configuration to a four-lane divided roadway with a raised median, drainage, and operational improvements within the existing variable width ROW. The project location is shown on Figure 1, Appendix A.

## Endangered Species Background

The USFWS considers nine federally listed endangered karst invertebrate species as having the potential to occur or be affected by activities in Bexar County. A summary of species and their habitat requirements listed for Bexar County is provided in Table 1.

**Table 1. Federally Listed Endangered Karst Invertebrate Species in Bexar County, Texas**

Common Name	Scientific Name	Federal Status	Habitat Requirements	Designated Critical Habitat in Bexar County?
Madla's Cave Meshweaver	<i>Cicurina madla</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Robber Baron Cave Meshweaver	<i>Cicurina baroni</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Government Canyon Bat Cave Meshweaver	<i>Cicurina vespera</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Braken Bat Cave Meshweaver	<i>Cicurina venii</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Government Canyon Bat Cave Spider	<i>Tayshaneta microps</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Cokendolpher Cave Harvestman	<i>Texella cokendolpheri</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Helotes Mold Beetle	<i>Batrisodes venyivi</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Ground Beetle	<i>Rhadine exilis</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes
Ground Beetle	<i>Rhadine infernalis</i>	E	Subterranean karst spaces with stable temperature and high humidity	Yes

<sup>1</sup>E = endangered.  
Reference: USFWS 2017

## Bexar County Karst Invertebrates

On December 26, 2000, the USFWS published a Final Rule to list nine species of troglobitic invertebrates known only from caves in Bexar County, Texas as endangered under the federal Endangered Species Act of 1973 (USFWS 2000). These species include Robber Barron Cave meshweaver (*Cicurina baronia*), Madla's Cave meshweaver (*C. madla*), Government Canyon Bat Cave Meshweaver (*C. vespera*), Bracken Bat Cave Meshweaver (*C. venii*), Government Canyon Bat Cave Spider (*Tayshaneta microps* [formerly *Neoleptoneta microps*]), Cokendolpher cave harvestmen (*Texella cokendolpheri*), Helotes mold

beetle (*Batrisodes venyivi*), and two ground beetles with no common name, *Rhadine exilis*, and *R. infernalis* (five spiders, one harvestman, and three beetles, respectively). Threats considered to be potentially endangering these species are listed in the Final Rule as destruction and/or deterioration of habitat by commercial, residential, and road construction; filling of caves; loss of permeable cover; potential contamination from such sources as septic effluent, sewer leaks, runoff, and pesticides; predation by and competition with non-native fire ants; and vandalism.

Habitat requirements for these species include subsurface void spaces in permanent darkness, moisture input sufficient to maintain high humidity, and a source of organic material from the surface. Organic material can be washed into subsurface voids by surface water, or brought into the void by small mammals or troglodyte species such as cave crickets (*Ceuthophilus* spp.) and daddy longlegs (*Leioobunum* spp.). Features that can host these organisms include caves, sinkholes, and smaller karst conduits.

In 1993 (revised in 2002), the USFWS commissioned a study that delineated five geographic zones according to their potential to provide suitable habitat for karst invertebrates (Veni 2002). The zones were based on lithology, distribution of known caves and cave fauna, and geologic controls on cave development. Special attention was paid to cavern development in the Edwards group, Upper Glen Rose, Pecan Gap Chalk, and Austin Chalk. The zones were delineated as follows:

- Zone 1—contains endangered endemic cave fauna
- Zone 2—high probability of endangered or endemic cave fauna
- Zone 3—low probability of endangered or endemic cave fauna
- Zone 4—requires further study, probably equivalent to zone 3
- Zone 5—does not contain endangered or endemic cave fauna

The Blanco Road Phase II project occurs within karst zone 3. Figure 2 in Appendix A presents karst zone boundaries in the project vicinity.

Certain geologic and geographic features, such as stream valleys and faults, were hypothesized (Veni 1994) to form barriers to karst invertebrate dispersal and distribution. Six karst faunal regions (KFR) were delineated within Bexar County, including Stone Oak, UTSA, Helotes, Government Canyon, Culebra Anticline, and Alamo Heights. Based on the distribution of invertebrate specimens collected from a small percentage of the caves in the county, the boundaries between KFRs were hypothesized to have played significant roles in the species evolutionary development and to define the ranges of individual troglodytic species or populations (Veni 1994).

The Blanco Road Phase II does not occur within a mapped KFR. The project area is located north of Stone Oak KFR. The Stone Oak KFR is known to contain Madla's Cave meshweaver and the ground beetles, *Rhadine exilis* and *R. infernalis*. A feature called Blanco Cave is known to occur within Blanco Road ROW approximately 0.6 mile south of the project limits and is known to be occupied by *Rhadine exilis* (SWCA 2006). Critical Habitat Unit 11e has been delineated by USFWS to encompass Blanco Cave for the protection of *Rhadine exilis*.

# Data Collection and Field Investigations

---

## Identification and Delineation of Potential Endangered Species Habitat

Prior to conducting field inspections, SWCA reviewed aerial, topographic, karst invertebrate zone, and geologic maps of the project area, and other published information from the following:

- Aerial photography: 2016 City of San Antonio 6-inch Bulverde Quadrangle, Bexar County, Texas;
- Geologic Map of the Camp Bullis quadrangle, Texas, University of Texas Austin, Bureau of Economic Geology (Collins 1994);
- U.S. Department of Agriculture Natural Resource Conservation Service (USDA NRCS). Web Soil Survey (USDA NRCS 2011);
- USFWS Information for Planning and Conservation (IPaC) Trust Resources Report (USFWS 2017);
- USFWS karst zone maps, Camp Bullis Quadrangle, Bexar County, Texas (Veni 2002); and
- U.S. Geological Survey (USGS) digital 7.5-minute topographic quadrangle maps. Camp Bullis Quadrangle, Bexar County, Texas (USGS 1992).

The Blanco Road Phase II project area is delineated as karst zone 3. In accordance with USFWS survey requirements described in *United States Fish and Wildlife Service, Section 10(a)(1)(A) Scientific Permit Requirements for Conducting Presence/Absence Surveys for Endangered Karst Invertebrates in Central Texas* (USFWS 2015), SWCA conducted a karst survey on May 10, 2017 for the entire project area to look for potential karst features with surface expression. Surveyors also observed the areas adjacent to the existing road ROW that could be observed from within the ROW.

SWCA also reviewed data from the TPWD NDD, which was provided by TPWD on October 6, 2016. The TPWD's NDD includes EORs which denote the locations of known sightings of federally listed threatened and endangered species that have been recorded near the project region (TPWD 2016).

## Conditions Documented Within the Project Site

### Topography and Surface Drainage

Topography in the project area consists of rolling and hilly terrain, with elevations ranging from approximately 1,150 to 1,350 above mean sea level. An unnamed tributary of Panther Springs is west of the project area and flows to the south.

### Geology

The project area is located within the Edwards Aquifer Contributing Zone. Rocks outcropping in the area are the Cretaceous-age upper member of the Glen Rose Formation (Collins 1994), which consists of thinly bedded yellow-tan limestone (Stein and Ozuna 1995). A geologic map of the area of the project is presented as Figure 3, Appendix A.

The project area is located within the Balcones Fault Zone (BFZ). During the middle Tertiary, structural down-warping occurred to the southeast associated with the formation of the ancestral Gulf of Mexico. The earth's crust was stretched in response, and the BFZ formed along an area of weakness that today

marks the boundary between the Edwards Plateau and the Gulf Coastal Plain throughout central Texas. The zone consists of a series of northeast-trending, predominantly normal, nearly vertical, en echelon faults. One mapped, intraformational fault crosses the project just south of the Slumber Pass intersection (Collins 1994).

## Soils

The soils occurring on the project area mapped by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS 2011) are summarized below.

**Eckrant cobbly clay, 1 to 8 percent slopes (TaB):** The Eckrant series consist of well drained, moderately slowly permeable soils that are shallow over indurated limestone bedrock. These type of soils typically occur on ridges and plateaus. Depth to lithic bedrock is 4 to 20 inches. Typical profile of Eckrant cobbly clay consists of 0 to 4 inches cobbly clay, 4 to 11 inches of very cobbly clay, and 11 to 80 inches of bedrock.

**Brackett gravelly clay, 3 to 12 percent slopes (BrD):** The Brackett series consists of paralithic bedrock. This soil is well drained and its permeability is moderate. Bracket soils form in residuum weathered from Cretaceous limestone. Depth to paralithic contact is 5 to 20 inches. Typical profile of Brackett gravelly clay consists of 0 to 5 inches of gravelly clay loam, 5 to 16 inches of clay loam, and 16 to 60 inches of bedrock.

**Krum clay, 1 to 5 percent slopes (Kr):** The krum series consists of very deep, well drained soils. These soils form in calcareous clayey sediments. The depth to restrictive feature is more than 80 inches. Krum soils are moderately slowly permeable soils.

Table 2 lists general soil associations occurring in the project area. Soil associations have a distinctive proportional pattern of soils and usually consist of one or more major soils and at least one minor soil. Soils in associations may occur in other associations, but in different patterns (USDA NRCS 2011).

**Table 2. Soil Types**

General Soil Type	Texture and Drainage	General Location	Percent of County
Rock outcrop-Eckrant	Shallow and very shallow soils over limestone	Summits, shoulders, and backslopes of ridges on dissected plateaus.	20%

Table 3 lists the Land Resource Region and Major Land Resource Area within the project area. Land resource regions (LRRs) are geographically associated major land resource areas (MLRAs) which approximate broad agricultural market regions. MLRAs are geographically associated land resource units (LRUs). Identification of these large areas is important in statewide agricultural planning and has value in interstate, regional, and national planning (USDA NRCS 2006).

**Table 3. Major Land Resource Area and Land Resource Region**

Major Land Resource Area	Land Resource Region
Edwards Plateau	Southwest Plateaus and Plains Range and Cotton Region

Table 4 lists soil mapping units occurring in the project area. Mapping units group soils that are similar in suitability for specific uses and results under present methods of use and management. One or more mapping units may occur within an association (USDA NRCS 2011).

**Table 4. Mapping Units**

Mapping Unit	Permeability (Inches/Hour)	Drainage Class	Listed as Hydric by NRCS
Brackett gravelly clay loam, 3 to 12 percent slopes	1.2	Well drained	No
Krum clay, 1 to 5 percent slopes	0.38	Well drained	No
Eckrant cobbly clay, 1 to 8 percent slopes	0.38	Well drained	No

## Federally Listed Endangered Species Assessment

A review of the TPWD NDD indicates that there are two records of endangered karst invertebrates from Camp Bullis, the ground beetles *Rhadine exilis* and *Rhadine infernalis*. These known locations are south of Camp Bullis Road near the headquarters area, over 3 miles from the Blanco Road project limits. Although not included in the NDD, Blanco Cave is known to occur within Blanco Road ROW approximately 0.6 mile south of the project limits and is known to be occupied by *Rhadine exilis* (SWCA 2006). Critical Habitat Unit 11e has been delineated by USFWS to encompass Blanco Cave for the protection of *Rhadine exilis*.

Nine Bexar County endangered karst invertebrate species are listed in Table 1 and addressed in this assessment. Table 5, at the end of this section, provides a summary of this assessment of the potential for the species to occur in the project area.

### Bexar County Karst Invertebrates

The project area does not occur within a delineated KFR; however, the Stone Oak KFR is in close proximity to the project area. The Stone Oak KFR is known to contain the Madla's cave meshweaver and the ground beetles, *Rhadine exilis* and *R. infernalis*. Therefore, in accordance to USFWS guidelines, a karst terrain features survey was conducted in the proposed project area (USFWS 2015). No potential karst features were identified during the survey, however, a known cave occupied by *R. exilis* occurs 0.6 mile south of the project limits. Since the project area occurs in karst invertebrate zone 3, project construction contractors should be made aware that there is potential to encounter below-ground karst features during construction. Should potential karst features be encountered during construction, activities should be halted in the area and the potential karst feature be examined by a qualified geologist or karst invertebrate specialist to determine if the feature may provide habitat for endangered karst invertebrates.

**Table 5. Assessment of the Potential for the Occurrence of Endangered Karst Invertebrate Species in the Project Area**

Common Name	Habitat Present?	Potential for Occurrence?	Pertinent Information
Bexar County Karst Invertebrates	No	Unlikely	No potential karst features were observed in the project area; should a below-ground karst feature be encountered during construction, work should be halted and the feature evaluated by a qualified geologist or karst specialist.

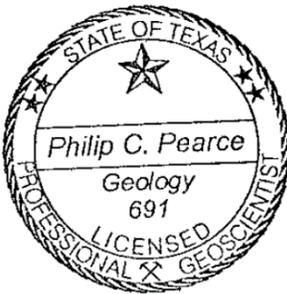
# Findings and Conclusions

---

On May 10, 2017, SWCA geologists conducted a karst terrain features survey for the Blanco Road Phase II project area, which is within area delineated by the USFWS as karst invertebrate zone 3. Zone 3 delineates areas that are unlikely to contain listed karst invertebrates.

No suitable habitat for endangered karst invertebrates was observed within or adjacent to the proposed project area, however, a known cave occupied by *Rhadine exilis* occurs 0.6 mile south of the project limits. Project construction contractors should be made aware that there is potential to encounter below-ground karst features during construction.

In accordance with the provisions of the Texas Geoscience Practice Act, the karst feature survey described in this report was performed under the responsible charge of Philip C. Pearce, P.G.



A handwritten signature in blue ink that reads "Philip C. Pearce".

## References Cited

---

- Collins, E.W. 1994. Geologic map of the Camp Bullis quadrangle, Texas; University of Texas at Austin Bureau of Economic Geology; 1:24,000.
- Texas Parks and Wildlife Department. 2016. Texas Natural Diversity Database, Camp Bullis Quadrangle. Wildlife Diversity Program of Texas Parks and Wildlife Department. 6 October 2016.
- United States Department of Agriculture Natural Resource Conservation Service (USDA NRCS). 2006. *Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin*. U.S. Department of Agriculture Handbook, 296.
- USDA NRCS. 2011. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>. Accessed May 17, 2017.
- U.S. Fish and Wildlife Service (USFWS). 2000. Endangered and Threatened Wildlife and Plants; Final Rule to List Nine Bexar County, Texas Invertebrate Species as Endangered. *Federal Register* Vol. 65, No. 248. Tuesday, December 26, 2000. pp. 81419- 81433.
- USFWS. 2015. United States Fish and Wildlife Service, Section 10(a)(1)(A) scientific permit requirements for conducting presence/absence surveys for endangered karst invertebrates in Central Texas. Austin Ecological Services Field Office. May 21, 2015.
- USFWS. 2017.
- U.S. Geological Survey. 1992. Camp Bullis, Texas 7.5-minute quadrangle topographic map.
- Stein, W., and Ozuna, G. 1995. Geologic Framework and Hydrologic Characteristics of the Edwards Aquifer Recharge Zone, Bexar County, Texas. Prepared in cooperation with the San Antonio Water System.
- SWCA. 2006. Evaluation of potential impacts to endangered karst invertebrates in Blanco Cave from improvements of Blanco Road (FM 2696) in northern Bexar County, Texas. Prepared for Texas Department of Transportation, January 2006.
- Veni, G. 1994. Geologic controls on cave development and the distribution of endemic cave fauna in the San Antonio, Texas, region. Prepared for Texas Parks and Wildlife Department and U.S. Fish and Wildlife Service. February 23, 1994.
- Veni, G. 2002. Distribution of petitioned and endemic cavernicole fauna in the San Antonio region. In: Geologic controls on cave development and the distribution of endemic cave fauna in the San Antonio, Texas region. George Veni and Associates, San Antonio, Texas.

# Appendix A – Location Map and Exhibits



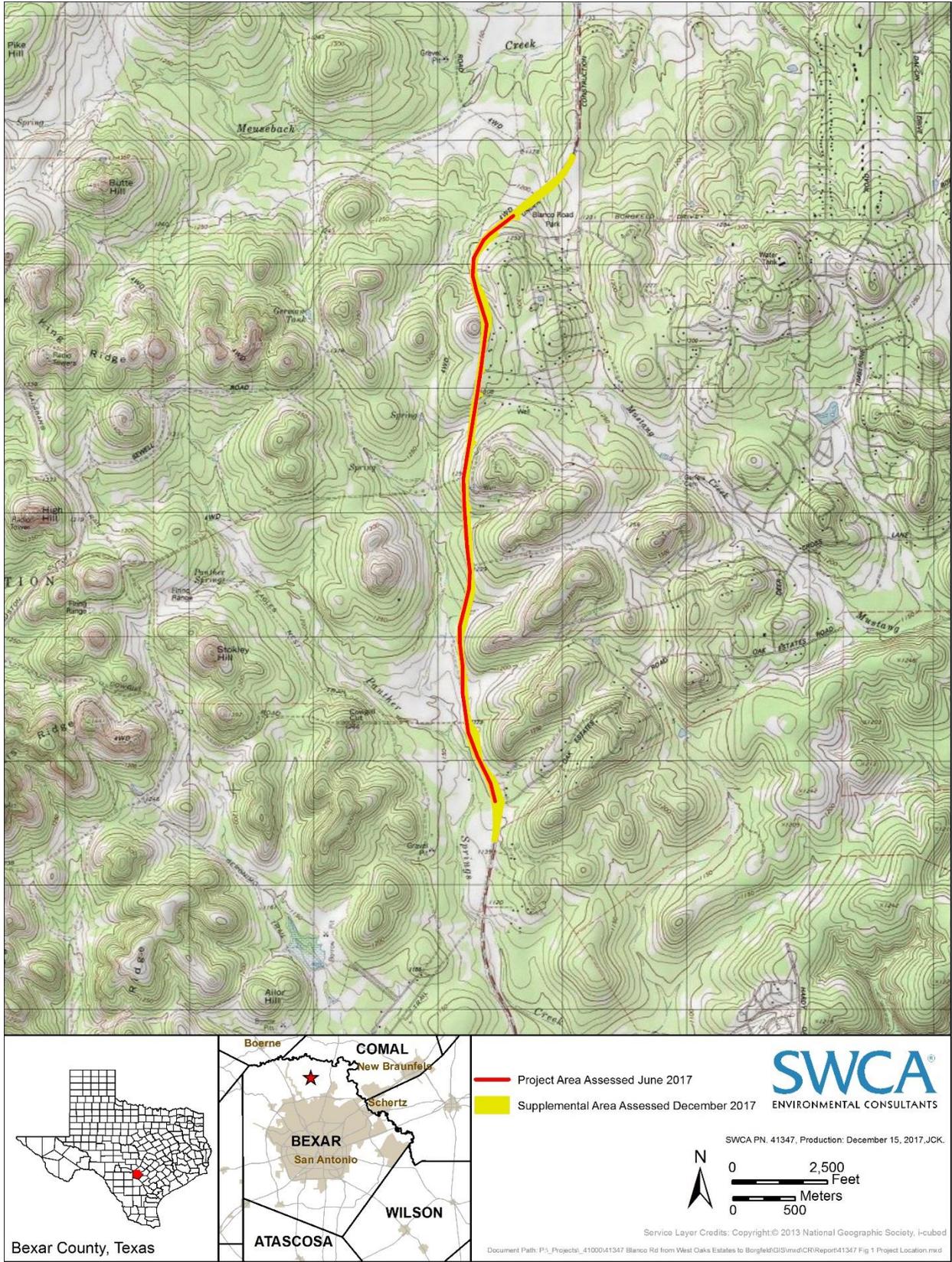


Figure 1. Project Location.

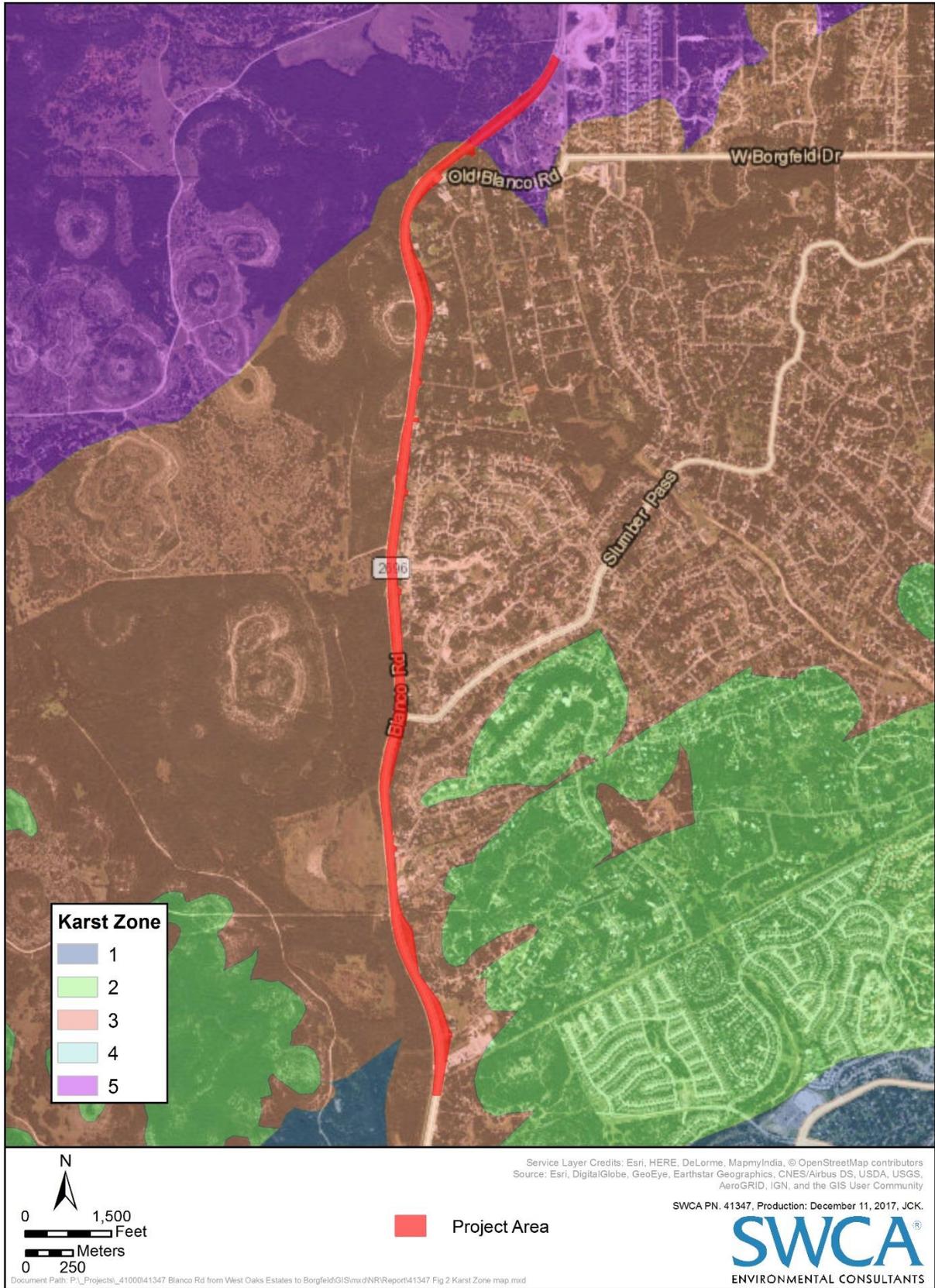


Figure 2. Karst Zones in Project Vicinity.

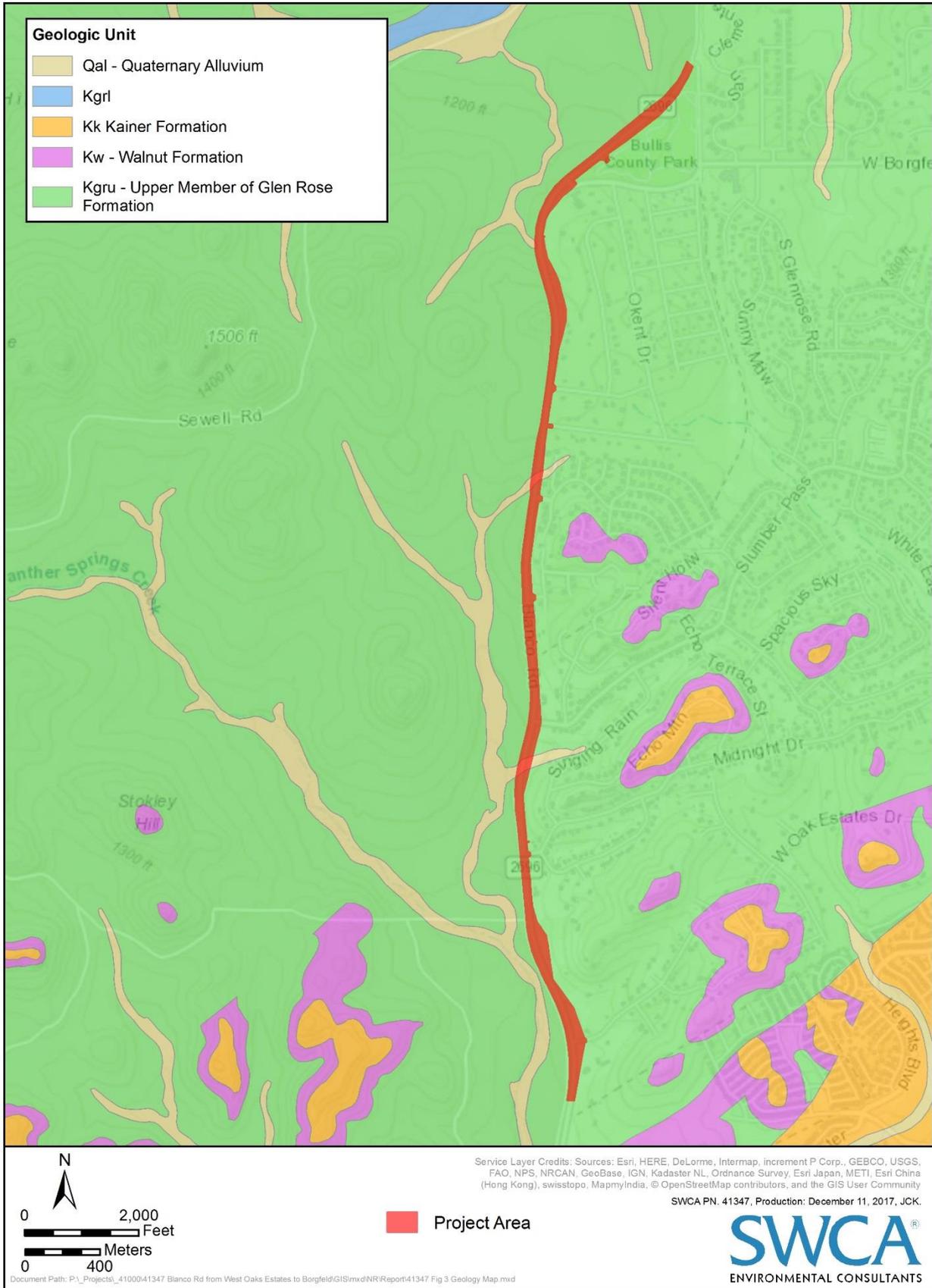


Figure 3. Geologic Map of Project Area.

# Appendix B – Information for Planning and Conservation Trust Resources Report



## IPaC

U.S. Fish &amp; Wildlife Service

# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Bexar County, Texas



## Local office

Austin Ecological Services Field Office

☎ (512) 490-0057

📠 (512) 490-0974

10711 Burnet Road, Suite 200

Austin, TX 78758-4460

<http://www.fws.gov/southwest/es/AustinTexas/>

<http://www.fws.gov/southwest/es/EndangeredSpecies/lists/>

## Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

## Listed species

<sup>1</sup> are managed by the [Endangered Species Program](#) of the U.S. Fish and Wildlife Service.

1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.

The following species are potentially affected by activities in this location:

## Amphibians

NAME	STATUS
San Marcos Salamander <i>Eurycea nana</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/6374">https://ecos.fws.gov/ecp/species/6374</a>	Threatened
Texas Blind Salamander <i>Typhlomolge rathbuni</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5130">https://ecos.fws.gov/ecp/species/5130</a>	Endangered

## Arachnids

NAME	STATUS
Braken Bat Cave Meshweaver <i>Cicurina venii</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/7900">https://ecos.fws.gov/ecp/species/7900</a>	Endangered
Cokendolpher Cave Harvestman <i>Texella cokendolpheri</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/676">https://ecos.fws.gov/ecp/species/676</a>	Endangered

Government Canyon Bat Cave Meshweaver *Cicurina vespera* Endangered

There is a **final critical habitat** designated for this species.  
Your location is outside the designated critical habitat.  
<https://ecos.fws.gov/ecp/species/7037>

Government Canyon Bat Cave Spider *Neoleptoneta microps* Endangered

There is a **final critical habitat** designated for this species.  
Your location is outside the designated critical habitat.  
<https://ecos.fws.gov/ecp/species/553>

Madla's Cave Meshweaver *Cicurina madla* Endangered

There is a **final critical habitat** designated for this species.  
Your location is outside the designated critical habitat.  
<https://ecos.fws.gov/ecp/species/2467>

Robber Baron Cave Meshweaver *Cicurina baronia* Endangered

There is a **final critical habitat** designated for this species.  
Your location is outside the designated critical habitat.  
<https://ecos.fws.gov/ecp/species/2361>

## Birds

NAME	STATUS
Black-capped Vireo <i>Vireo atricapilla</i>	Endangered
No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/5716">https://ecos.fws.gov/ecp/species/5716</a>	
Golden-cheeked Warbler (=wood) <i>Dendroica chrysoparia</i>	Endangered
No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/33">https://ecos.fws.gov/ecp/species/33</a>	

Least Tern *Sterna antillarum* Endangered

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/8505>

Piping Plover *Charadrius melodus* Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

There is a **final critical habitat** designated for this species. Your location is outside the designated critical habitat.

<https://ecos.fws.gov/ecp/species/6039>

Red Knot *Calidris canutus rufa* Threatened

This species only needs to be considered if the following condition applies:

- Wind Energy Projects

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/1864>

Whooping Crane *Grus americana* Endangered

There is a **final critical habitat** designated for this species. Your location is outside the designated critical habitat.

<https://ecos.fws.gov/ecp/species/758>

## Clams

NAME	STATUS
Golden Orb <i>Quadrula aurea</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9042">https://ecos.fws.gov/ecp/species/9042</a>	Candidate
Texas Fatmucket <i>Lampsilis bracteata</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/9041">https://ecos.fws.gov/ecp/species/9041</a>	Candidate

Texas Pimpleback *Quadrula petrina* Candidate  
 No critical habitat has been designated for this species.  
<https://ecos.fws.gov/ecp/species/8966>

## Crustaceans

NAME	STATUS
Peck's Cave Amphipod <i>Stygobromus (=Stygonectes) pecki</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/8575">https://ecos.fws.gov/ecp/species/8575</a>	Endangered

## Fishes

NAME	STATUS
Fountain Darter <i>Etheostoma fonticola</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/5858">https://ecos.fws.gov/ecp/species/5858</a>	Endangered

## Flowering Plants

NAME	STATUS
Bracted Twistflower <i>Streptanthus bracteatus</i> No critical habitat has been designated for this species. <a href="https://ecos.fws.gov/ecp/species/2856">https://ecos.fws.gov/ecp/species/2856</a>	Candidate
Texas Wild-rice <i>Zizania texana</i> There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/805">https://ecos.fws.gov/ecp/species/805</a>	Endangered

# Insects

NAME	STATUS
<p>[no Common Name] Beetle <i>Rhadine infernalis</i></p> <p>There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/3804">https://ecos.fws.gov/ecp/species/3804</a></p>	Endangered
<p>[no Common Name] Beetle <i>Rhadine exilis</i></p> <p>There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/6942">https://ecos.fws.gov/ecp/species/6942</a></p>	Endangered
<p>Comal Springs Dryopid Beetle <i>Stygoparnus comalensis</i></p> <p>There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/7175">https://ecos.fws.gov/ecp/species/7175</a></p>	Endangered
<p>Comal Springs Riffle Beetle <i>Heterelmis comalensis</i></p> <p>There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/3403">https://ecos.fws.gov/ecp/species/3403</a></p>	Endangered
<p>Helotes Mold Beetle <i>Batrisodes venyivi</i></p> <p>There is a <b>final critical habitat</b> designated for this species. Your location is outside the designated critical habitat. <a href="https://ecos.fws.gov/ecp/species/1149">https://ecos.fws.gov/ecp/species/1149</a></p>	Endangered

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

# Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any activity that results in the take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct) of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service

<sup>3</sup>. There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

- 
1. The [Migratory Birds Treaty Act](#) of 1918.
  2. The [Bald and Golden Eagle Protection Act](#) of 1940.
  3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data <http://www.birdscanada.org/birdmon/default/datasummaries.jsp>

The migratory birds species listed below are species of particular conservation concern (e.g. [Birds of Conservation Concern](#)) that may be potentially affected by activities in this location. It is not a list of every bird species you may find in this location, nor a guarantee that all of the bird species on this list will be found on or near this location. Although it is important to try to avoid and minimize impacts to all birds, special attention should be made to avoid and minimize impacts to birds of priority concern. To view available data on other bird species that may occur in your project area, please visit the [AKN Histogram Tools](#) and [Other Bird Data Resources](#). To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

NAME	SEASON(S)
Audubon's Oriole <i>Icterus graduacauda</i>	Year-round
Bald Eagle <i>Haliaeetus leucocephalus</i> <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Wintering
Bell's Vireo <i>Vireo bellii</i> <a href="https://ecos.fws.gov/ecp/species/9507">https://ecos.fws.gov/ecp/species/9507</a>	Breeding
Burrowing Owl <i>Athene cunicularia</i> <a href="https://ecos.fws.gov/ecp/species/9737">https://ecos.fws.gov/ecp/species/9737</a>	Wintering
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Wintering
Dickcissel <i>Spiza americana</i>	Breeding
Fox Sparrow <i>Passerella iliaca</i>	Wintering
Harris's Sparrow <i>Zonotrichia querula</i>	Wintering
Hudsonian Godwit <i>Limosa haemastica</i>	Migrating
Lark Bunting <i>Calamospiza melanocorys</i>	Wintering
Le Conte's Sparrow <i>Ammodramus leconteii</i>	Wintering
Least Bittern <i>Ixobrychus exilis</i> <a href="https://ecos.fws.gov/ecp/species/6175">https://ecos.fws.gov/ecp/species/6175</a>	Breeding
Lewis's Woodpecker <i>Melanerpes lewis</i> <a href="https://ecos.fws.gov/ecp/species/9408">https://ecos.fws.gov/ecp/species/9408</a>	Wintering
Loggerhead Shrike <i>Lanius ludovicianus</i> <a href="https://ecos.fws.gov/ecp/species/8833">https://ecos.fws.gov/ecp/species/8833</a>	Year-round

Orchard Oriole	<i>Icterus spurius</i>	Breeding
Painted Bunting	<i>Passerina ciris</i>	Breeding
Peregrine Falcon	<i>Falco peregrinus</i> <a href="https://ecos.fws.gov/ecp/species/8831">https://ecos.fws.gov/ecp/species/8831</a>	Wintering
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Wintering
Rufous-crowned Sparrow	<i>Aimophila ruficeps</i> <a href="https://ecos.fws.gov/ecp/species/9718">https://ecos.fws.gov/ecp/species/9718</a>	Year-round
Short-eared Owl	<i>Asio flammeus</i> <a href="https://ecos.fws.gov/ecp/species/9295">https://ecos.fws.gov/ecp/species/9295</a>	Wintering
Sprague's Pipit	<i>Anthus spragueii</i> <a href="https://ecos.fws.gov/ecp/species/8964">https://ecos.fws.gov/ecp/species/8964</a>	Wintering

### What does IPaC use to generate the list of migratory bird species potentially occurring in my specified location?

#### Landbirds:

Migratory birds that are displayed on the IPaC species list are based on ranges in the latest edition of the National Geographic Guide, Birds of North America (6th Edition, 2011 by Jon L. Dunn, and Jonathan Alderfer). Although these ranges are coarse in nature, a number of U.S. Fish and Wildlife Service migratory bird biologists agree that these maps are some of the best range maps to date. These ranges were clipped to a specific Bird Conservation Region (BCR) or USFWS Region/Regions, if it was indicated in the 2008 list of Birds of Conservation Concern (BCC) that a species was a BCC species only in a particular Region/Regions. Additional modifications have been made to some ranges based on more local or refined range information and/or information provided by U.S. Fish and Wildlife Service biologists with species expertise. All migratory birds that show in areas on land in IPaC are those that appear in the 2008 Birds of Conservation Concern report.

#### Atlantic Seabirds:

Ranges in IPaC for birds off the Atlantic coast are derived from species distribution models developed by the National Oceanic and Atmospheric Association (NOAA) National Centers for Coastal Ocean Science (NCCOS) using the best available seabird survey data for the offshore Atlantic Coastal region to date. NOAA/NCCOS assisted USFWS in developing seasonal species ranges from their models for specific use in IPaC. Some of these birds are not BCC species but were of interest for inclusion because they may occur in high abundance off the coast at different

times throughout the year, which potentially makes them more susceptible to certain types of development and activities taking place in that area. For more refined details about the abundance and richness of bird species within your project area off the Atlantic Coast, see the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other types of taxa that may be helpful in your project review.

About the NOAANCCOS models: the models were developed as part of the NOAANCCOS project: [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#). The models resulting from this project are being used in a number of decision-support/mapping products in order to help guide decision-making on activities off the Atlantic Coast with the goal of reducing impacts to migratory birds. One such product is the [Northeast Ocean Data Portal](#), which can be used to explore details about the relative occurrence and abundance of bird species in a particular area off the Atlantic Coast.

All migratory bird range maps within IPaC are continuously being updated as new and better information becomes available.

### **Can I get additional information about the levels of occurrence in my project area of specific birds or groups of birds listed in IPaC?**

#### **Landbirds:**

The [Avian Knowledge Network \(AKN\)](#) provides a tool currently called the "Histogram Tool", which draws from the data within the AKN (latest, survey, point count, citizen science datasets) to create a view of relative abundance of species within a particular location over the course of the year. The results of the tool depict the frequency of detection of a species in survey events, averaged between multiple datasets within AKN in a particular week of the year. You may access the histogram tools through the [Migratory Bird Programs AKN Histogram Tools](#) webpage.

The tool is currently available for 4 regions (California, Northeast U.S., Southeast U.S. and Midwest), which encompasses the following 32 states: Alabama, Arkansas, California, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, and Wisconsin.

In the near future, there are plans to expand this tool nationwide within the AKN, and allow the graphs produced to appear with the list of trust resources generated by IPaC, providing you with an additional level of detail about the level of occurrence of the species of particular concern potentially occurring in your project area throughout the course of the year.

#### **Atlantic Seabirds:**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results

files underlying the portal maps through the NOAAANCCOS [Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project](#) webpage.

## Facilities

## Wildlife refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGES AT THIS LOCATION.

## Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

[NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army](#)

# Appendix C – Photo Log



Blanco Rd from West Oaks Estates to Borgfeld  
Photographic Log

---



Photograph 1. View of project area facing north



Photograph 2. View of project area facing north

Blanco Rd from West Oaks Estates to Borgfeld  
Photographic Log

---



Photograph 3. View of project area



Photograph 4. View north on project area

Blanco Rd from West Oaks Estates to Borgfeld  
Photographic Log

---



Photograph 5. View south on project area



Photograph 6. View south on project area

Blanco Rd from West Oaks Estates to Borgfeld  
Photographic Log

---



Photograph 7. View south on project area