

**OSCAR TRACT**  
**ENDANGERED SPECIES HABITAT ASSESSMENT**

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## **ENDANGERED SPECIES HABITAT ASSESSMENT**

### **EXECUTIVE SUMMARY**

KFW Engineers assessed the potential habitat for the occurrence of federally listed threatened and endangered species for Oscar Tract, the subject property. The purpose of this habitat assessment is to identify and evaluate potential habitat for federally listed threatened and endangered species to exist on the subject property. A habitat assessment includes published literature review, a site visit, and preparation of this report.

According to USFWS karst zone maps, the majority of the subject property lies within Karst Zone 3. Karst Zone 3 is defined as “Areas that probably do not contain listed invertebrate karst species”. Approximately 20-acres near the southeastern property corner lies within Karst Zone 2. Karst Zone 2 is defined as “Areas having a high probability of containing suitable habitat for listed invertebrate karst species”. In accordance with USFWS guidelines, published in 2015, a karst feature survey consisting of 50-ft transects are required in Karst Zones 1, 2, and 3 to identify any karst features which may contain potential karst invertebrate habitat. Therefore, a karst feature survey was conducted as part of this assessment. No karst features were identified within the boundaries of the subject property.

The City of San Antonio defines “Golden-Cheeked Warbler Presumptive Habitat” as any area outside of Loop 1604, north of U.S. Highway 90, and west of Interstate Highway 35. The subject property lies within the “GCWA Presumptive Habitat” area as defined by the City of San Antonio. No potential Golden-Cheeked Warbler (GCWA) habitat was identified within the boundaries of the subject property.

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## ENDANGERED SPECIES HABITAT ASSESSMENT

### 1. INTRODUCTION

The subject property consists of two parcels of land comprised of approximately 152-acres located at 6460 Gass Road, San Antonio, Bexar County, Texas. The legal description of the two parcels of land from current Bexar County Appraisal District records are as follows:

**BEXAR CAD PARCEL 210065:** CB 4410 P-7 ABS 98 MH LABEL: NTA0495860 & NO LABEL# NO SERIAL#/ REF: 81900-013-1048 & 80800-0 01-2030 & 81300-007-0980.

**And**

**BEXAR CAD PARCEL 210062:** CB: 4410 P-4 ABS 98 REFER TO: 80700-100-0041 RESURVEYED FROM 122.171 TO 125.955 PER 11628/218.

#### 1.1. Purpose

The purpose of this Habitat Assessment is to identify potential habitat for federally listed endangered and threatened species within the boundaries of the subject property. The City of San Antonio (COSA) requires submittal of a habitat compliance form (HCF) for applicants applying for master development plans, major plats, development plats, tree permits, planned unit development plans, and minor plats for properties larger than 2 acres.

#### 1.2. Scope

The scope of services for this assessment of potential habitat of federally listed threatened and endangered species include the following tasks:

1. Review of U.S.G.S. 7.5 Minute Topographic Maps, Soil maps, USFWS database records, Karst Zone Maps, Texas Parks and Wildlife Department (TPWD) Maps, and available aerial photographs.
2. A site reconnaissance of the subject property to assess and determine the presence and potential for endangered species habitat based on descriptions

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- of specific species suitable habitat. Site reconnaissance includes a karst survey in accordance with USFWS guidelines.
3. Preparation of habitat assessment report and relevant GIS exhibits.

### **1.3. Limitations and Exceptions**

The observations and findings included in this report are based on the guidance, regulations, and data available at the time of preparation of this report. Site conditions observed at the time of the site visit may be dynamic and are susceptible to future changes in the land or human development. A future evaluation may yield differing results.

### **1.4. User Reliance**

This potential habitat assessment determination report has been prepared for the exclusive use of, and may be relied upon by Meritage Homes. Reliance on the information or conclusions in this report by any other person or entity is not authorized without the written consent of KFW Engineers.

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### 2. ENDANGERED SPECIES BACKGROUND

The U.S. Fish and Wildlife Service (USFWS) determines golden cheeked warblers (*Setophaga chrysoparia*) as federally endangered in Bexar County. There are nine USFWS endangered karst invertebrates listed within Bexar County.

Species listed as threatened or endangered by USFWS are protected by the federal Endangered Species Act (ESA). Section 9 of the ESA prohibits the “take” of threatened and endangered species. Take is defined as to “harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct”. Generally, USFWS considers modification of regularly occupied endangered species habitat to constitute “harm” and, therefore, may result in a violation of the ESA.

#### 2.1. Golden-cheeked Warbler (*Setophaga chrysoparia*)

The USFWS listed the golden-cheeked warbler as endangered in 1990, citing the threat of urban encroachment resulting in destruction and fragmentation of suitable habitat (USFWS 1990). The USFWS believed at the time of listing that habitat fragmentation and loss made the golden-cheeked warbler considerably more vulnerable to threats caused by invasive species, such as parasitism of brown-headed cowbirds (*Molothrus ater*; USFWS 1990). The USFWS has not designated critical habitat for the golden-cheeked warbler (USFWS 1992).

The breeding range for the golden-cheeked warbler is restricted to the Edwards Plateau and Cross Timbers regions of central and north-central Texas (USFWS 1990; Campbell 2003). Golden-cheeked warbler breeding habitat consists of dense and mature woodland vegetation types composed of a combination of Ashe juniper (*Juniperus ashei*) and broad-leaved hardwood tree species, especially oaks such as Texas red oak (*Quercus buckleyi*) and plateau live oak (*Q. fusiformis*) (Guilfoyle 2002). Other hardwood tree species often found in golden-cheeked warbler breeding habitat include shin oak (*Q. sinuata* var. *breviloba*), Lacey oak (*Q. laceyi*), post oak

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(*Q. stellata*), escarpment black cherry (*Prunus serotina* var. *eximia*), and cedar elm (*Ulmus crassifolia*) (USFWS 2013).

The USFWS generally accepts the Campbell 2003 definition for golden-cheeked warbler habitat. Optimal habitat conditions include woodlands with Ashe juniper and a blend of oaks, elms, and other hardwood species (Campbell 2003). Ideally, mature Ashe juniper trees are greater than 15 feet tall with a trunk diameter of 5 inches diameter at breast height (dbh), i.e., approximately 4 feet above the ground, with 50%–100% of the overall canopy cover at a height of 20 feet or more (Campbell 2003). While 50% to 100% canopy cover is considered the best quality habitat, golden-cheeked warblers may utilize areas where the canopy cover is as low as 35% (Campbell 2003).

Since the exact distribution of golden-cheeked warblers is difficult to predict and can vary based on site-specific characteristics, Campbell (2003) recommends that all habitat that meet the following guidelines listed below to be considered occupied unless on-site surveys verify that the habitat is not suitable for golden-cheeked warblers:

1. Stands of mature Ashe juniper (trees with shredding bark), over 15 feet in height and dbh of about 5 inches, with scattered live oaks (at least 10% total canopy cover), where the total canopy cover of trees exceeds 35% and overall woodland canopy height is at least 20 feet.
2. Bottomlands along creeks and drainages which support at least a 35% canopy of deciduous trees (average canopy height of 20 feet), with mature Ashe junipers (at least 15 feet and 5 inches dbh) growing either in the bottom or on nearby slopes.
3. Mixed stands of post oak and/or blackjack oak (*Q. marilandica*) (10%–30% canopy cover), with scattered mature Ashe juniper (15 feet in height and 5 inches

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dbh), where the total canopy cover of trees exceeds 35% and overall woodland canopy height is 20 feet.

4. Mixed stands of shin oak (10%–30% canopy cover) with scattered mature Ashe juniper (15 feet in height and 5 inches dbh), where the total canopy cover of trees exceeds 35% and overall woodland canopy height is 20 feet.

### **2.2. Karst Invertebrates**

On 26 December 2000, the USFWS published a Final Rule listing nine species of troglobitic invertebrates known only to be found in caves located in Bexar County, Texas, as endangered under the ESA (USFWS 2000).

Troglobites are obligate cave-dwelling organisms. The nine species include Robber Baron Cave meshweaver, Madla's Cave meshweaver, Government Canyon Bat Cave meshweaver, Braken Bat Cave meshweaver, Government Canyon Bat Cave spider, Cokendolpher cave harvestman, Helotes mold beetle, and the ground beetles, *Rhadine exilis* and *R. infernalis* (five spiders, one harvestman, and three beetles, respectively).

Habitat requirements for these species include subsurface voids with permanent darkness, moisture input sufficient to maintain high humidity, and some source of organic material derived from the surface. Organic material can be washed into subsurface voids by surface water runoff or brought in by small mammals or troglaxene species such as cave crickets (*Ceuthophilus* spp.) and daddy longlegs (*Leiobunum* spp.). Geologic features which can host these types of organisms include caves, sinkholes, and smaller karst void conduits.

In 1993 (revised in 2002), the USFWS conducted a study that delineated five geographic zones (Karst 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

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development. Special attention was given to cavern development in the Edwards Group, Upper Glen Rose, Pecan Gap Chalk, and Austin Chalk. The zones were delineated as follows:

- **Zone 1:** Areas known to contain endangered karst invertebrate species
- **Zone 2:** Areas having a high probability of containing suitable habitat for endangered karst invertebrate species
- **Zone 3:** Areas that probably do not contain endangered karst invertebrate species
- **Zone 4:** Areas that require further research but are generally equivalent to Zone 3, (although they may include sections that could be classified as Zone 2 or Zone 5 as more information becomes available)
- **Zone 5:** Areas which do not contain listed karst invertebrate species.

The subject property lies within Karst Zone 2 and Karst Zone 3. Therefore, a karst feature survey was conducted on the subject property.

Veni (1994) hypothesized that certain geologic and geographic features such as stream valleys and faults form barriers to karst invertebrate dispersal and distribution. On the basis of this hypothesis, Veni (2002) delineated six Karst Fauna Regions (KFRs) within Bexar County, including (i.e., the Stone Oak, UTSA, Helotes, Government Canyon, Culebra Anticline, and Alamo Heights KFRs). Approximately 20-acres near the southeastern property corner lies within the Culebra Anticline KFR (Exhibit 8).



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### **3. PRELIMINARY DATA GATHERING**

#### **3.1. Adjacent Properties**

Development immediately surrounding the subject property consist of mostly vacant ranch land and residential development.

Current uses of land adjacent to the subject property include:

- Ranchland to the west and south;
- National Skeet Shooting Complex to the north;
- Residential development to the east and distant north;

#### **3.2. Site Topography**

According to the current U.S. Geological Survey, (2017) La Coste NE Quadrangle, topographic map (Exhibit 4), the elevation on the subject property ranges from approximately 970-ft to 1070-ft above mean sea level. The highest elevation point in the central portion of the property separates the subject property into two separate drainage areas. The topography of the northern portion of the subject property is generally sloping towards the northwest. The topography of the southern portion of the subject property is generally sloping towards the southeast.

#### **3.3. Site Soils**

According to the Bexar County Soil Survey (Exhibit 3), four soil types are identified on the subject property. The soil types are listed as Eckrant cobbly clay, 1 to 8 percent slopes (TaB), Whitewright-Austin complex, 1 to 5 percent slopes (BsC), Whitewright clay loam, 1 to 5 percent slopes (BpC), and Brackett gravelly clay loam, 3 to 12 percent slopes (BrD).

#### **3.4. Site Geology**

According to the Geologic Atlas of Texas, the subject property is located within the Cretaceous-age Pecan Gap Chalk (Kpg), and the Cretaceous-age Austin Chalk (Kau). The thickness of the Pecan Gap Chalk is estimated to be 100-400+/- feet.

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Pecan Gap Chalk lies below Marlbrook Marl and above Austin Chalk. The formations in the vicinity of the subject property stratigraphically lie above the Edwards Group. The Edwards Aquifer is located within the Edwards Group. The Austin Chalk is comprised of massive limestone, chalky limestone, mudstone, nodular wackestone, and bioturbated wackestone. The thickness of the Austin Chalk ranges from 130-160+/- feet. Austin Chalk lies below the Navarro Group and lies above Buda Limestone. The formations in the vicinity of the subject property stratigraphically lie above the Edwards Group. The Edwards Aquifer is located within the Edwards Group.

### **3.5. Site EMST Types**

The TPWD's Ecological Mapping System of Texas (EMST) indicates that the property lies within the "Edwards Plateau" vegetation communities. The ecological vegetation communities mapped by the TPWD EMST include Edwards Plateau: Shin Oak Shrubland, Edwards Plateau: Ashe Juniper – Live Oak Shrubland, Edwards Plateau: Live Oak Motte and Woodland, Edwards Plateau: Oak- Hardwood Motte and Woodland, Edwards Plateau: Savanna Grassland, Edwards Plateau: Deciduous Oak – Evergreen Motte and Woodland, South Texas: Shallow Shrubland, Urban Low Intensity, Row Crops, and Barren. (Elliott 2014) (Exhibit 5).

#### Edwards Plateau: Shin Oak Shrubland

This type typically has a diverse array of shrub components including species such as mesquite, white shin oak, Vasey oak, agarito, Texas persimmon, plateau live oak, pricklypear, and Ashe juniper. Grasses such as purple threeawn, curly mesquite, Texas winter grass, sideoats grama, little bluestem, and slim tridens are often important.

#### Edwards Plateau: Ashe Juniper – Live Oak Shrubland

Ashe juniper and plateau live oak are the most frequent dominants of this evergreen shrubland. Plateau live oak and/or Ashe juniper may form a sparse canopy and Vasey oak (west), white shin oak, Mohr's shin oak (west), agarito, Texas persimmon, Texas mountain-laurel, mesquite, Lindheimer's prickly pear may be common in the understory.

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### Edwards Plateau: Live Oak Motte and Woodland

Plateau live oak alone or with Ashe juniper usually dominates the overstory of this type. Deciduous trees such as cedar elm, sugar hackberry, white shin (or Vasey) oak, Lacey oak, and Texas oak may be components. Shrubs such as mesquite, Texas persimmon, and agarito are common.

### Edwards Plateau: Oak- Hardwood Motte and Woodland

This deciduous woodland or forest may contain a diversity of species in the overstory, including cedar elm, Texas oak, sugar hackberry, post oak, white shin oak, or pecan. Plateau live oak is often an important component, and Ashe juniper may be in the overstory. Understory may contain species such as prairie sumac, Texas persimmon, white shin oak, and elbowbush.

### Edwards Plateau: Savanna Grassland

Grassland condition varies for this mapped type, but many areas contain non-native King Ranch bluestem as an important species, and Bermudagrass is also frequent. Common native grasses include little bluestem, sideoats grama, silver bluestem, Texas wintergrass, purple three-awn, and common curlymesquite. Trees and shrubs are usually present, and may include plateau live oak, Ashe juniper, mesquite, agarito, and/or cedar elm.

### Edwards Plateau: Deciduous Oak/Evergreen Motte and Woodland

This mixed woodland type contains significant variation, but deciduous oaks such as Texas oak, white shin oak, or Lacey oak (west) are often important in the overstory, together with Ashe juniper, plateau live oak, cedar elm, or sugar hackberry. The understory often contains Ashe juniper, plateau live oak, and Texas persimmon, agarito, mesquite, and Texas mountain-laurel are common shrubs.

### South Texas: Shallow Shrubland

A more or less discontinuous canopy of shrubs and small trees characterize this type, and species such as mesquite, guajillo, blackbrush, cenizo, granjeno, Texas persimmon, guayacan, leatherstem, Texas kidneywood, and colima are common components. Succulents such as yucca species, sotol, Lindheimer cactus, and tasajillo are important on some sites.

### Urban Low Intensity

This type includes areas that are built-up but not entirely covered by impervious cover, and includes most of the non-industrial areas within cities and towns.

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### Row Crops

This type includes all cropland where fields are fallow for some portion of the year. Some fields may rotate into and out of cultivation frequently, and year-round cover crops and tame hay fields are generally mapped as grassland.

### Barren

This type includes areas where little or no vegetation cover existed at the time of image data collection. Many areas mapped as this type are human-associated land clearings.

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### 4. METHODOLOGY

The subject property was evaluated for vegetation communities, topographic characteristics, and other habitat features similar to those known to provide suitable habitat for the endangered Golden-cheeked warbler (*Setophaga chrysoparia*). The subject property lies within “GCWA Presumptive Habitat” area as defined by the City of San Antonio.

The subject property was also evaluated for karst features with the potential to contain habitat for endangered karst invertebrates. There are five USFWS listed karst zones identified within Bexar County. The subject property lies within Karst Zone 2 and Karst Zone 3. Karst Zone 2 is defined as “areas having a high probability of containing suitable habitat for listed invertebrate karst species”. Karst Zone 3 is defined as “areas that probably do not contain listed invertebrate karst species”. Under the direction of a KFW Licensed Professional Geoscientist, a KFW Environmental Scientist performed 50-ft transects, as part of a karst feature survey, in accordance with USFWS guidelines, published in 2015, to identify any karst features that may contain potential karst invertebrate habitat.

KFW Environmental Scientists conducted multiple site visits on 1/13/22 & 1/17/22.

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### 5. SITE ASSESSMENT FOR POTENTIAL HABITAT

KFW Environmental Scientists evaluated the Oscar Tract, the subject property on 1/13/22 & 1/17/22. The purpose of the site visit is to observe any on-site characteristics that would indicate the potential presence of federally listed endangered species habitat.

Vegetation composition and structure within the subject property differ from those found in areas where golden-cheeked warblers occur on a regular annual basis in Bexar County (Campbell 2003) and USFWS definitions of suitable GCWA habitat. Due to the lack of suitable GCWA vegetation (mature ashe juniper & mixed oak woodlands with more than 35% canopy coverage), adjacent human development, and lack of connectivity to any adjacent high quality GCWA habitat, the subject property is considered unsuitable for GCWA habitat. Vegetation observed during the site visit within the boundaries of the subject property consisted of immature ashe juniper regrowth and woodland species. Vegetation observed within the boundaries of the subject property consisted of scattered immature ashe juniper (*Juniperus asheri*), huisache (*Vachellia farnesiana*), Live oak (*Quercus virginiana*), Texas persimmon (*Diospyros texana*), brasil (*Condalia hookeri*), tasajillo (*Cylindropuntia leptocaulis*), prickly pear cactus (*Opuntia*), agarito (*Mahonia trifoliolata*), and other shrubland vegetation communities. A large area in the central portion of the subject property is utilized as farmland land with no native vegetation present. The lack of mature ashe juniper woodlands results in lack of bark material GCWA use to build their nests during breeding season. Vegetation types and canopy coverage throughout the subject property differ from that considered to be suitable for GCWA Habitat. No mature Ashe juniper woodlands occur on the property; therefore the occurrence of the golden-cheeked warbler within or adjacent to the property is unlikely.

According to the USFWS Karst Zone map, the subject property lies within Karst Zone 2 and Karst Zone 3. Karst Zone 2 is defined as “areas having a high probability of containing suitable habitat for listed invertebrate karst species”. Karst Zone 3 is defined as “areas that probably do not contain listed invertebrate karst species”. (APPENDIX A).

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Therefore, a karst feature survey was conducted as part of this assessment. No karst features were identified within the boundaries of the subject property.

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### 6. CONCLUSIONS AND SUMMARY

KFW Engineers was contracted by Meritage Homes to assess the potential for the presence of potential habitat suitable for federally endangered species for Oscar Tract, the subject property. No potential federally listed endangered species habitat was identified within the boundaries of the subject property.

#### **Golden-Cheeked Warblers:**

Based on site characteristics observed during the site visits, the subject property is not considered potential habitat due to the lack of suitable GCWA vegetation (mature ashe juniper & mixed oak woodlands above 15-ft in height with more than 35% canopy coverage), adjacent human development, and lack of connectivity to any adjacent high quality GCWA habitat, the subject property is considered unsuitable for GCWA habitat. Therefore, the golden-cheeked warbler would not be expected to occur within the boundaries of the subject property.

#### **Karst Invertebrates:**

The subject property lies within Bexar County, Texas. There are five listed karst zones identified within Bexar County. The subject property lies within Karst Zone 2 and Karst Zone 3. Karst Zone 2 is defined as “areas having a high probability of containing suitable habitat for listed invertebrate karst species”. Karst Zone 3 is defined as “areas that probably do not contain listed invertebrate karst species”. According to USFWS Guidelines, karst feature surveys should be conducted within areas that lie in Karst Zones 1, 2, and 3. Therefore, a karst feature survey was conducted as part of this assessment. No karst features were identified at the time of the site visit.



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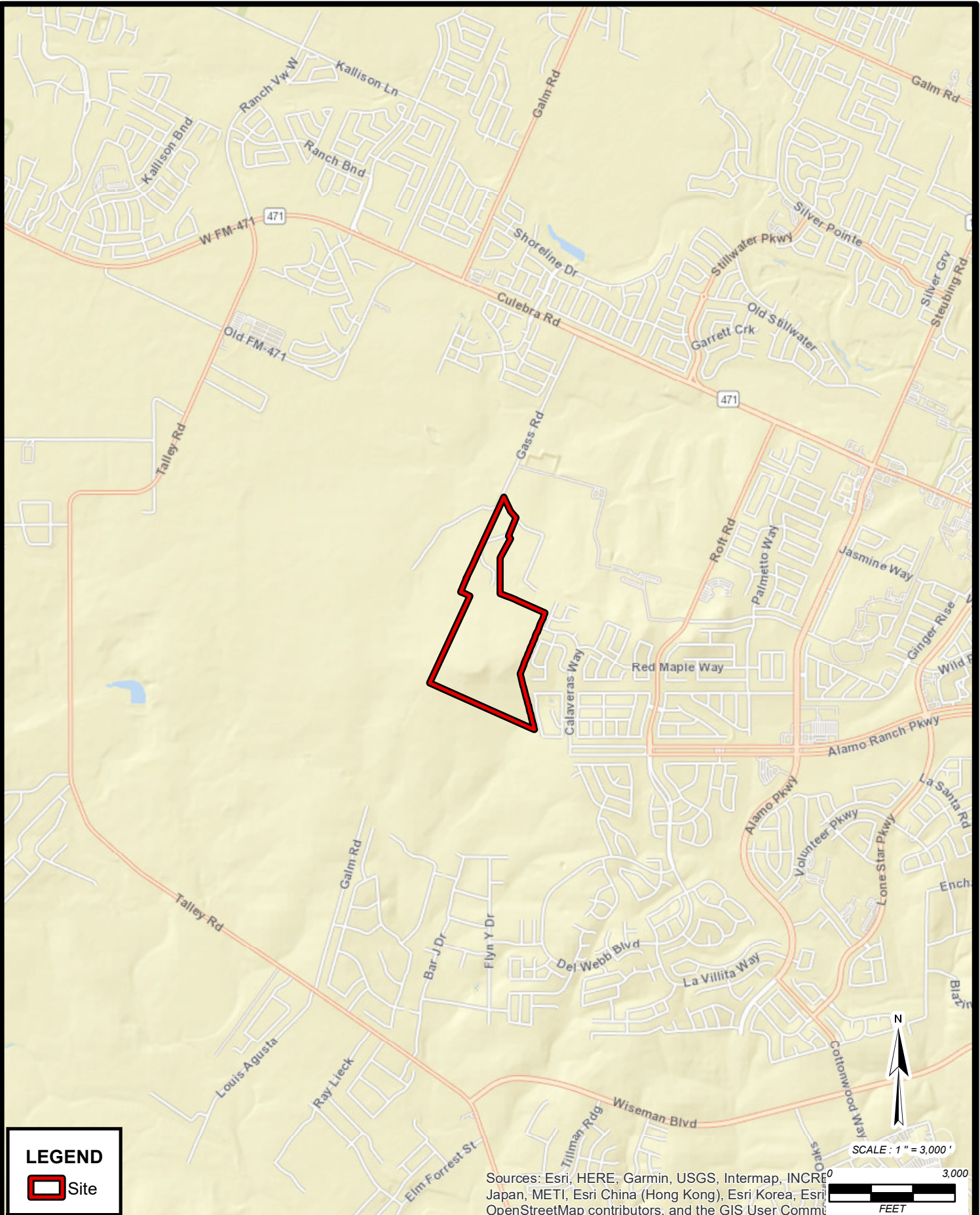
## **ENDANGERED SPECIES HABITAT ASSESSMENT**

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**APPENDIX A. EXHIBITS**



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENTAL, Japan, METI, Esri China (Hong Kong), Esri Korea, Esri Japan, Swisstopo, OpenStreetMap contributors, and the GIS User Community

**LEGEND**

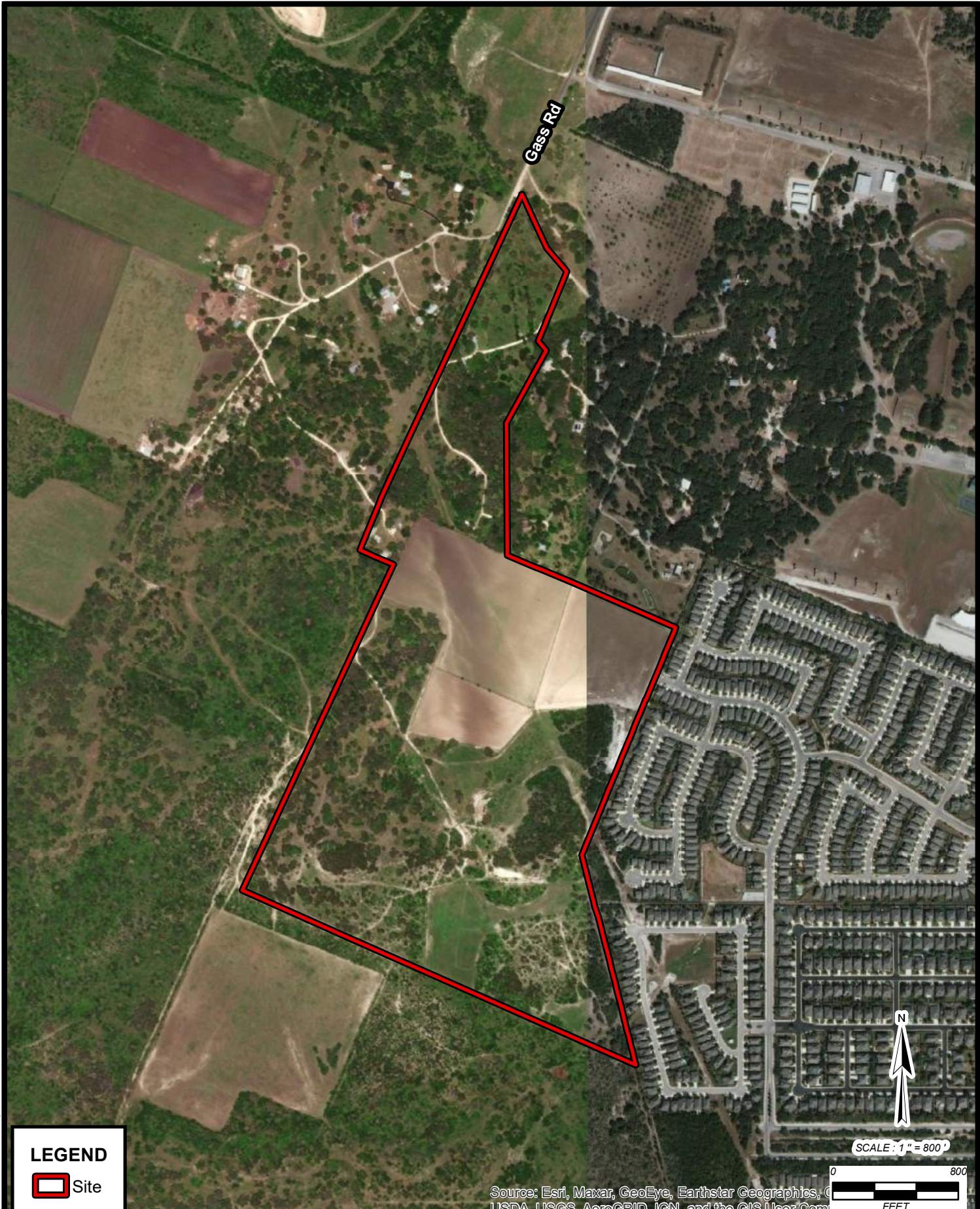
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**KFW**  
 ENGINEERS + SURVEYING  
 FIRM# 9513 FIRM# 10122300  
 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

**OSCAR TRACT**  
 ENDANGERED SPECIES HABITAT ASSESSMENT  
 SITE LOCATION MAP

REVISIONS:	ISSUE DATE:	
JOB NO. 397-13-02		
DATE: January 2022	DESIGNER:	
DRAWN: C.G.	CHECKED: R.P.	<b>EX-1</b>



Gass Rd

SCALE: 1" = 800'



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNR Aero, IGN, and the GIS User Community

**LEGEND**

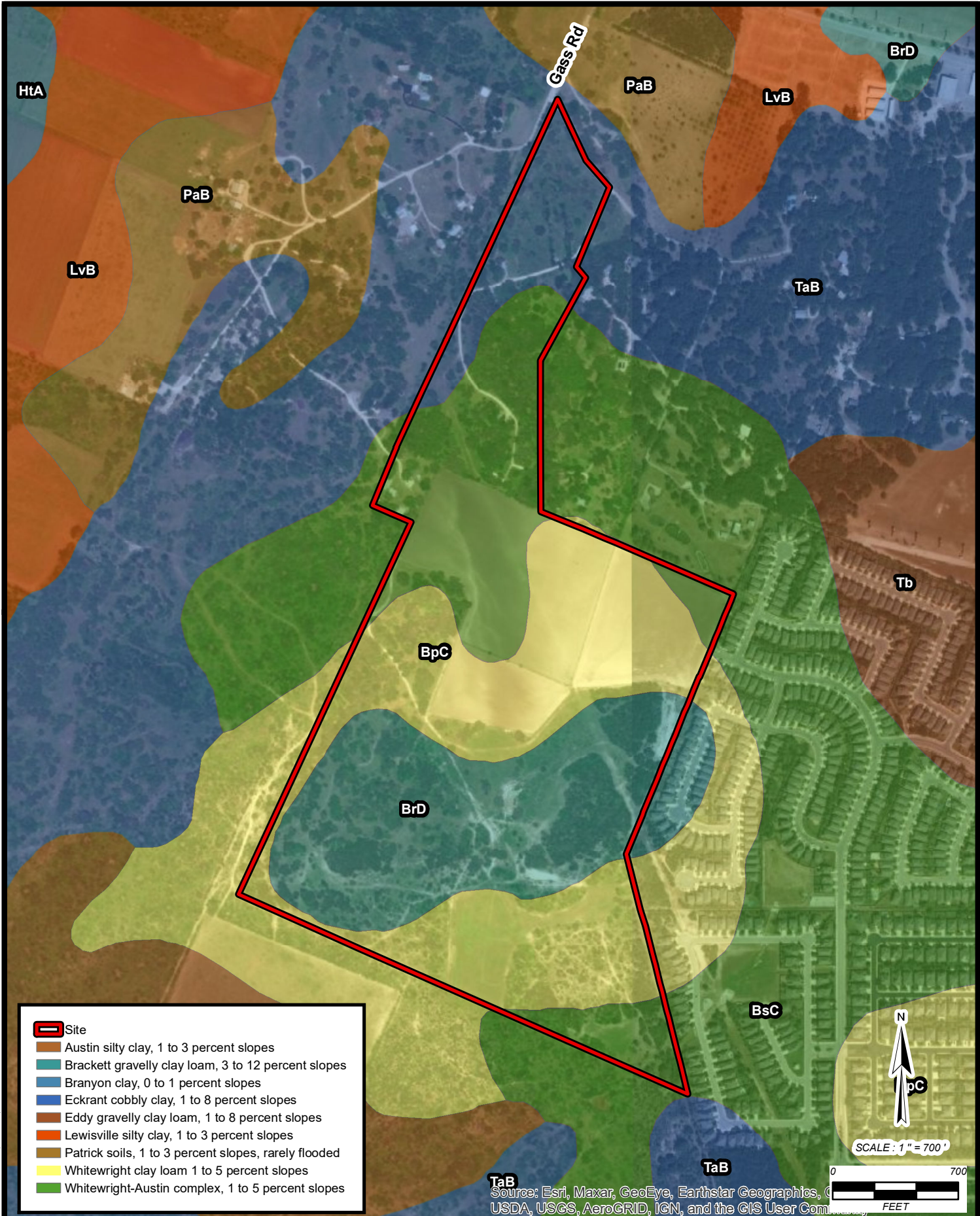
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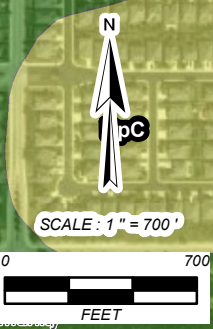
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 ENGINEERS + SURVEYING  
 FIRM# 9513 FIRM# 10122300  
 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

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 ENDANGERED SPECIES HABITAT ASSESSMENT  
 2020 AERIAL PHOTOGRAPH

REVISIONS:	ISSUE DATE:	
JOB NO. 397-13-02		
DATE: January 2022	DESIGNER:	
DRAWN: C.G.	CHECKED: R.P.	<b>EX-2</b>



- Site
- Austin silty clay, 1 to 3 percent slopes
- Brakett gravelly clay loam, 3 to 12 percent slopes
- Branyon clay, 0 to 1 percent slopes
- Eckrant cobbly clay, 1 to 8 percent slopes
- Eddy gravelly clay loam, 1 to 8 percent slopes
- Lewisville silty clay, 1 to 3 percent slopes
- Patrick soils, 1 to 3 percent slopes, rarely flooded
- Whitewright clay loam 1 to 5 percent slopes
- Whitewright-Austin complex, 1 to 5 percent slopes



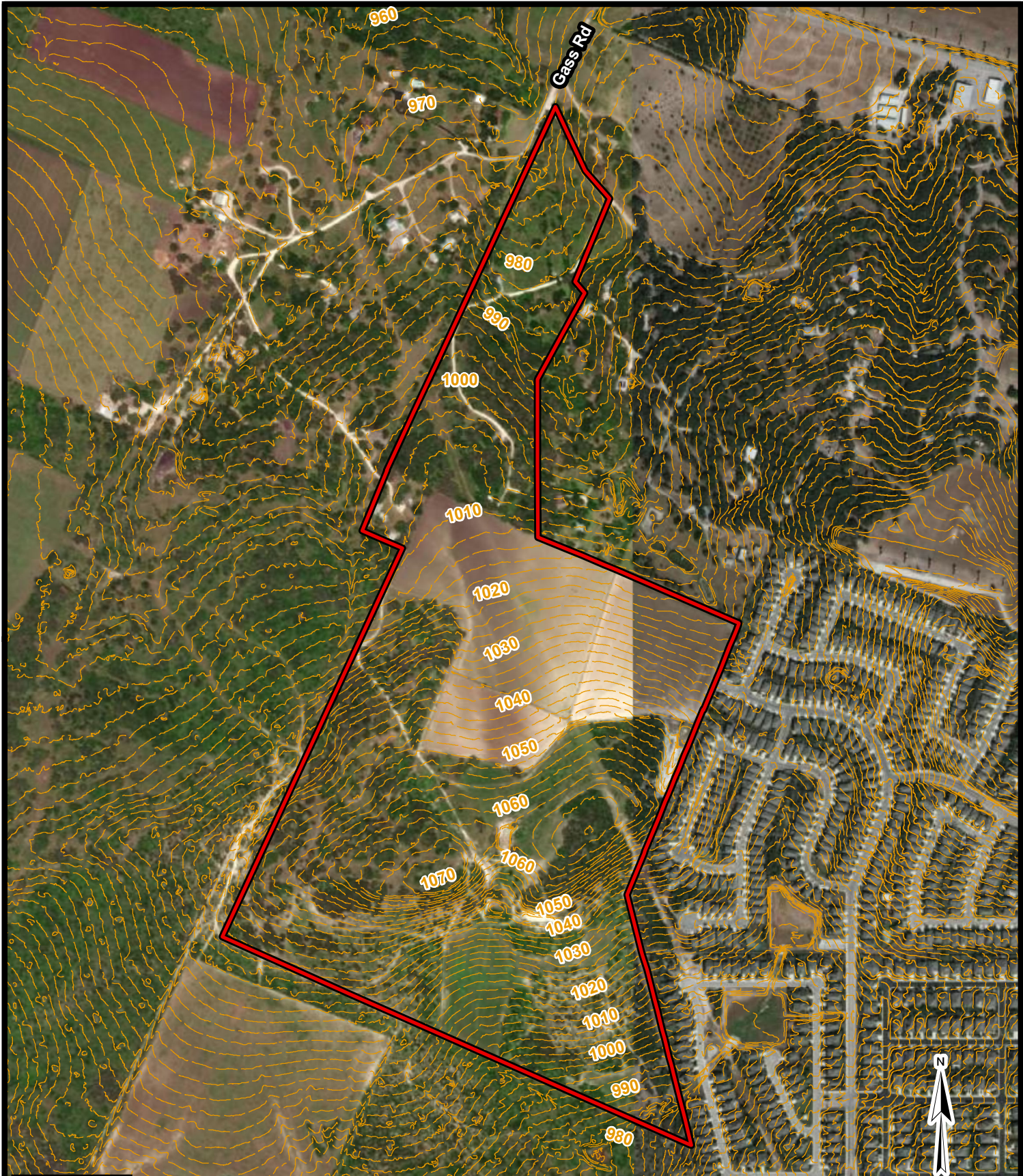
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNR Aero, IGN, and the GIS User Community

Date: Jan 18, 2022, 11:05:26 AM User ID: crogan File: N:\39713\2022\Design\Environment\HAG\BEX3-County Soils\_Survey.mxd

**KFW**  
**ENGINEERS + SURVEYING**  
 FIRM# 9513 FIRM# 10122300  
 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

**OSCAR TRACT**  
**ENDANGERED SPECIES HABITAT ASSESSMENT**  
**BEXAR COUNTY SOILS**

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<b>EX-3</b>	





**LEGEND**

 Site

**USGS QUARTER QUAD INDEX**  
**La Coste NE (2017)**

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNR Aero, IGN, and the GIS User Community

SCALE: 1" = 700'

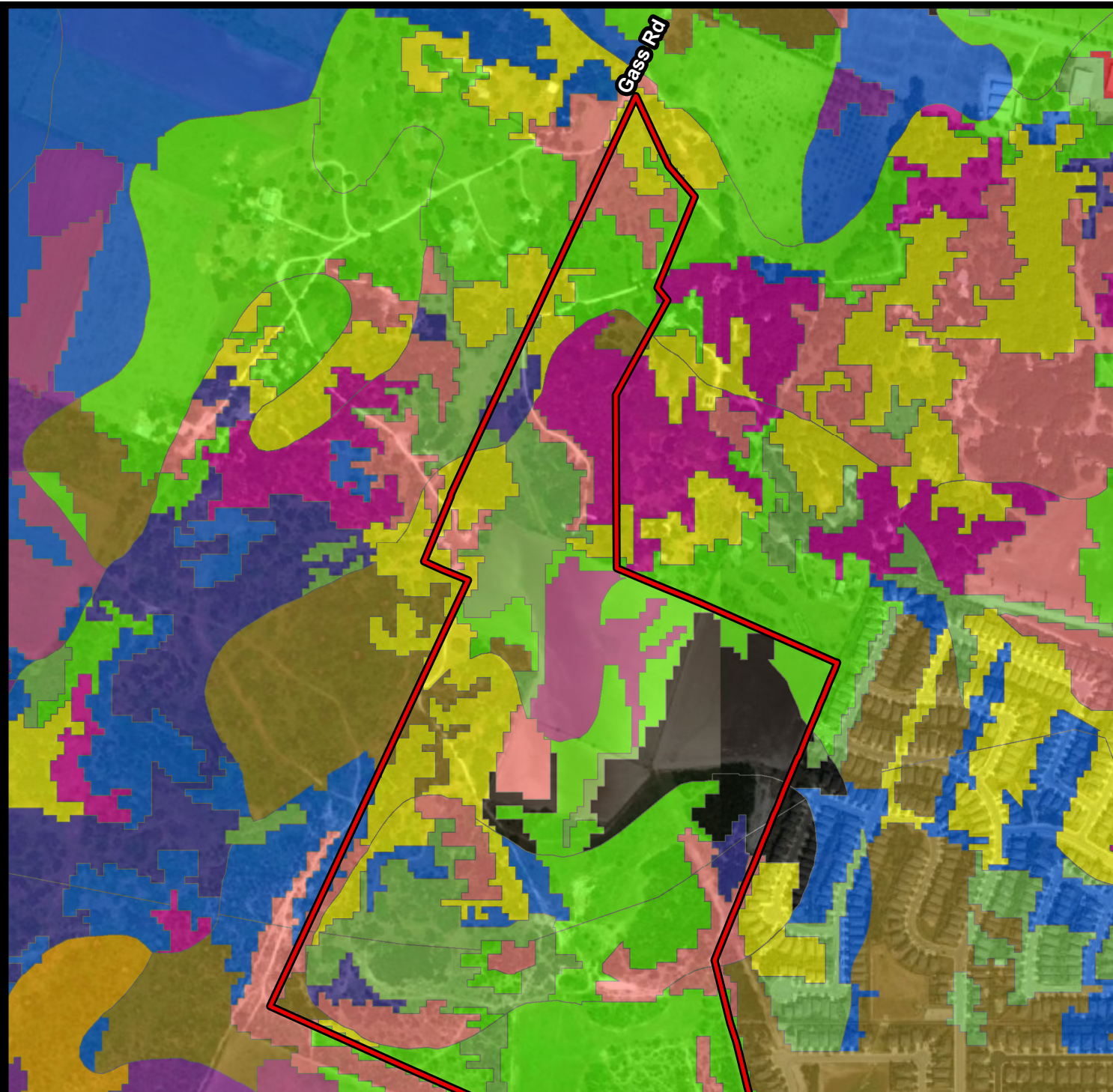



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**ENGINEERS + SURVEYING**  
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 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
 SAN ANTONIO, TEXAS 78231 FAX (210) 979-8441

**OSCAR TRACT**  
**ENDANGERED SPECIES HABITAT ASSESSMENT**  
**US GEOGRAPHIC SURVEY TOPOGRAPHIC MAP**

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Gass Rd

**LEGEND**

Site

**TPWD Vegetation Type**

- Barren
- Blackland Prairie: Disturbance or Tame Grassland
- Edwards Plateau: Ashe Juniper-Live Oak Shrubland
- Edwards Plateau: Deciduous Oak - Evergreen Motte and Woodland
- Edwards Plateau: Live Oak Motte and Woodland
- Edwards Plateau: Oak - Hardwood Motte and Woodland
- Edwards Plateau: Savanna Grassland
- Edwards Plateau: Shin Oak Shrubland
- Native Invasive: Deciduous Woodland
- Native Invasive: Juniper Shrubland
- Native Invasive: Mesquite Shrubland
- Row Crops
- South Texas: Shallow Shrubland
- Urban High Intensity
- Urban Low Intensity



"EMST Vegetation Communities." TEAM: Texas Ecosystem Analytical Mapper, Texas Parks & Wildlife Department GIS, [tpwd.texas.gov/gis/team/](http://tpwd.texas.gov/gis/team/).

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus, DigitalGlobe, GeoEye, IGN, USDA, USGS, AeroGRID, IGN, and the GIS User Community

SCALE: 1" = 700'



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**ENGINEERS + SURVEYING**  
 FIRM# 9513 FIRM# 10122300  
 8421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
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**OSCAR TRACT**  
**ENDANGERED SPECIES HABITAT ASSESSMENT**  
**ECOLOGICAL MAPPING SYSTEMS**

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**EX-5**








Gass Rd

No GCWA Habitat

No GCWA Habitat

No GCWA Habitat

**LEGEND**

-  Site
-  No Habitat
-  Low Quality Habitat
-  Medium Quality Habitat
-  High Quality Habitat

Duarte, A, Ph.D. July 2019. GCWA Habitat Model. Oregon Cooperative Fish and Wildlife Research Unit. Department of Fishers and wildlife, Oregon State University.

Source: Esri, Maxar, GeoEye, Earthstar Geographics, USDA, USGS, AeroGRID, IGN, and the GIS User Community

SCALE: 1" = 700'



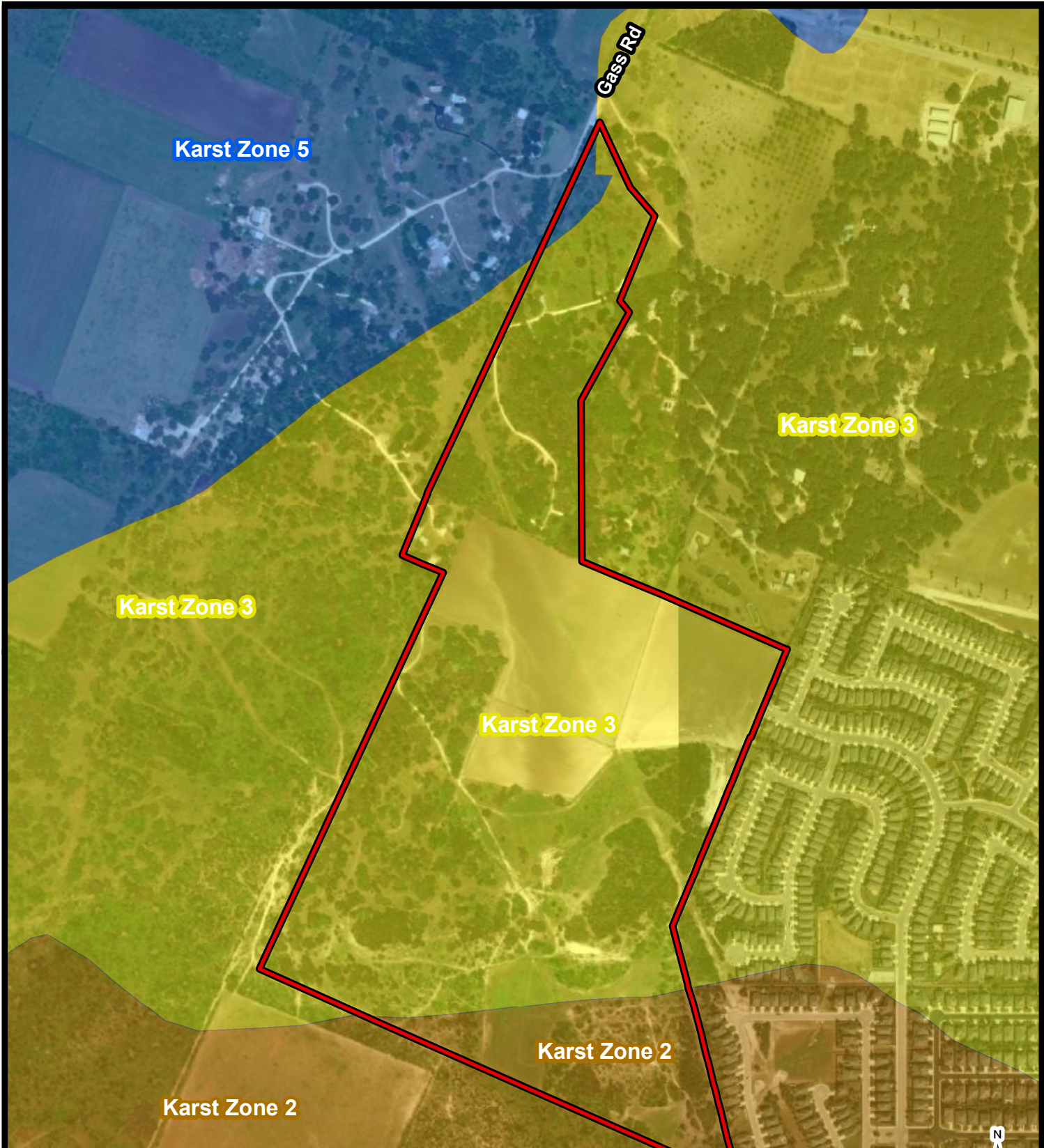
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**OSCAR TRACT  
ENDANGERED SPECIES HABITAT ASSESSMENT  
GCWA HABITAT QUALITY**

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		<b>EX-6</b>



Gass Rd

Karst Zone 5

Karst Zone 3

Karst Zone 3

Karst Zone 3

Karst Zone 2

Karst Zone 2

**LEGEND**

Site

**Karst Zone**

- 1: Areas known to contain listed invertebrate karst species
- 2: Areas having a high probability of containing suitable habitat for listed invertebrate karst species
- 3: Areas that probably do not contain listed invertebrate karst species
- 4: Areas which require further research but are generally equivalent to Zone 3
- 5: Areas which do not contain listed invertebrate karst species

SCALE: 1" = 700'

0 700  
FEET



<https://www.arcgis.com/home/webmap/viewer.html?webmap=8b9b276d39ad415abf1b6162268d830d&extent=-98.9787,29.379,-98.2604,29.6849>

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

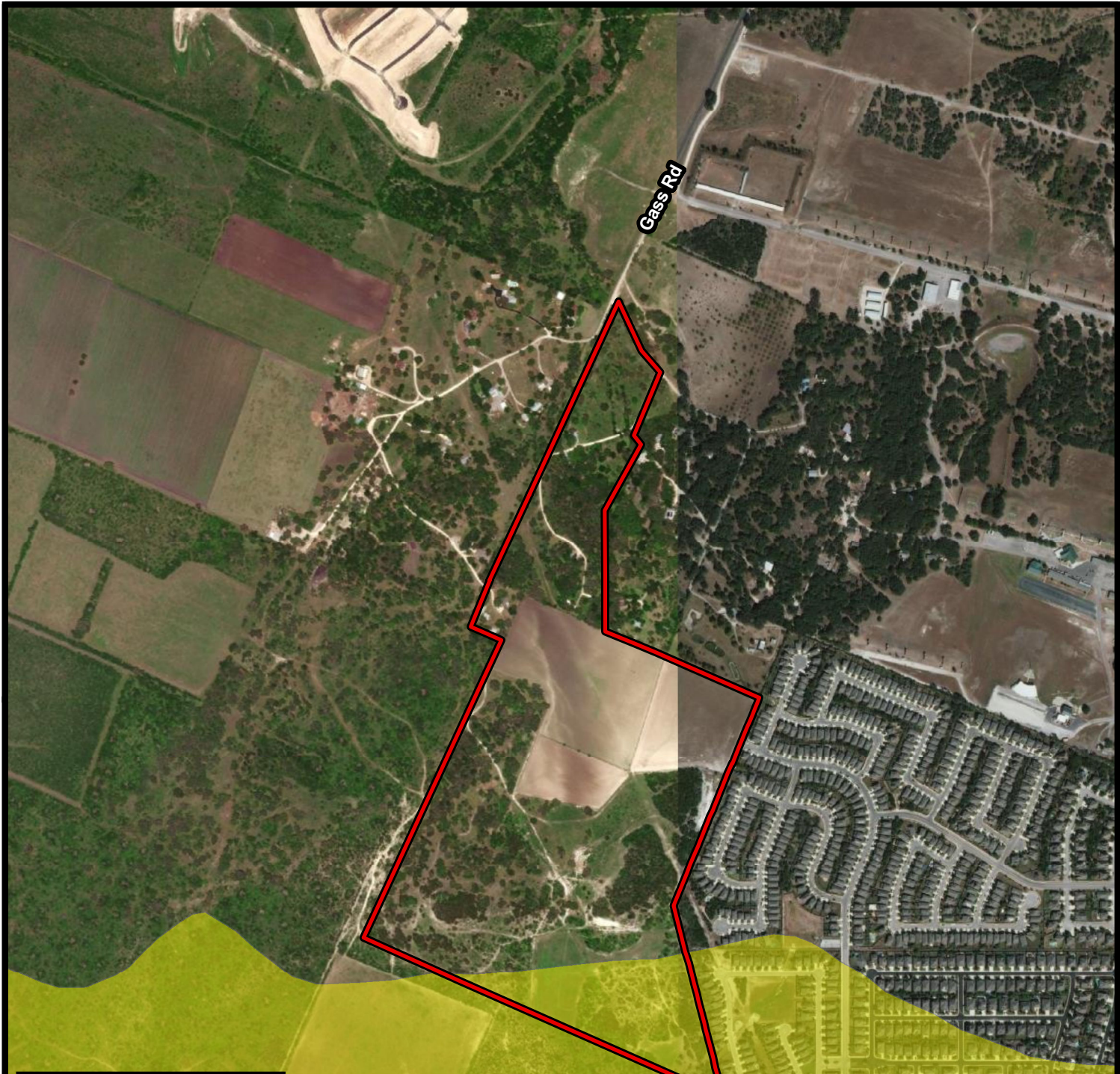
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ENGINEERS + SURVEYING  
FIRM# 9513 FIRM# 10122300  
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**OSCAR TRACT  
ENDANGERED SPECIES HABITAT ASSESSMENT  
BEXAR COUNTY KARST ZONES**

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**EX-7**



Gass Rd

Culebra Anticline KFR

SCALE: 1" = 1,000'



U.S. Fish and Wildlife Service, Critical Habitat for Threatened & Endangered Species Mapper.  
<https://www.fws.gov/ventura/endangered/criticalhabitat/index.html>

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus, DigitalGlobe, GeoEye, IGN, USDA, USGS, AeroGRID, IGN, and the GIS User Community

**LEGEND**

- Site
- Karst Fauna Region
- Alamo Heights
- Culebra Anticline
- Government Canyon
- Helotes
- Stone Oak
- UTSA

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 3421 PAESANOS PKWY STE. 200 PHONE (210) 979-8444  
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**OSCAR TRACT**  
**ENDANGERED SPECIES HABITAT ASSESSMENT**  
**USFWS CRITICAL HABITAT UNITS**

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DRAWN: C.G.	CHECKED: R.P.

**EX-8**

Oscar Tract  
Endangered Species Habitat Assessment



Photograph 1 is a view of the southwestern portion of the subject property. This area is not considered suitable GCWA Habitat.



Photograph 2 is a view of the southern portion of the subject property. This area is not considered suitable GCWA Habitat.



Photograph 3 is a view of the central portion of the subject property. This area is not considered suitable GCWA Habitat.



Photograph 4 is a view of the central portion of the subject property. This area is not considered suitable GCWA Habitat.

**SITE PHOTOGRAPHS**

Oscar Tract  
Endangered Species Habitat Assessment



Photograph 5 is a view of the northern portion of the subject property. This area is not considered suitable GCWA Habitat.



Photograph 6 is a view of the eastern portion of the subject property. This area is not considered suitable GCWA Habitat.