



CITY OF SAN ANTONIO

DEVELOPMENT SERVICES DEPARTMENT

1901 S. Alamo, San Antonio, TX 78204

ADMINISTRATIVE EXCEPTION/VARIANCE REQUEST APPLICATION

Project Name:	SA BigHaus Development
A/P # /PPR # /Plat #	LAND-PLAT-20-11800047
Date:	06/29/2020
Code Issue:	
Code Sections:	

Submitted By:	☒ Owner	☐ Owners Agent * (Requires notarized Letter of Agent)
Owners Name:	Dan Leverett	
Company:	SA BigHausLand LLC	
Address:	1722 Broa77802dmoor Drive, Suite 208, Bryan, TX	Zip Code: 77802
Tel #: 713-502-6574	Fax#	E-Mail: dleverett@placeusa.com
Consultant:	Chance Kutac	
Company:	Stantec	
Address:	70 NE Loop 410 Suite 1100 San Antonio TX	Zip Code: 78216
Tel #: 713-502-6574	Fax#	E-Mail: Chance.Kutac@stantec.com
Signature:		

Additional Information – Subdivision Plat Variances & Time Extensions

- ☐ Time Extension ☐ Sidewalk ☐ Floodplain Permit ☐ Completeness Appeal
☐ Other _____
- City Council District _____ Ferguson Map Grid _____ Zoning District _____
- San Antonio City Limits ☐ Yes ☐ No
- Edwards Aquifer Recharge Zone? ☐ Yes ☐ No
- Previous/existing landfill? ☐ Yes ☐ No
- Parkland Greenbelts or open space? Floodplain? ☐ Yes ☐ No



Stantec Consulting Services Inc.
70 NE Loop 410 Suite 1100, San Antonio TX 78216-5893

June 29, 2020
File: 222011059

Attention: Administrative Exception/Variance Request Review

City of San Antonio
Development Services Department
1901 S. Alamo
San Antonio, TX 78204

Reference: SA BigHaus LAND-PLAT-20-11800047 Section UDC 35-F124 - Allowable Development Within the Regulatory Floodplain

Dear Mr. Jacob Powell,

This letter requests consideration of an administrative exception of the allowable development within the regulatory floodplain section of the Unified Development Code Section 35-F124 for the proposed SA BigHaus multi-family development. The proposed hydraulic results show an increase in water surface elevation of more than 0.5 feet at multiple cross sections. The maximum rise allowed is 0.5 ft per the UDC.

Currently, the site is undeveloped with natural vegetation and trees. Maverick Creek divides the property in half. The proposed development is 26 apartment buildings on one side Maverick Creek and an amenity center on the other side of the creek spread out across approximately 23 acres. The existing terrain includes slopes in excess of 30%, see the attached slope map. The current design includes two culvert crossings of Maverick Creek that also act as in line detention. This inline detention raises the water surface elevation within our property by more than 0.5 feet in some areas, but the water surface elevation of the floodplain entering and exiting the property is unchanged.

An administrative exception to the water surface elevation of more than 0.5 feet UDC § 35-F124 will not be contrary to the spirit and intent of the code.

In accordance with UDC § 35-F124 the following statements are provided:

- If the applicant complies strictly with the provisions of these regulations, he/she can make no reasonable use of his/her property; and
 - As mentioned above the existing site has slopes greater than 30% and a large floodplain running through it. These existing conditions already make the site a challenge to develop. By not permitting inline detention that yields a water surface elevation increase over 0.5' we will not be able to develop within this site. We are constrained to the east by steep slopes and to the west by floodplain. In order to construct a traditional detention pond with 3:1 slopes a very large area would be needed to make up grades. This is also problematic as the area is Golden Cheek Warbler Habitat. The owner has gone through great lengths and paid a significant amount of money into the Southern Edwards Plateau Habitat Conservation Plan to try and minimize the impact to the trees on the site. See the attached proof of participation into the Southern Edwards Plateau Habitat Conservation Plan.

Reference: SA BigHaus LAND-PLAT-20-11800047 Section UDC 35-F124 - Allowable Development Within the Regulatory Floodplain

Vertical wall ponds are also not feasible for the same reason. While the impact of a vertical wall pond would be less than an earthen 3:1 pond, the footprint would remain considerable causing the removal of additional trees and habitat. Furthermore, the property is located with Karst Zone 1. Additional excavation within the property increase the opportunity to find and expose karsts that could impact the Edwards Aquifer. The owner has chosen to implement Aqua Shield technology in their submission to the TCEQ to meet their requirements for TSS removal but minimize the amount of excavation needed to install the BMP.

- The hardship relates to the applicant's land, rather than personal circumstances; and
 - Due to the existing slopes up to 30%, the thick tree coverage with Golden Cheek Warbler habitat, and being located in Karst Zone 1, inline detention resulting in an increase of water surface elevation greater than 0.5 feet within our property is the ethical way to develop the property.
- The hardship is unique, or nearly so, rather than one shared by many surrounding properties; and
 - The hardship is unique to the site. Not only does the site have slopes up to 30%, the thick tree coverage with Golden Cheek Warbler habitat, and is in Karst Zone 1, the location of the floodplain through the site is a challenge as it dissects the developable area. Providing traditional detention with the low running through the site would require either oversizing a single pond on one side of the flood plain, or building two ponds, one on either side of the flood plain. Either way, this would again increase the amount of disturbance to the habitat and potentially karst features.
- The hardship is not the result of the applicant's own actions; and
 - The hardship is a direct result of the existing terrain, Golden Cheek Warbler habitat, and karst features in the area. Due to these constraints the owner is pursuing the least invasive and most ethical way to develop the property.
- The granting of the exception/variance will not be injurious to other property and will not prevent the orderly subdivision of other property in the area in accordance with these regulations.
 - The granting of the exception/variance will allow the owner to develop the property consistently with the spirit of the UDC, by allowing for detention of stormwater on site to protect downstream property. The increase of the water surface elevation due to the in-line detention is all located within the owner's property as shown on the attached exhibit. This variance will in no way impact adjacent property owners from developing and utilizing their property.

Reference: SA BigHaus LAND-PLAT-20-11800047 Section UDC 35-F124 - Allowable Development Within the Regulatory Floodplain

In my professional opinion, the proposed administrative exception/variance remains harmony with the spirit and intent of the UDC as it will not adversely affect the health, safety, or welfare of the public.

Regards,

Stantec Consulting Services Inc.



Chance Kutac
Senior Project Manager, Senior Associate
Phone: 210 714 9978
Fax: 210 525 0529
Chance.Kutac@stantec.com



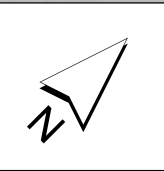
Signature of Owner (if applicable)

wj\\lus1568-f01\workgroup\2220\active\222011585\civil\phase_01\submittal_documents\20190731_aevr\let.docx

<u>For Office Use</u>	AEVR #:	Date Received:
<u>DSD – Director Official Action:</u>		
APPROVED	☐ APPROVED W/ COMMENTS	DENIED
Signature:	Date:	
Printed Name:	Title:	
Comments:		

Maverick Creek			
Cross Sections	Pre-Project WSE (ft)	Post-Project WSE (ft)	Delta (ft)
33807	1182.23	1182.44	0.21
33572	1179.44	1178.92	-0.52
33334	1177.31	1177.07	-0.24
33131	1174.3	1175.92	1.62
33054	1173.27	1173.14	-0.13
33011	1172.84	1172.84	0
32814	1169.58	1169.56	-0.02
32581	1165.98	1166.34	0.36
32336	1162.8	1165.15	2.35
32279	1162.03	1164.33	2.3
32176	1160.81	1160.53	-0.28
32018	1158.69	1158.28	-0.41
31784	1155.26	1155.13	-0.13
31594	1154.14	1154.06	-0.08
Tributary 9			
Cross Sections	Pre-Project WSE (ft)	Post-Project WSE (ft)	Delta (ft)
1581	1199.09	1199.12	0.03
1429	1195.47	1195.5	0.03
1224	1190.23	1190.25	0.02
990	1184.77	1184.79	0.02
736	1177.73	1177.79	0.06
555	1170.64	1170.71	0.07
357	1165.12	1165.15	0.03
162	1159.39	1159.41	0.02

1 inch = 240 feet



Legend

Streets

Stream Center Line

Studied Cross-Sections

Post-Project 100-yr Floodplain

KYLE SEALE PKWY

BABCOCK RD



Southern Edwards Plateau Habitat Conservation Plan PARTICIPATION CERTIFICATE



These certain tracts of land described in Exhibit A have complied with requirements of the federal Endangered Species Act (16 U.S.C. §1531 et seq.) through the regional 10(a) permit issued by the U.S. Fish and Wildlife Service to the City of San Antonio and Bexar County (permit number TE-48571B), issued on January 18, 2016, also known as the Southern Edwards Plateau Habitat Conservation Plan (SEP-HCP). The bearer of this certificate, SA BIGHAUSLAND LLC - (application # 19-005), paid an assessment of \$73,749.00 to the Permit Holders on the 29 day of January, 2020 and paid Bandera Conservation Corridor, LLC an assessment of \$324,000.00 for 81.0 GCW Preservation Credits on the 28 day of January, 2020. Bandera Conservation Corridor, LLC assigned the 81.0 GCW Preservation Credits to the Permit Holders on the 29 day of January, 2020, and the GCW Preservation Credits were recorded into the SEP-HCP GCW Preservation Credit Ledger on January 29, 2020 and assigned to SEP-HCP Application 19-005 on the 29 day of January, 2020 based on the following habitat determination:

<u>35.50</u>	acres of golden-cheeked warbler habitat (Direct Impacts) @ \$8,000 per acre
<u>20.00</u>	acres of golden-cheeked warbler habitat (Indirect Impacts) @ \$2,000 per acre
<u>0</u>	acres of black-capped vireo habitat (Direct Impacts) @ \$8,000 per acre
<u>0</u>	acres of black-capped vireo habitat (Indirect Impacts) @ \$2,000 per acre
<u>5.29</u>	acres of karst zone 1 & 2 habitat @ \$1000 per acre
<u>32.30</u>	acres of karst zone 3 & 4 habitat @ \$1000 per acre
<u>0</u>	total number of occupied karst features with Occupied Cave Zone A access @ \$400,000 per feature
<u>0</u>	total number of occupied karst features with Occupied Cave Zone B access @ \$40,000 per feature

(approved fees through September 30, 2020)

The bearer of this certificate entered into a Participation Agreement with the Permit Holders on the 30 day of January, 2020. This contract is recorded in the Real Property Records of Bexar County as Document # 20200021812 and the covenants therein run with the land. Participation in the Southern Edwards Plateau Habitat Conservation Plan is subject to the terms and conditions of the Participation Agreement.

Issued by: _____

Date: January 31, 2020

Tony Felts, AICP

SEP-HCP Secretary

City of San Antonio, Development Services Department

Southern Edwards Plateau Habitat Conservation Plan

This Participation Certificate or a facsimile must be posted at the property site of the participating tract from the time vegetation clearing begins until the construction is completed. For more information about the certificate, contract or the permit, contact: City of San Antonio Development Services Department at (210) 207-1111, Bexar County Public Works Department at (210) 335-6700, or the U.S. Fish and Wildlife Service, Ecological Services Field Office at (512) 490-0057. For information about the participating tract contact: SABIGHAUSLAND LLC, 722 Broadmoor Drive, Suite 208, Bryan, Texas 77802, or (713) 502-6574.

EXHIBIT “A”

TO MEMORANDUM OF PARTICIPATION AGREEMENT

Legal Description of Participant’s Property

TRACT 1 – 35.8103 ACRES – LEGAL DESCRIPTION INCLUDED ON THE FOLLOWING
PAGES

TRACT 2 – 1.780 ACRES - LOT 1, BLOCK 4, C.B. 4565 BABCOCK RD.-COMMERCIAL
SUBDIVISION V. 9726, PG. 2077

TRACT 1



35.81 ACRES
(1,559,881 Sq. Ft.)
2223-11059ex3.dwg

Fn. No. 2220-11059-3
April 16, 2019
JOB NO. 222011059.913

FIELD NOTE DESCRIPTION

Being a 35.81 acre tract of land situated in the City of San Antonio, Bexar County, Texas, being out of and a portion of a called 41.68 acre tract of land situated in C.B. 4565, Bexar County, Texas as recorded in Volume 18909, Page 2016 of the Official Public Records of Bexar County, Texas and all of Lot 2, Block 4, Babcock Rd-Commercial Subdivision as recorded in Volume 9725, Page 207, Deed and Plat Records Bexar County, Texas; said 35.81 acres being more particularly described as follows, with all bearings being referenced to the North American Datum of 1983, Texas State Plane coordinate system, South Central Zone;

Beginning, at a found 1/2-inch iron rod on the Southwesterly right-of-way line of Babcock Road (86' R.O.W.) for the most Northerly corner of said 41.68 acres; said point also being the Northeast corner of a called 17.407 acre tract, conveyed to the City of San Antonio in Volume 10503, Page 659 of the Official Public Records of Bexar County, Texas;

Thence, along the Northeasterly lines of said 41.68 acre tract and the Southwesterly lines of Babcock Road as follows:

- S 41° 36' 45" E, 444.08 feet, to a found 1/2-inch iron rod for corner;
- S 48° 51' 04" E, at 489.00 feet, passing a found 1/2-inch iron rod for the North corner of said Lot 2, in all, a distance of 553.82 feet, to a found 1/2-inch iron rod for corner;
- S 57° 12' 41" E, 529.24 feet, to a found 1/2-inch iron rod for the North most East corner of the herein described tract of land; said point also being the North corner of Lot 1, Block 4, CB 4565, Babcock Rd.-Commercial Subdivision as recorded in Volume 9725, Page 207 of the Deed and Plat Records of Bexar County, Texas and the East corner of said Lot 2;

Thence, with the Northwesterly and Southwesterly lines of said Lot 1, Block 4, Babcock Rd.-Commercial Subdivision as follows:

- S 32° 46' 01" W, 319.20 feet, to a found 1/2-inch iron rod for corner;
- S 60° 48' 58" E, 91.23 feet, to a found 1/2-inch iron rod for corner;
- S 56° 04' 55" E, 128.53 feet, to a found 1/2-inch iron rod for the most Southerly East corner of the herein described tract; said point also being on the Northwest line of a 239.6 acre tract in the name of the City of San Antonio as recorded in Volume 8861, Page 1537 of the Official Public Records of Bexar County, Texas;

Thence, S 44° 21' 45" W, 996.55 feet, along the Northwest line of said City of San Antonio 239.6 acre tract, to a set 1/2-inch iron rod with Stantec Cap for corner;

Thence, N 88° 27' 48" W, 168.21 feet, along the North line of said City of San Antonio 239.6 acre tract, to a found 1/2-inch iron rod for the Southwest corner of the herein described tract of land;

Thence, crossing said 41.68 acre tract, the following three (3) calls:

- N 23° 25' 54" W, 1030.27 feet, to a found 1/2-inch iron rod for corner;
- N 00° 32' 50" E, 289.59 feet, to a found 1/2-inch iron rod for corner;
- N 11° 28' 08" W, 557.21 feet, to a found 1/2-inch iron rod for corner; said point being on the West line of said 41.68 acre tract and the East line of said 17.407 acre tract;

Thence, with the East lines of said 17.407 acre tract and the West lines of said 41.68 acre tract as follows:

- N 00° 32' 50" E, 107.02 feet, to a found 1/2-inch iron rod for corner;
- N 48° 23' 10" E, 282.52 feet, to the **Point of Beginning**, containing 35.81 acres (1,559,881 square feet) of land, more or less.

Note: A sketch of even date accompanies this Legal Description.

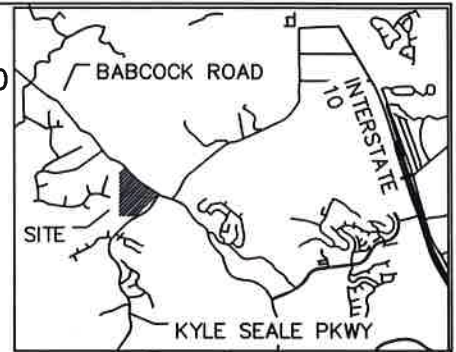
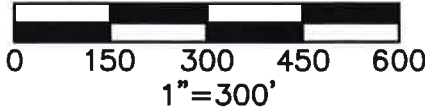

Hal B. Lane III
Registered Professional Land Surveyor
Texas Registration Number 4690
Stantec Consulting Services, Inc.
70 NE Loop 410, Suite 1100
San Antonio, Texas 78216
210/525-9090
TBPLS Firm No.: 10194228

4/16/19
DATE



LEGEND

- 1/2" IRON ROD FOUND
- 1/2" IRON ROD SET
- P.O.C. POINT OF COMMENCING
- P.O.B. POINT OF BEGINNING



LOCATION MAP
NOT TO SCALE
SAN ANTONIO, TEXAS

35.81 ACRES
(1,559,881 SQ. FT.)

BEARING BASIS

BEARINGS ARE BASED ON NORTH AMERICAN DATUM, 1983, TEXAS COORDINATE SYSTEM, SOUTH CENTRAL ZONE, ESTABLISHED FROM GPS OBSERVATIONS UTILIZING THE WDS COOPERATIVE NETWORK.

N 48°23'10" E
282.52'

N 00°32'50" E
107.02'

N 11°28'08" W
557.21'

CITY OF SAN ANTONIO
17.407 ACRES
VOL 10503, PG 659

N 00°32'50" E
289.59'

PARCEL LINE DATA

LINE #	BEARING	DISTANCE
L1	S57°12'41"E	529.24'
L2	S32°46'01"W	319.20'
L3	S60°48'58"E	91.23'
L4	S56°04'55"E	128.53'

P.O.B.

S 41°36'45" E
444.08'

S 48°51'04" E
553.82'

BABCOCK RD.
86' ROW

TRACT 1

LOT 2, BLOCK 4,
C.B. 4565
BABCOCK RD.-
COMMERCIAL
SUBDIVISION
V. 8726,
PG. 207

LOT 1, BLOCK 4,
C.B. 4565
BABCOCK RD.-
COMMERCIAL
SUBDIVISION
V. 8726,
PG. 207

SA BIGHAUSLAND LLC
(OWNER)
CB 4565
VOL. 18909,
PG. 2016

N 23°25'54" W
1030.27'

N 88°27'48" W
168.21'

CITY OF SAN ANTONIO
239.6 ACRES
VOL 8861, PG 1537

S 44°21'45" W 996.55'
CITY OF SAN ANTONIO
239.6 ACRES
VOL 8861, PG 1537

KYLE SEALE PKWY
(PUBLIC 86' R.O.W.)



Stantec

70 NE Loop 410, Suite 1100
San Antonio, TX 78216
Tel. (210) 525-9090 Fax (210) 525-0529
TBPE # F-6324 TBPLS # F-10194228
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SKETCH TO ACCOMPANY DESCRIPTION OF

OF A 35.81-ACRE, HCP AREA, SITUATED IN THE CITY OF SAN ANTONIO, BEXAR COUNTY, TEXAS BEING A PORTION OF A TRACT AS RECORDED IN VOLUME 18909, PAGES 2016 OF THE DEED AND PLAT RECORDS OF BEXAR COUNTY, TEXAS.

HCP LEGAL DESCRIPTION
EXHIBIT

SHEET 1 OF 1

DATE: 04/16/2019

SCALE: 1"= 300'

DRAWN BY: STANTEC

FILE: 2220-11059 exh3.dwg

PROJECT No. : 2220-11059

TRACT 2



1.780 Acres
(77,537 SQ. FT.)
222011989_ti.dwg

FN NO. 2220-11989-1
January 21, 2020
JOB NO. 222011989.913

FIELD NOTE DESCRIPTION

Being a 1.780 acre tract of land situated in Bexar County, Texas, consisting of all that certain called Lot 1, County Block 4565, Block 4, 4.38 Acre Babcock Rd – Commercial as recorded in Volume 9723, Page 207 of the Deed and Plat Records of Bexar County, Texas; said 1.780 acres being more particularly described as follows, with all bearings being referenced to the North American Datum of 1983, Texas State Plane Coordinate System, South Central Zone;

Beginning, at a found 1/2-inch iron rod with “Rickman” cap on the Southerly right-of-way line of Babcock Road (variable width R.O.W.), being the Northwest corner of said Lot 1, Block 4, 4.38 Acre Babcock Rd – Commercial Subdivision and the Northeast corner of Lot 2, 4.38 Acre Babcock Rd – Commercial Subdivision;

Thence, S 57° 12' 41" E, 251.09 feet, along the Southwest right-of-way line of Babcock Road, to a found 1/2-inch iron rod for the most Easterly corner of the herein described tract of land; said point also being the North corner of a called 0.046 acre tract, standing in the name of Bexar County, as recorded in Volume 20986, Page 1386 of the Official Public Records of Bexar County;

Thence, S 28° 27' 07" W, 119.01 feet, along the Northwesterly line of said 0.046 acre tract, to a found 1/2-inch iron rod with yellow cap, for corner; said point also being the South most corner of said 0.046 acre tract and also being on the Northwesterly line of a 239.6 acre tract, as conveyed to the City of San Antonio in Volume 8861, Page 1537 of the Official Public Records of Real Property, Bexar County, Texas;

Thence, S 44° 21' 45" W, 201.43 feet, along the Northwesterly line of said 239.6 acre tract, to a found 1/2-inch iron rod with “CAWC 5810” Cap for the South corner of the herein described tract of land; Said point also being the most easterly corner of a called 41.68 acre tract as recorded in Volume 18909, Page 2016, of the Official Public Records of Bexar County, Texas;

Thence, along the Southwesterly lines of the herein described tract and the Northeast lines of said 41.68 acre tract as follows:

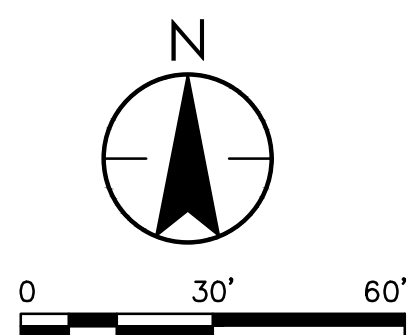
- N 56° 04' 55" W, 128.53 feet, to a found 1/2-inch iron rod with "CAWC 5810" Cap, for corner;
- N 60° 48' 58" W, 91.23 feet, to a found 1/2-inch iron rod with "CAWC 5810" Cap, for the most westerly corner of the herein described tract of land; said point also being the most Southerly corner of said Lot 2;

Thence, N 32° 46' 01" E, 319.20 feet, along the Northwesterly line of Lot 1 and the Southeasterly line of Lot 2, to the Point of Beginning, containing 1.780 acres (77,537 square feet) of land, more or less.

Note: A survey plat of even date accompanies this Legal Description.

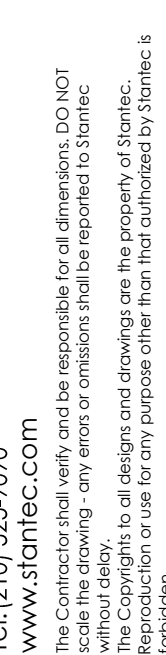
This Metes and Bounds description is not intended to supercede the Recorded Legal Description contained with the Plat recorded in Volume 9723, Page 207 of the Deed and Plat Records of Bexar County, Texas.

Hal B. Lane III	DATE
Registered Professional Land Surveyor	
Texas Registration Number 4690	
Stantec Consulting Services, Inc.	
70 NE Loop 410, Suite 1100	
San Antonio, Texas 78216	
210/525-9090	
TBPELS Firm No.: 10194228	



7) THERE ARE NO GAPS OR OVERLAPS OF THE PROPERTY LINES AND THE PROPERTY LINES.

HAL B. LANE III
REGISTERED PROFESSIONAL LAND SURVEYOR NO. 6572
STANTEC CONSULTING SERVICES INC.
70 NE LOOP 410, SUITE 1100
SAN ANTONIO, TEXAS 78216
EMAIL: HAL.LANE@STANTEC.COM
TBPELS FIRM No. 10194228



Revision.	Sheet.	Of
Drawing No.		

GOLDEN-CHEEKED WARBLER HABITAT ASSESSMENT FOR THE SA BIGHAUSLAND PROJECT

Bexar County, Texas

May 2018

Submitted to:

Raba Kistner Environmental, Inc.
12821 West Golden Lane
San Antonio, Texas 78249

Prepared by:

aci consulting
1001 Mopac Circle
Austin, Texas 78746

aci Project No.: 22-09-053ZE

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Golden-cheeked Warbler Habitat Assessment for the SA Bighausland Project, Bexar County, Texas

May 2018

1.0 INTRODUCTION

aci consulting was retained by Raba Kistner Environmental, Inc. to conduct an endangered golden-cheeked warbler (*Setophaga chrysoparia*) habitat assessment for the approximately 46-acre SA Bighausland Project, hereafter referred to as the “subject area,” in Bexar County, Texas.

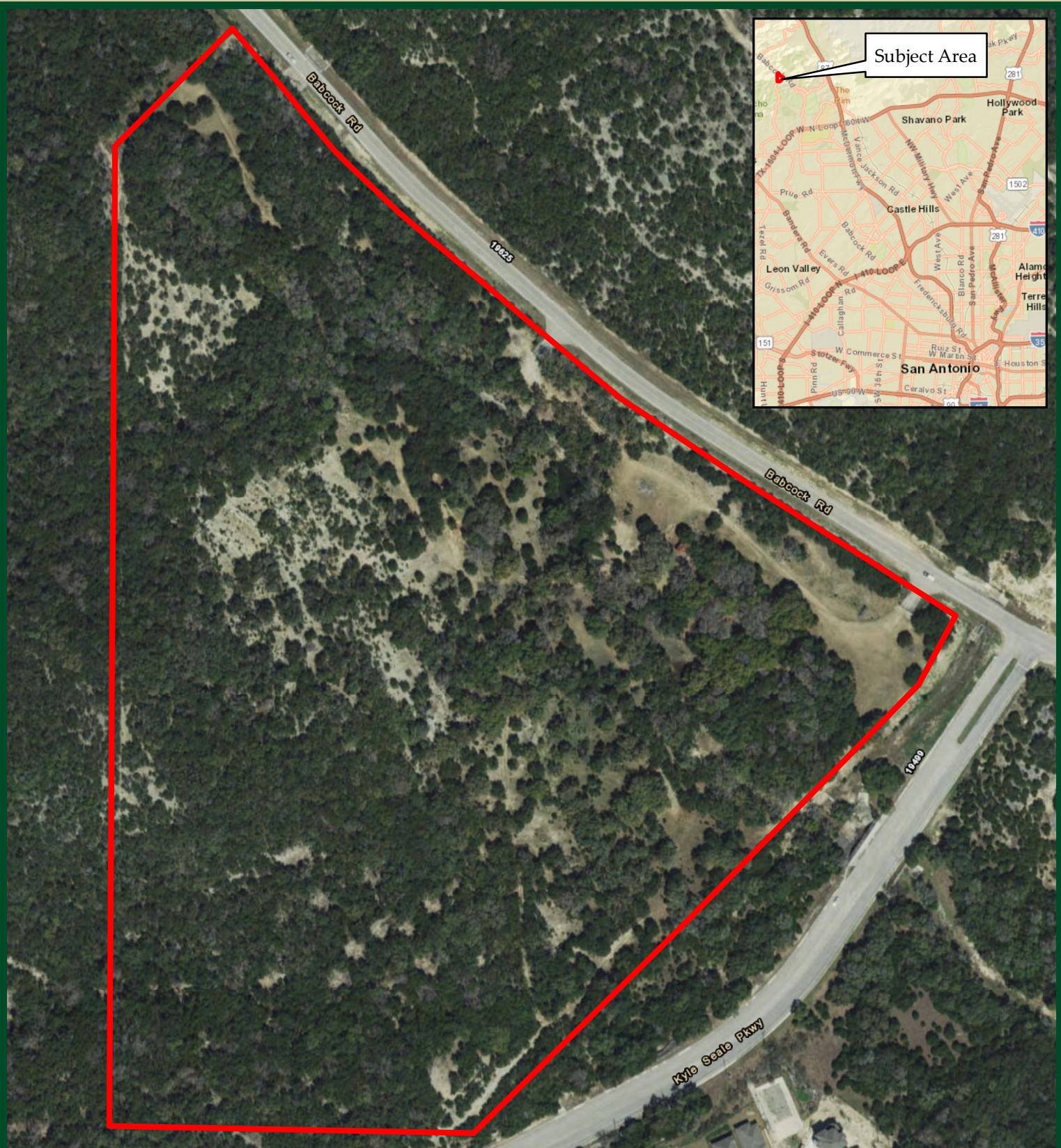
Species listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS) are protected by the Endangered Species Act (ESA), which prohibits “take.” “Take” is defined in the ESA as “harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” “Harm” has been defined to include activities that modify or degrade habitat in a way that significantly impairs essential behavior patterns and results in death or injury. Alteration of the quality and/or quantity of endangered species habitat may “harm” the listed species that inhabit those areas. A number of potential impacts, directly or indirectly related to human activities, are of concern to USFWS and may be regulated by the agency to prevent “take” or “harm” of these listed species.

A USFWS protocol presence/absence survey was not conducted as part of the habitat assessment.

2.0 EXISTING ENVIRONMENT

The subject area is approximately 46 acres and is located directly west of the intersection of Babcock Road and Kyle Seale Parkway, and approximately 2.5 miles northwest from the intersection of Babcock Road and Loop 1604 within the City of San Antonio ETJ, Bexar County, Texas (Figure 1).

Descriptions of the topography, soils, geology, vegetation, and hydrology of the subject area are included below.



This map is intended for planning purposes only. All map data should be considered preliminary. All boundaries and designations are subject to confirmation.



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 Subject Area



2.1 Topography

The subject area is located within the *Helotes* (1992) and *Van Raub* (1991) U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangles (Figure 2). The subject area has variable topography of hills and gently sloping areas that range in elevation from approximately 1,150 feet above mean sea level (MSL) to 1,300 feet above MSL. The western portion of the subject area is higher in elevation than the eastern portion of the subject area. A drainage runs from north to south through the eastern portion of the subject area and an additional drainage runs west to east through the southwestern portion of the subject area. The majority of the subject area drains toward the eastern drainage with only the southwestern portion of the subject area draining toward the southwestern drainage. Drainage flows off site to the southeast.

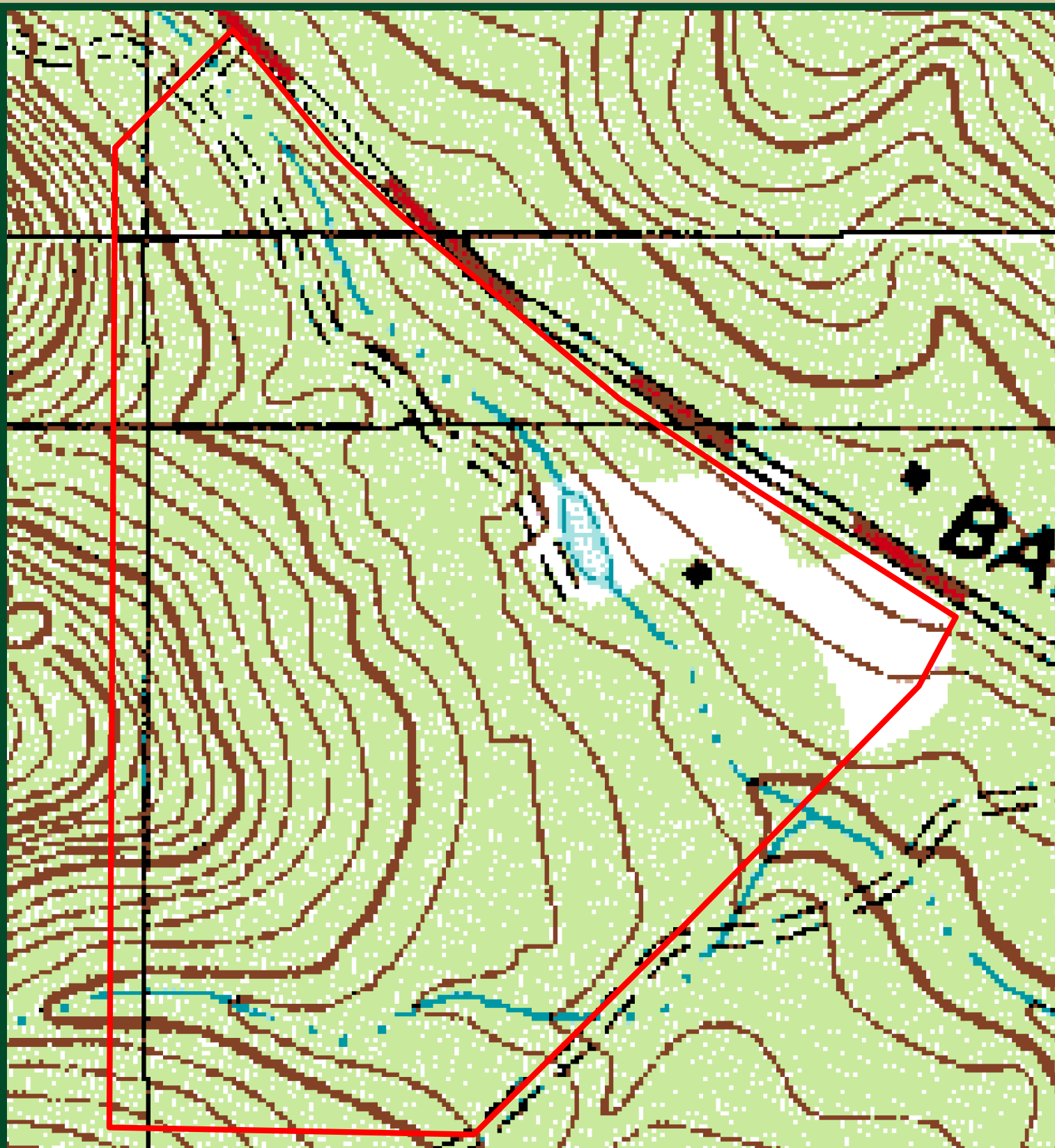
2.2 Soils

According to the United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) Web Soil Survey (2018), three soil map units occur within the subject area (Figure 3).

- **Bracket-Eckrant Association, 20 to 60 Percent Slopes (BtE)**

The Brackett component makes up 60 percent of the map unit. Slopes are 20 to 60 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, paralithic, is 6 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria

The Eckrant component makes up 40 percent of the map unit. Slopes are 20 to 60 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 8 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.



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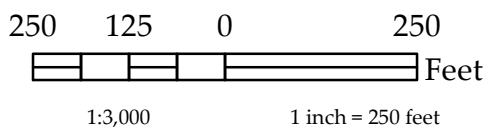
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1:3,000 1 inch = 250 feet

 Subject Area





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 Subject Area



- **Krum clay, 1 to 5 percent slopes (Kr)**

The Krum component makes up 100 percent of the map unit. Slopes are 1 to 5 percent. This component is on stream terraces on river valleys. The parent material consists of alluvium derived from limestone. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

- **Eckrant-Rock outcrop Association, 8 to 30 percent slopes (TaD)**

The Eckrant component makes up 65 percent of the map unit. Slopes are 8 to 30 percent. This component is on ridges on dissected plateaus. The parent material consists of residuum weathered from limestone. Depth to a root restrictive layer, bedrock, lithic, is 4 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. This soil does not meet hydric criteria.

Rock outcrop (27 percent), Brackett (4 percent), Kerrville (2 percent), Krum (1 percent), Tarpley (1 percent) make up the remaining 45 percent of this map unit. These soils do not meet hydric criteria.

2.3 Geology

According to Collins (1995a and 1995b), the subject area is located within three geologic units:

- **Alluvium (Qal)**

Unconsolidated gravel, sand, silt, and clay along streams and rivers; relatively free of woody vegetation, inundated regularly. Clasts are mainly carbonate and chert. Along minor drainages, includes undivided terrace deposits. Includes some local bedrock outcrops that are undivided.

- **Upper Glen Rose Limestone (Kg_{ru})**

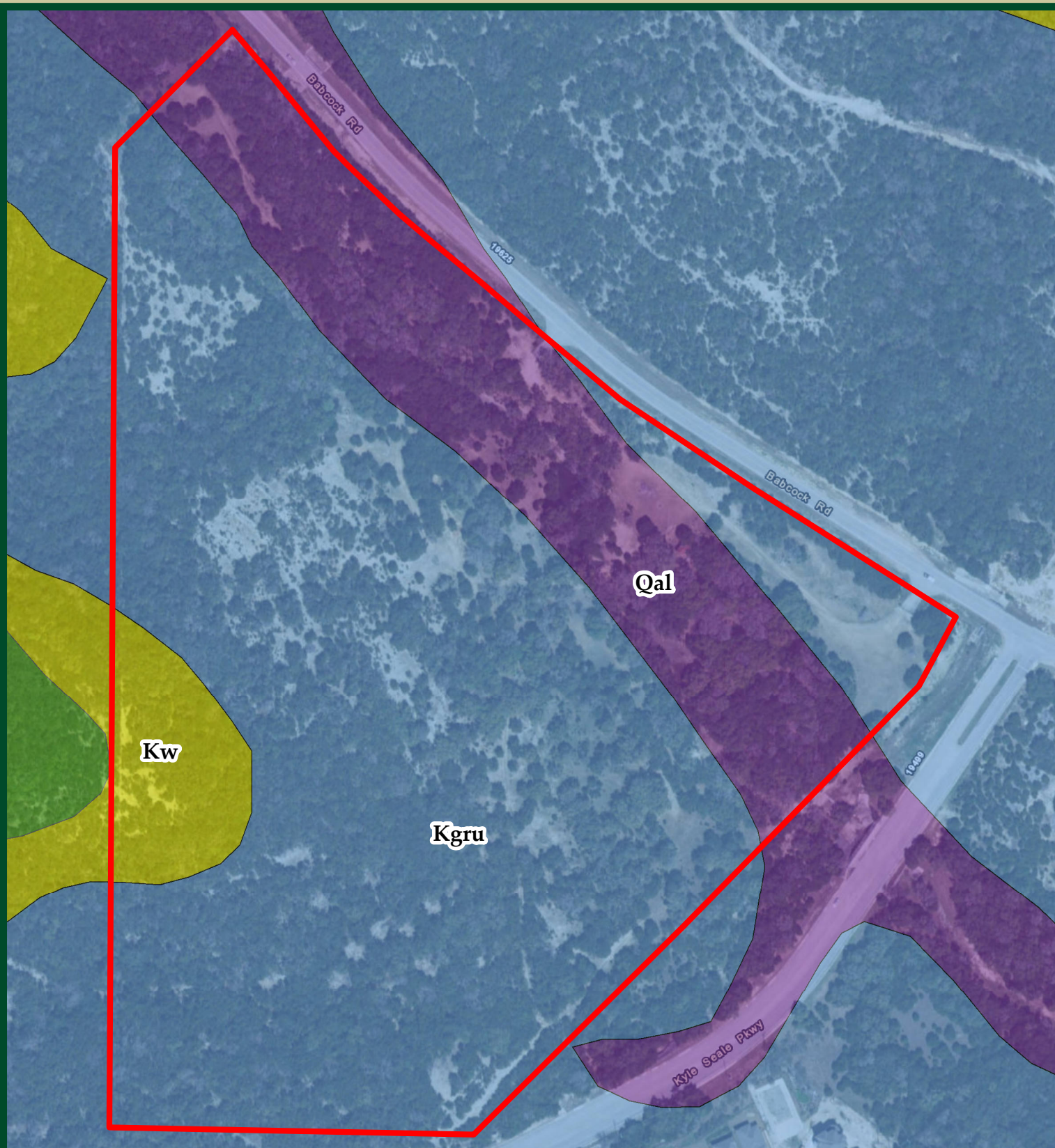
Corbula interval divides the formation into upper and lower parts. Limestone, dolomitic limestone, and marl. Shallow subtidal to tidal-flat cycles. Alternating resistant and recessive beds forming stair-step topography; limestone, wackestone, packstone, grainstone, hard to soft and marly, 3-to-10 feet-thick, shoaling-upward cycles common, light gray to yellowish gray; dolomite, fine-grained, porous, yellowish brown. Locally burrowed; local honeycomb porosity; marine megafossils include molluscan steinkerns, rudistids, oysters, and echinoids; local dinosaur tracks. Upper part, Kg_{ru}, relatively thinner bedded, more dolomitic, and less fossiliferous; some intervals of disturbed bedding and collapse breccia possibly caused by evaporate solution; about 400 feet thick. Lower part, Kg_{rl}, commonly more massive, contains some rudistid reefs and mounds. *Corbula* interval at top with abundant steinkerns of *Corbula harveyi* (Hill) in one to three thin, resistant, 1-to 3 feet-thick beds composing an interval as much as 15 feet thick; thickness ranges 200 to 270 feet. Entire formation about 650 feet thick.

- **Walnut Formation (K_w)**

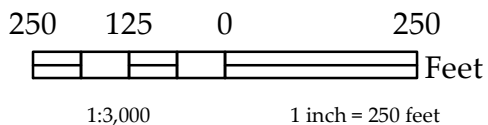
Limestone, marl, and dolomitic limestone; undifferentiated Bull Creek and Bee Cave Members; upper Bee Cave Member consists of fossiliferous marl; *Exogyra texana* common; Bee Cave Member thins and may pinch out toward the southwest; along steep slopes the marly Bee Cave Member commonly supports denser vegetation than does the overlying Kainer Formation; lower Bull Creek Member comprises limestone and dolomite interbedded with some marl; gastropods common; *Exogyra texana*; gradational contact with underlying Glen Rose Formation. Cream to light yellowish brown. Karst locally; some honeycomb porosity. Some researchers include K_w as lower part of Kainer Formation (K_k) southwest of Hays County. Formation as much as 30 to 50 feet thick

The geologic units are displayed in Figure 4.

According to the Texas Commission on Environmental Quality (TCEQ) recharge maps for the Edwards Aquifer, the subject area lies within the Edwards Aquifer contributing zone (TCEQ 2005) (Figure 5).

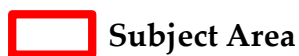


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 Subject Area





2.4 Vegetation

The subject area is located within the Edwards Plateau level III ecological region of Texas, more specifically within the Balcones Canyonlands level IV ecological region of Texas (Griffith et al. 2007). Vegetation typical of the Balcones Canyonlands is upland woodlands consisting of various oak species (*Quercus* spp.), Texas persimmon (*Diospyros texana*), Ashe juniper (*Juniperus asheii*), and cedar elm (*Ulmus crassifolia*) as well as minimally disturbed grasslands and grazed areas with various grass species. Additionally, Balcones Canyonlands contains riparian areas with bald cypress (*Taxodium distichum*), American sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), slippery elm (*Ulmus rubra*), Ohio buckeye (*Aesculus glabra*), boxelder (*Acer negundo*), bigtooth maple (*Acer grandidentatum*), and Carolina basswood (*Tilia americana* var. *caroliniana*) (Griffith et al. 2007).

The subject area is dominated by Ashe juniper forest that ranges from early successional to old growth stages. Oaks and other deciduous species are present throughout the subject area in various densities with some portion of the subject area having more deciduous species than Ashe juniper. Additional vegetation identified within the subject area includes, but is not limited to, Texas oak (*Quercus buckleyi*), hackberry (*Celtis laevigata*), Texas persimmon, cedar elm, escarpment black cherry (*Prunus serotina*), black walnut (*Juglans microcarpa*), huisache (*Acacia farnesiana*), mountain laurel (*Sophora secundiflora*), deciduous holly (*Ilex decidua*), and agarita (*Muhlenbergia trifoliata*).

Additional descriptions of the vegetative communities within the subject area are further described in Section 5.0.

2.5 Hydrology

The subject area is located within one eight-digit hydrologic unit code (HUC): 12100302 (Medina).

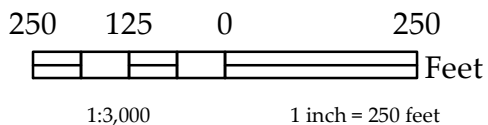
According to the USGS (2018) National Hydrography Dataset (NHD) two NHD flowlines and one NHD waterbody are present within the subject area. According to the United States Fish and Wildlife Service (USFWS) (USFWS 2018) National Wetlands

Inventory (NWI), three riverine wetlands are present within the subject area. The NWI features correspond with the NHD flowlines within the subject area (Figures 6 and 7).

According to the Federal Emergency Management Agency (FEMA) (2018), the subject area intersects the “1% Annual Chance of Flood Hazard” (100-year flood zone) and “Future Conditions 1% Annual Chance Flood Hazard” zones (Figure 8).



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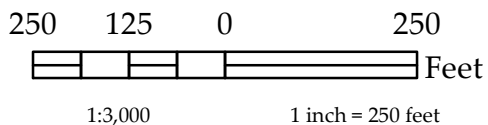


 Subject Area





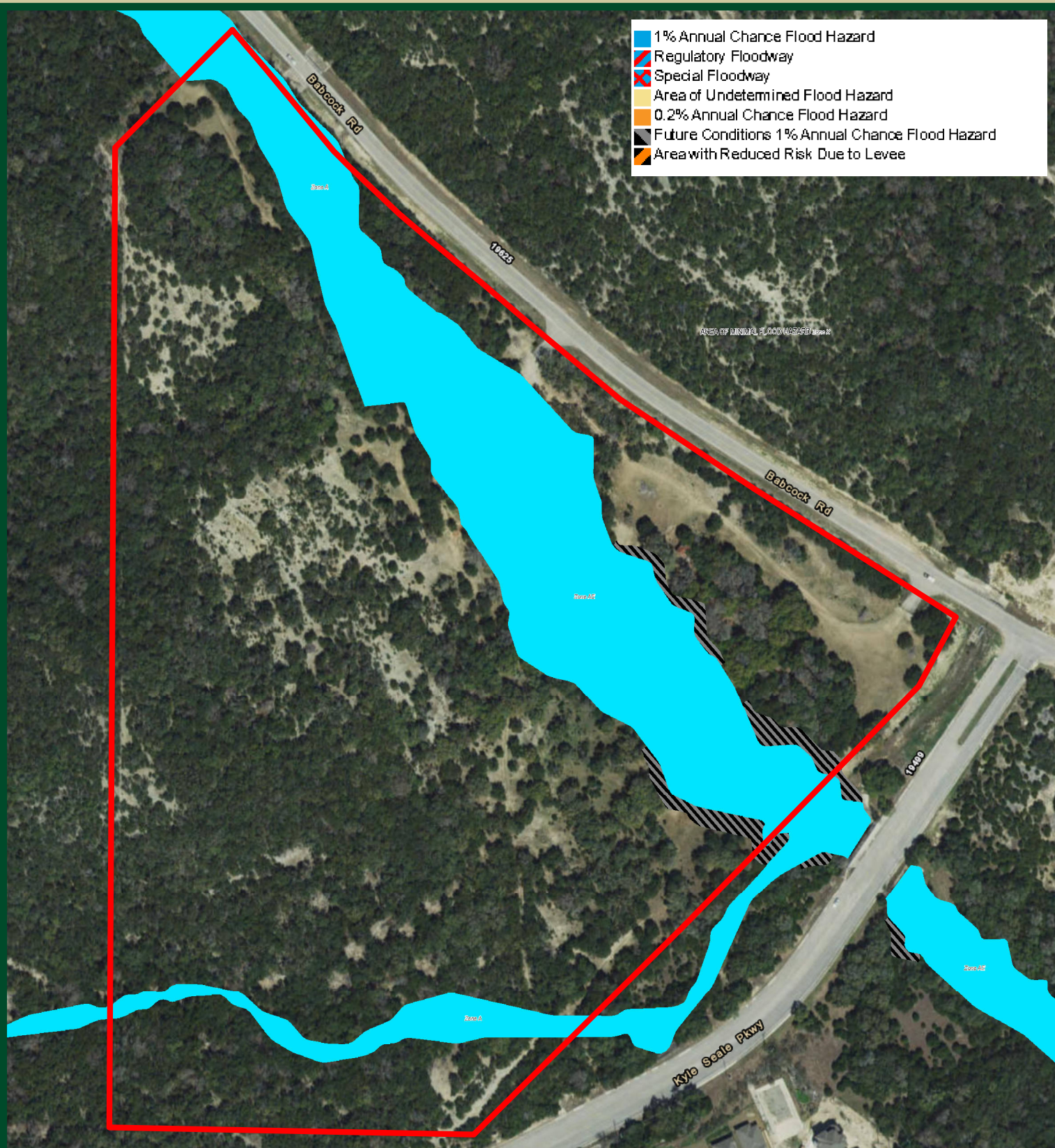
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 Subject Area

 NWI Riverine





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Feet
1:3,000 1 inch = 250 feet

 Subject Area



3.0 GOLDEN-CHEEKED WARBLER BACKGROUND

Golden-cheeked warbler (GCWA) was emergency listed as endangered on May 4, 1990, and the Final Rule was issued on December 27, 1990 (USFWS 1990a & USFWS 1990b). GCWA is a small, migratory, insectivorous bird known to breed only in Central Texas. The species winters in Central America, arrives in Central Texas in mid-March, and returns to its wintering grounds between late June and mid-August. GCWA requires unique structural and compositional vegetative elements within the landscape for habitat. A recovery plan for GCWA was published in 1992 to provide for the long-term maintenance and recovery strategies for the species (USFWS 1992). No critical habitat has been designated for the species.

The GCWA is small wood warbler that weighs approximately 9 grams that is a summer resident in Texas and generally ranges from the area around Austin, southwest across the Edwards Plateau to the West Nueces River drainage in Kinney County, then northeast to Junction, east to Llano County, and northward near the Possum Kingdom area in Palo Pinto and Stephens County. Within this range, they occupy “cedar breaks,” which are areas of “almost impenetrable mature stands of cedar that broke the horizon or terrain of grass and other vegetation” (Pulich 1976). These areas were historically constrained to the sheltered slopes and cliffs of the limestone canyons of the area as a result of Native Americans burning the landscape or natural fire sources, according to Pulich. Recent land management practices that resulted in fire suppression and overgrazing has allowed the cedar breaks to expand into areas that were previously comprised of grassland (Pulich 1976).

The recovery plan (USFWS 1992) describes the general habitat structure for GCWA as requiring a moderate to high density of trees and dense foliage. Wahl et al. (1990) notes this density is usually at the upper levels. Pulich (1976) states that the general habitat structure for GCWA consists of climax stands of Ashe juniper averaging 20 feet in height with some deciduous cover that are frequently adjacent to riparian or solid-oak species for foraging. Tree species composition is dominated by Ashe juniper and a variety of other, mostly deciduous species. Ashe juniper trees with shredding bark, aged 20 to 40 years, are required for nesting materials. Tree height average ranges from 4.5 to 9.8 meters (14.76 to 32.14 feet), with an average tree height of 6.5 meters (21.32

feet) (Wahl et al. 1990). Wahl et al. (1990) notes that there is variation of GCWA occupation frequency at various heights based on the age, maturity, and density of the tree stand. Canopy cover in known GCWA habitat was estimated to be 67% at 3 meters (9.84 feet), 73% at 5 meters (16.14 feet), and 68% above 5.5 meters (18.04 feet) (Wahl et al. 1990).

The GCWA recovery plan cites Pulich (1976) for its thresholds of the acreage amount that one pair of GCWA would regularly utilize in varying degrees of habitat quality. Pulich's density estimates are 20 ac/pair in "good" habitat, 50 ac/pair in average" habitat, and 85 ac/pair in "marginal" habitat (Pulich 1976).

Campbell (2003) notes that GCWA habitat typically consists of mature Ashe juniper woodlands interspersed with deciduous species. The areas most likely to be utilized by GCWA consist of nearly continuous cover of trees with 50 to 100 percent closed canopy. Deciduous species common in GCWA habitat include escarpment black cherry, Texas black walnut, ash (*Fraxinus* spp.), Texas oak, and cedar elm.

According to a study published by Texas A&M University, Mathewson et al. (2012) estimated the range-wide GCWA male population at 263,339 (95 percent confidence interval: 223,927 – 302,620). Morrison et al. (2012) concluded that the species exists as a single population across its breeding range.

4.0 DESKTOP ANALYSIS

A desktop analysis was conducted that utilized three existing remote sensing models to identify potential GCWA habitat within the subject area. Each model was developed utilizing different methodologies and scales based off of different data to achieve a unique objective. These methods include the Diamond (2007) method of range-wide modeling, the Morrison et al. (2010) method of identifying GCWA habitat, and the remote sensing technique created by Loomis (2008). Additionally, a review of the Texas Parks and Wildlife (TPWD) Texas Natural Diversity Database (TNDD) (2017) and USFWS known historical observations (2003) was conducted to identify the nearest known sightings of the species.

4.1 Diamond Model

The Diamond Model (2007) estimates GCWA nesting habitat using a model of habitat quality that identified: 1) variables most important to GCWA habitat quality, and 2) which of those important variables can be assessed using available Geographic Information Systems (GIS) data (Diamond 2007). The resulting model ranked habitat quality from 0 (Not Habitat) to 4 (High Quality):

- Class 0 - not habitat;
- Class 1 - potential low quality habitat when bordering higher ranked habitat; not habitat when not bordering higher ranked habitat;
- Class 2 - potential low quality habitat when bordering higher ranked habitat; probably not habitat when not bordering higher ranked habitat;
- Class 3 - potential moderate quality habitat when bordering habitat ranked 4; potential low quality habitat when not bordering habitat ranked 4; and
- Class 4 - potential moderate to high quality habitat.

The Diamond Model classified 45.7 acres of the subject area (Figure 9). Of the 45.7 classified acres, 2.8 acres were classified as Class 0 - not habitat; 3.1 acres were classified as Class 3 - potential moderate quality habitat when bordering habitat ranked 4; potential low quality habitat when not bordering habitat ranked 4; and 39.8 acres were classified as Class 4 - potential moderate to high quality habitat.

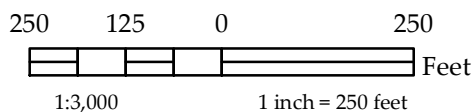
4.2 Loomis Model

The Loomis Model assumes that any large area of dense to moderately dense woodland is potential habitat. It does not account for species composition, age, canopy height or other potentially relevant variables associated with GCWA habitat (Loomis 2008). The Loomis Model classified habitat into three classes:

- Class 0 - Not Likely Habitat;
- Class 1 - Potential Low Quality GCWA Habitat;
- Class 2 - Potential Medium Quality GCWA Habitat; and
- Class 3 - Potentially High Quality Habitat.



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 Subject Area



The Loomis Model classified approximately 4.4 acres as Class 2 – Potential Medium Quality GCWA Habitat, which was primarily located in the eastern corner of the subject area. Additionally, 41.2 acres were classified as Class 3 – Potential High Quality Habitat across of the subject area (Figure 10).

4.3 TAMU Model

Morrison et al. (2010) created a predictive model (TAMU Model) for GCWA presence utilizing patch size and landscape composition; this model was used to produce an estimate for GCWA population distribution and abundance.

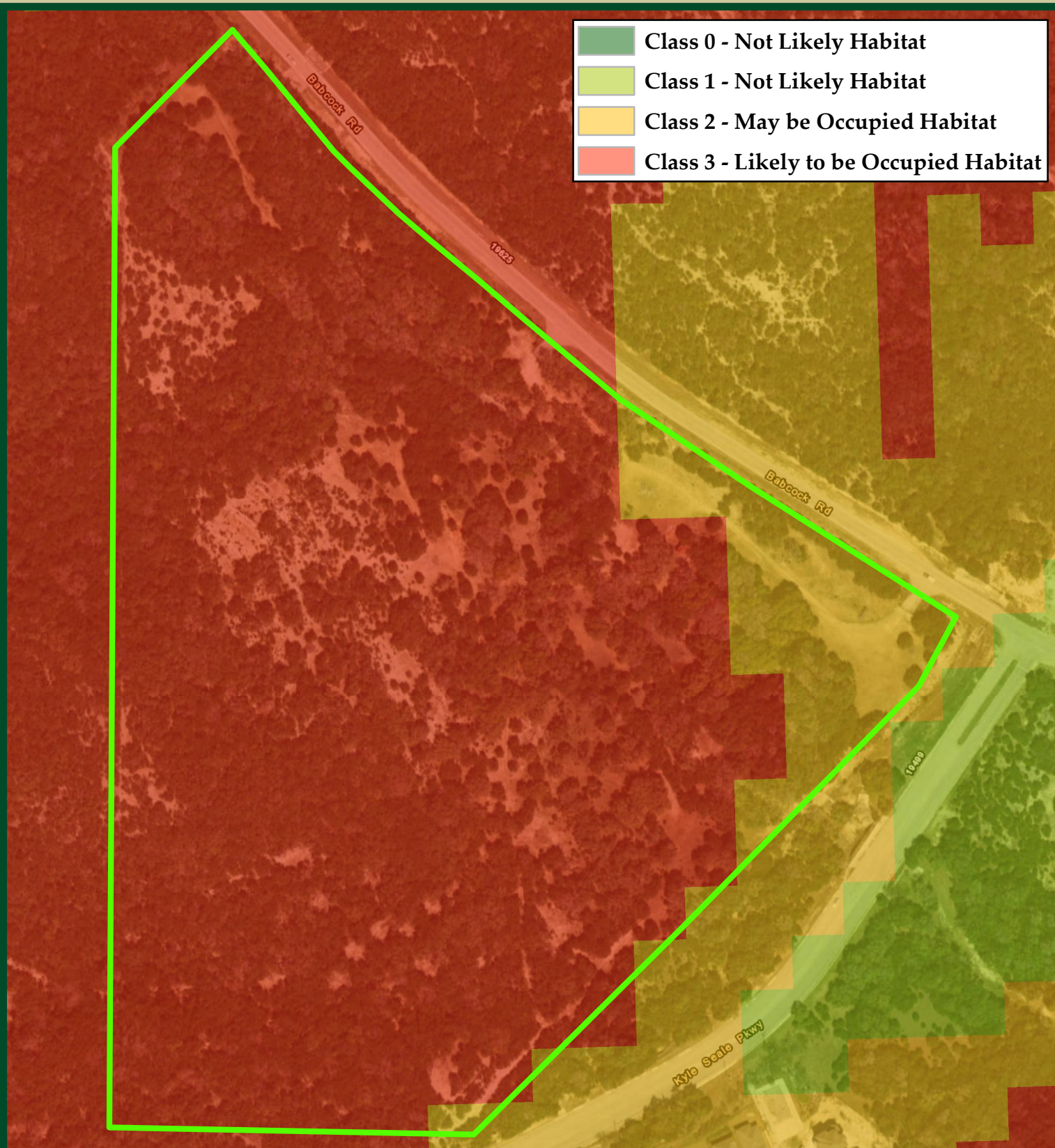
The published model identifies the probability of occurrence for GCWA within each individual patch on a scale of 0.0-1.0 with 0.0 being the lowest likelihood of occurrence and 1.0 being the highest likelihood of occurrence. A patch is considered likely GCWA habitat if it has a probable occupancy greater than 0.50

Approximately 4.3 acres of the subject area was classified by the TAMU model as having a probable occupancy of 0.958799. Additionally, approximately 31.5 acres of the subject area was classified as having a probable occupancy of 0.454675. Based on a patch being considered likely habitat if it has a probable occupancy greater than 0.50, the 4.3-acre patch is considered habitat, while the 31.5-acre patch is not considered habitat by the TAMU model (Figure 11).

4.4 TPWD TNDD and USFWS Historical Observations

According to the TNDD (2017), the nearest EOs, EO ID# 4669 and EO ID# 4132, for the GCWA intersect the proposed subject area. EO ID # 4132 intersects in the northern corner of the subject area, while EO ID # 4669 intersects in the eastern corner of the subject area (Figure 12).

According to the USFWS historical observations for the GCWA, the closest observation is approximately 0.5 mile northwest of the subject area within EO ID# 4132 (USFWS 2003).



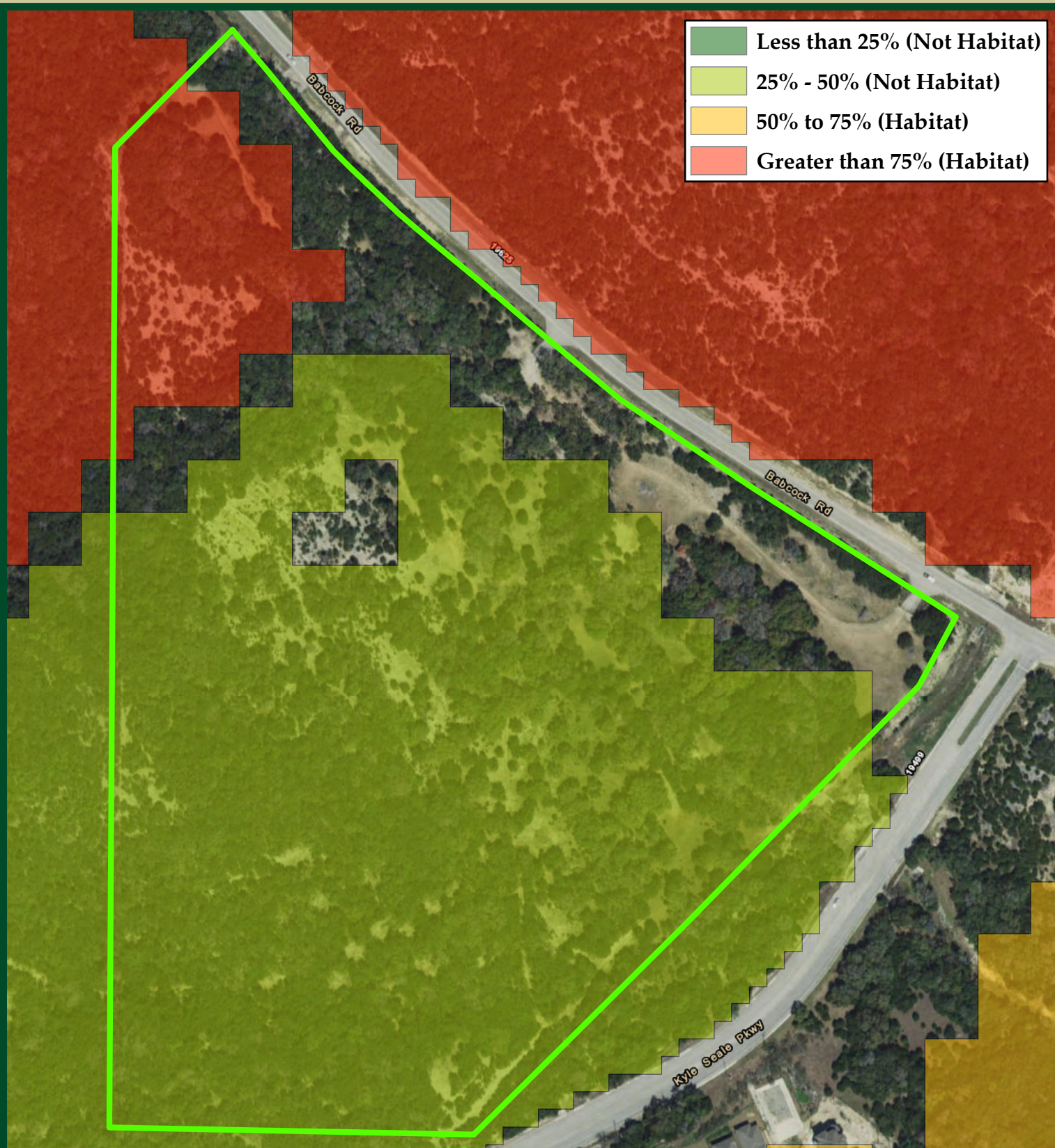
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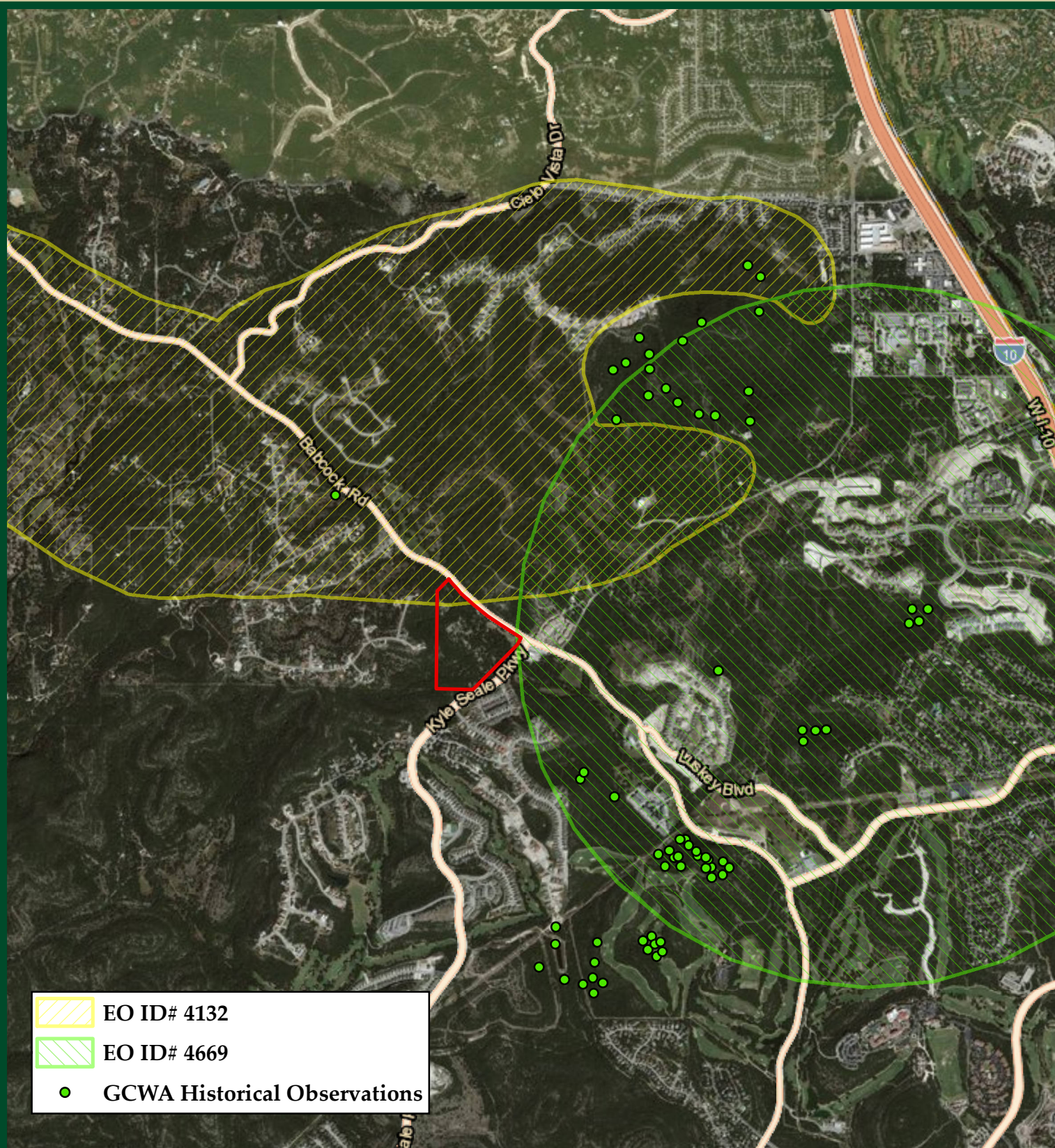
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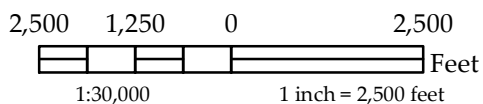


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-  EO ID# 4132
-  EO ID# 4669
-  GCWA Historical Observations



 Subject Area



5.0 FIELD INVESTIGATIONS

5.1 Methods

USFWS protocol for performing habitat assessments for GCWA (USFWS 2010) recognizes three categories of potential GCWA habitat (Probably Occupied, May be Occupied, and Non-habitat), as published in a section of the Texas Parks and Wildlife management guide for Texas endangered species titled “Management Guidelines for the Golden-cheeked Warbler in Rural Landscapes” (Campbell 2003). Figure 13 is used as a guide for evaluating potential GCWA habitat.

aci consulting biologists familiar with the structural and compositional elements of the vegetation typically associated with areas regularly utilized by GCWA studied aerial photographs and conducted field investigations to identify vegetation consistent with three Campbell (2003) GCWA habitat categories. Field investigations were conducted on March 29, and April 4, 2018, to evaluate the entire subject area with respect to canopy cover, tree height, structural maturity, and dominant species. Additionally, vegetation sampling was conducted using a variation of the vertical-line intercept technique (MacArthur and Horn 1969); the variation of the technique used is referred to as the “pole method” (Mills et al. 1991). The pole method was conducted within each identified GCWA habitat category to further quantify the vertical structure and composition of the vegetation and canopy density.

5.1.1 Campbell Classification

According to Campbell (2003) The three categories of potential GCWA habitat include:

Category 1: The general habitat structure listed in the management guidelines for habitat types that, if impacted, are likely to adversely affect GCWA include:

- Woodlands with mature Ashe juniper in a natural mix with oaks, elms and other hardwoods in relatively moist areas including steep canyons, slopes and adjacent uplands;
- Mature Ashe juniper trees at least 15 feet in height with a diameter at breast height (dbh) of approximately five inches;
- Nearly contiguous canopy cover of trees with 50-100 percent canopy closure; and
- Overall woodland canopy height of 20 feet or more.

Category 2: Areas where GCWA may occur include:

- Stands of mature Ashe juniper with shredding bark and scattered live oaks (≥ 10 percent total canopy cover), where the total canopy cover exceeds 35 percent and overall woodland canopy height is ≥ 20 feet;
- Bottomlands along creeks and drainages that support deciduous trees with at least 35 percent canopy cover with an average canopy height of 20 feet. Mature Ashe juniper must be present at the bottom or on nearby slopes;
- Mixed stands of post oak and/or blackjack oak with 10-30 percent canopy cover, with scattered mature Ashe juniper where total canopy cover exceeds 35 percent overall woodlands canopy height is 20 feet; and
- Mixed stands of shin oak with 10-30 percent canopy cover with scattered mature Ashe juniper where total canopy cover exceeds 35 percent overall woodlands canopy height is 20 feet.

Category 3: Areas GCWA are not expected to occur:

- Stands of small Ashe juniper, averaging less than 15 feet in height and five inches dbh. These areas are often dry and relatively flat, lacking oaks and other broad-leaved trees and shrubs. These areas often include open rangelands, previously cleared areas and old fields;
- Pure stands of large Ashe juniper greater than 15 feet in height and five inches dbh with few or no oaks or other hardwoods;
- Open park-like woodlands or savannahs (even with old junipers) where canopy cover is less than 35 percent. These areas often have scattered live oaks and other trees;
- Small junipers and other trees coming up along existing fencelines; and
- Small junipers less than 15 feet tall coming up under larger hardwoods where junipers have been removed in the last 20 years.

During field investigation, a qualitative review of the different vegetative communities was conducted with specific community data collected throughout the subject area.

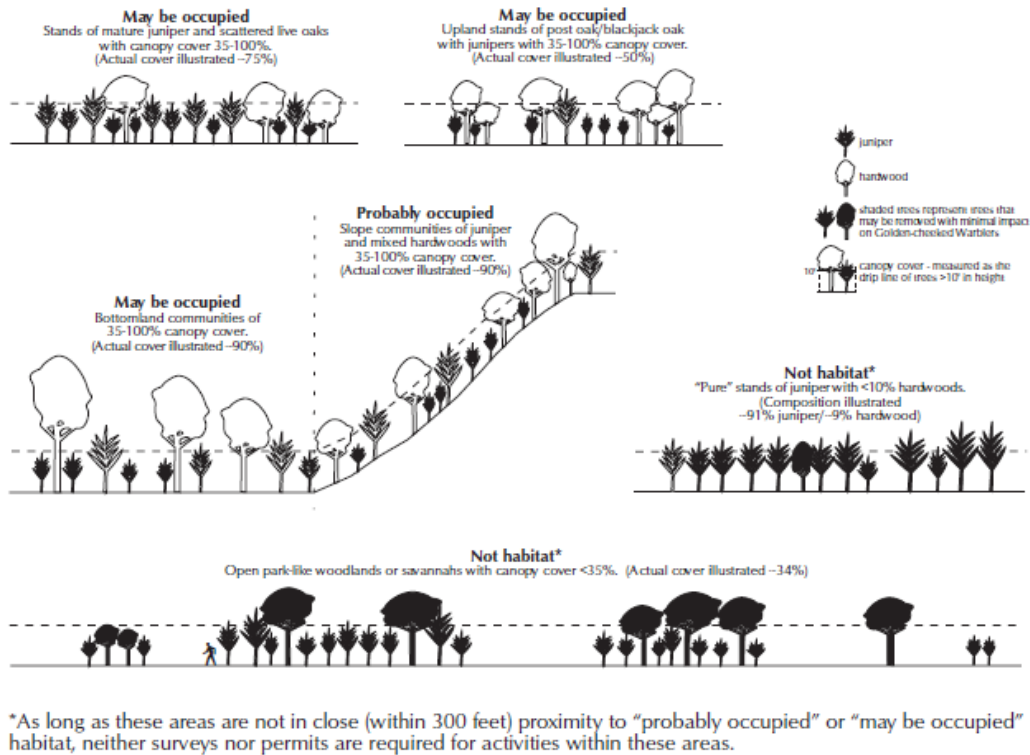


Figure 13: Visual Aid for Assessing GCWA Habitat (Campbell 2003)

5.1.2 Pole Method

Vegetation sampling was conducted using a variation of the vertical-line intercept technique (MacArthur and Horn 1969); the variation of the technique used is referred to as the "pole method" (Mills et al. 1991). This method is unique in that it allows the vegetation being studied to be quantified vertically; that is, the pole method clearly defines vegetation structure and composition within each stratified layer. This method was previously utilized on a similar site in Bexar County and is therefore considered a highly applicable technique.

The first step in application of this sampling method is to select areas of interest within the project site. After general areas are determined, representative sampling areas can be delineated for sampling. Within a sampling area, a tree is tagged and the direction of the first transect is randomly selected from this tree. Once orientation of the first transect is determined, 10 sample plots are sampled along this same bearing each 6 feet apart. The second transect aligns perpendicular to the first and crosses at mid-point.

The end result is a 60x60 foot “cross” with a total of 20 sample sites selected in a manner to eliminate as much subjectivity in the sampling as possible.

At each sample plot, an approximately 25-foot survey rod is used to sample the surrounding vegetation. For the purpose of this study, only woody vegetation was measured. At each plot, the number of “hits” within a decimeter radius of the pole and the species associated with the “hit” is recorded; with a maximum of ten “hits” per meter section. If more than 10 “hits” occur within a meter section, a proportion of species represented within this section is determined. Also, the maximum tree canopy height reaching above the sampling pole is estimated at each plot. The number of 60x60 foot sites was pre-determined by overall project size and variation in the landscape. For this project, we determined the plot location by selecting nine points prior to field investigations that, based on review of aerial photography, were likely representative of the different vegetative compositions within the subject area.

The objective of applying this methodology to assess vegetation on this project is to accumulate enough scientific data to objectively and quantifiably describe the species composition and structure within the project site as related to GCWA habitat.

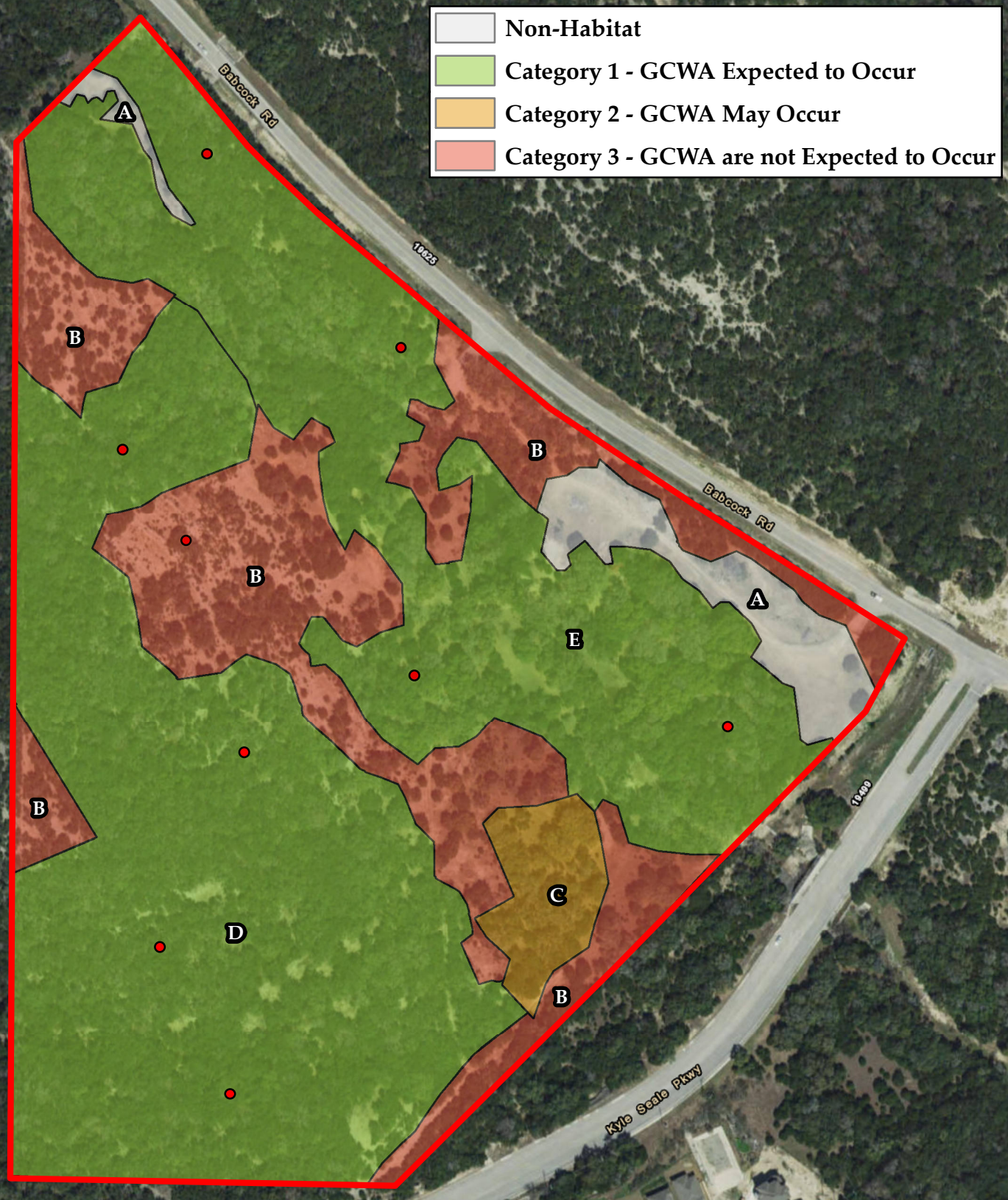
The proposed method of vegetation sampling will provide a non-biased, data supported determination of the quantity and quality of potential GCWA habitat within the project site that lacks the subjectivity associated with assessments by aerial maps and/or typical habitat evaluations.

5.2 Campbell Classification and Pole Method Results

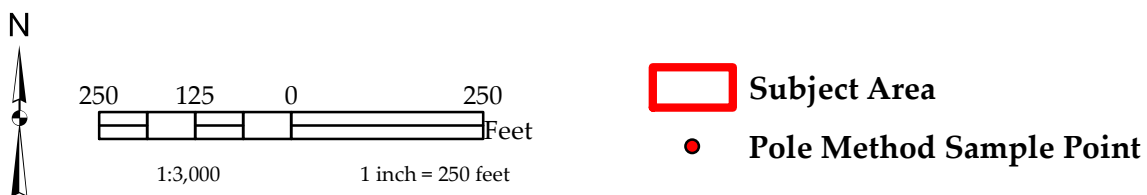
The following sections describe the vegetation within the subject area and the corresponding Campbell GCWA habitat categories and the results of the pole method study.

aci consulting collected qualitative Campbell habitat data at eight locations throughout the subject area in conjunction with the pole method sampling at nine points chosen to best represent the entire vegetative communities within the subject area. The points were located in areas that assessed the overall vegetative structure throughout the range of the three habitat categories previously identified in Section 5.1.1.

Throughout the subject area, biologists from **aci consulting** identified 10 woody species. These species were classified as Ashe juniper, hardwood, and shrub species. The hardwood species were identified as live oak, Texas oak, black walnut, hackberry, and cedar elm. The shrub species were identified as Texas persimmon, mountain laurel, agarita, and deciduous holly. Overall, five distinct vegetative communities were identified within the subject area (Figure 14). The communities are described in the following sections.



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Area A

Campbell Classification - Area A comprises approximately 2.0 acres (4 percent) of the overall approximately 46 acres subject area. Area A is comprised of two habitat types, non-wooded, cleared areas on flat topography. Area A comprises the eastern portion of the subject area and a narrow open area near the northern corner of the subject area. Based on the vegetative structure and compositional elements along with Area A's spatial setting in relation to other potential GCWA habitat, Area A is considered **Non-habitat**.

Pole Method – Pole method data was not collected in Area A due to the lack of canopy-forming vegetation.

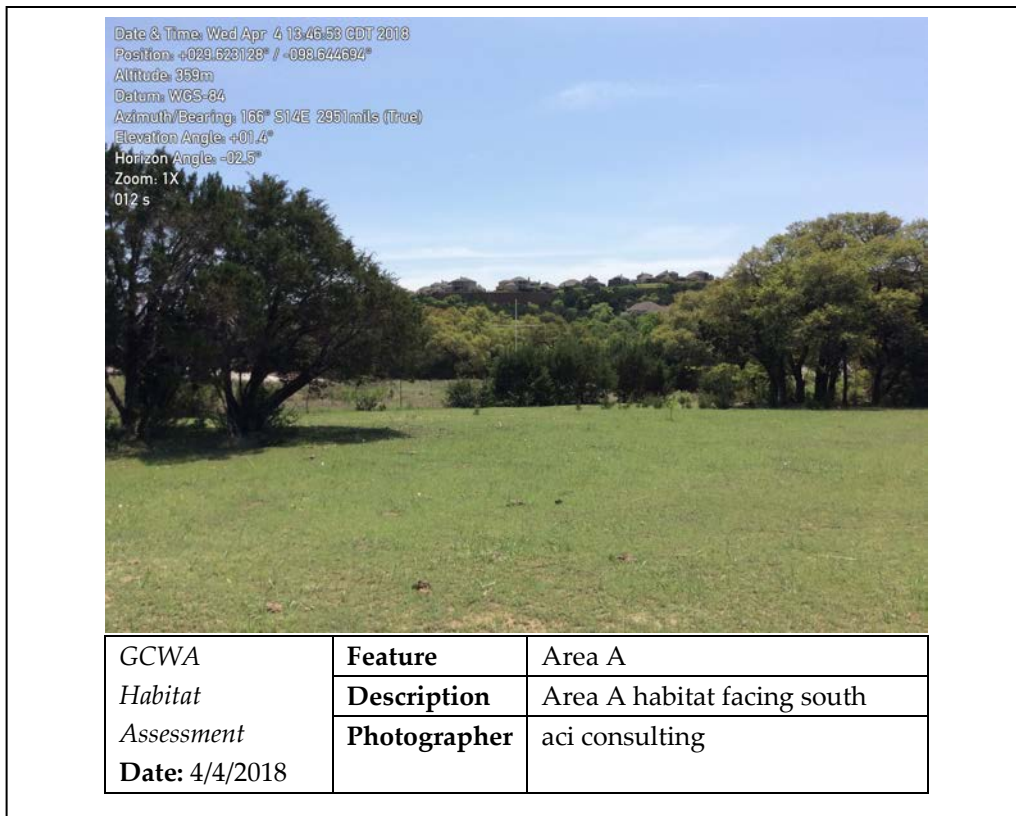


Photo 1: Area A Habitat

Area B

Campbell Classification - Area B comprises approximately 10.5 acres (23 percent) of the overall approximately 46-acre subject area. The general topography is moderately sloped. Field investigations indicate that the vegetation in this area is characterized as a mixed Ashe juniper/live oak scrub with approximately 10 percent canopy cover. The area has a canopy that is dominated by immature Ashe junipers less than 15 feet in height. Live oaks were approximately 10 feet in height and comprise approximately less than 10 percent of the overall canopy. Area B has the compositional elements, but generally lacks the structural elements of high canopy cover of oaks and other deciduous species and mature Ashe junipers to regularly support the breeding, feeding, or sheltering of GCWA. However, these areas are adjacent to potentially higher quality habitat and therefore may provide sufficient feeding habitat to the GCWA. Based on the vegetative structure and compositional elements along with Area B's spatial setting in relation to other potential GCWA habitat, Area B is considered **Category 3 – Areas GCWA are not expected to occur.**

Pole Method – Area B was assessed in 1 plot within the subject area. Overall, vegetation density was highest from 0 feet to 9 feet, before sharply decreasing at the maximum height of 9 feet to 12 feet. The highest density occurs between 0 feet to 3 feet. The area was dominated by Ashe juniper between 0 feet and 9 feet, and hardwoods between 9 feet and 12 feet. No vegetation was present above 12 feet in height. The species type composition of Area B is displayed in Chart 1. Within the entirety of Area B, only two woody species were identified: Ashe juniper and live oak. Total canopy height averaged 5.6 feet tall, while Ashe juniper height averaged 5.3 feet.

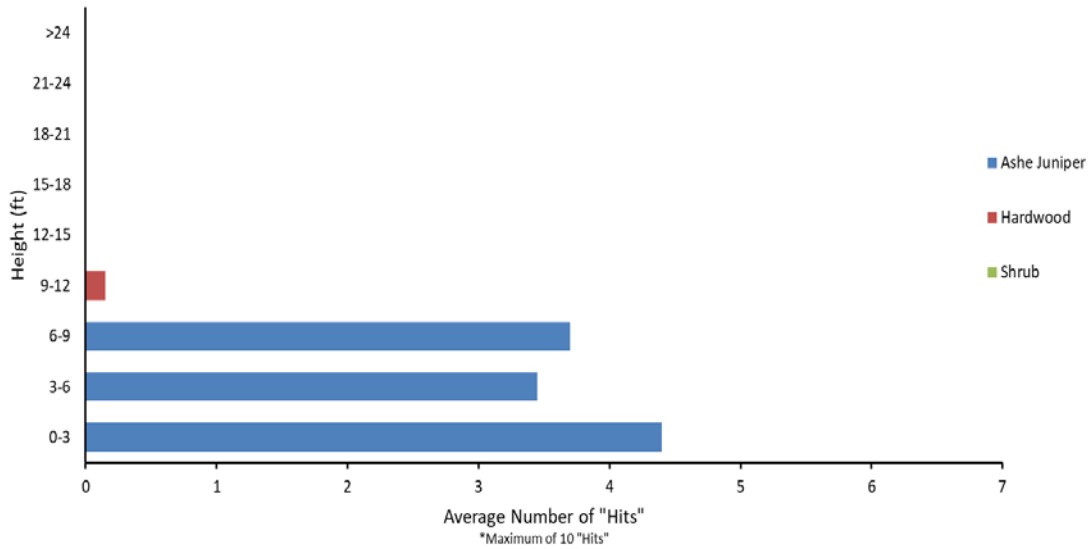


Chart 1: Area B Vegetative Composition

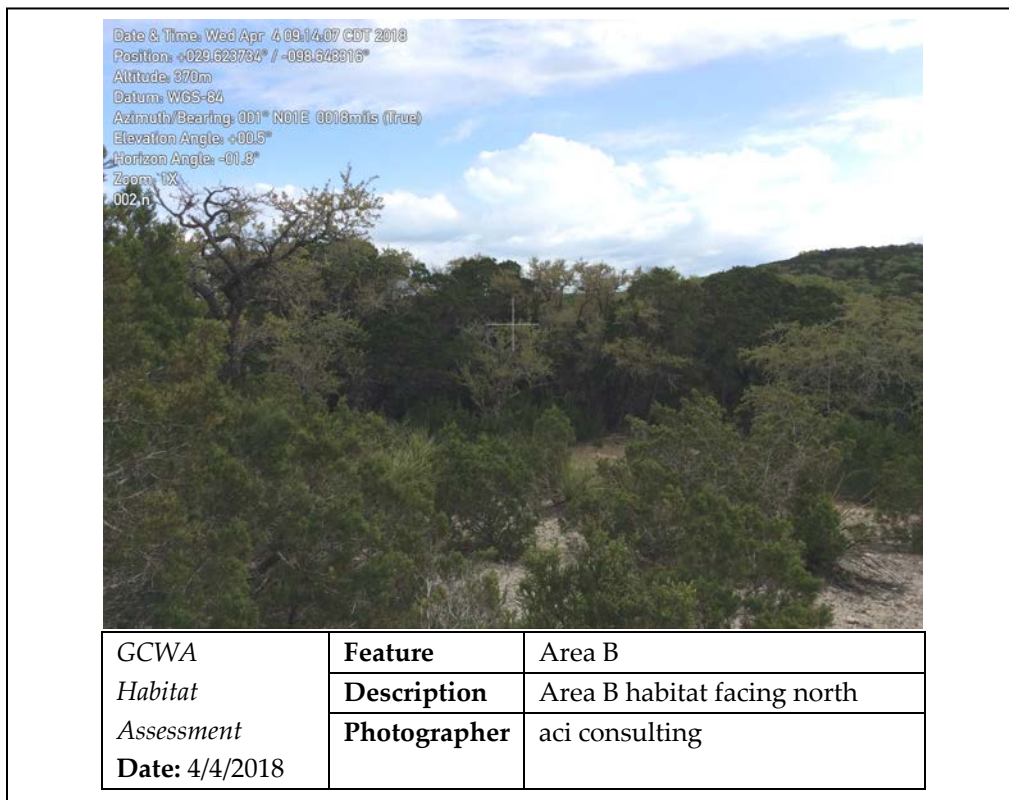


Photo 2: Area B Habitat

Area C

Campbell Classification - Area C comprises approximately 1.3 acres (3 percent) of the overall approximately 46-acre subject area. The general topography is flat. Field investigations indicate that the vegetation in this area is characterized as a mixed Ashe juniper/live oak scrub with Texas persimmon and huisache and approximately 45 percent canopy cover. The area has a canopy that is a mixture of immature Ashe junipers less than 15 feet in height and live oaks approximately 25 feet tall. Area C has the compositional elements, but generally lacks the structural elements of mature Ashe junipers to regularly support the breeding, feeding, or sheltering of GCWA. However, this area is adjacent to potentially higher quality habitat and therefore may provide sufficient feeding or sheltering habitat to the GCWA. Based on the vegetative structure and compositional elements along with Area C's spatial setting in relation to other potential GCWA habitat, Area C is considered **Category 2 – Areas where GCWA may occur**.

Pole Method - Pole method data was not collected within Area C.

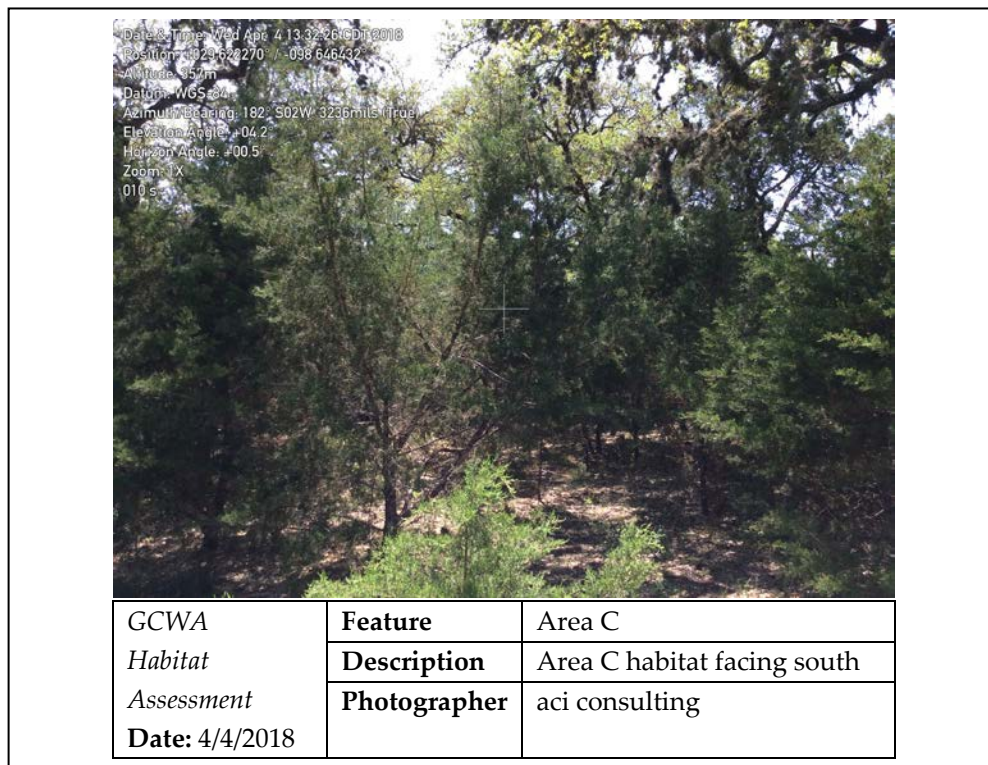


Photo 3: Area C Habitat

Area D

Campbell Classification - Area D comprises approximately 18.1 acres (40 percent) of the overall approximately 46-acre subject area. The general topography is moderately steep to steep slopes near drainages. Field investigations indicate that the vegetation in this area is characterized as a mixed Ashe juniper/live oak woodland with cedar elm and approximately 50-100 percent canopy cover. The area has a canopy that is a mixture of mature Ashe junipers greater than 15 feet in height and live oaks approximately 25 feet tall. Area D has the compositional, structural, and spatial elements to regularly support the breeding, feeding, or sheltering of GCWA. Based on the vegetative structure and compositional elements along with Area D's spatial setting, Area D is considered **Category 1 – Areas where GCWA are expected to occur.**

Pole Method - Four of the nine pole method points were located within Area D. Overall, vegetation density was lowest from 0 feet to 6 feet, then gradually increases from 6 feet to 21 feet before sharply decreasing from 21 feet to 24 feet and sharply increasing again at >24 feet. The highest density occurs at >24 feet. The area has a mixture of Ashe juniper, hardwoods, and shrubs from 0 feet to 12 feet, with Ashe juniper accounting for the majority of the hits. A mixture of Ashe juniper and hardwoods continues through the canopy, with Ashe juniper accounting for the majority of hits. The species type composition of Area D is displayed in Chart 2. Within Area D, seven woody species were identified: Ashe juniper, live oak, Texas oak, black walnut, Texas persimmon, mountain laurel, and hackberry. Total canopy height averaged 23.8 feet tall, while Ashe juniper height averaged 21.5 feet.

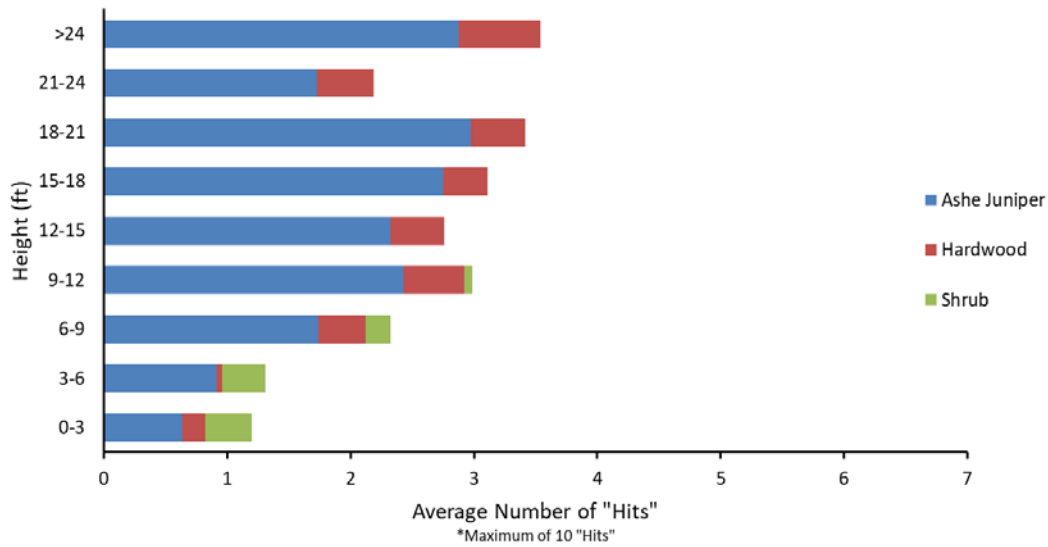


Chart 2: Area D Vegetative Composition

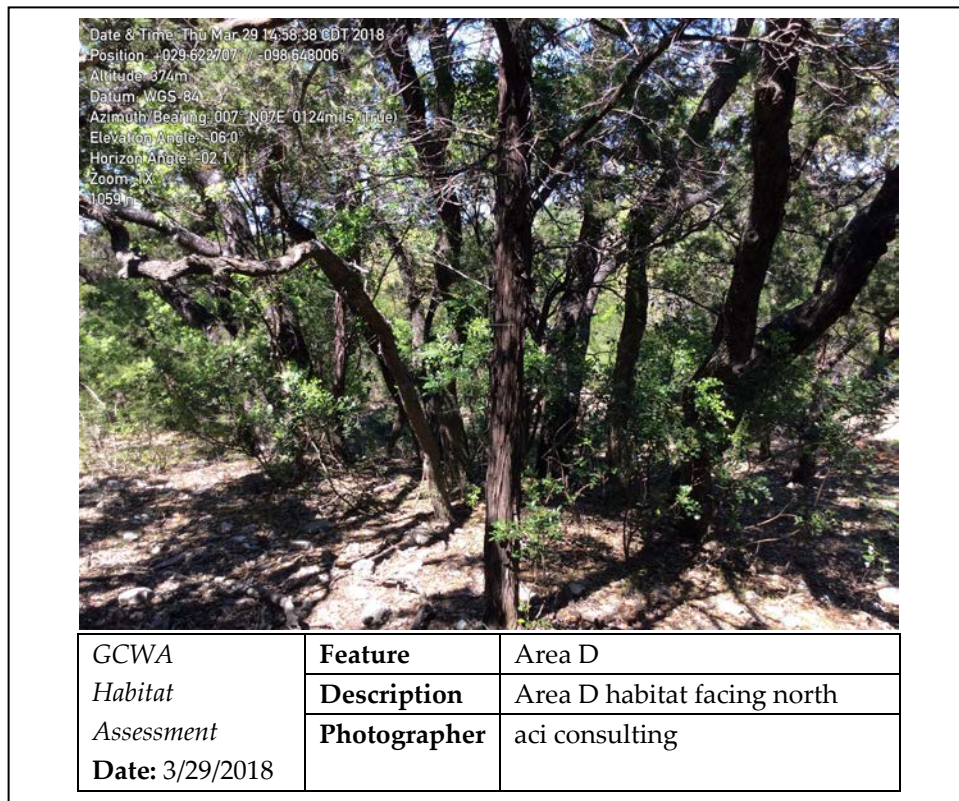


Photo 4: Area D Habitat

Area E

Area E comprises approximately 13.6 acres (30 percent) of the overall approximately 46-acre subject area. The general topography is flat to moderately steep near drainages. Field investigations indicate that the vegetation in this area is characterized as a mixed Ashe juniper/oak woodland with cedar elm, black walnut, escarpment black cherry, and hackberry and approximately 50-100 percent canopy cover. The area has a canopy that is a mixture of mature Ashe junipers greater than 15 feet in height and deciduous trees approximately 25 feet tall. Area F has the compositional, structural, and spatial elements to regularly support the breeding, feeding, or sheltering of GCWA. Based on the vegetative structure and compositional elements along with Area E's spatial setting, Area E is considered **Category 1 – Areas where GCWA are expected to occur**.

Pole Method - Four of the nine pole method points were located within Area E. Overall, vegetation density was lowest from 0 feet to 9 feet, then steadily increases from 9 feet to 15 feet before gradually decreasing from 15 feet to 21 feet and steadily increasing again from 21 feet to >24 feet. The highest density occurs at >24 feet. The area has a mixture of Ashe juniper, hardwoods, and shrubs from 0 feet to 18 feet. A mixture of Ashe juniper and hardwoods continues through the canopy, with Ashe juniper accounting for the majority of hits from 18 feet to 21 feet, and hardwoods accounting for the majority of hits between 21 feet to >24 feet. The species type composition of Area F is displayed in Chart 3. Within Area F, eight woody species were identified: Ashe juniper, live oak, Texas persimmon, mountain laurel, cedar elm, deciduous holly, agarita, and hackberry. Total Canopy height averaged 28.3 feet tall, while Ashe juniper height averaged 21.3 feet.

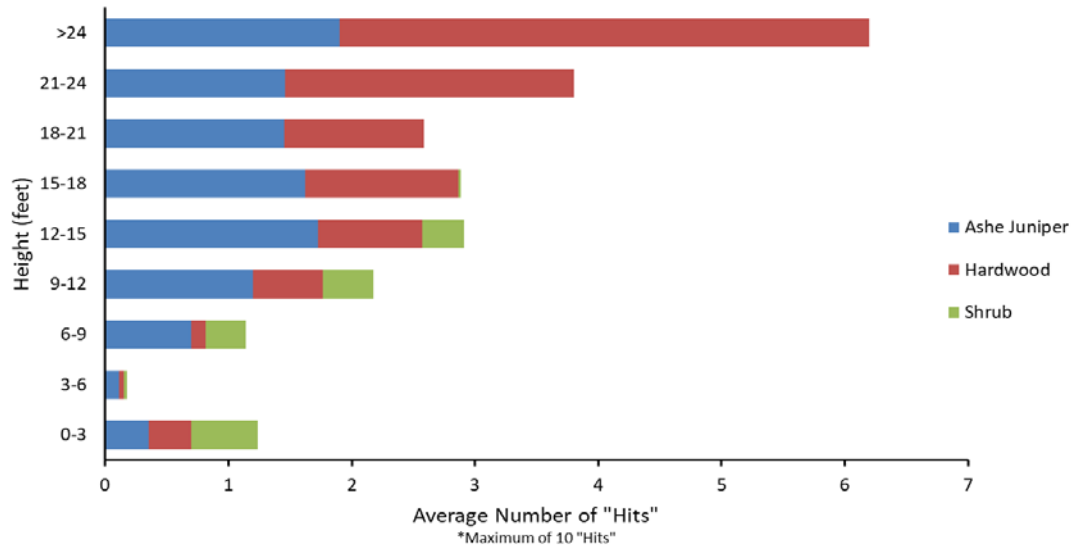


Chart 3: Area E Vegetative Composition

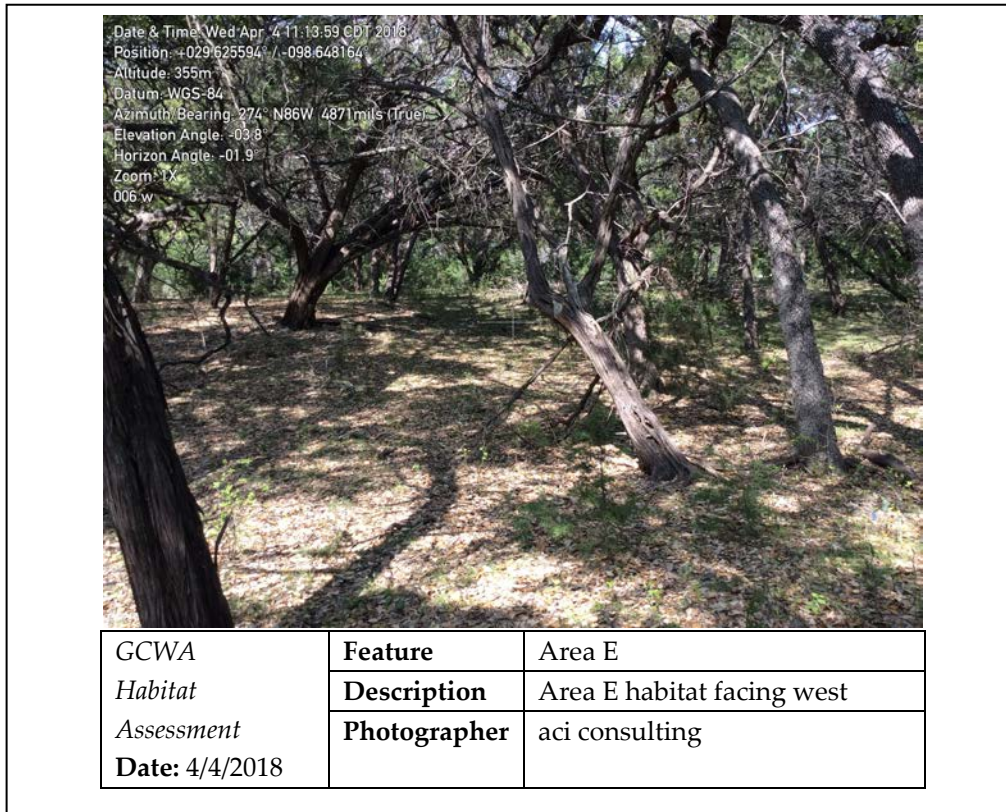


Photo 5: Area E Habitat

Category 1 – GCWA Expected to Occur

Category 1 is approximately 31.7 acres (69 percent) of the subject area and was assessed in 8 plots throughout the subject area. Overall, vegetation density was low from 0 feet to 6 feet, density gradually increases from 6 feet to 15 feet, density remains relatively constant from 15 feet to 24 feet, and then reaches the highest point at >24 feet. The area was populated evenly by Ashe juniper, hardwoods, and shrubs within the first 3 feet. Above 6 feet, shrubs gradually decrease until they are no longer present above 18 feet, while the remaining area is majority Ashe juniper until 21 feet to >24 feet where hardwoods begin to dominate. The species composition of Category 1 is displayed in Chart 4. Within the entire Category 1 area, 10 woody species were identified: Ashe juniper, live oak, Texas oak, black walnut, hackberry, cedar elm, Texas persimmon, mountain laurel, agarita, and deciduous holly. Total Canopy height averaged 26.0 feet tall, while Ashe juniper height averaged 21.4 feet. Category 1 corresponds to Area D and Area E above.

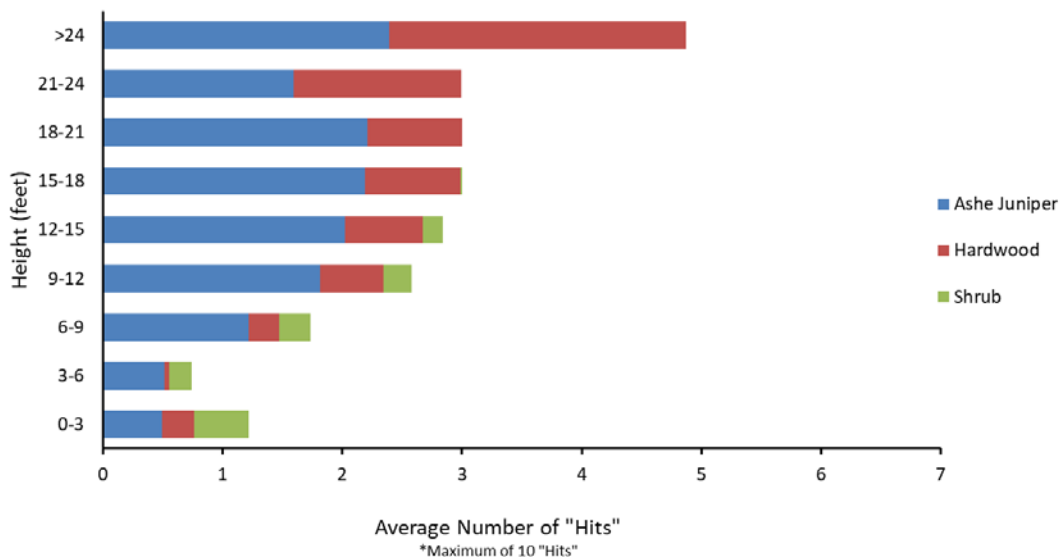


Chart 4: Category 1 Vegetative Composition

Category 2 – GCWA May Occur

Category 2 is approximately 1.3 acres (3 percent) of the subject area and was not assessed using the pole method within the subject area

Category 3 – GCWA Are Not Expected to Occur

Category 3 is approximately 10.5 acres (23 percent) of the subject area and was assessed in 1 plot within the subject area. Overall, vegetation density was highest from 0 feet to 9 feet, before sharply decreasing at the maximum height of 9 feet to 12 feet. The highest density occurs between 0 feet to 3 feet. The area was dominated by Ashe juniper between 0 feet and 9 feet, and hardwoods between 9 feet and 12 feet. No vegetation was present above 12 feet in height. The species type composition of Category 3 is displayed in Chart 5. Within the entire Category 3 area, two woody species were identified: Ashe juniper and live oak. Total Canopy height averaged 5.6 feet tall, while Ashe juniper height averaged 5.3 feet. Category 3 corresponds to Area B above.

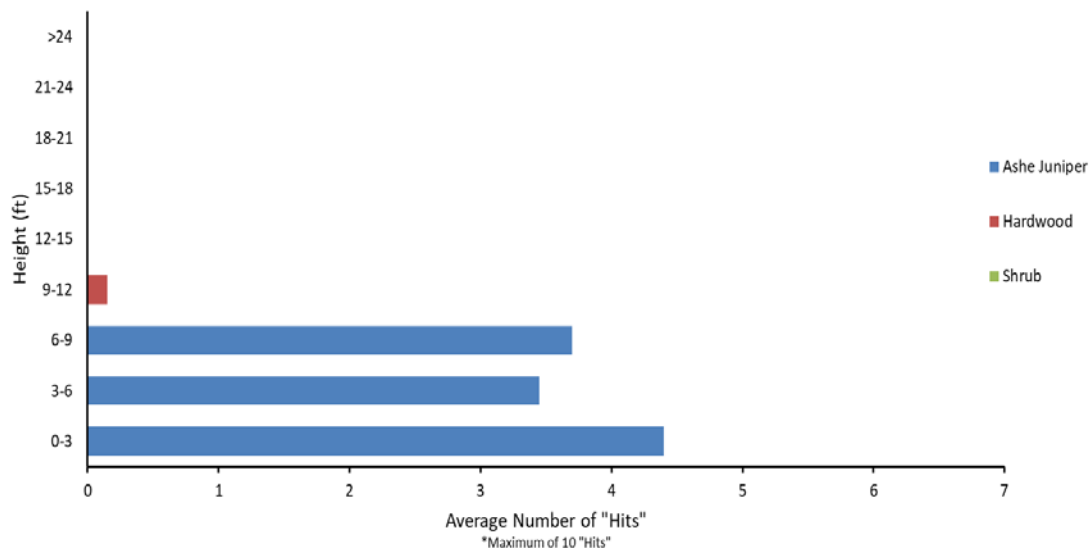


Chart 5: Category 3 Vegetative Composition

6.0 CONCLUSION

To evaluate the subject area's potential for utilization by GCWA, **aci consulting** conducted a desktop assessment and field investigation of the subject area.

6.1 Desktop

The Diamond (2007) model estimated approximately 2.8 acres as not habitat, 3.1 acres of moderate habitat, and 39.8 acres of moderate to high quality habitat within the subject area. The Loomis (2008) model estimated 4.4 acres was medium quality habitat, and 41.2 acres was high quality habitat. The TAMU model (Morrison et al. 2010) estimated that approximately 4.3 acres of the subject area had a 0.96 probability of being occupied by GCWA and approximately 31.5 acres had a 0.45 probability of being occupied by GCWA. If potential moderate habitat and high quality habitat are combined and classified as GCWA habitat, the Diamond (2007) model had 42.9 acres of habitat and the Loomis (2008) model had 45.6 acres of habitat. If areas with a greater than 50 percent chance of being occupied by GCWA are classified as habitat, the TAMU model (Morrison et al. 2010) estimated 4.3 acres of habitat.

6.2 Field Evaluations

aci consulting biologists familiar with the structural and compositional elements of the vegetation typically associated with areas regularly utilized by golden-cheeked warbler studied aerial photographs and conducted field investigations utilizing the pole method to identify potential vegetation consistent with golden-cheeked warbler habitat. These investigations identified six classifications of vegetation within the subject area and whether or not those areas would likely provide suitable habitat for the golden-cheeked warbler. These areas were identified as follows:

- Area A (2.0 acres): areas golden-cheeked warbler are not expected to occur (Not Habitat);
- Area B (10.5 acres): areas golden-cheeked warbler are not expected to occur (Not Habitat);
- Area C (1.3 acres): vegetation associations that may be used by golden-cheeked warblers (Potential Habitat);
- Area D (18.1 acres): vegetation associations that may be used by golden-cheeked warblers (Potential Habitat); and

- Area E (13.6 acres): areas where GCWA are likely to occur (Potential Habitat).

Based on field investigations, select areas within the subject area is classified according to Campbell GCWA habitat classifications as follows:

- Category 1 - approximately 31.7 acres (69 percent) are classified as Category 1, where, according to Campbell (2003), GCWA are expected to occur.
- Category 2 - Approximately 1.3 acres (3 percent) are classified as Category 2, where, according to Campbell (2003), GCWA may occur.
- Category 3 - Approximately 10.5 acres (23 percent) are classified as Category 3, where, according to Campbell (2003), GCWA are not expected to occur.

Categories 1 and 2 are considered potential habitat. Category 3 is generally not considered potential habitat. However, USFWS may consider Category 3 areas as potential habitat when those areas occur within 300 feet of higher quality habitat (Category 1 or Category 2).

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