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# Endangered Species Habitat Assessment

**Crystal Falls West**  
**2,145 Acres**

*Prepared for:*

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## Introduction

This report presents the results of an endangered species habitat survey and assessment for a 2,175-acre tract west of Grand Mesa at Crystal Falls and east of Nameless, TX hereafter referred to as the “Property,” (See Figure 1 – Site Plan). The Property is located north of FM 1431 and east of FM 2243, approximately four miles west of Cedar Park, TX (Figure 2 – Area Map). Portions of this Property are slated for development as residential neighborhoods.

Areas of Travis and Williamson Counties have been designated as potential endangered species habitat. There are several species listed, at federal and state levels, as endangered or threatened in central Texas. Per the requirements of the Endangered Species Act of 1973, these endangered plants and animals are protected.

It should be noted that previous endangered species habitat assessments were performed on parts of the Crystal Falls development in 2007 and 2010. This study reviewed encompasses areas that have not been previously studied by Eclipse and several areas that for which studies have been conducted. The entire property was evaluated for habitat that would be suitable for any of the listed rare or endangered species. The areas that have been previously studied were re-evaluated to identify any changes in vegetation or terrain that may have occurred since the previous assessment. This was done to determine if there had been any significant changes and to determine if any changes occurred that could affect the suitability of the land to serve as habitat for any of the endangered species

## Background

### *Ecology*

The subject property is located in the Live Oak – Mesquite – Ashe juniper Parks vegetative sub-region of the Edwards Plateau physiographic region. These regions are characterized by scrub forest and savanna areas containing juniper, oaks, and mesquite found on gently rolling uplands and ridge tops of the Edwards Plateau Region. Other common plants associated with this sub-region are Texas oak, shin oak, cedar elm, netleaf hackberry, flameleaf sumac, agarito, Mexican persimmon, Texas pricklypear, kidneywood, saw greenbriar, Texas wintergrass, little bluestem, curly mesquite, Texas grama, Halls panicum, purple three-awn, hairy tridens, cedar sedge, two-leaved senna, mat euphorbia, rabbit tobacco.

The Property spans several hilltops, plateau, valleys, and creeks. These creeks include Bloody Hollow, Palmetto Hollow, Cold Springs Hollow, Buttermilk Hollow, Big Sandy Creek, Bee Cave Hollow, and Deep Hollow. The smaller creeks flow into Bloody Hollow and Big Sandy Creek, which in turn flow into Lake Travis.

### *Endangered Species Specific to the Region*

The Balcones Canyonland Conservation Plan (BCCP) provides landowners with an alternative to the lengthy individual Section 10(a) permitting process with the U. S. Fish and Wildlife Service

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(USFWS) for construction or development in areas with potential habitat for endangered species. The BCCP is administered by the Balcones Canyonland Coordinating Committee, a group of individuals representing federal, state, and local governments, the private business sector, private landowners, and environmental interests. Under the BCCP, there are eight endangered species known to occur in and around the Balcones Canyonland Preserve System [1]. These eight species are listed in the table below. In addition to the BCCP listed species, the Texas Parks and Wildlife Department (TPWD) maintains a list of endangered and threatened species were reviewed. A copy of the TPWD list is included in Appendix B.

**Table 1: Endangered species covered under the BCCP**

Common Name	Scientific Name
Black-capped Vireo	<i>Vireo atricapillus</i>
Golden-cheeked Warbler	<i>Dendroica chrysoparia</i>
Tooth Cave pseudoscorpion	<i>Tartarocreagris texana</i>
Tooth Cave spider	<i>Neoleptoneta myopica</i>
Bee Creek harvestman	<i>Texella reddelli</i>
Bone Cave harvestman	<i>Texella reyesi</i>
Tooth Cave ground beetle	<i>Rhadine persephone</i>
Kretschmarr Cave mold beetle	<i>Texasmaurops reddelli</i>

Most of the species on the BCCP and the TPWD list can be eliminated from consideration for the subject tract due to a lack of suitable terrain and habitat. This includes amphibian species tied to specific spring systems (such as Barton Springs), fishes, crustaceans, and mollusks. Bird species that generally require proximity to rivers or perennial streams such as the Least Tern are not likely to be found on or near the Property. Several rare plants and reptiles are classified as “threatened.” The populations of these rare species are tracked and carefully monitored. The Property does not provide suitable habitat for these plants and reptiles.

The initial walking surveys of the Property did not identify any substantial sinkholes, crevices, caves or other suitable habitat for the listed karst invertebrates. None of the subject Property is listed as being in Karst Zone 1 (confirmed habitat) but approximately 250 acres of the property has been designated by the BCCP as Karst Zone 2 (suspected karst habitat) while the remainder of the property is designated as Karst Zone 3 or Karst Zone 4 which only require a walking survey as was conducted for the Property. Because a portion of the land was designated as being in Karst Zone 2, a karst survey using TCEQ karst survey protocols for identifying recharge features on the Edwards Aquifer were used for these areas. This survey is addressed in a separate report but one potential karst habitat area (cave) was identified in the far eastern portion of the property.

The remainder of this report focuses on the bird endangered bird species which are known to inhabit this general area.

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### *Species of concern for the Property*

The Black-capped Vireo (*Vireo atricapilla*), (hereafter referred to as “BCVI”) is an endangered migratory songbird. BCVI habitat typically consists of a variety of shrub lands and open woodlands with a patchy structure. Shrub species diversity is important factor. Preferred species for include Redbud, shin oak, and sumac species. Deciduous shrubs extending from the ground to approximately six feet and covering thirty to sixty percent of the total area are required for foraging and nesting habitat. Preferred habitat usually has a low density and canopy representation of Ashe juniper trees [2].

The Golden-cheeked Warbler (*Dendroica chrysoparia*), (hereafter referred to as “GCWA”) is listed as an endangered migratory songbird with the BCCP and TPWD. It is typically associated with tall (minimum fifteen feet canopy height), mature stands of Ashe juniper and mixed hardwoods such as oaks, elms, hackberry, and pecan. Due to the size of the trees, a dense canopy (fifty percent or greater) is typically observed in occupied habitats. In central Texas, this type of woodland generally grows in relatively moist areas such as steep-sided canyons and slopes, which are sometimes dotted with springs and seeps. The GCWA can also be found in lower densities in drier, flatter upland habitats. This may be utilized as secondary foraging habitat, but does not make ideal nesting habitat. GCWA is considered an “interior forest” species that does best in large contiguous blocks of habitat, ranging from five to twenty acres per breeding pair. The do not respond well to fragmentation and areas that are dominated by (ecological) edges [3, 4].

According to the “Balcones Canyonlands Conservation Plan Fee Zone Map” from 1996 (see Figure 3), the valley surrounding Bloody Hollow and area of the Property east of Bloody Hollow are located in “Golden-cheeked Warbler Zone – 1 (Confirmed Habitat). The plateau between Bloody Hollow and Palmetto Hollow is designated as “Golden-cheeked Warbler - Zone 2 (Unconfirmed Habitat).” In addition, the canyons surrounding Palmetto Hollow, Cold Springs Hollow, Deep Hollow and Sandy Creek are categorized as Zone 2. A separate BCCP report shows potential GCW habitat areas in the vicinity of the Property. This report is the Habitat Conservation Plan and Final Environmental Impact Statement Issued by the BCCP in March 1996 and shows all of the potential GCW habitat areas in Travis County. Figure 4 shows the segment of this map which covers the Crystal Falls West project area. According to this map the BCCP identified potential GCW habitat areas are restricted to the north eastern portion of the site and an area located on the central portion of the north property line. This map also shows the potential habitat delineated for this report. The delineated areas track well with the BCCP potential habitat areas on the northeast side of the property. It is believed that the BCCP mapping contains buffer areas because areas mapped as potential habitat include large areas of sparse vegetation and even includes established residential areas located along the eastern boundary of the project. The areas mapped during the recent survey were areas where the vegetation mix, canopy height and degree of canopy coverage matched the published habitat criteria for the GCW. These were generally found in the steep sided canyons and ravines with spring fed ephemeral springs and streams which are present in this area. The BCCP maps tend to include not only include the areas where the habitat matches the listed criteria but also includes surrounding areas where there is low or sparse canopy coverage.

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A review of the Texas Natural Diversity Database (TPWD) yielded reports of Golden-cheeked Warblers sightings in the area. A copy of the 1 page report received from TPWD is included as an attachment to the report and a copy of the GCW occurrence map is that accompanied the report is shown in Figure 4. The report states that surveys conducted in 1991 and 1993 resulted in 17 observations in 1991 and 22 territories were observed in 1993 in the general area shown on the map (see Figure 4). According to this map GCW observations were limited to the north eastern portion of the 2,145 acre tract. The area that was identified as GCW habitat territories include two canyons which were delineated as potential habitat in the recent survey. Much of the area which is shaded as potential habitat areas on the TPWD map have relatively sparse vegetation consisting primarily of immature cedars. Overall, however, the shading on the TPWD map matches relatively well with the areas delineated in two relatively large canyons. It should also be noted that no sightings were reported for the black capped vireo on the property but here were two reported occurrences in areas that were near the western portions of the Property.

## **Findings**

Based on the location, ecology, and terrain of the Property, it was determined that the primary species of concern are the BCVI and the GCWA. The scope of the assessment included a review of the existing literature, aerial photography/satellite imagery and field visits to identify areas of potential habit for the two endangered birds.

Field observations were gathered on December 28 through 30, 2011, January 3, 4, and 11, and April 29, 2012. Roberto Vega, Bill McCurley, and Gabriela Casares of Eclipse Environmental and Engineering, Inc. walked the Property and noted vegetation composition, structure, and canopy cover characteristics. Photographs of the Property are available in Appendix C. The Property is part of a larger development known as Crystal Falls. The western third of the Property is locally known as The Nameless Valley Ranch which has been operated as a church camp and retreat. The middle third is in operation as a private ranch and the eastern third is former ranchland, which is currently not in use and is referred in this report as the Unmanaged Area.

Interviews with site managers Mr. Larry Reid of Nameless Valley Ranch and Mr. Chappo Luevanos of Luevanos Ranch indicated that most of the property has historically been utilized as rangeland for cattle, goats, horses, etc. The vegetation structure, maturity, and composition correlates with this information. Areas of the property were cleared of vegetation in the past which is illustrated in historical aerial photographs of the Property which show that the majority of the site was cleared and consisted of range land which was open. Based on the historical photographs, trees were absent from all areas of the property except for in steep sided canyons and slopes, and along some sections of the creeks which flow across the property. The aerial photographs indicate that the trees found along the streams were found to exist in narrow bands.

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In some areas, Ashe juniper exclusively colonized the open patches as they grew back. In addition, much of the area is covered by immature trees (Ashe junipers) and does not meet the canopy height or coverage required for Golden Cheeked Warbler habitat.

Due to the large size of the Property, field data collection was separated into three areas: Nameless Valley Ranch, Luevanos Ranch, and the Unmanaged Area.

#### *Nameless Valley Ranch (NVR)*

NVR is bordered by FM 2246 to the south and CR 290 to the west. Along the southern boundary, Big Sandy Creek winds past open patchy areas and cleared fields. The lowest elevation on the Property, approximately 737 feet above mean sea level (AMSL), is located in the creek bed. Large Pecan trees dominate the open areas closest to the creek. Ashe juniper dominates the patchy wooded areas. The canopy height in this area is generally less than fifteen feet.

Moving north, the elevation begins to rise. Nameless Valley Ranch Road provides access from FM 2246. It runs east west then turns north at a large strip of land, approximately 100 feet wide and 2,000 feet long. Reportedly, this strip of cleared land was used as an airstrip. Through the center of NVR, Palmetto Hollow flows north to south. Cold Springs Hollow branches from Palmetto Hollow to the east. The main NVR buildings are located between these two hollows. Palmetto Hollow has been impounded where it crosses Nameless Ranch Road. The elevation of the lake is approximately 811 feet AMSL. From the lake, the terrain rises sharply. Approximately 1,600 feet to the east, the elevation reaches 964 feet AMSL. The same distance to the west the elevation is approximately 1,000 feet AMSL. A power line and the associated cleared right-of-way are just north of the NVR camp buildings. It separates the northern tip from the rest of the property. Most of the northern tip is shrub-like immature Ashe juniper and exposed limestone outcroppings. There is a ridge near the northern eastern property boundary. This ridge starts on the NVR property and continues southward to the Luevanos Ranch. Red oaks, live oaks, and mature Ashe juniper are found on the portion of the slope that faces north. Approximately 9 acres have characteristics that are consistent with GCWA habitat (Area 1 on Figure 4 – Potential Habitat Map).

#### *Luevanos Ranch*

The northern half of the Luevanos Ranch is dominated by a large plateau and a mile long ridge to the west of Bloody Hollow. Bloody Hollow borders the northeastern property boundary. A high fence is located on top of the ridge. The highest point of the property, which is at approximately 1,097 feet AMSL, is located along this fence. As stated above, the northern facing portion of the ridge, an area of approximately 9 acres has plant species, canopy coverage and height, and terrain consistent with the characteristics required for GCWA habitat. The top of the ridge is dominated by immature Ashe juniper and rocky limestone outcroppings. The eastern facing sides of the ridge and flatter areas next to Bloody Hollow are dominated by immature Ashe juniper, white

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oak, live oak and red oak. The canopy height averages less than fifteen feet and less than fifty percent aerial coverage. In the flatter areas next to Bloody Hollow, sycamore dominates the sparse canopy layer. The southwestern portion of the property is dominated by former livestock grazing pastures.

Deep Hollow is a very narrow creek that runs from north to south through this section of the property. Southeast of the large plateau, an unnamed tributary runs west to east and into Bloody Hollow. An area designated as Area 2 (Figure 4), approximately 1.94 acres, was located along this creek. This area is sheltered to the north and south by steep hillsides.

The area located southeast of Area 2 was recently fenced and is used as a paddock for pregnant mares and mares with foals. This area is located on a gently sloping plateau and has canopy coverage provided by live oaks and red oaks (cedar trees have been removed). The areas to the west and south are dominated by rocky limestone outcroppings and shrubs. To the east and southeast there is a depression measuring approximately 400 feet by 400 feet, which reportedly is a former stock tank. Directly south, there is a large pasture dotted with Ashe juniper saplings. The connection between the Luevanos Ranch and the Unmanaged Area is dominated by livestock grazing fields and what may have been hay fields. Bloody Hollow and Bee Cave Hollow converge and flow south toward the Sandy Creek arm of Lake Travis.

#### *Unmanaged Area*

This southern portion of this area is dominated by unpaved dirt ranch roads and two tributaries to Bee Cave Hollow. Near the intersection of two ranch roads, Whitetail Pass and Buck Run, and just south of the Crystal Falls Golf Course is an area of approximately 1.76 acres that meets the vegetation composition and canopy height and coverage requirements for GCWA habitat. This is designated as Area 3 (See Figure 4). Area 3, located south of an unnamed tributary, is dominated by mature Ashe juniper, red oak, and live oak trees. Canopy coverage at from twelve to fifteen feet averages fifty percent.

Further upstream (east) along the unnamed tributary, a narrow canyon starts at about 850 feet AMSL and rises to 925 feet AMSL. Much of this canyon, approximately 10 acres, has vegetation composition, canopy and terrain characteristics consistent with GCWA habitat. This area is designated as Area 4 (Figure 4).

The plateau portions of the Unmanaged Areas to the south are dominated by shrub canopy and rocky outcroppings. To the north, a tributary of Bee Cave Hollow flows west to east through another narrow canyon. This canyon was previously surveyed in 2010 for endangered species habitat in a study done by Eclipse Environmental and Engineering, Inc. In the previous study, this area had vegetation composition, canopy, and terrain characteristics that are consistent with potential GCWA habitat. This area was resurveyed and conditions appear similar to the 2010 survey. The flatter center of the canyon has less than fifty percent canopy coverage. The sloped sides of the canyon are dominated by mature hardwoods. Along the top of the canyon ridge,



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mature Ashe junipers dominate the canopy layer at fifteen feet. Area 5 is approximately 10 acres (Figure 4).

## **Conclusion**

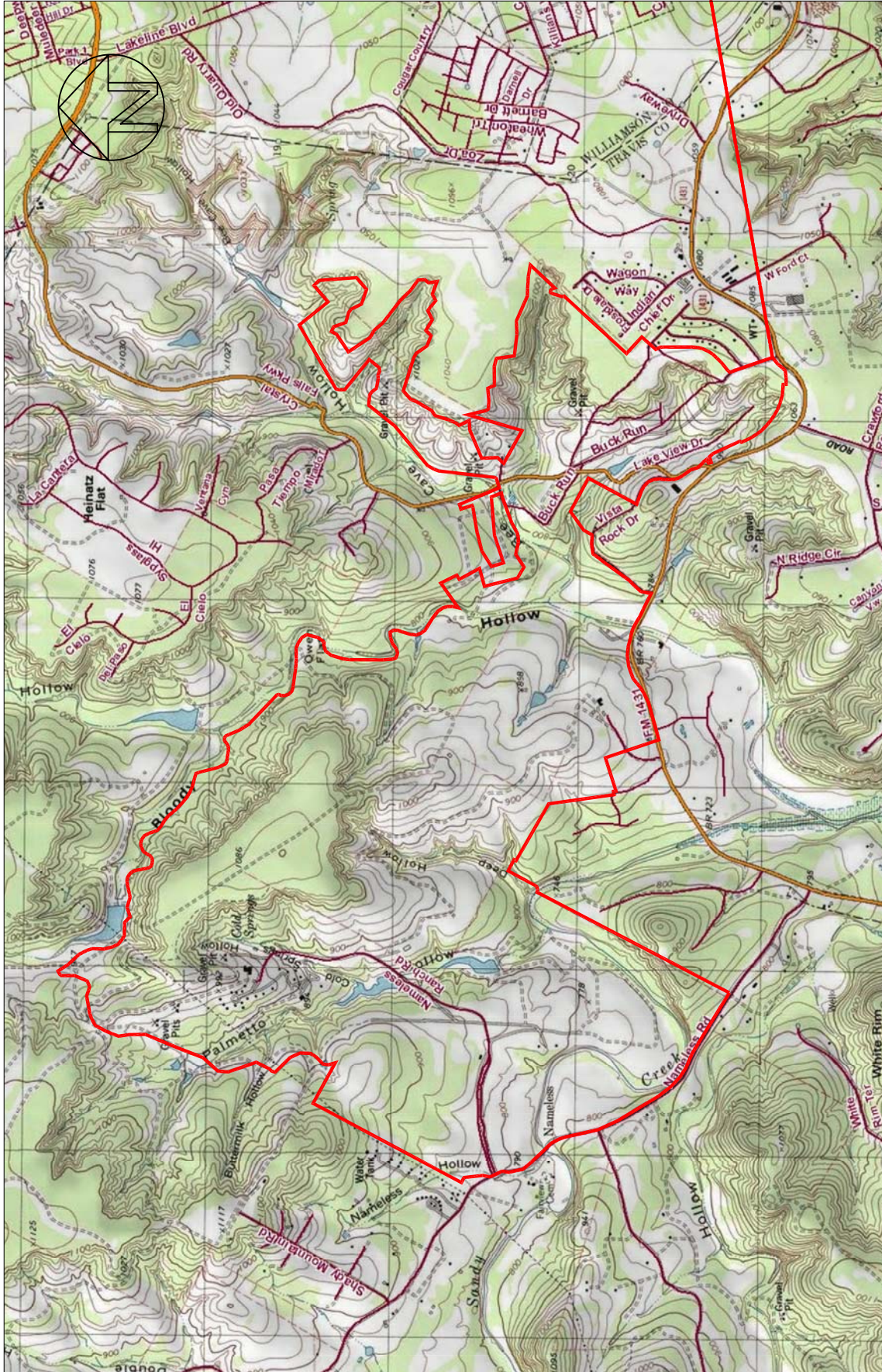
A review of endangered species known to inhabit the Balcones Canyonlands and Travis County was conducted. Based on the available information, it was determined that the main species of concern for this area were limited to the Black-capped Vireo and the Golden-cheeked Warbler. While the BCVI population is more abundant than the GCWA overall, locally the GCWA is more abundant than BCVI. The Property lacked the shrub diversity and habitat structure to support breeding pairs of BCVI. Therefore, no suitable prime/nesting habitat was found for the BCVI. Additionally there were no BCVI occurrence records on the 2,145 acre tract.

Five areas with suitable vegetation and canopy coverage were identified but only three of these are large enough to support one or more breeding pairs. These are the areas designated as Areas 1, 4, and 5. Area 3 is too small to be used for breeding habitat but due to its proximity to Area 4, it could potentially be used as secondary foraging habitat. Area 2 is too small to serve as breeding habitat and is isolated from the potential breeding habitats. It is our opinion that prior to disturbance of areas 1, 3, 4, and 5 additional study in the form of a GCWA presence/absence survey will be required. If birds are found to be present in these areas, an application for a USFWS permit or participation in the Balcones Canyonland Conservation Plan (BCCP) with payment of compensatory fees will be required prior to development of these areas.

The BCCP potential habitat map and the TPWD GCW sighting occurrence records indicate that the primary potential habitat area for the GCW is in the north east portion of the property where there are steep sided canyons with springs and streams which flow for a relatively long periods during the spring months. These areas were delineated as potential GCW habitat in this study. The area which was delineated on the far western portion of the project area is shown as confirmed or potential habitat on the BCCP map in Figure 4 or the TPWD map shown in Figure 5. It is, however, shown as potential GCW habitat on the BCCP fee map in Figure 3..


Evidence of the presence of the BCVI or GCWA was not seen or heard during field observations. However, these habitat surveys were performed during the winter months when the endangered songbirds would not be present in Texas, and as such does not represent an official presence/absence survey.



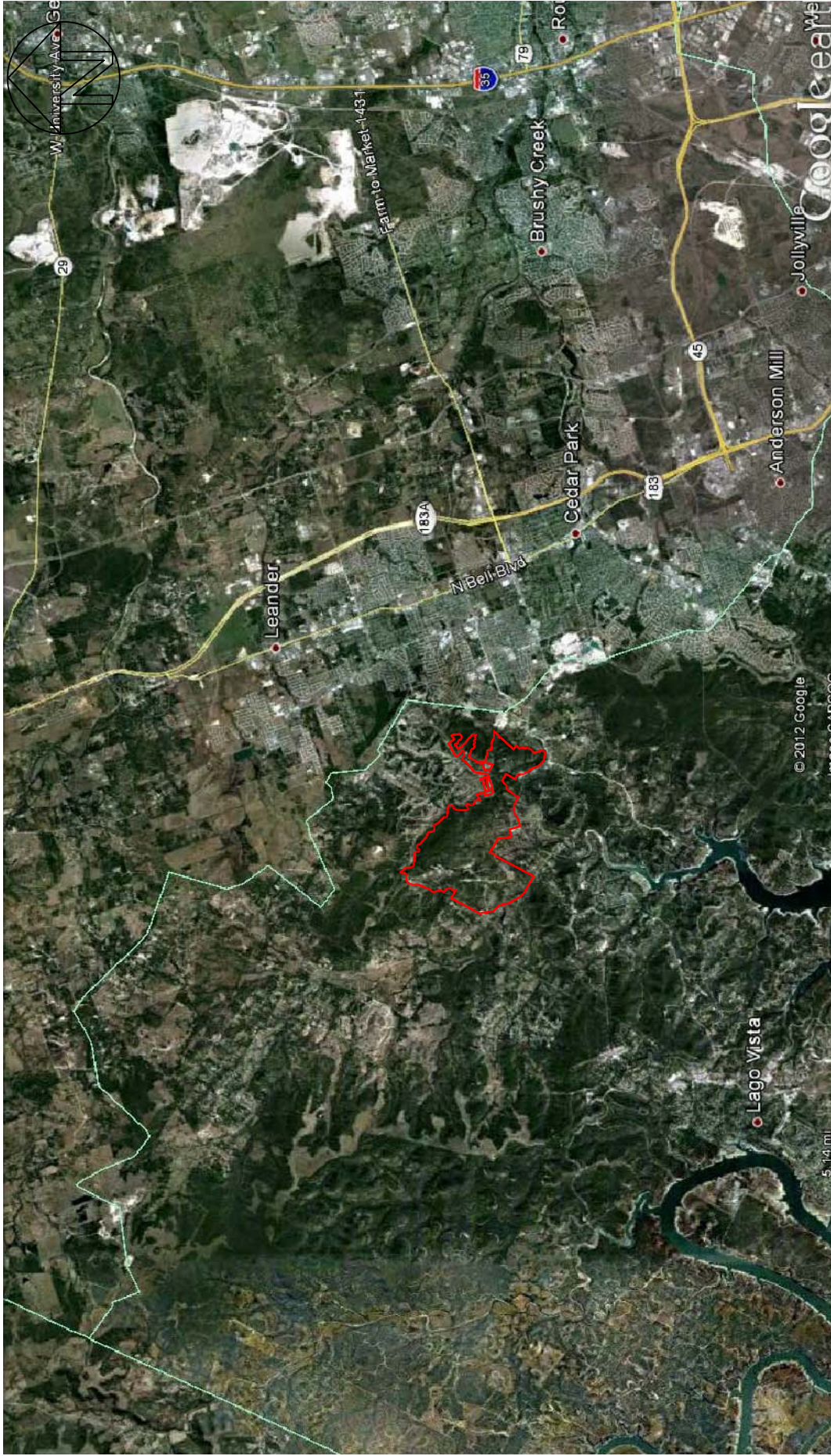


MAP NAME: Leander, TX  
 MAP VERSION: 1991  
 MAP DATE: 1995  
 CONTOUR INTERVAL 20 ft  
 SOURCE: USGS 1 arc-second NED, 1 meter vertical precision  
 LOCATION: Crystal Falls West


LEGEND  
 [Red Outline] PROPERTY AREA

<b>FIGURE 1</b>	
<b>SITE PLAN</b>	
PROJECT: TAYLOR-MORRISON	
DATE: MARCH 2012	
SCALE: AS SHOWN	
 <b>ECLIPSE</b> ENVIRONMENTAL & ENGINEERING, INC.	
8705 Shoal Creek Blvd., Suite 200 Austin, Texas 78757 Phone (512) 323-6350 Fax (512) 323-6604	





SOURCE: GOOGLE EARTH MAPS

FIGURE 2 AREA MAP	
PROJECT: TAYLOR-MORRISON	
DATE: MARCH 2012	
SCALE: AS SHOWN	
 ECLIPSE ENVIRONMENTAL & ENGINEERING, INC.	
8705 Shoal Creek Blvd., Suite 200 Austin, Texas 78757 Phone (512) 323-6350 Fax (512) 323-6604	