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Phase I Archeological Survey for the Proposed Zacate Creek Hike and Bike Trail, City of Laredo, Webb County, Texas

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Prepared for:
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Laredo, Texas 78040

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MOORE ARCHEOLOGICAL CONSULTING, INC.
HOUSTON'S FIRST ARCHEOLOGY FIRM

Report of Investigations Number 675

December 2017
Texas Antiquities Code Permit #8037
TxDOT CSJ: 0922-33-170

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by TxDOT pursuant to 23 I.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

Abstract

In May 2017, archeologists from Moore Archeological Consulting, Inc. (MAC) conducted intensive archeological survey with shovel testing in accordance with Texas Historical Commission (THC) guidelines on an approximately 3.4-km-long Area of Potential Effects (APE) for a proposed hike and bike trail in the northeastern portion of the City of Laredo. The project area runs mostly west of a recently completed section of Bartlett Ave. between North Beach Lane and East Del Mar Blvd., just north of the Laredo International Airport (Figures 1 through 3). The depth of impacts for the project are anticipated to be less than one meter in depth.

Because the proposed project will be undertaken on land that is to be donated to the City of Laredo, the project falls under the Texas Administrative Code (13 TAC 26.20[2]). The recent archeological investigation comprised pedestrian survey including shovel testing, photography, site recording, basic archival research, National Register of Historic Places (NRHP) and State Antiquities Landmark (SAL) eligibility assessment, artifact and data analysis, and report preparation in accordance with THC and Council of Texas Archeologists (CTA) standards. The APE consisted of a 3.4-km-long by 18-m- (60-ft-) wide corridor. The total survey area was approximately 61,200 square m or 15.12 acres.

Two archeological sites, 41WB835 and 41WB836, both sparse lithic scatters lacking temporally diagnostic materials, were recorded as a result of this survey; the portions of both sites within the current project APE are recommended as not eligible for listing on the National Register of Historic Places (NRHP) or as State Antiquities Landmarks (SALs). Surface examination and recent aerial photography indicates the majority of the proposed APE has already undergone extensive modification. Based on these results, no further archeological investigation is recommended. Jennifer Hatchett Kimbell served as Principal Investigator (TAC Permit #8037), and Veronica Garcia served as field assistant.

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1 Introduction

Between May 30 and June 1, 2017, archeologists from Moore Archeological Consulting, Inc. (MAC) conducted intensive archeological survey with shovel testing in accordance with Texas Historical Commission (THC) guidelines on an Area of Potential Effects (APE) measuring approximately 3.4 km (2.1 mi) long by 18 m (60 ft) wide for a proposed hike and bike trail in the northeastern portion of the City of Laredo. The total survey area was approximately 61,200 square m or 15.12 acres. The project area runs mostly west of a recently completed section of Bartlett Ave. between North Beach Lane and East Del Mar Blvd., just north of the Laredo International Airport (Figures 1 through 3). The depth of impacts for the project are anticipated to be less than one meter in depth.

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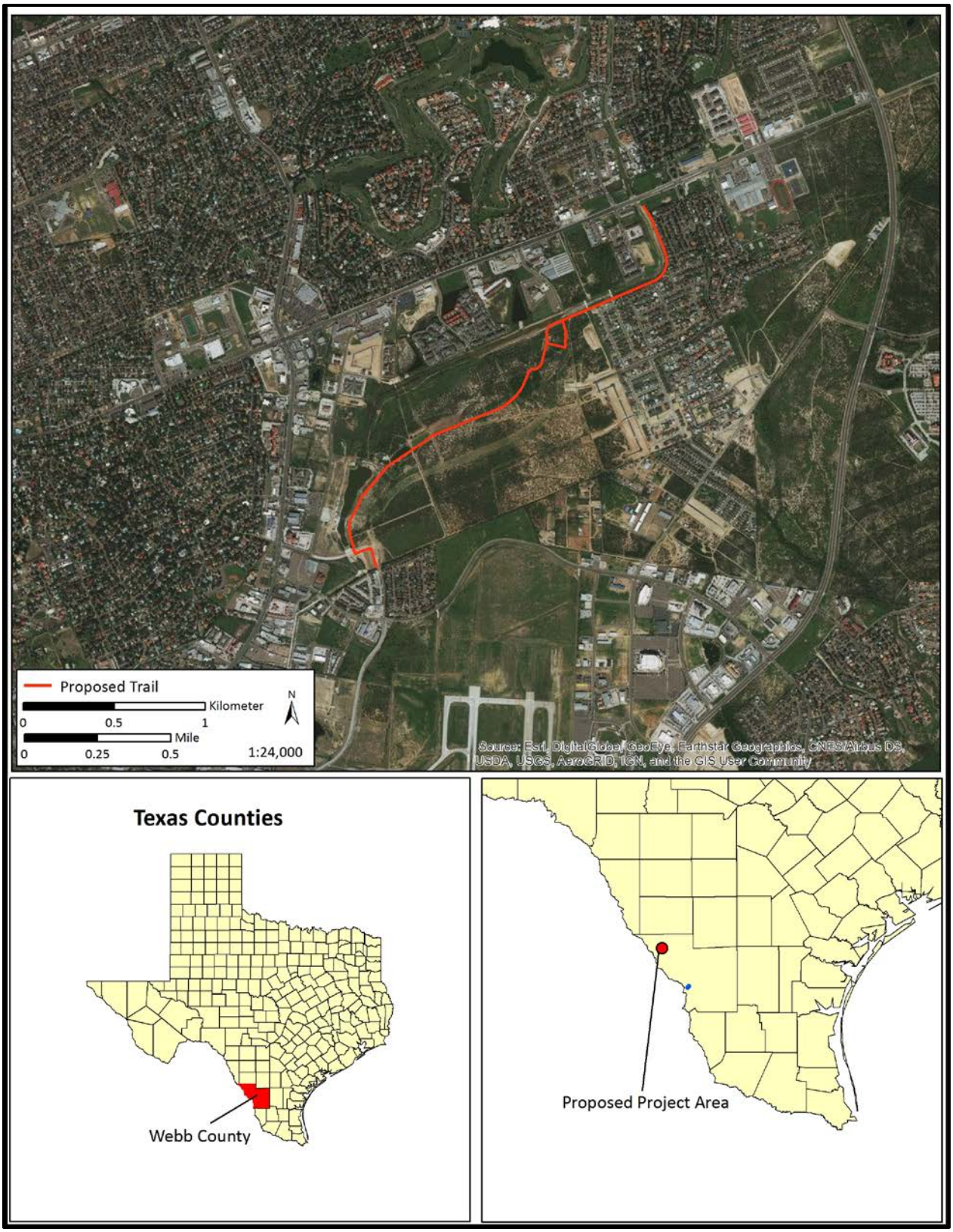

Figure 1. General location map of the project area.

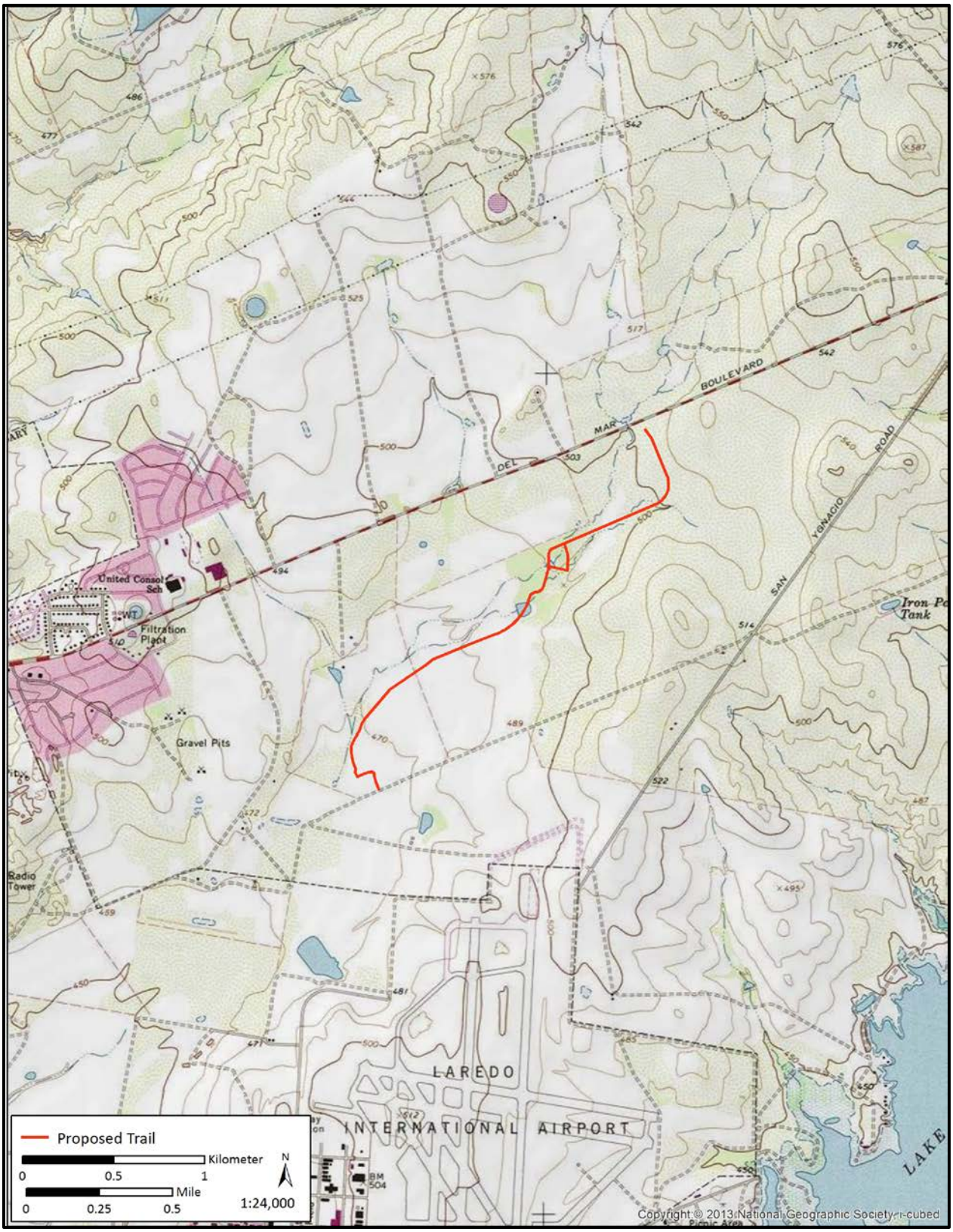

Figure 2. Proposed APE on USGS topographic quad map.

Figure 3. Proposed APE on aerial photograph.

2 Background

2.1 Environmental Setting

The proposed project area is located within the Texas-Tamaulipan Thornscrub subregion of the Southern Texas Plains ecoregion of Texas (Griffith et al. 2007). This subregion is just outside the Rio Grande Floodplain and Terraces subregion in which much of the City of Laredo is located (Griffith et al. 2007). Most of the area is composed of gently rolling or irregular plains cut by arroyos and streams. Historically, the vegetation within the Texas-Tamaulipan Thornscrub subregion consisted of a mix of shrublands and grasses with some parklands and woodlands. More recently, most of the area is characterized as brushy shrubland, dominated by drought-tolerant, often thorny small trees and shrubs such as honey mesquite (Griffith et al. 2007). Outside urban areas, most of the land in this subregion is used as rangeland for cattle and sheep, and many ranches also lease land for hunting (Griffith et al. 2007). Other than along major drainages, archeological sites in the area tend to be surficial or only shallowly buried and found on deflated surfaces (Hester 2004). Hester (2004) notes that, despite the general tendency of sites in south Texas to lack intact buried deposits, there are notable exceptions in the form of deeply stratified open camp sites.

The proposed area of potential effects (APE) is within the urban area of the City of Laredo, and Google Earth imagery shows the area around the APE to have been developed into residential neighborhoods by 1995. Imagery from 2005 indicates that at that time the western portion of the APE had been scraped and a small lake, Zacate Lake, was created immediately west of the APE. Another small water catchment area had been added just north of Zacate Lake by 2010.

2.2 Geology and Soils

Geology

Geologically, the project area overlies the Laredo formation, an Eocene sandstone and clay formation (Barnes 1993).

Soils

Soils in this area consist of moderately to very deep, well-drained soils (NRCS 2017). Two soil units occur in the proposed APE (Figure 4).

Copita fine sandy loam, 0 to 3 percent slopes (CpB): Copita series soils formed in loamy residuum derived from sandstone and occur on side slopes of low hills. A typical pedon consists of A1 and A2 horizons overlying Bk1, Bk2, and Crk horizons over calcareous sandstone bedrock, which occurs at between 125 and 152 cm (NRCS 2017).

Tela sandy clay loam, 0 to 1 percent slopes, frequently flooded (Te): Tela series soils formed in loamy alluvium and generally occur along drainageways. A typical pedon consists of an A1 horizon overlying Bt, Btk, and Bk horizons to approximately 200 cm (NRCS 2017).

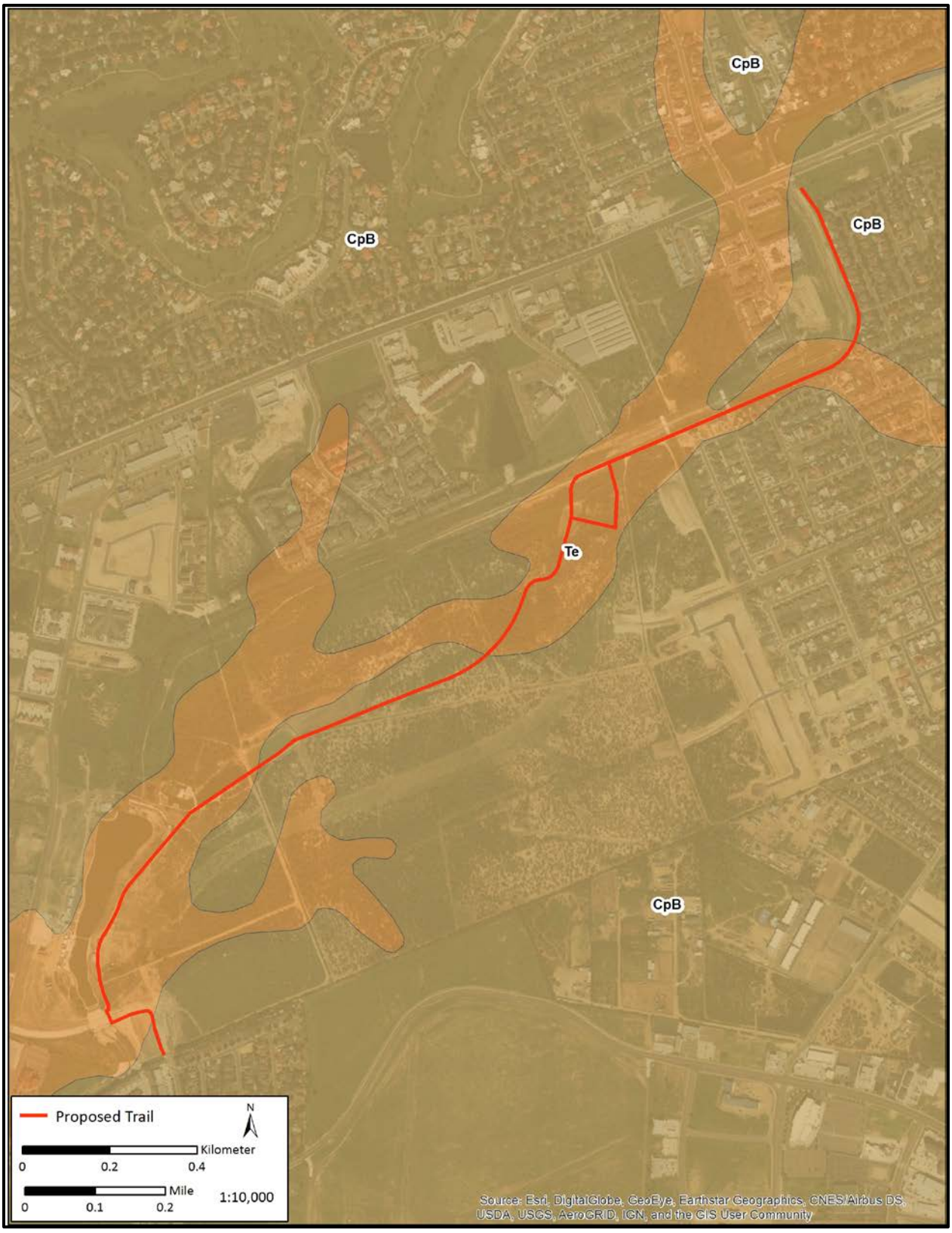

Figure 4. Project area soils.

3 Regional History and Culture Chronology

3.1 Prehistoric Background

Paleoindian Period (ca. 11,200 to 8.500 B.P.)

The proposed project area is located within the South Texas archeological region, which is arbitrarily separated from that of northeastern Mexico due to modern political boundaries (Hester 2004). This region of Texas has attracted human occupation beginning in Clovis times at least 11,200 years ago, although the Paleoindian period in this area of Texas is represented almost entirely by diagnostic artifacts found within isolated contexts; no intact archeological sites dating to the Clovis or Folsom periods have been investigated in this region (Hester 2004). Many of these artifacts are in documented private collections; the surficial nature of many archeological sites in south Texas has resulted in extensive private collecting of points and other diagnostic artifacts (Hester 2004). The Berger Bluff site, in Goliad County, provides a notable exception to the lack of intact Paleoindian sites in south Texas (Hester 2004). This site was buried more than eight meters below the surface near Coleto Creek. While no diagnostic projectile points were recovered from the site, radiocarbon dates from the site place it within the Paleoindian period. Other known sites have yielded Late Paleoindian artifacts and hold the potential for intact buried deposits, so Hester (2004) suggests there are still opportunities to gain valuable information on the Paleoindian period in this region. Early Paleoindian lifeways across most of North America appear to be similar, based on material culture from archeological sites. The Clovis and Folsom peoples appear to have been highly mobile and relied heavily on large game hunting, supplemented with smaller game and easily accessible plant foods. As the Paleoindian period progressed, regional differences in tool manufacture may indicate increased adaptation to specific environments, but a reliance on large game appears to have continued.

Archaic Period (ca. 8,500 to 900 B.P.)

The Archaic Period in south Texas is represented by numerous archeological sites, although few of the sites contain intact, stratigraphically discrete occupations. In general, across Texas the Archaic is divided into three subperiods, distinguished archeologically primarily on the basis of stone tool (specifically dart point) types. In many cases, radiocarbon dates provide chronological associations for sites lacking temporally diagnostic artifacts, or radiocarbon dates are used in combination with diagnostic tools to date a site. Preservation of organic remains at south Texas archeological sites tends to be poor, limiting the possibilities for radiocarbon dating. Recent studies, however, have been successful in isolating organic residues trapped in burned rocks and radiocarbon dating those residues (Quigg 2003). In some cases the residues can also be used to identify particular families of plants being exploited as sources of food (Quigg 2003). Early Archaic (ca. 8,500 to 4,500 B.P.) populations in south Texas, as in central Texas, appear to have shifted to an increased reliance on plant foods and small game, but few sites from this time period have been studied in south Texas (Carpenter et al. 2010). The Early Archaic sites in south

Texas that have been studied indicate increased use of stone-lined hearths, associated with an increased reliance on plant foods that required cooking, and the exploitation of both aquatic and terrestrial meat resources (Carpenter et al. 2010).

Interestingly, while Middle Archaic (ca. 4,500 to 2,300 B.P.) sites are very rare along the central Texas coast, these sites are much more common in interior south Texas than are earlier sites (Carpenter et al. 2010; Ricklis 2004). Ricklis (2004) suggests this lack of evidence of human occupation of the central portion of the Texas coast is related to a hypothesized reduction in exploitable resources available within the fragile estuarine ecological system of this portion of the coast; as a result, populations that had previously exploited coastal resources may have migrated inland in search of alternative subsistence strategies. Within inland south Texas, as across much of Texas, the Middle Archaic period is associated with a greater diversity of stone tool types, suggesting greater specialization of tools and, perhaps, exploitation of new resources. Additionally, larger and more compact hearths and increased numbers of ground stone tools are interpreted as indications of a greater reliance on plant foods requiring more intensive processing (Carpenter et al. 2010). An increase in non-local materials, such as marine shell and projectile point types typical of other regions, found at sites in south Texas suggests expanded trade networks. The Loma Sandia site in Live Oak County indicates at least limited use of cemeteries for burial of the dead (Carpenter et al. 2010).

The Late Archaic (ca 2,300 to 1,200 B.P.) period in south Texas, as in many other regions of the state, seems to represent a continuation of trends begun during the Middle Archaic period. Populations appear to have been increasing, and exploitation of environmental resources intensified (Carpenter et al. 2010). Large cemeteries suggest increased population density and, arguably, greater social organization. Late Archaic sites are also found in a greater variety of topographical settings than are those from earlier time periods.

Late Prehistoric (ca. 1,200 to 250 B.P.)

As was the case elsewhere in Texas, the beginning of the Late Prehistoric period coincides with the replacement (or at least supplementation) of the atlatl and dart by the bow and arrow and with the common use of ceramics (Hester 2004). Evidence of greater population mobility may reflect an increased reliance on bison as a subsistence staple (Carpenter et al. 2010).

3.2 Historical Background

During the early period of Spanish dominion over modern-day Texas, the region south of the Nueces and west of the Gulf Coast was largely ignored until the mid-eighteenth century. The region was not known to contain valuable exploitable resources and was populated with nomadic hunter-gatherer groups. Additionally, this region was far enough from the borders of the Spanish territories and from the coastline itself that it was insulated from threat of English or French incursion; thus the establishment of population centers and military installations was not a high

priority. By the mid-eighteenth century, the region was considered part of the Spanish state of Nuevo Santander, which extended well into modern-day Mexico. In 1746, Colonel Don José de Escandón was tasked with leading an expedition to explore Nuevo Santander and to propose a plan for colonization (Cunningham 2014). The area "had become a safe haven for indigenous populations who fled Spanish domination, as well as a region coveted by other European powers who sought to expand their colonial possessions" (Cunningham 2014:56). In January 1747 Escandón directed an organized expedition into the region; seven divisions totaling 765 soldiers spent three months exploring, surveying, and mapping the region of Nuevo Santander (Cunningham 2014). Escandón synthesized the information gathered into a report and included proposed sites for fourteen settlements and the same number of missions. Of these, however, only Nuestra Señora de los Dolores and Laredo were north of the Rio Grande and thus within the current borders of Texas. In a break from the usual Spanish approach to the frontier, Escandón's plans did not include the establishment of presidios. Rather, the soldiers chosen to establish settlements would also protect those settlements from attacks by indigenous peoples (Cunningham 2014).

In May 1755, the town of Laredo was officially founded by a colonist named Tomás Sánchez who had received permission from Escandón, then governor of Nuevo Santander, to establish a colony. Sánchez founded the town with his own family and three others; they were soon joined by seven more families (Wood 2004). In the summer of 1757, a representative from the Viceroy visited Laredo and reported back that the town subsisted primarily on the raising of livestock, hunting, and fishing, as the lack of rain would have required irrigation for growing crops (Wood 2004). During the 1760s and 1770s increased aggression by Comanches and Apaches, being pushed southward from the Plains by Spanish activity, threatened Laredo and other Rio Grande settlements. The governor of Nuevo Santander in 1775 assigned a permanent military garrison to the town to assist in the protection from native aggression (Hinojosa 1983). By 1789, Laredo boasted a population of 700 inhabitants of various ethnic backgrounds and including a group of over 100 Carrizo Indians (Cruz 1988). The economy continued to be based on livestock raising, although limited farming efforts had been attempted.

The town of Laredo, although not directly involved in the Mexican war for independence, which began in 1810, suffered from the redeployment of military forces away from the town and from the general economic depression and social disruption that characterized the time period in general (Hinojosa 1983). Laredo grew slowly during the mid-nineteenth century, suffering occasional problems from raiding parties of Apaches and Comanches and affected negatively by the war for Texas independence (Hinojosa 1983). In 1848, as the Treaty of Guadalupe Hidalgo was being negotiated to end the U.S.--Mexican War, the town of Laredo, split almost in half by the Rio Grande, petitioned the American and Mexican authorities to be allowed to remain within the Mexican Republic (Hinojosa 1983). In the end, the Rio Grande became the international border and the city of Laredo was divided into two towns in different countries.

Despite its geographical and social distance from the factors at play during the American Civil War, Laredo found itself caught up in the struggle. In addition to the blockade of the Gulf Coast, Union efforts to prevent the importation of goods into the Confederacy included attempts to stop trade along the Rio Grande. In an attempt to protect trade that had previously gone through Brownsville, bales of cotton were shipped to Laredo. In March 1864, during what became known as the Battle of Laredo, Colonel Santos Benavides and a small group of soldiers held off Union troops sent to Laredo to destroy the cotton stored there (Cuéllar 2017).

Beginning in the early 1880s, the establishment of rail lines into and through Laredo connected Texas to Mexico and encouraged population and economic growth (Cuéllar 2017). During the events leading up to the Mexican Revolution of 1910, anti-Porfirio Díaz activists sought exile in Laredo, and the city became a haven for Mexican refugees fleeing the political instability south of the border following the revolution (Cuéllar 2017). The Laredo economy was further improved by the discovery of rich oil and gas fields nearby, and during World War II a tactical training base for fighter pilots was established in the city (Cuéllar 2017). By the mid-twentieth century Laredo had become established as a key import and export center for trade with Mexico.

4 Previously Recorded Sites and Previous Investigations

According to Hester (2004), south Texas site types include open occupation sites, lithic procurement and reduction sites, cemetery sites, and rare rock art sites. Few sites with deeply buried intact archeological deposits are known from the area; most sites are surficial and found on deflated surfaces (Hester 2004). The sites that have been recorded near the proposed APE for this project fit this surficial pattern.

There are no recorded cemeteries, NRHP properties or districts, or SALs within one kilometer of the proposed project area; however, three archeological sites have been recorded within one kilometer of the proposed APE (Figure 5). The easternmost extents of sites 41WB65 and 41WB66 are each located approximately 380 m west of the proposed APE. These sites were recorded in 1977 by archeologists from the Center for Archaeological Research (CAR) at the University of Texas at San Antonio (UTSA) as part of the McPherson Road Extension Project. Site 41WB65 was recorded as a "thin scatter of chipped stone and thermally altered stone exposed in a fine, tan, sandy clay loam" (Fox and Uecker 1977:7). No temporally diagnostic artifacts were recovered, although the general assemblage was thought to indicate multiple occupations by Archaic-period peoples. The assemblage from this site included relatively high frequencies of secondary and tertiary chipping debris, bifaces, and dart points, suggesting the site was the location of later-stage lithic tool production. Surface indications implied the site had been badly disturbed by cultivation and erosion. Site 41WB66 yielded a higher relative frequency of primary and secondary flakes, suggesting the site may have served as a quarry, and it was also thought to

have been heavily disturbed by cultivation, gravel quarry operations, and erosion (Fox and Uecker 1977). Fox and Uecker (1977) recommended testing at site 41WB65 to evaluate the possibility that intact subsurface deposits would be impacted by proposed earth-moving activities. The limited testing confirmed the disturbed nature of the archeological deposits to a depth of over 50 cm below the surface (Fox and Uecker 1977). The locations of both sites are within what is now a developed urban zone.

Site 41WB160 was recorded in 1989 during a survey for the Laredo North Wastewater Plant State Revolving Fund Project (see Figure 5). The northernmost marked boundary of the site, which was apparently conjectural based on landforms, approaches no closer than 200 meters from the proposed APE for the Zacate Creek Hike and Bike Trail. The site was described as a sparse lithic scatter of unknown extent and that had been extensively disturbed by clearing, cultivation, overgrazing, and erosion.

According to the Archeological Sites Atlas, two additional archeological investigations have been conducted within one kilometer of the proposed APE (see Figure 5). A 1993 survey for a proposed north Laredo/Webb County infrastructure improvements project was conducted by Warren and did not result in the recording of any previously unknown archeological sites within a kilometer of the current proposed APE. A short linear survey almost a kilometer east of the proposed APE was conducted by Yelacic in 2015, but the project apparently did not result in the recording of any previously unknown archeological sites. The survey, of the right-of-way of a 24-inch waterline, was conducted on behalf of the City of Laredo; additional information about this survey was not available.

Figure Removed for Confidentiality

Figure 5. Previous investigations and previously recorded sites.

5 Methods

Field methods complied with or exceeded survey standards established by the Council of Texas Archeologists (CTA) and adopted by the Texas Historical Commission (THC) for the project area. For linear projects with corridors up to 30 m wide, the standards require one shovel test for every 100 m of distance, in areas that have potential for buried cultural materials. This excludes areas with greater than 30 percent surface visibility or greater than 20 percent slopes. The original research design as accepted by the THC for the current project proposed the excavation of 34 shovel tests based on a 3.4-km-long APE. Google Earth imagery from February 2017, the most recent imagery available, presents the central portion of the APE within what appears to be a relatively undisturbed area.

MAC archeologists conducted pedestrian survey over 100 percent of the APE and excavated a total of 14 shovel tests, two of which were positive for buried cultural material. Surface visibility in the project area varied widely, between 100 percent and 5 percent. Shovel tests measured at least 40 cm in diameter and were excavated in 10-cm levels. Excavated sediments were screened through 1/4-inch hardware cloth. Each shovel test was documented on a shovel test form, and its location was recorded with a handheld Trimble Global Positioning System (GPS) device with sub-meter accuracy. Several artifacts that were of interest but were not temporally diagnostic were photographed; no temporally diagnostic artifacts were observed, and no artifacts were collected during the course of the investigation.

Surface inspection of the APE and examination of recent aerial photography indicates that at least the surface of most of the project area has been modified in the recent as well as the more distant past and thus is unlikely to contain intact archeological deposits. Modifications include scraping of a long portion of the APE (Figure 6), the removal of mesquite and other brush (Figure 7), and the augmentation of drainage channels (Figure 8). Since the majority of archeological sites known from this area are limited to the upper few centimeters of sediment, disturbance of this deflated surface is likely to result in disturbance of any archeological remains that might be present. Shovel tests were placed within mildly to moderately disturbed areas in an effort to determine whether subsurface deposits might be intact. Portions of the APE that clearly had been heavily disturbed were not shovel tested, as the probability of intact archeological remains being present in these areas is minimal.

Figure 6. Cleared/scraped portion of proposed APE (see Figure 9-2 for location where photograph was taken).

Figure 7. Portion of proposed APE from which trees have been removed (see Figure 9-2 for location where photograph was taken).

Figure 8. Augmented drainage channel crossed by proposed APE (see Figure 9-3 for location where photograph was taken).

6 Results and Recommendations

Archeological investigations of the APE for the proposed Zacate Creek Hike and Bike Trail in the City of Laredo, Webb County, Texas resulted in the excavation of 14 shovel tests and the documentation of two previously unrecorded prehistoric archeological sites (Figures 9-1 through 9-4). Site 41WB835 represents a relatively sparse lithic scatter that runs along approximately 545 m in length and covers the entire 18-m-wide project corridor, for a total area of approximately 9,810 square meters within the proposed APE. The lithic scatter may be an extension of previously recorded site 41WB160 (see Figure 9-2). At the time 41WB160 was recorded, the northern extent of the site was unknown; the tentative boundary provided to the THC ends approximately 455 m south of the current APE but is directly south of the 41WB835 lithic scatter. Unfortunately, disturbances to the land between the previously recorded boundary of 41WB160 and 41WB835 almost certainly exclude the possibility that investigation of the land between the two sites would result in evidence that they are connected. The 41WB835 lithic scatter was first seen within a small section of uncleared land within the APE immediately west of a portion of the project area that had been cleared of trees and scraped (see Figure 9-2). The ground surface among the mesquite, grasses, and small forbs was littered with chert debitage and a few pieces of burned rock. Examination of a newly-created slope immediately north of this area revealed

debitage eroding downslope from above. Among the materials on the slope were two chert biface fragments found approximately 95 m apart (Figure 10, Figure 11). Very few artifacts were found within the scraped area of the APE, which covers almost the entire width of the project corridor, but the small berms on the sides of the scraped area (resulting from the action of the bulldozer or other scraping machinery) contained numerous pieces of chert debitage and two unifacial scrapers (Figure 12). The original locations of the materials found within these small berms are impossible to determine, and it is likely that the artifacts have been pushed outward from the original site boundaries. Six shovel tests were placed within the site area; two of these shovel tests yielded debitage from between 20 and 45 cm below the surface. However, the degree of disturbance within the area and the nature of the deposits within the shovel tests suggests the few subsurface artifacts recovered were likely not in primary context. The matrix within the two positive shovel tests was notably less compact to the depth at which artifacts were recovered than that within the negative shovel tests, suggestive of burrows or other disturbances. The site appears to have originally been limited to either the immediate ground surface or no more than the upper few centimeters of sediment; the scraping of the cleared area effectively destroyed the context of any artifacts found within that portion of the APE.

Site 41WB836 represents a very small lithic scatter eroding down a bare artificial slope from an undiscovered location (see Figure 9-3, Figure 13). The scatter measured at most 30 m long by 15 m wide, with the long axis parallel to the channel at the bottom of the slope; the total area of the scatter is approximately 215 square meters. Two shovel tests placed within the flat area above the slope were negative for cultural material. The entire area shows evidence of having been extensively modified, and the primary context of the debitage that makes up 41WB836 has likely been destroyed. No tools or other temporally diagnostic artifacts were among the 25 to 30 lithic artifacts within the scatter. There is no evidence that this scatter extends beyond the current project corridor.

Neither the portion of 41WB835 within the proposed APE nor 41WB836 meet the criteria for inclusion on the NRHP or for listing as a SAL. The portion of 41WB835 within the proposed APE is extremely disturbed and offers little likelihood for preserving intact subsurface archeological deposits. The lithic scatter recorded as 41WB836 is likely out of its primary context; in fact, the primary context for those artifacts may no longer exist. Based on these results, no further archeological investigation is recommended within the current proposed APE. Should the APE be modified or should additional archeological remains be discovered during the course of clearing or construction of the proposed project, the City of Laredo shall immediately contact the THC for additional guidance.

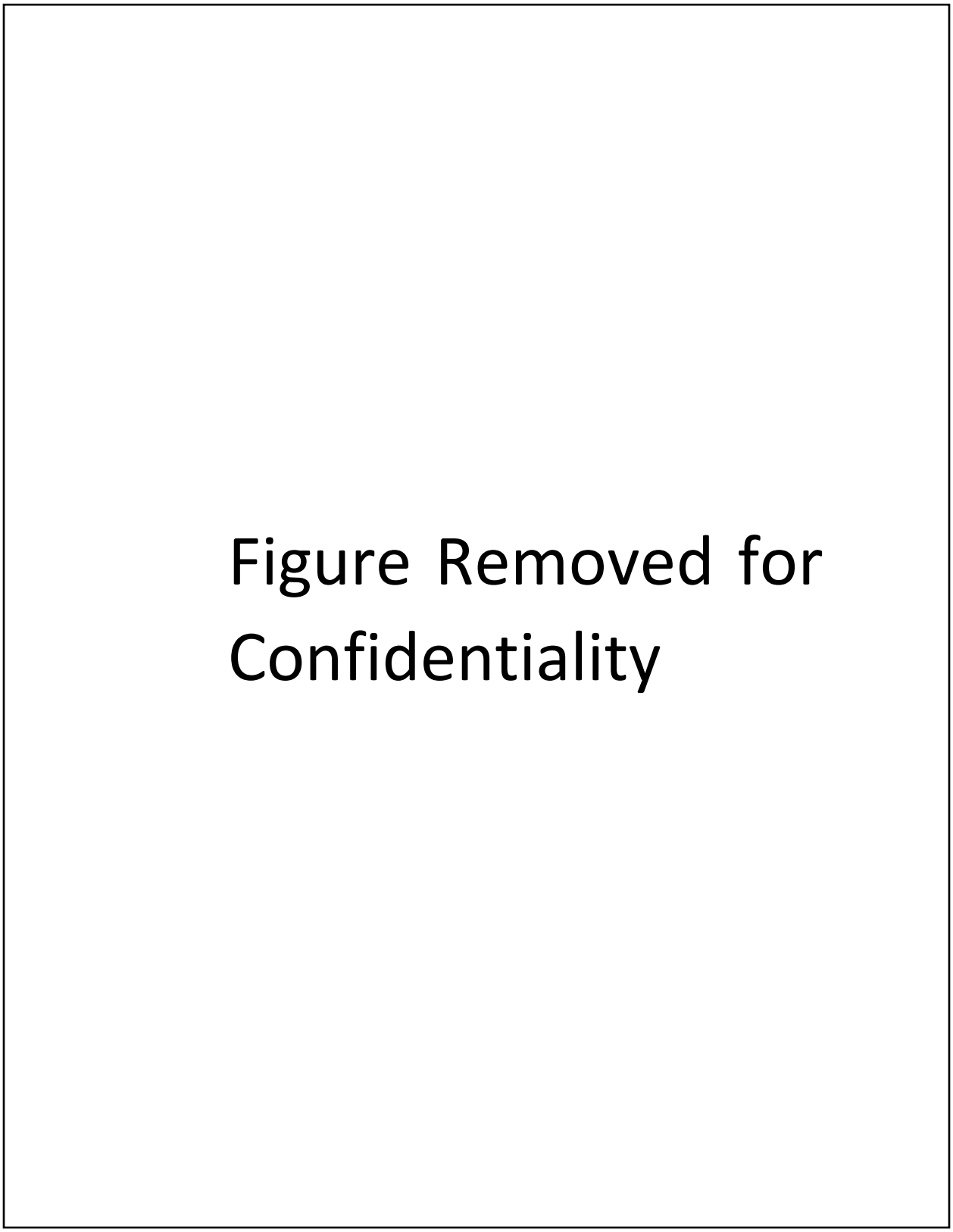

Figure 9. Locations of shovel tests and results of investigations.

Figure 10. Biface fragment from 41WB835.

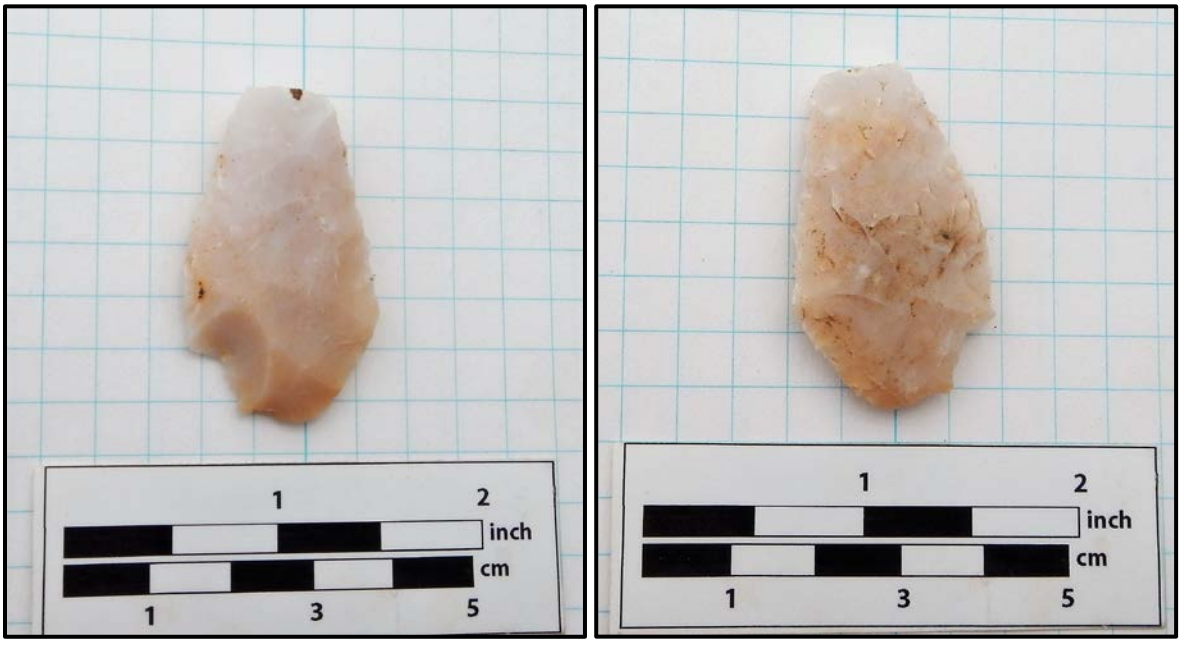

Figure 11. Biface from 41WB835.

Figure 12. Unifacial scraper from 41WB835.


Figure 13. Setting of 41WB836, on slope.

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Appendix A: Shovel Test Results

Moore Archeological Consulting
Project #17-15
TAC Permit #8037

Project Name: Zacate Creek Hike & Bike Trail, Webb County
Dates: May 30-June 1, 2017
TxDOT CSJ: 0922-33-170

Shovel Test Log

Shovel Test #	Depth (cmbs)	Sediment Type	Munsell	Notes	Results
ST 1	0-2	dry fine sandy loam	10YR 5/4 yellowish brown	Near south end of APE, in vacant lot adjacent to Bartlett Ave.; surface visibility 40%, shin-high bunch grasses	-
	2-12	slightly moist sandy clay loam	10YR 4/4 dark yellowish brown mottled with 10YR 5/4 yellowish brown, 10YR 4/2 dark grayish brown	Many small gravels in upper 12 cm. Appears very disturbed	-
	12-20	extremely compact clay	10YR 4/2 dark grayish brown	Terminated at 20 cmbs due to extremely compact clay.	-
ST 2	0-2	dry fine sandy clay loam	10YR 5/4 yellowish brown	Near gravel trail, relatively flat area; surface visibility 75%, short bunch grasses, many gravels on surface.	-
	2-4	slightly moist sandy clay loam	10YR 4/4 dark yellowish brown mottled with 10YR 5/6 yellowish brown, 10YR 4/1 dark gray	Appears disturbed.	-
	4-20	moist sandy clay loam	7.5YR 5/1 gray mottled with 7.5YR 5/8 strong brown and 7.5YR 3/4 dark brown	Many small gravels, small carbonate and mineral (iron) nodules. Terminated at 20 cmbs due to carbonates and mineral nodules.	-
ST 3	0-5	dry fine sandy loam	10YR 6/4 light yellowish brown	Near concrete trail and pond; surface visibility 40%, bunch grasses. Fist-sized gravels and small pebbles.	-
	5-23	slightly moist sandy clay loam	10YR 5/6 yellowish brown, mottled with 10YR 5/2 grayish brown	Fist-sized gravels and small pebbles.	-
	23-45	moist clay	10YR 5/2 grayish brown, mottled with 10YR 6/8 brownish yellow; streaky appearance	Terminated at 45 cmbs due to high clay content and lack of artifacts.	-

Shovel Test #	Depth (cmbs)	Sediment Type	Munsell	Notes	Results
ST 4	0-2	dry fine sandy loam	10YR 4/4 dark yellowish brown	In relatively flat area adjacent to very disturbed channel; surface visibility 10%, knee-high bunch grasses and thorny shrubs.	-
	2-50	slightly moist sandy loam	10YR 4/3 brown	Very few gravels.	-
	50-60	slightly moist sandy loam	10YR 4/3 brown	Some carbonates, increase in number and density with depth. Terminated at 60 cmbs due to carbonates.	-
ST 5	0-2	dry fine sandy loam	10YR 7/1 light gray	Near very disturbed channel; surface visibility 30%, knee-high bunch grasses.	-
	2-45	slightly moist sandy loam	10YR 4/4 dark yellowish brown	Fairly homogeneous matrix, loose, easily excavated	2 small debitage @ 42 cmbs; 1 small debitage @ 45 cmbs
	45-50	slightly moist sandy loam	10YR 4/4 dark yellowish brown	Some carbonates, increase in number and density with depth. Terminated at 50 cmbs due to carbonates, increased compactness.	-
ST 6	0-2	dry fine sandy loam	10YR 4/4 dark yellowish brown	In flat area adjacent to scraped path/road next to wide channel; surface visibility 50%, knee-high grasses and forbs, head-high mesquite.	-
	2-40	slightly moist sandy loam	10YR 4/3 brown	Very few gravels.	-
	40-45	slightly moist sandy loam	10YR 4/3 brown	Some carbonates, increase in number and density with depth. Terminated at 45 cmbs due to carbonates.	-
ST 7	0-4	dry fine sandy loam	10YR 6/3 pale brown	Surface visibility 80%, small bunch grasses.	-
	4-20	slightly moist sandy clay loam	10YR 4/4 dark yellowish brown		-
	20-40	slightly moist clay, drier with depth	10YR 4/2 dark grayish brown	Clay becomes increasingly compact with depth, some carbonates. Terminated at 40 cmbs due to extremely compact clay, carbonates.	-

Shovel Test #	Depth (cmbs)	Sediment Type	Munsell	Notes	Results
ST 8	0-3	dry fine sandy loam	10YR 4/4 dark yellowish brown	In flat area immediately north of heavily modified channel; surface visibility in immediate area 10%, knee-high grasses, head-high mesquite.	-
	3-40	slightly moist sandy loam	10YR 4/3 brown	Very few gravels.	-
	40-45	slightly moist sandy loam	10YR 4/3 brown	Some carbonates, increase in number and density with depth. Terminated at 45 cmbs due to carbonates.	-
ST 9	0-2	dry fine sandy loam	10YR 6/3 pale brown	Near modified channel, close to scraped path/road; rocks and debitage visible on surface; surface visibility 40%, knee-high grasses and forbs, head-high mesquite.	-
	2-30	slightly moist sandy loam	10YR 4/3 brown	small and large gravels mixed in with sediment	-
	30-60	slightly moist sandy loam	10YR 4/6 dark yellowish brown	Pieces of insulation foam found at about 40 cmbs. Terminated at 60 cmbs due to depth, lack of artifacts, evidence of disturbance	-
ST 10	0-3	dry fine sandy loam	10YR 6/3 pale brown	Between modified channel and scraped path/road; gravels visible on surface; surface visibility 100%. Debitage is visible in channel cut about 30 cmbs immediately below.	-
	3-13	slightly moist sandy clay loam	10YR 4/4 dark yellowish brown	Sediment loose, easily excavated.	-
	13-30	slightly moist sandy clay loam	10YR 3/4 dark yellowish brown	Sediment loose, easily excavated.	2 medium pieces debitage @ 20 cmbs
	30-45	slightly moist sandy clay loam	10YR 4/3 brown	Sediment loose, easily excavated.	2 small pieces of debitage @ 40 cmbs
	45-50	dry clay	10YR 4/2 dark grayish brown	Terminated at 50 cmbs due to very compact clay, substantial tree roots.	-

Shovel Test #	Depth (cmbs)	Sediment Type	Munsell	Notes	Results
ST 11	0-2	dry fine sandy loam	10YR 5/4 yellowish brown	Located at top of slope immediately above small lithic scatter; surface visibility 10%, Russian thistle, other knee-high forbs	-
	2-15	slightly moist sandy clay loam	10YR 5/4 yellowish brown, mottled with 10YR 4/3 brown		-
	15-40	slightly moist clay loam	10YR 4/3 brown	Sediment very compact, some carbonates beginning at 35 cmbs. Terminated at 40 cmbs due to extremely compact clay, carbonates.	-
ST 12	0-2	dry fine sandy loam	10YR 6/2 light brownish gray	Surface visibility 35%, knee-high grasses, thorny shrubs	-
	2-12	slightly moist sandy loam	10YR 4/2 dark grayish brown		-
	12-25	slightly moist sandy loam	10YR 3/1 very dark gray		-
	25-40	clay	10YR 2/2 very dark brown	Some carbonates, increase in number and density with depth. Clay is very compact. Terminated at 40 cmbs due to extremely compact clay, carbonates.	-
ST 13	0-3	dry fine sandy loam	10YR 5/4 yellowish brown	About 6 m north of ST 11; on top of slope immediately above small lithic scatter; surface visibility 10%, Russian thistle, other knee-high forbs.	-
	3-10	slightly moist sandy clay loam	10YR 5/4 yellowish brown, mottled with 10YR 4/3 brown		-
	10-20	dry clay	10YR 4/3 brown	Extremely compact. Terminated at 20 cmbs due to impenetrable clay.	-

Shovel Test #	Depth (cmbs)	Sediment Type	Munsell	Notes	Results
ST 14	0-4	dry fine sandy loam	10YR 5/3 brown	Near where alignment crosses Bartlett Rd; surface visibility 0%, shin-high grasses; area appears very disturbed (piles of dirt, near modified channel)	-
	4-22	slightly moist sandy clay loam	10YR 5/6 yellowish brown, mottled with 10YR 4/4 dark yellowish brown	Clay is streaky/mottled.	-
	22-30	slightly moist sandy clay loam	10YR 5/6 yellowish brown, mottled with 10YR 4/4 dark yellowish brown	Streaky/mottled appearance continues, but also includes some carbonates and flecks/tiny nodules of some mineral (iron?) 5YR 4/6 yellowish red. Terminated at 30 cmbs due to carbonates, extremely compact matrix, mineral inclusions.	-