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Intensive Archaeological Survey For Asphalt Package 2020-1 (Upin 21103N304101), Harris County, Texas

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INTENSIVE ARCHAEOLOGICAL SURVEY FOR ASPHALT PACKAGE 2020-1 (UPIN 21103N304101), HARRIS COUNTY, TEXAS

FINAL REPORT (Redacted)

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Texas Antiquities Committee Permit Number 9622

Cultural Resources Report No. 20-022
AHF20-082-01

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MANAGEMENT SUMMARY

Raba Kistner, Inc. (RKI) was contracted by Harris County Engineering Department (CLIENT), to conduct archaeological investigations in support of a road improvements along 8.09 miles (13 km) of existing road along Old Washington County Road and Binford Roads, located in northwestern Harris County, Texas. The purpose of this investigation was to identify any surface-exposed or shallowly buried cultural deposits within the limits of the proposed undertaking and, if possible, assess their significance and eligibility for inclusion in the National Register of Historic Places (NRHP) and for formal designation as State Antiquities Landmarks (SALs). As the project will be conducted on publicly-owned land and is sponsored by the Harris County Engineering Department, an entity of the State of Texas, the proposed project is subject to review under the Antiquities Code of Texas (ACT) (Texas Natural Resources Code, Title 9, Chapter 191). All work was conducted in accordance with the Archeological Survey Standards for Texas, as set forth by the Council of Texas Archeologists (CTA) and the Texas Historical Commission (THC) under Texas Antiquities Committee Permit Number 9622.

Investigations consisted of a background review and intensive pedestrian survey augmented with shovel testing within the APE. The background review revealed that the majority of the project area is underlain by soils derived from loamy deposits of the Pliocene-age Willis Formation. Only six separate areas along Binford Road totaling 4,410-feet (1,344 m) contain Holocene-age deposits. As such, in a background review submitted for consultation to the THC, **RKI** recommended that archaeological investigations focus on the area containing the Holocene-age deposits. Based on the information provided in the background review, the THC concurred with the recommendation. Therefore, the Area of Potential Effects (APE) for the project is defined as the six areas along Binford Road totaling 4,410-feet (1,344 m), within the 75-foot (22.8 m) ROW, totaling approximately 7.59-acres (3.07 ha).

Field investigations were conducted on October 7, 2020. Antonio E. Padilla served as the Principal Investigator for the project and all fieldwork was conducted by Staff Archaeologists Adam Birge, Chris Matthews, and Archaeologist Tiffany Lindley. Report preparation was conducted by Adam Birge. Adam Birge and Bruce Martin provided geographical information system (GIS) during fieldwork and report production.

During the pedestrian survey of the APE, it was found that the area had been lightly graded for the existing roadbed with both shoulders consisting of graded shoulders with ditches. Vegetation ranged from manicured lawns to tall grasses with hardwood trees. As a result of the investigations, 15 shovel tests (AB1–AB2, CM1–CM9, and TL1–TL4) were attempted; however, only 14 were excavated. The fifteenth was not excavated due to the lack of soil. No cultural materials were observed on the surface or encountered within any of the shovel tests.

RKI has made a reasonable and good faith effort to identified cultural resources within the given APE. No significant deposits or features were identified during the intensive pedestrian survey of the APE. As such, **RKI** recommends no further archaeological investigations within the APE. However, should changes be made within the APE, further work may be required. All field records and photographs produced during investigations will be permanently housed at the Center for Archaeological Research at the University of Texas at San Antonio.

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CHAPTER 1. INTRODUCTION

Raba Kistner, Inc. (RKI) was contracted by Harris County Engineering Department (CLIENT), to conduct archaeological investigations in support of a road improvements project approximately 0.68 mile (1.1 kilometer [km]]) east of the City of Waller in northwestern Harris County, Texas (**Figure 1-1**). The proposed project will involve the widening of approximately 8.09 miles (13 km) of existing roads, and will be conducted entirely within existing right-of-way (ROW). As the project will be conducted on publicly-owned land and is sponsored by the Harris County Engineering Department, an entity of the State of Texas, the proposed project is subject to review under the Antiquities Code of Texas (ACT) (Texas Natural Resources Code, Title 9, Chapter 191) by virtue of it representing a public undertaking. This legislation calls for the assessment of all proposed improvement activities that have a potential to disturb historically significant resources and significant subsurface deposits on lands owned by the State. Oversight of compliance with the ACT is provided by the Texas Historical Commission (THC).

Investigations consisted of an intensive pedestrian survey augmented with shovel testing. The purpose of this investigation was to identify any surface-exposed or shallowly buried cultural deposits within the limits of the proposed undertaking and, if possible, assess their significance and eligibility for inclusion in the National Register of Historic Places (NRHP) and for formal designation as State Antiquities Landmarks (SALs). All work was conducted in accordance with the Archeological Survey Standards for Texas, as set forth by the Council of Texas Archeologists (CTA) and the Texas Historical Commission (THC) under Texas Antiquities Committee Permit Number 9622.

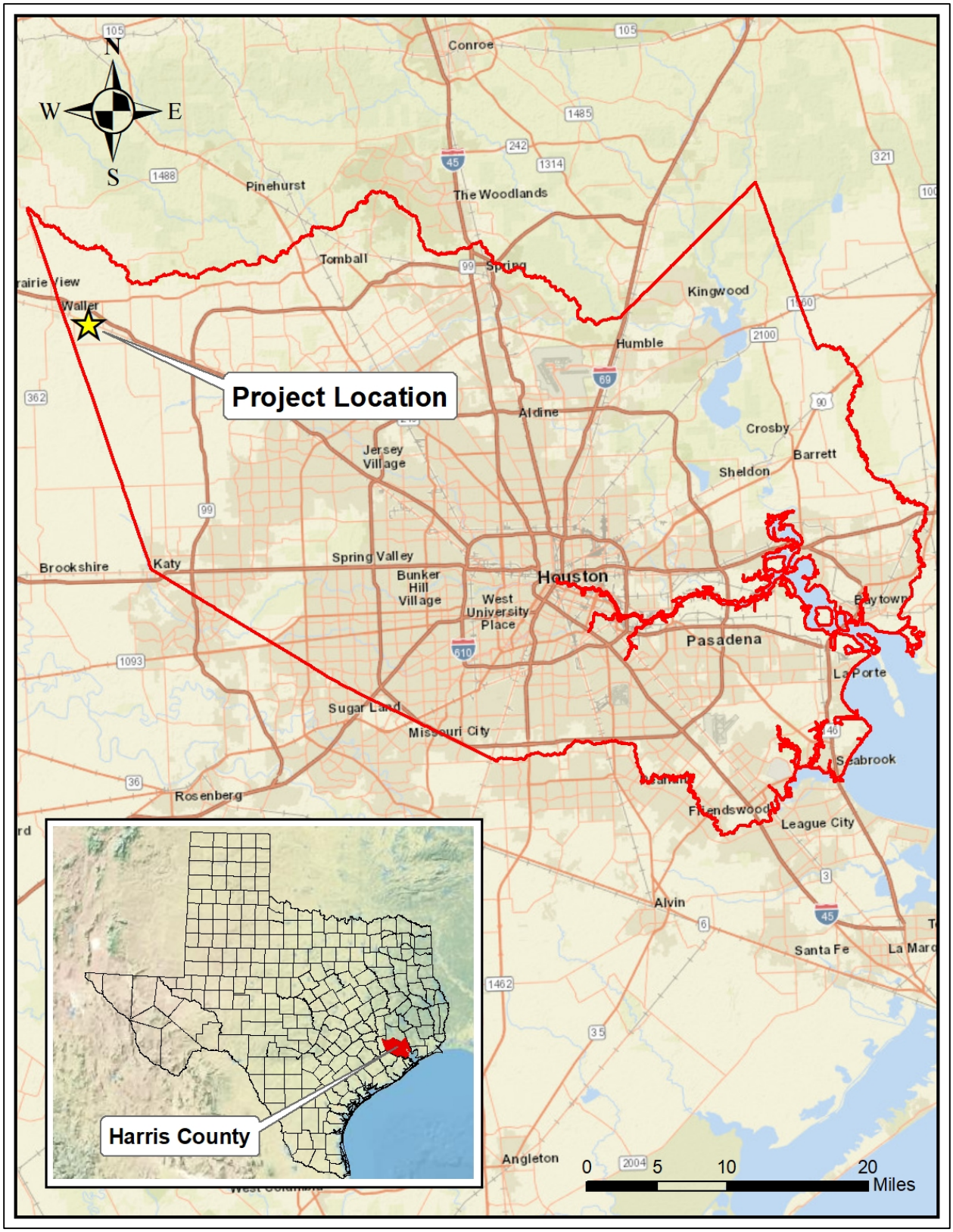

Figure 1-1. Project location within northwest Harris County, Texas.

Project Description and Area of Potential Effects

The Project Area is located approximately 0.68 mile (1.1 kilometers [km]) east of the City of Waller in northwest Harris County, Texas (**Figure 1-2**). The undertaking encompasses approximately 8.09 miles (13 km) of existing road along Old Washington County Road and Binford Roads and will involve the widening of the existing roads from 22 to 24 feet (6.7 to 7.3 m). No new ROW will be acquired, all proposed work will be conducted within the existing ROW.

A review of historic aerial photography from 1944 through 2016 determined that the APE and surrounding areas remained largely as pasture with a few residential complexes near the APE. Photos from 1981 show the first residential developments to the east of Binford Road and north of Waller Spring Road. Over the next couple of decades, this section of Binford Road is further developed. Over this span of time, Kickapoo Creek appears not to be significantly impacted. On the other hand, an unnamed drainage by Waller Spring Road is relocated away from Binford Road during the 1960s.

A background review of the project area revealed that the majority of the area is underlain by soils derived from loamy deposits of the Pliocene-age Willis Formation. Only six separate areas along Binford Road totaling 4,410-feet (1,344 m) contain Holocene-age deposits. As such, in a background review submitted for consultation to the THC, **RKI** recommended that archaeological investigations focus on the area containing the Holocene-age deposits. Based on the information provided in the background review, the THC concurred with the recommendation.

Although the project area encompasses 8.09 miles (13 km), the Area of Potential Effects (APE) for the project is defined as the six areas along Binford Road, totaling 4,410-feet (1,344 m), within the 75-foot (22.8 m) ROW, totaling approximately 7.59-acres (3.07 ha). The maximum depths of impacts will range from 2 to 3 feet (0.61 to 0.91 m) below the surface. The APE is depicted on the *Waller (3095-222), Texas*. U.S. Geological Survey 7.5-minute topographic quadrangle map (**Figure 1-3**).

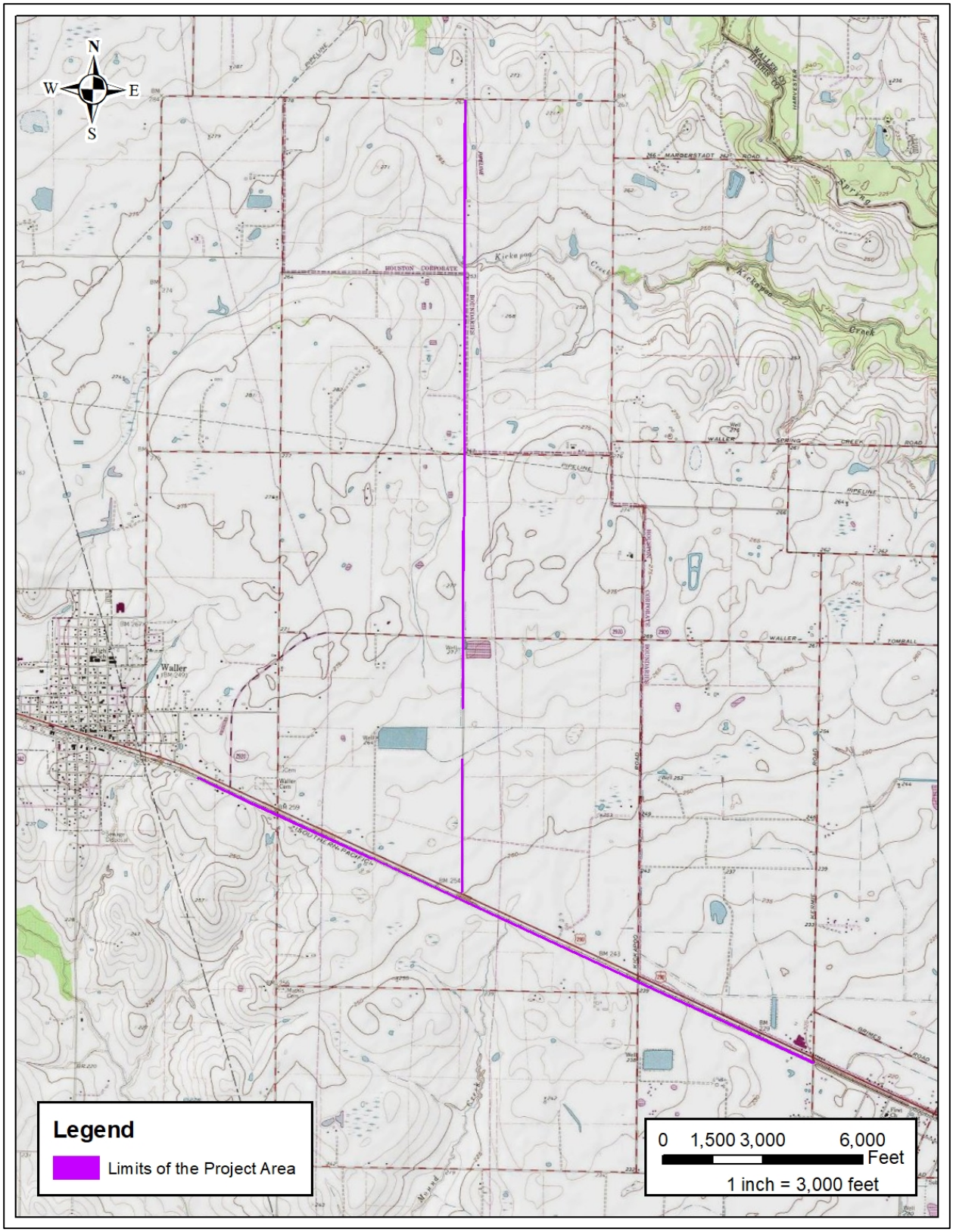

Figure 1-2. Project area depicted on the *Waller (3095-222) and Hockley (3095-221), Texas*. U.S. Geological Survey 7.5-minute topographic quadrangle map.

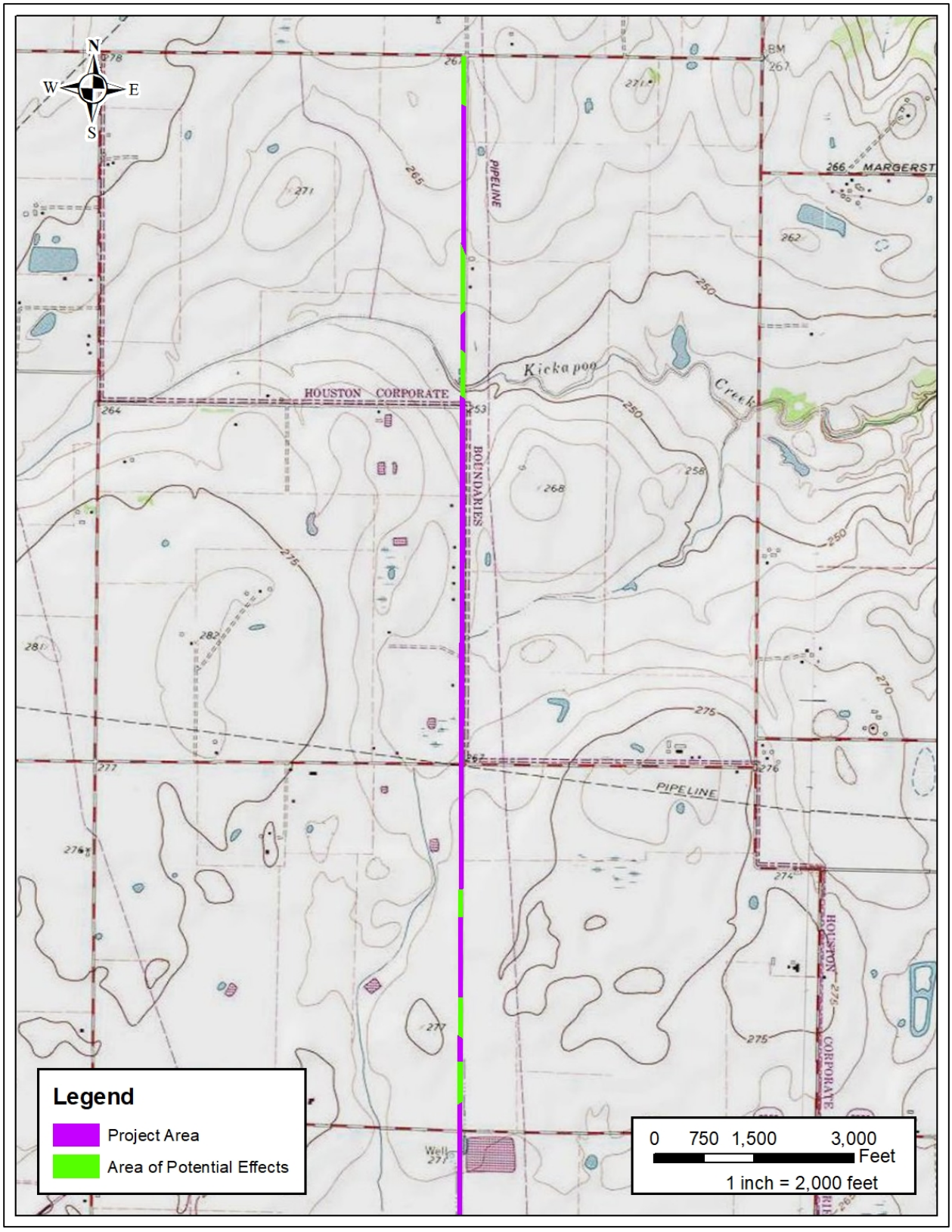

Figure 1-3. Area of Potential Effects depicted on the *Waller (3095-222)*, *Texas*. U.S. Geological Survey 7.5-minute topographic quadrangle map.

CHAPTER 2. ENVIRONMENTAL SETTING

The APE is mapped within the Northern Humid Gulf Coast Prairies ecoregion, a subdivision of the Western Gulf Coastal Plain ecoregion of southeast Texas (Griffith et al. 2007). The Western Gulf Coastal Plains are characteristically flat and suitable for grassland natural vegetation. The Northern Humid Gulf Coast Prairies ecoregion is a largely flat to gently sloping coastal plain that has poor drainage due to its low topographic relief and clay subsoils. Surface soils of the ecoregion often consist of fine textured clay, clay loam, or sandy clay loam. The natural vegetation was largely tallgrass grasslands occasionally interspersed with oak mottes; however, the ecoregion has been strongly impacted by development and historically native vegetation has largely been extirpated from much of the area.

Geology

The APE is underlain by the Late Pleistocene-aged Beaumont Formation, areas predominantly sand (Qbs). This formation is composed of interbedded and intermixed fine quartz sand, silt, and some fine gravels, forming poorly defined meander-belt ridges and 3–6.5-foot (1–2-meter [m]) tall pimple mounds. Its thickness is 10 to 33 feet (3 to 10 m) at outcrop locations, increasing southeastward to more than 328 feet (100 m) below surface (Moore and Wermund 1993).

Soils

Examination of Natural Resources Conservation Service (NRCS) data identified three soil types mapped within the APE: Snakecreek fine sandy loam (SnIA), 0 to 1 percent slopes, occasionally flooded; Tomball loam (TomA), 0 to 1 percent slopes, frequently ponded; Wockley-Urban land complex (Wy) (**Figure 2-1**) (NRCS 2020). The majority of the APE is mapped as Tomball loam, which is described as deep 80 inches (203 cm), poorly drained, and formed from loamy fluviomarine deposits from the Willis Formation (NRCS 2020). Snakecreek fine sandy loam is described as deep 80 inches (203 cm), somewhat poorly drained, and formed in loamy sediments derived from Holocene age alluvium (NRCS 2020). The last soil type, Wockley-Urban land complex, is described as deep 80 inches (203 cm), somewhat poorly drained, and formed in loamy sediments of the late Pliocene-age Willis Formation (NRCS 2020).

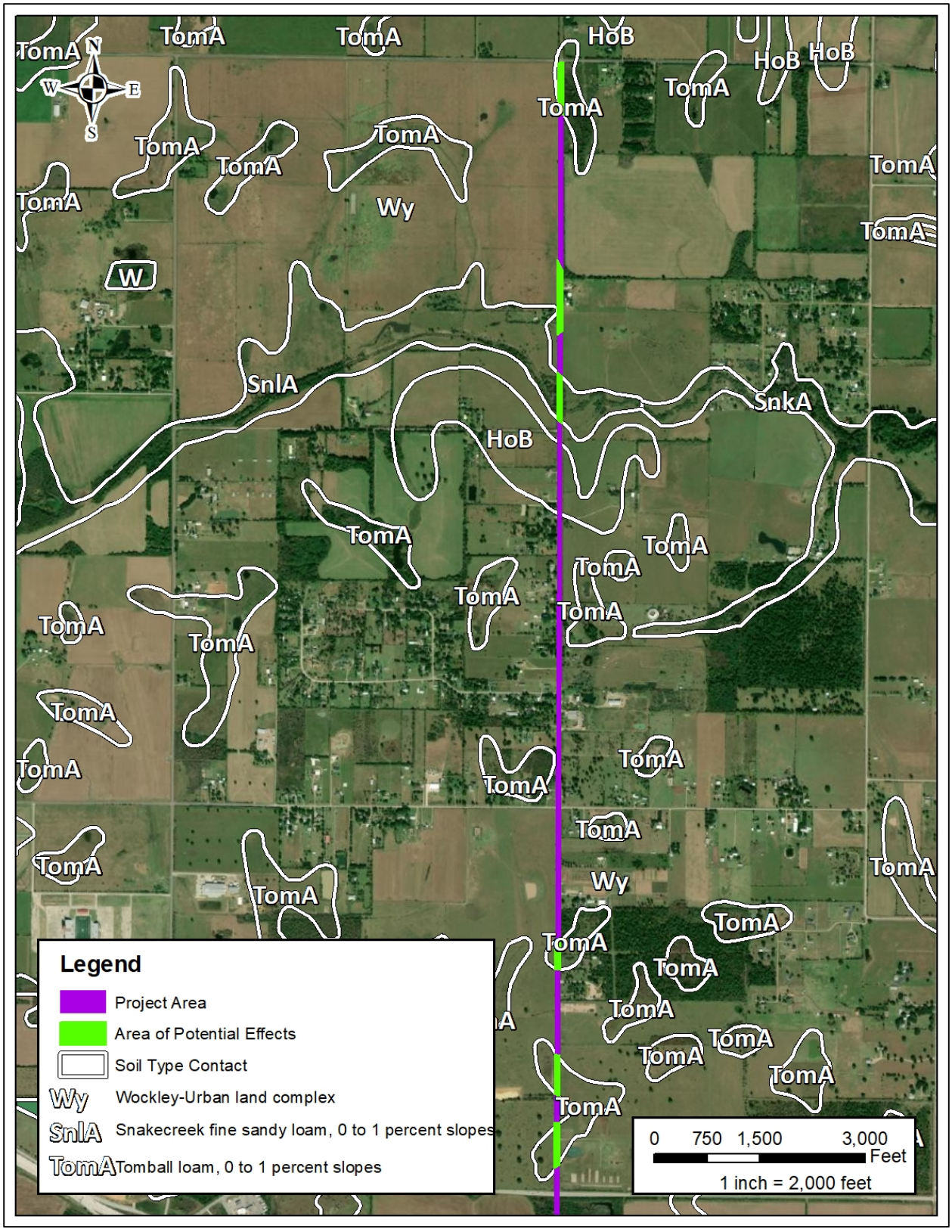

Figure 2-1. Soils mapped within the Area of Potential Effects.

CHAPTER 3. CULTURAL CONTEXT

Humans have inhabited the southeast region of Texas for at least 11,500 years, adapting to changes in climatic and biotic conditions as they occurred. Archaeologists researching long-term change in settlement structures, subsistence choices, and technological innovation have identified distinct coastal and inland adaptions in this region (Ricklis 2004; Story 1990). Southeastern Texas coastal populations took advantage of the abundant resources of the coastal prairie and nearby estuaries. The cultural chronology of the region is divided into six major time periods: Paleoindian Period (11,500 to 7,000 BC); Archaic Period (7,000 to 500 BC); Transitional Late Archaic or Early Ceramic Period (500 BC to AD 700); Late Prehistoric (AD 700 to 1700); Protohistoric (AD 1528-1700) and Historic (AD 1700 to present). An overview of the sequence of human occupation within the region is presented below.

Paleoindian Period

The oldest cultural materials found in the region date to the Paleoindian period. The period spans roughly from 11,500–8800 B.P. (Collins 1995, 2004). The Aubrey site in Denton County has one of the earliest occupations, with radiocarbon assays dating to between 11,542 ± 11 B.P. and 11,590 ± 93 B.P. (Bousman et al. 2004:48). Paleoclimatic proxy measures suggest that a cooler climate with increased precipitation was predominant during the Late Pleistocene (Mauldin and Nickels 2001), the later portion of the period.

Initial reconstructions of Paleoindian adaptations typically viewed these hunter-gatherers as traversing extreme distances in pursuit of now extinct mega-fauna such as mammoth and mastodon. While these Paleoindian populations did exploit the Late Pleistocene mega-fauna when it was accessible, a number of faunal assemblages from an increasingly larger number of sites indicate that the Paleoindian diet was more varied and consisted of a wide range of resources, including small game and plants. The Lewisville (Winkler 1982) and the Aubrey sites (Ferring 2001) produced faunal assemblages that represented a wide range of taxa, including large, medium, and small species. Information on the consumption of plant resources during the Paleoindian period is lacking. Bousman et al. (2004) reported that the late Paleoindian component at the Wilson-Leonard site reflected the exploitation of riparian, forest, and grassland species. Analysis of Paleoindian skeletal remains indicates that the diets of the Paleoindian populations may have been similar to Archaic period hunter-gatherer populations (Bousman et al. 2004; Powell and Steele 1994).

The early portion of the Paleoindian period was characterized by the appearance of Clovis and Folsom fluted projectile points that were used for hunting mega-fauna. Typical projectile points produced at sites with occupations dating to the later portion of the Paleoindian period included the Plainview, Dalton, Angostura, Golandrina, Meserve, and Scottsbluff types. Meltzer and Bever (1995) have identified 406 Clovis sites in Texas. One of the earliest, 41RB1, yielded radiocarbon assays that put the maximum age for the Paleoindian component at 11,415 ± 125 B.P. (Bousman et al. 2004:47).

Unfortunately, the Paleoindian Period is poorly represented across the state, including Southeast Texas. This can be attributed to two factors: issues pertaining to projectile point temporal classifications; and climatic and geologic processes during the Pleistocene-Holocene transition. Typological issues have made it difficult to distinguish between point types and styles in the region (see Bousman et al. 2004 and Story 1990). Furthermore, the number of Paleoindian sites in Southeast Texas is small, relative to the numerous sites in the Balcones Escarpment. Geologic explorations of ancient shorelines indicate that Paleoindian sites are most likely submerged due to the advance of the Gulf of Mexico inland. The occasional Paleoindian artifact and remains of Pleistocene fauna, which wash ashore at McFaddin Beach, Texas, confirms the presence of sites offshore (Abbott 2001:105-107; Story 1990:24- 25).

Archaic Period

The Archaic period dates between ca. 8800 to 1200 B.P. It is divided into three sub-periods: Early, Middle, and Late. During the Archaic, mobility strategies may have shifted to more frequent short distance movements that allowed the exploitation of seasonal resource patches. The intermittent presence of bison in parts of Texas, combined with changes in climatic conditions and the primary productivity of the plant resources may have contributed to shifts in subsistence strategies and associated technological repertoire. When bison were not present in the region, hunting strategies focused on medium to small game along with continued foraging for plant resources. When bison were available, hunter-gatherers targeted the larger-bodied prey on a regular basis.

Early Archaic

Collins (1995, 2004) suggests that the Early Archaic spans from 8800 to 6000 B.P. Projectile point styles characteristic of the Early Archaic include Angostura, Early Split Stem, Martindale, and Uvalde (Collins

1995, 2004). The Early Archaic climate was drier than the Paleoindian period and witnessed a return to grasslands (Bousman 1998). Mega-fauna of the Paleoindian period could not survive the new climate and ecosystems, therefore eventually dying out. Early Archaic exploitation of medium to small fauna intensified.

The Wilson-Leonard excavation produced a wealth of cultural materials representative of a lengthy period in regional prehistory. The projectile point assemblages from the site indicate that the lanceolate Paleoindian point forms, such as Angostura, continue from the Paleoindian into the Early Archaic. However, these forms are replaced by corner- and basally-notched and shouldered forms (Early Triangular, Andice, Bell), and these quickly become the dominant points tipping the atlatl-thrown darts. In addition, the uses of small to medium hearths similar to the previous period were noted too. The appearance of earth ovens suggests a shift in subsistence strategies. The earth ovens encountered at the Wilson-Leonard site were used to cook wild hyacinth along with aquatic and terrestrial resources (Collins et al. 1998). Analyses of Early Archaic human remains encountered in Kerr County (Bement 1991) reveal diets low in carbohydrates in comparison to the Early Archaic populations found in the Lower Pecos region.

Middle Archaic

The Middle Archaic sub-period spans from 6000 to 4000 B.P. (Collins 1995, 2004; Weir 1976). Archaeological data indicates that populations may have increased during this time. Climate was gradually drying leading to the onset of a long drought period. Changes to the demographics and cultural characteristics were likely in response to the warmer and increasingly arid conditions. Projectile point styles included in this sub-period include Bell, Andice, Calf Creek, Taylor, Nolan, and Travis.

Subsistence during the Middle Archaic includes an increased reliance on nuts and other products of riverine environments (Black 1989). The upsurge of burned rock middens during the Middle Archaic represented the increased focus on the use of plant resources (Black 1989; Johnson and Goode 1994). Little is known about burial practices during the Middle Archaic, however an excavation of an Uvalde County sinkhole (41UV4) contained 25–50 individuals (Johnson and Goode 1994:28).

Late Archaic

The Late Archaic spans from 4000 to 1200 B.P. (Collins 1995, 2004). It is represented by the Bulverde, Pedernales, Kinney, Lange, Marshall, Williams, Marcos, Montell, Castroville, Ensor, Frio, Fairland, and Darl projectile points. The early part of the Late Archaic exhibited fluctuations in the temperature and rainfall. There appears to have been an increase in population at this time (Nickels et al. 1998).

While some researchers believe that the use of burned rock middens decreased during the Late Archaic, recent research has challenged this notion (Black and Creel 1997; Mauldin et al. 2003). Johnson and Goode (1994) discuss the role of burned rock middens in relation to acorn processing.

Burials related to the Late Archaic in Central and South Texas suggests the region saw an increase in population. This increase may have prompted the establishment of territorial boundaries which resulted in boundary disputes (Story 1985). Human remains dating to this sub-period have been encountered near the Edwards Plateau.

Large cemeteries located in the coastal plain have provided insight into the Middle and Late Archaic. The Harris County Boy's School site provided insight into how evolving estuaries changed site function and use over time. During the Middle Archaic, the site was located inland from the Galveston Bay estuary. Estuaries were exploited during mid-summer, but by late summer to early fall, people moved inland. The exploration of shell middens and fish otolith studies revealed that this subsistence strategy continued through the Late Archaic (Aten 1983:158-159). The Ernest Witte Site (41AU36) provided insight into long-distance trade during the Late Archaic. Items such as sting ray spines and columella atlatl weights from either the Texas or Florida Gulf Coast, corner tang knives from the Edwards Plateau, and stone gorgets from the Ouachita Mountains of Arkansas, were found at the site (Story 1990:237-243).

Transitional Late Archaic/Early Ceramic Period

Although Ricklis (2004:189) argues that the introduction of pottery into the region marks the end of the Archaic period, archaeological evidence indicates that there was cultural and technological continuity throughout this time period. The earliest pottery in Southeast Texas assemblages appears around 200 BC. Tchefuncte ceramics, typically thick-walled vessels, date to AD 200 and are found in the Galveston Bay area. In the inland region, sandy paste ceramics were adopted around AD 500 (Ricklis 2004:200). The

adoption of ceramics does indicate a change in how people stored, processed, and prepared plant and animal resources. In addition, the rapid innovations of ceramic technology in the region provide further evidence of distinct ethnic groups inhabiting the coastal and the inland regions.

Late Prehistoric Period

The Late Prehistoric period begins ca. 1200 B.P. (Collins 1995, 2004), and appears to continue until the Protohistoric period (ca. A.D. 1700). A series of traits characterize the shift from the Archaic to the Late Prehistoric period. The main technological changes were the adoption of the bow and arrow and the introduction of pottery. The period is divided into two phases: The Austin phase and the Toyah phase.
At the beginning of this period, environmental conditions were warmer and dryer. However, moister conditions appear after 1000 B.P. (Mauldin and Nickels 2001). Plant and faunal remains at Late Prehistoric sites indicate that subsistence practices are similar to that of the Late Archaic. Projectile points associated with the Austin phase include the Scallorn and Edwards types. The Toyah phase is characterized by the prominence of the Perdiz point (Collins 1995, 2004).

Most researchers concur that the early portion of the Late Prehistoric period saw a decrease in population density (Black 1989:32). Radiocarbon dates from some sites have indicated that the middens were utilized during the Late Prehistoric. Some archaeologists feel the peak of midden use was after A.D. 1 and into the Late Prehistoric (Black and Creel 1997:273). Radiocarbon dates from Camp Bowie middens provide evidence that supports Black and Creel's arguments that burned rock middens were a primarily Late Prehistoric occurrence (Mauldin et al. 2003).

Beginning rather abruptly at about 650 B.P., a shift in technology occurred. This shift is characterized by the introduction of blade technology, the first ceramics in Central Texas (bone-tempered plainwares), the appearance of Perdiz arrow points, and alternately beveled bifaces (Black 1989:32; Huebner 1991:346). Prewitt (1981) suggests this technology originated in north-central Texas. Patterson (1988), however, notes that the Perdiz point was first seen in southeast Texas by about 1350 B.P., and was introduced to west Texas some 600 to 700 years later.

Early ceramics in Central Texas (ca. A.D. 1250 to 1300) are associated with the Toyah phase of the Late Prehistoric and are referred to as Leon Plain ware. The Leon Plain ceramic types are undecorated, bone-

tempered bowls, jars, and ollas with oxidized, burnished and floated exterior surfaces (Ricklis 1995). There is notable variation within the type (Black 1986; Johnson 1994; Kalter et al. 2005). This variation can be attributed to differences in manufacturing techniques and cultural affiliation. Analysis of residues on ceramic sherds suggests that vessels were used to process bison bone grease/fat, mesquite bean/bison bone grease and deer/bison bone grease (Quigg et al. 1993).

The return of bison to South and Central Texas during the Late Prehistoric resulted from a drier climate in the plains located to the north of Texas and increased grasses in the Cross-Timbers and Post Oak Savannah in north-central Texas (Huebner 1991). The increased grasses in the two biotas formed the "bison corridor" along the eastern edge of the Edwards Plateau and into the South Texas Plain (Huebner 1991:354–355). Rock shelter sites, such as Scorpion Cave in Medina County (Highley et al. 1978) and Classen Rock Shelter in northern Bexar County (Fox and Fox 1967), have indicated a shift in settlement strategies (Skinner 1981). Burials encountered that dated to this period often reveal evidence of conflict (Black 1989).

Protohistoric and Historic Period

The Historic period is marked by the first European contact with indigenous populations in Texas. During this period, there was intermittent contact between the native groups and Spanish explorers. The period encompasses the approximately 175 years before the Spanish significantly impacted the indigenous groups in the area. A few encounters between the indigenous communities and Europeans were recorded, including those of Cabeza de Vaca (1528-1536) and the French settlement of Fort Saint Louis established by Rene Robert Cavelier, Sieur de La Salle (1685-1689) (Weddle 2001).

French explorers and traders encountered Atakapan groups, including the Arkokisas (Orcoquisacs) and Bidai in the 1730s and 1740s. French trade items, including glass beads and nails, are found at Arkokisas sites from this time period (Ricklis 2004:198). From early ethnohistoric accounts, it is clear that sub-groups of the Atakapans utilized coastal and inland resources, and the confluences of streams and rivers for camps (Anderson 1999:154-176; Aulbach 2012:15). A French presence in the region spurred the Spanish to establish missions and marks the start of the Historic period. However, these settlements were short-lived and the Spanish left the region by 1756.

Harris County

In 1824, Stephen F. Austin issued land grants along the Brazos, Colorado, and San Bernard Rivers to Anglo immigrants who are called the Old Three Hundred (Long 2020). Part of this settlement included future Harris County, which would become the southeastern border for Austin's colony (Henson 2020a). In 1826, John R. Harris founded Harrisburg near Brays Bayou and Buffalo Bayou that was later established as a port of entry for the region in 1833. Due to its location and port, Harrisburg served as the home for President David G. Burnet and Vice President Lorenzo de Zavala of the Republic of Texas. Harrisburg was burned down by Santa Anna shortly before the battle of San Jacinto. Following the Texas Revolution, the county of Harrisburg—later Harris County—was created and the small city of Houston was recognized as a county seat. Development of the area through railroads, canals, and other industry started following the Civil War.

Harris County truly emerged as an important industrial zone in 1911 with the approval for the formation of the Harris County Ship Channel Navigation District. By 1914, the U.S. Army Corps of Engineers had completed a 50-mile long and 25-feet deep channel that ran from the Gulf of Mexico to its terminus at the Port of Houston (Henson 2020b). The addition of oil refineries in the area along Buffalo Bayou and the San Jacinto River prompted both the deepening and widening of the channel to accommodate larger vessels. The Harris County Navigation District has since become highly profitable and owns several facilities related to shipping such as the Long Reach Docks, the container facility at the Bayport Industrial Complex, and a bulk handling plant at Greens Bayou. Additionally, in the 1950's the Harris County Navigation District partnered with both the national and state government to construct the Washburn Tunnell under Buffalo Bayou as well as the Baytown-La Porte Tunnel beneath the San Jacinto River (Henson 2020b). Another engineering feat accomplished in Harris County was the construction of the Astrodome in 1965, which was the first stadium of its kind with air conditioning and facilities for multiple sports (Chandler 2020). Also in the 1960's, the land east of Webster, Texas became the home of the National Aeronautics and Space Administration (NASA) Manned Spacecraft Center, which was later renamed the Lyndon B. Johnson Space Center in 1973 (Alexander and Kleiner 2020).

The ship channel has attracted numerous industries, which caused a surge in population. The census of 1930 recorded 359,328 people in Harris County, which surpassed both Dallas and Bexar Counties by more than 100,000 people (Henson 2020b). By 1960, the population of Harris County was over 1 million people.

In 1990, the population of Harris County reached 2,818,199 people, the majority of which were both Anglo and Hispanic (Henson 2020b). The most recent population estimate for Harris County shows that it has approximately 4,713,325 people living within the county (United States Census Bureau 2020).

Town of Waller

Closer to the project area is the town of Waller, Texas, approximaltey 40 miles north west of Houston on U.S. Highway 290. Waller was established in 1884, and was named for Edwin Waller. In 1887, the first public school organized and at the time had an enrollment of 88 students. The boundaries of the town was expanded in 1889 when the town was mapped. In 1898, the population of the town was estimated at 500. The primary agricultural produced by farmers of the town consisted of small fruits and berries, corn, and cotton (Spencer 2020).

In the early twentieth century the business district of Waller grew with the opening of a bank in 1915 and Gods Mercy Store in 1918. In 1920, local farmers established The Cooperative which served as a social and marking service. With the cooperative, farmers were able to sell their produce and locally and to markets in Houston. In 1950 a decrease in cotton production resulted in the closing of the cotton gin. Despite the decrease in cotton production, the town continued to grow. The population of Waller was 712 in 1950 and totaled 2,092 in 2000 (Spencer 2020).

Previous Archaeological Investigations and Cultural Resources

RKI conducted a desktop review to determine if any previously conducted archaeological investigation or any cultural resources had been documented within the APE. Examination of the Texas Archeological Sites Atlas (*Atlas*), an online database maintained by the THC, revealed that there are no previous archaeological project nor archaeological sites recorded within the APE (**Figure 3-1**) (THC 2020). Examination of a 1-mile (1.6-km) radius of the APE identified two linear archaeological surveys. However, both of these surveys do not have any additional details recorded in the Atlas (**Table 3-1**) (THC 2020). No other documented cultural resources were identified within the 1-mile buffer around the project area.

The Atlas shows that there are no previously recorded archaeological sites within the APE or within a 1-mile (1.6-km) radius of its boundaries. The nearest documented archaeological site is 41WL30, which is

located approximately 1.25 miles (2.5 km) north of the APE. The site was recorded in 2009, by Moore Archaeological Consulting. Site 41WL30 was identified as a possible prehistoric lithic reduction site and an unknown historic site located in a tributary of Spring Creek. Prehistoric materials consisted of 2 primary flakes, 7 secondary flakes, 11 tertiary flakes, 4 flake fragments, 8 lithic debris, 1 utilized debitage, 1 knife, 1 dart point fragment, and 1 hammerstone. Historic materials consisted of 28 square nails, 3 round nails, 10 indeterminate iron, 2 wire, 64 curved glass, 1 flat glass, 5 brick fragments, 16 ceramic sherds, 1 pre-1870 bottle neck, and 1 thimble. The historic component of the site might have been a feature that was dug out into the prehistoric deposit (THC 2020).

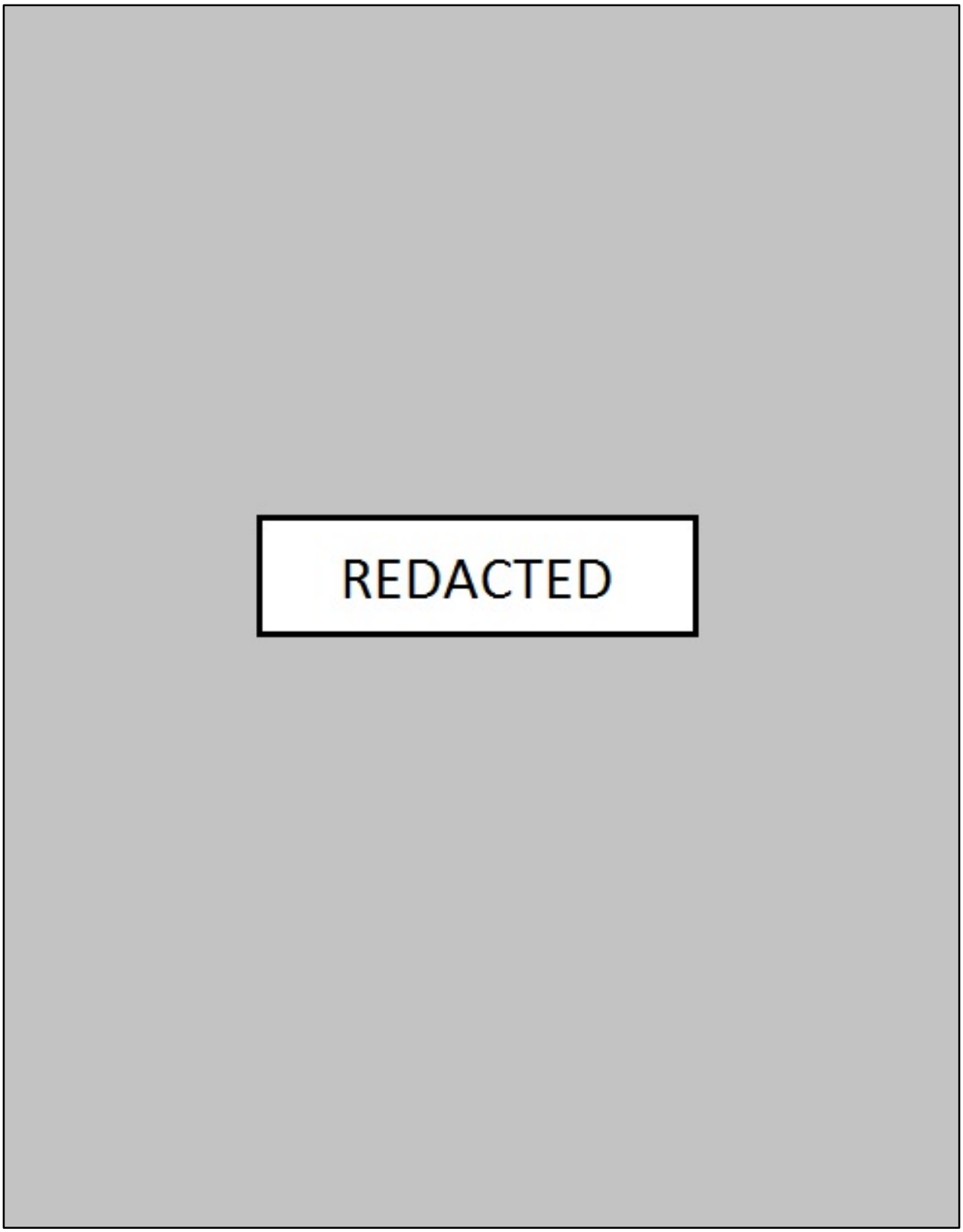

Figure 3-1. Previously conducted archaeological investigations and cultural resources within 1-mile (1.6-km) of the APE.

Table 3-1. Summary of Previously Conducted Investigations Within 1-mile (1.6-km) of the APE.

Year of Investigation	Distance from APE	Investigative Firm/TAC Permit No.	Brief Summary of Investigations
Not listed	0.1 mile to the south	Not listed in *Atlas*	A linear or possibly area survey without any additional details in the *Atlas*.
Not listed	0.62 mile to the south	Not listed in *Atlas*	A linear survey without any additional details in the *Atlas*.

CHAPTER 4. METHODS OF INVESTIGATION

To ensure the project adhered to the requirements of the regulating agencies, **RKI** performed an intensive pedestrian survey augmented with shovel testing of the APE. All work complied with THC and CTA guidelines and standards. Investigations ensured that if historic or prehistoric deposits and/or features were present within the APE, they were properly recorded and evaluated prior to negative impacts associated with the proposed project. The ground surface inspection along the direct APE was accomplished with archaeologists walking transects spaced approximately 30 m apart with shovel tests being placed at intervals of approximately 100 m.

Field Methods

The entire APE was subject to an intensive survey augmented with shovel testing totaling 4,410-feet (1,344 m). The THC minimum survey standards recommended for linear surveys of project areas is one shovel test every 100 m. As the APE measures approximately 1,344 m, 14 shovel tests were required. During the pedestrian survey, **RKI** archaeologists attempted to excavate 15 shovel test, however only 14 were excavated within the APE. The fifteenth was not excavated due to the lack of soil.

Shovel tests measured from 12 to 13 inches (30 to 33 cm) in maximum diameter and were excavated in 8-inch (20-cm) levels with all soils screened through a ¼-inch mesh to observe artifacts. Depths of shovel tests varied, ranging between 8 inches (20 cm) to 39 inches (1 m) below surface. A shovel test form was completed for each excavated shovel test. Data collected from the shovel test included the final excavation depth, reason for termination, disturbances noted, and references a brief soil description (texture, consistency, Munsell color, inclusions). The location was recorded using a sub-meter accurate, hand-held Trimble GPS unit. A shovel test log containing data from each shovel test is provided in Appendix A.

Laboratory Methods

The project adhered to a temporally diagnostic artifact collection only policy. No diagnostic artifacts were identified during the course of the investigations, thus, no artifacts were collected. All project-related documentation produced during the survey were prepared in accordance with federal regulation 36 CFR Part 79, and THC requirements for State Held-in-Trust collections. Field notes, field forms, photographs,

and field drawings were placed into labeled archival folders and converted into electronic files. Digital photographs were printed on acid-free paper, labeled with archivally appropriate materials, and were placed in archival-quality plastic sleeves when needed. All field forms were completed with pencil. A copy of the report and all digital materials were saved onto a CD and stored with field notes and documents. Records will be permanently house at the Center for Archaeological Research at the University of Texas at San Antonio.

CHAPTER 5. RESULTS OF INVESTIGATIONS

On October 7, 2020, **RKI** conducted an intensive cultural resources survey of the approximately 7.59-acre APE for the proposed Asphalt Package 1 Project. The investigation consisted of a pedestrian survey augmented by shovel testing. As a result of the investigations, 15 shovel tests (AB1–AB2, CM1–CM9, and TL1–TL4) were attempted; however, only 14 were excavated. Shovel test CM5 was not excavated due to lack of suitable soil (**Figure 5-1**). No cultural materials were observed on the surface or encountered within any of the shovel tests.

The APE was situated along the existing ROW of Binford Road. Both the western and eastern shoulders were approximately 5 m wide with a drainage ditch (**Figure 5-2** and **Figure 5-3**). Vegetation ranged from manicured Bermuda grass to tall grasses with occasional hardwood trees. Due to the vegetation present within the APE surface visibility was 0-percent. One section of the APE, that intersects Kicakapoo Creek, was heavily overgrown and at the time of the survey water was present within the creek. (**Figure 5-4**).

Shovel Testing

As part of the pedestrian survey, **RKI** attempted a total of 15 shovel tests, however only 14 were excavated. One shovel test (CM5) near Kickapoo Creek was not excavated due to a culvert and related ditch near the abutments for the bridge (**Figure 5-5**). Depths of shovel tests varied, ranging between 8 inches (20 cm) to 39 inches (1 m) below surface. One shovel test (AB2) reached the maximum depth of 39 inches (1 m), while the others were terminated between 20 and 80 cm due to compact sandy clay. During the excavation of the shovel tests it was noticed that soils were redoximorphic in nature at a depth of approximately 30 to 40 cm below surface. A typical soil profile exhibited a level of dark brown to brown (10YR 3/4 or 10YR 5/3) sandy loam over lighter brown or light grayish brown (10YR 6/2) sandy clay (**Figures 5-6 –5-7**). Inclusions typically included gravel at or near the surface, and redoximorphic features around 30 to 40 cmbs. All shovel tests were negative for cultural materials.

Figure 5-1. Results of the investigation.

Figure 5-1. (*cont.*) Results of the investigation.

Figure 5-2. View of eastern shoulder of APE at the southern end; facing north.

Figure 5-3. View of western shoulder of APE at the northern end; facing north.

Figure 5-4. Vegetation around Kickapoo Creek; facing west.

Figure 5-5. No dig shovel test at CM5; facing north.

Figure 5-6. A typical shovel tests at CN9; facing north.

Figure 5-7. A typical shovel test at TL4; facing north.

CHAPTER 6. SUMMARY AND RECOMMENDATIONS

Raba Kistner, Inc. (RKI) was contracted by Harris County Engineering Department (CLIENT), to conduct archaeological investigations in support of a road improvements along 8.09 miles (13 km) of existing road along Old Washington County Road and Binford Roads, located in northwestern Harris County, Texas. The purpose of this investigation was to identify any surface-exposed or shallowly buried cultural deposits within the limits of the proposed undertaking and, if possible, assess their significance and eligibility for inclusion in the National Register of Historic Places (NRHP) and for formal designation as State Antiquities Landmarks (SALs). As the project will be conducted on publicly-owned land and is sponsored by the Harris County Engineering Department, an entity of the State of Texas, the proposed project is subject to review under the Antiquities Code of Texas (ACT) (Texas Natural Resources Code, Title 9, Chapter 191). All work was conducted in accordance with the Archeological Survey Standards for Texas, as set forth by the Council of Texas Archeologists (CTA) and the Texas Historical Commission (THC) under Texas Antiquities Committee Permit Number 9622.

Investigations consisted of a background review and intensive pedestrian survey augmented with shovel testing within the APE. The background review revealed that the majority of the project area is underlain by soils derived from loamy deposits of the Pliocene-age Willis Formation. Only six separate areas along Binford Road totaling 4,410-feet (1,344 m) contain Holocene-age deposits. As such, in a background review submitted for consultation to the THC, **RKI** recommended that archaeological investigations focus on the area containing the Holocene-age deposits. Based on the information provided in the background review, the THC concurred with the recommendation. Therefore, the Area of Potential Effects (APE) for the project is defined as the six areas along Binford Road totaling 4,410-feet (1,344 m), within the 75-foot (22.8 m) ROW, totaling approximately 7.59-acres (3.07 ha).

On October, 2020, **RKI** conducted an intensive cultural resources survey of the approximately 7.59-acre APE. During the pedestrian survey of the APE, it was found that the area had been lightly graded for the existing roadbed with both shoulders consisting of graded shoulders with ditches. Vegetation ranged from manicured lawns to tall grasses with hardwood trees. As a result of the investigations, 15 shovel tests (AB1–AB2, CM1–CM9, and TL1–TL4) were attempted; however, only 14 were excavated. No cultural materials were observed on the surface or encountered within any of the shovel tests.

RKI has made a reasonable and good faith effort to identified cultural resources within the given APE. No significant deposits or features were identified during the intensive pedestrian survey of the APE. As such, **RKI** recommends no further archaeological investigations within the APE. However, should changes be made within the APE, further work may be required. All field records and photographs produced during investigations will be permanently housed at the Center for Archaeological Research at the University of Texas at San Antonio.

REFERENCES CITED

Abbott, J. T.

2001 Houston Area Geoarcheology: *A Framework for Archeological Investigation, Interpretation, and Cultural Resource Management in the Houston Highway District.* Texas Department of Transportation, Environmental Affairs Division, Archeological Studies Division. Report 27.

Anderson, G.

1999 The Indian Southwest, 2580-1830. University of Oklahoma Press, Norman.

Aten, L. E.

1983 *Indians of the Upper Texas Coast*. Academic Press, New York.

Aulbach, L. F.

2012 Buffalo Bayou: An Echo of Houston's Wilderness Beginnings. Louis F. Aulbach Publisher, Houston, Texas.

Bement, L. C.

1991 The Thunder Valley Burial Cache: Group Investment in a Central Texas Sinkhole Cemetery. *Plains Anthropologist* 36(135):97–109.

Black, S. L.

1986 *The Clemente and Herminia Hinojosa Site, 41JW8: A Toyah Horizon Campsite in Southern Texas*. Special Report, No. 18. Center for Archaeological Research, The University of Texas at San Antonio.

1989 Central Texas Plateau Prairie. In *From the Gulf Coast to the Rio Grande: Human Adaptations in Central, South, and Lower Pecos Texas*, by T.R. Hester, S.L. Black, D.G. Steele, B.W. Olive, A.A. Fox, K.J. Reinhard, and L.C. Bement, pp. 17–38. Research Series No. 33. Arkansas Archaeological Survey, Fayetteville.

Black, S. L., and D. G. Creel

1997 The Central Texas Burned Rock Midden Reconsidered. In *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas,* by Steve Black, Linda W. Ellis, Darrell G. Creel and Glenn T. Goode, pp.269–305. Studies in Archeology 2. Texas Archeological Research Laboratory, The University of Texas at Austin.

Bousman, C. B.

1998 Paleoenvironmental Change in Central Texas: The Palynological Evidence. *Plains Anthropologist* 43 (164):201–219.

Bousman, C. B., B. W. Baker, and A. C. Kerr

2004 Paleoindian Archeology in Texas. In *The Prehistory of Texas*, edited by Timothy Perttula, pp. 15–97. Texas A&M University Press, College Station.

Collins, M. B.

1995 Forty Years of Archeology in Texas. *Bulletin of the Texas Archeological Society* 66:361–400.

2004 Archeology in Central Texas. In *Prehistory of Texas*, edited by T.K. Perttula, pp. 101–126. Texas A&M University Press, College Station.

Collins, M. B., J. Guy, and S. W. Dial

1998 The Archaic Period, 8800 to 1300 BP. In Wilson-Leonard: An 11,000-year Archaeological Record of Hunter-Gatherers on Central Texas. Volume I: Introduction, Background, and Syntheses. Edited by Michael B. Collins. Studies in Archaeology 31. Texas Archaeological Research Laboratory, The University of Texas at Austin.

Ferring, C. R.

2001 *The Archaeology and Paleoecology of the Aubrey Clovis Site (41DN79) Denton County, Texas*. Center for Environmental Archaeology. Department of Geography, University of North Texas.

Fox, A. A., and D. E. Fox

1967 The Classen Rock Shelter, 41BX23. Manuscript on File at the Center for Archaeological Research, The University of Texas at San Antonio.

Griffith, G., S. Bryce, J. Omernik, and A. Rogers

2007 Ecoregions of Texas. U.S. Environmental Protection Agency, Corvallis, Oregon.

Henson, M. S.

2020a Anglo-American Colonization. Handbook of Texas Online, https://tshaonline.org/handbook/online/articles/uma01. Accessed September 4, 2020.

2020b Harris County. Handbook of Texas Online, http://www.tshaonline.org/handbook/online/articles/hch07. Accessed September 4, 2020.

Highley, C. L., C. Graves, C. Land, and G. Judson

1978 Archeological Investigations at Scorpion Cave (41ME7) Medina County, Texas. *Bulletin of the Texas Archeological Society* 49:139–194.

Huebner, J. A.

1991 Late Prehistoric Bison Populations in Central and Southern Texas. *Plains Anthropologist* 36(137):343–358.

Johnson, L.

1994 The Life and Times of Toyah-Culture Folk: The Buckhollow Encampment Site 41KM16, Kimble County, Texas. Report No. 38. Office of the State Archeologist, Austin.

Johnson, L., and G. T. Goode

1994 A New Try at Dating and Characterizing Holocene Climates, as well as Archaeological Periods, on Eastern Edwards Plateau. *Bulletin of the Texas Archaeological Society* 65:1–51.

Kalter, A. J., R. M. Rogers, and M. N. Smith

2005 *Analysis and Reporting for 41FY135, the Sandbur Site, Fayette County, Texas*. PBS&J, Document No. 020388. Archeological Studies Program Report No. 73. Texas Department of Transportation. Austin.

Long, C.
2020 OLD THREE HUNDRED. Handbook of Texas Online, http://www.tshaonline.org/handbook/online/articles/umo1. Accessed September 4, 2020.

Mauldin, R. P., and D. L. Nickels
2001 An Archaeological Survey of Twin Buttes Reservoir, Tom Green County, Texas. Archaeological Survey Report, No. 300. Center for Archaeological Research, The University of Texas at San Antonio.

Mauldin, R. P., D. L. Nickels, and C. J. Broehm
2003 Archaeological Testing at Determine the National Register Eligibility Status of 18 Prehistoric Sites on Camp Bowie, Brown County, Texas (Volume 1 and Volume 2). Archaeological Survey Report, No. 334. Center for Archaeological Research, The University of Texas at San Antonio.

Meltzer, D. J., and M. R. Bever
1995 Paleoindians of Texas: An Update on the Texas Clovis Fluted Point Survey. *Bulletin of the Texas Archeological Society* 66:47–81.

Moore, D. W. and E. G. Wermund, Jr.
1993 Quaternary geologic map of the Austin 4° x 6° quadrangle, United States. U.S. Geological Survey Miscellaneous Investigations Series Map I-1420 (NHG-14), scale 1;000,000. Available at: https://pubs.er.usgs.gov/publication/i1420(NH14). Accessed September 4, 2020.

Natural Resources Conservation Service (NRCS)
2020 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. *Web Soil Survey*. Available at: http://websoilsurvey.nrcs.usda.gov/. Accessed September 4, 2020.

Nickels, D. L., C. B. Bousman, J. D. Leach, and D. A. Cargill
1998 *Test Excavations at the Culebra Creek Site, 41BX126, Bexar County, Texas*. Archaeological Survey Report, No. 265. Center for Archaeological Research, The University of Texas at San Antonio.

Patterson, L. W.
1988 Chronology of Arrow Point Types in South Texas. *La Tierra* 15(4):29–33.

Powell, J. F., and D. G. Steele
1994 Diet and Health of Paleoindians: An Examination of Early Holocene Human Dental Remains. In *Paleonutrition: The Diet and Health of Prehistoric Americans*. Edited by K.D. Sobolik, pp. 176–192. Occasional Paper No. 22. Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Prewitt, E. R.
1981 Cultural Chronology in Central Texas. *Bulletin of the Texas Archaeological Society* 52:65–89.

Quigg, J. M., C. Lintz, F. M. Oglesby, A. C. Earls, C. D. Frederick, W. N. Trierweiler, D. Owsley, and K. W. Kibler

1993 Historic and Prehistoric Data Recovery at Palo Duro Reservoir, Hansford County, Texas. Technical Report 485. Mariah Associates, Inc., Austin.

Ricklis, R. A.

1995 Prehistoric Occupation of the Central and Lower Texas Coast: A Regional Overview. *Bulletin of the Texas Archeological Society* 66:265–300.

2004 The Archeology of the Native American Occupation of Southeast Texas. In *The Prehistory of Texas*, edited by T.K. Pertulla, pp. 181-202. Texas A&M University Press, College Station, Texas.

Skinner, S. A.

1981 Aboriginal Demographic Changes in Central Texas. *Plains Anthropologist* 26(92):111–118.

Spencer, D. E.

2020 Waller, Texas. Handbook of Texas Online, https://www.tshaonline.org/handbook/entries/hockley-tx. Accessed September 4, 2020.

Story, D. A.

1985 Adaptive Strategies of Archaic Cultures of the West Gulf Coastal Plain. In *Prehistoric Food Productions in North America*, edited by R.I. Ford, pp. 19–56. Anthropological Papers No. 75. Museum of Anthropology, University of Michigan, Ann Arbor.

1990 *The Archeology and Bioarcheology of the Gulf Coastal Plain, Vol. 1*, edited by M.A. Kennedy. Research Series No. 38, Arkansas Archeological Survey, Fayetteville, Arkansas.

Texas Historical Commission (THC)

2020 Texas Archeological Site Atlas, http://nueces.thc.state.tx.us/. Accessed September 4, 2020.

Weddle, R. S.

2001 The Wreck of the Belle, the Ruin of La Salle. Texas A&M University Press, College Station, Texas.

Weir, F. A.

1976 The Central Texas Archaic. Unpublished PhD. dissertation. Anthropology Department, Washington State University, Pullman.

Winkler, B. A.

1982 Wild Plant Foods of the Desert Gatherers of West Texas, New Mexico, and Northern Mexico: Some Nutritional Values. Unpublished Master's Thesis, Department of Anthropology, The University of Texas at Austin.

APPENDIX A
Shovel Test Log

Shovel Test Log

Shovel Test No.	Depth (cm)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Materials	Reason for Termination/ Comments
AB1	0–20	10YR 4/4	Dark Grayish Brown	Sandy Loam	Gravels 5%	Negative	-	-
	20–40	10YR 3/4	Dark Grayish Brown	Sandy Clay	-	Negative	-	Compacted Soils
AB2	0–20	10YR 3/4	Dark Grayish Brown	Sandy Loam	Gravels 5%	Negative	-	-
	20–40	10YR 3/4	Dark Grayish Brown	Sandy Loam	-	Negative	-	-
	40–60	10YR 4/4	Dark Grayish Brown	Sandy Loam	-	Negative	-	-
	60–80	10YR 4/4	Dark Grayish Brown	Sandy Loam	-	Negative	-	-
	80–100	10YR 4/4	Dark Grayish Brown	Sandy Loam	-	Negative	-	Depth
CM1	0–20	10YR 5/3	Brown	Sandy Loam	Gravels 10%	Negative	-	-
	20–40	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils
CM2	0–20	10YR 5/3	Brown	Sandy Loam	Gravels 10%	Negative	-	-
	20–40	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils

Shovel Test No.	Depth (cm)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Materials	Reason for Termination/ Comments
CM3	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	Gravels 15%	Negative	-	-
	20–40	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils
CM4	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	Redoximorphic Feature 25%	Negative	-	Compacted Soils
CM5	–	-	-	-	-	-	-	No Dig – In culvert and concrete
CM6	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	Gravels 10%	Negative	-	-
	20–40	10YR 5/3	Brown	Sandy Loam	-	Negative	-	-
	40–60	10YR 4/2	Dark Grayish Brown	Sandy Loam	Gravels 10%	Negative	-	-
	60–80	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils
CM7	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	Gravels 10%	Negative	-	-
	20–40	10YR 4/3	Brown	Sandy Loam	Gravels 10%	Negative	-	-
	40–60	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils

Shovel Test No.	Depth (cm)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Materials	Reason for Termination/ Comments
CM8	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	Gravels 10%	Negative	-	-
	20–40	10YR 4/3	Brown	Sandy Loam	Gravels 10%	Negative	-	-
	40–60	10YR 3/3	Reddish Brown	Sandy Loam	-	Negative	-	-
	60–80	10YR 4/1	Dark Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils
CM9	0–20	10YR 4/2	Dark Grayish Brown	Sandy Loam	-	Negative	-	-
	20–40	10YR 5/3	Brown	Sandy Loam	-	Negative	-	-
	40–60	10YR 6/2	Light Brownish Gray	Sandy Clay	-	Negative	-	Compacted Soils
TL1	0–20	10YR 4/3	Brown	Sandy Loam	Roots 10%	Negative	-	-
	20–40	10YR 5/2	Grayish Brown	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils
TL2	0–20	10YR 5/2	Grayish Brown	Sandy Loam	Roots 5%	Negative	-	-
	20–40	10YR 6/2	Light Brownish Gray	Sandy Clay	Redoximorphic Feature 10%	Negative	-	Compacted Soils

Shovel Test No.	Depth (cm)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Materials	Reason for Termination/ Comments
TL3	0–20	10YR 5/4	Yellowish Brown	Sandy Loam	Roots 5%	Negative	-	-
	20–40	10YR 5/4	Yellowish Brown	Sandy Loam	Roots 5%	Negative	-	Compacted Soils
TL4	0–20	10YR 5/4	Yellowish Brown	Sandy Loam	Roots 5%	Negative	-	-
	20–40	10YR 5/4	Yellowish Brown	Sandy Clay Loam	Gravels 10%; Redoximorphic Feature 5%	Negative	-	Compacted Soils