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Cultural Resources Survey of the Proposed CPS Energy Shepherd Transmission Line Project, Bexar County, Texas

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PREPARED FOR

CPS Energy

PREPARED BY

SWCA Environmental Consultants

Redacted

CULTURAL RESOURCES SURVEY OF THE PROPOSED CPS ENERGY SHEPHERD TRANSMISSION LINE PROJECT, BEXAR COUNTY, TEXAS

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ABSTRACT

SWCA Environmental Consultants (SWCA) conducted a cultural resources investigation on behalf of CPS Energy for the proposed 5.6-mile-long (9-kilometer [km]-long) Shepherd Transmission Line Project in Bexar County, Texas (Project). The Project will involve installing new overhead electric transmission monopoles within west San Antonio. The Project is currently not subject to Section 106 of the National Historic Preservation Act (NHPA) but is subject to the Antiquities Code of Texas (ACT) and Historic Preservation and Design Sections of San Antonio's Unified Development Code, both closely aligned to NHPA standards.

The purpose of the investigation was to identify any substantial cultural resources sites located within the Project area, establish vertical and horizontal site boundaries as appropriate with regard to the Project area, and evaluate the significance of any sites recorded within the property. All work was done in accordance with the Archeological Survey Standards for Texas as set forth by the Council of Texas Archeologists (CTA) and adopted by the Texas Historical Commission (THC).

The direct area of potential effects (APE) totals 69.3 acres (28.0 hectare), derived from the approximately 5.6-mile-long (9.0-km-long) proposed Project alignment and its 75- to 100-foot-wide (22.9- to 30.5-meter-wide) corridor. The indirect APE examined was the direct line of sight from planned Project monopoles and wires with the potential to impact the visual viewshed of historic buildings.

Prehistoric archaeological site 41BX2270 was newly identified during the investigation. Site 41BX2270 is a diffuse lithic artifact scatter isolated to the ground surface. The artifact assemblage is representative of a lithic procurement site ubiquitous across the region. Due to the paucity of cultural materials, lack of temporally diagnostic artifacts or features, and absence of buried prehistoric materials, SWCA assesses the portion of site 41BX2270 within the Project area as not eligible for the National Register of Historic Places or for designation as a State Antiquities Landmark and no further work is recommended.

SWCA has made a reasonable and good faith effort to identify significant cultural resources within the APE. All investigations were conducted in accordance with the regulations and guidelines of the ACT, THC/CTA, and Section 106 of the NHPA.

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CHAPTER 1. INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted a cultural resources investigation on behalf of CPS Energy for the proposed 5.6-mile-long (9-kilometer [km]-long) Shepherd Transmission Line Project in Bexar County, Texas (Project). The Project involves the installation of new overhead electric transmission monopoles connecting an existing CPS Energy line north of Farm-to-Market Road (FM) 143 south to a new substation west of Shepherd Road within west San Antonio.

The transmission line is located within existing or newly purchased CPS Energy rights-of-way (ROWs) or inside the City of San Antonio (CoSA) Extra Territorial Jurisdiction. CPS Energy is a political subdivision of the State of Texas. As such, the proposed undertaking is subject to review under the Antiquities Code of Texas (ACT) and CoSA's Historic Preservation and Design Section of the Unified Development Code (Article VI 35-360 to 35-634). SWCA completed all work in compliance with the ACT under Permit No. 8526, issued August 15, 2018.

Project activities relevant to waters of the U.S. will either be verified under Nationwide Permit (NWP) 12 (Utility Line Activities) under Section 404 of the Clean Water Act (33 U.S. Code [USC] 1344) or will avoid all federal triggers. No Section 10 navigable waters (River and Harbors Act of 1899, 33 USC 403) occur within the Project area. One NWP 12 condition is that transmission installation activities comply with Section 106 of the National Historic Preservation Act (NHPA; 36 Code of Federal Regulations [CFR] 800; 33 CFR 325, Appendix C [Processing Department of Army Permits: Procedures for the Protection of Historic Properties]). This report shall be submitted to the Texas Historical Commission (THC), Texas' State Historic Preservation Office, for formal ACT permit review and comment.

The purpose of the investigation was to identify any prehistoric and/or historic cultural resources sites located within the Project area, establish vertical and horizontal site boundaries as appropriate with regard to the Project area, and evaluate the significance of any sites recorded within the property. All work was done in accordance with the Archeological Survey Standards for Texas as set forth by the Council of Texas Archeologists (CTA) and adopted by the THC.

The direct area of potential effects (APE) totals 69.3 acres (28.0 hectare [ha]), derived from the approximately 5.6-mile-long (9-km-long) proposed Project alignment and its 75- to 100-foot-wide (22.9- to 30.5-meter [m]-wide) corridor. The indirect APE was limited to line of sight from Project monopoles and wires, with the potential to impact the visual viewshed of historic buildings.

The line is currently limited to privately owned and CPS Energy lands. It is depicted on the Macdona, Texas (2998-242), U.S. Geological Survey (USGS) 7.5-minute quadrangle map. The Project area crosses nine waterways: four named waterways (i.e., Medina River, Potranca Creek, Lucas Creek and Polecat Creek) and up to five unnamed drainages to the Medina River (Figures 1.1 and 1.2).

Project Personnel

Zachary M. Overfield, M.A., RPA, served as principal investigator for the duration of the Project, overseeing overall logistics and organization, managing reporting, and agency consultation. Project Archaeologist Sophia Salgado, B.A., and archaeologists Ashley Eyeington, B.A., and Jonathan Welch, M.A., completed the Straus-Medina Conservation Bank Segment survey on August 16, 2018 (Appendix A). Ms. Salgado and field archaeologists Rachel Jenson, B.A., and Laura Vilsak, M.A., completed the remainder of the survey from January 22 to 25, 2019. Ms. Salgado and Mr. Overfield prepared the technical report, Jason Kainer produced all field and report maps for the Project, and Lauri Logan provided technical editing and document preparation.

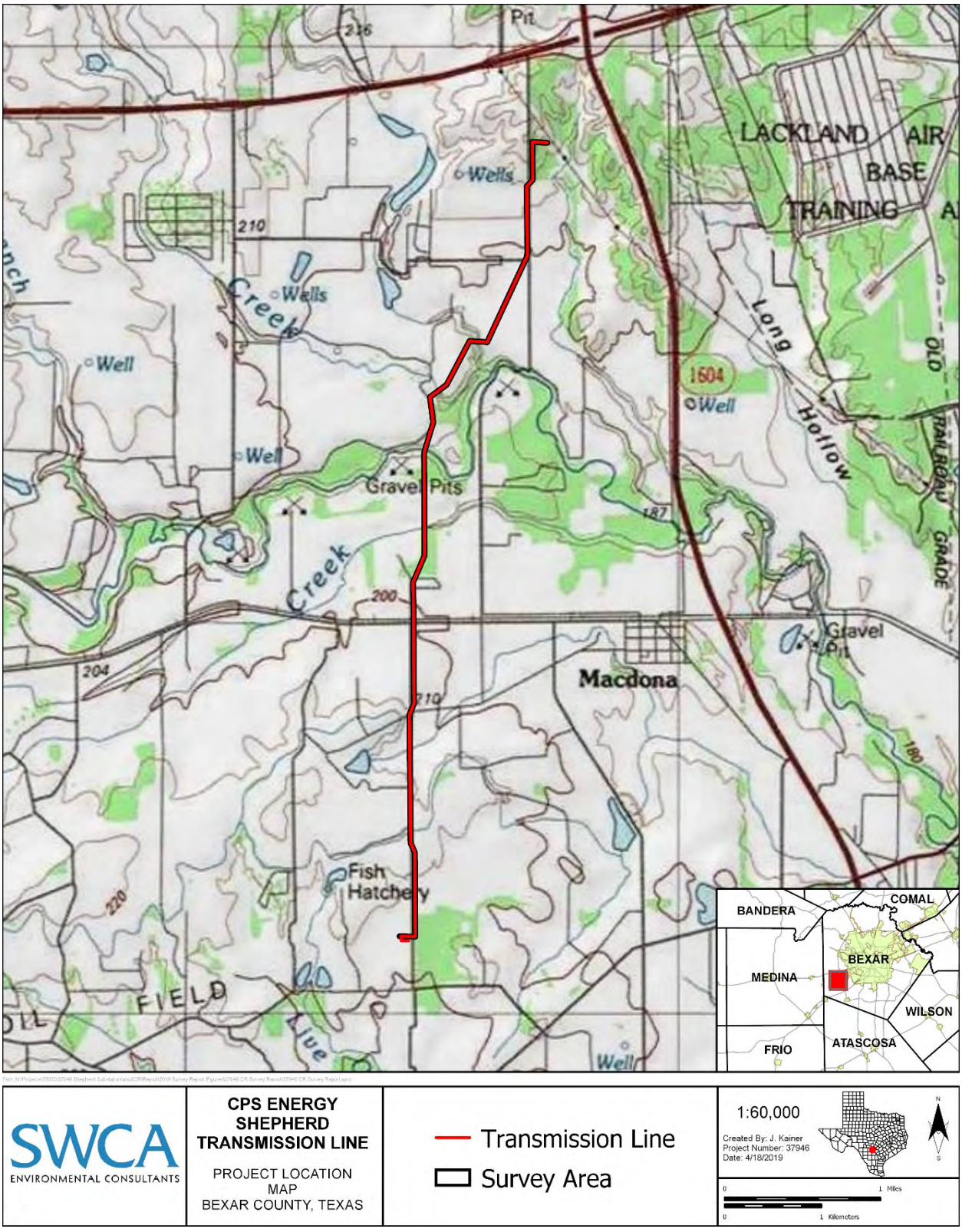

Figure 1.1. Project location, topographic overview.

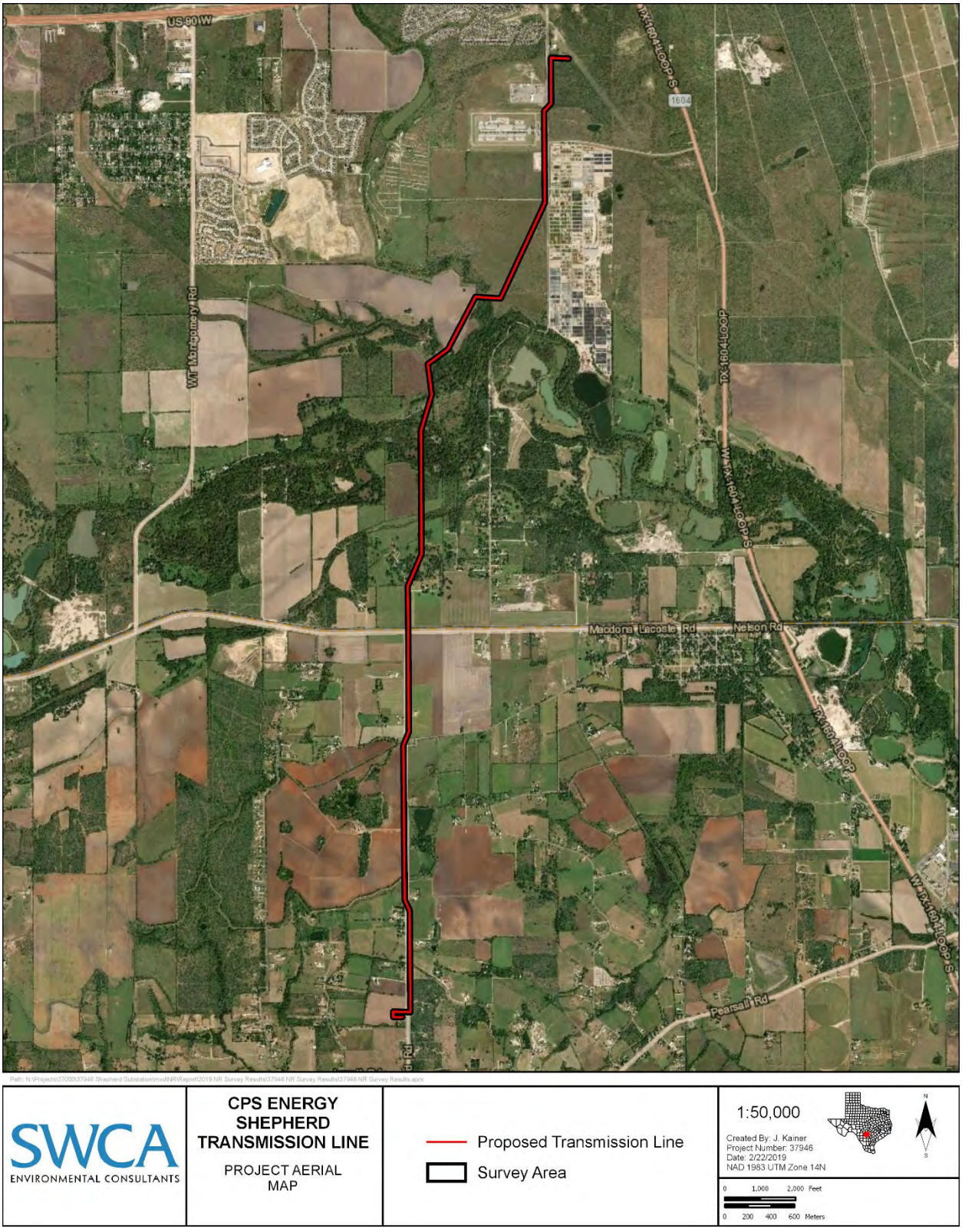

Figure 1.2. Project location, aerial overview.

CHAPTER 2. ENVIRONMENTAL BACKGROUND

Introduction

This chapter discusses the environmental setting of the CPS Energy Shepherd Transmission Line Project. This review encompasses geology, soils, vegetation, fauna, hydrology, and the paleoenvironment of the region. Unless otherwise noted, this chapter broadly reviews the overall Project area setting.

Environment

The Project area lies in west San Antonio, Bexar County, Texas. The Project area is within the Northern Blackland Prairie of the Blackland Prairie ecoregion. The Edwards Plateau physiographic region of Texas lies to the north, while the Blackland Prairies and Interior Coastal Plains lie to the south (Wermund 2019). A physiographic province is briefly characterized as a region with a shared geology (rocks and soil), vegetation, fauna, and climate (Wermund 2019). Overall, the Project area can be characterized as predominantly rural in nature with relatively limited industrial development in the immediate vicinity.

The proposed transmission line alignment traverses the Northern Blackland Prairie ecoregion with an elevation ranging between 640 and 800 feet above mean sea level (amsl) (Wermund 2019). This physiographic region is described as having a gradually undulating surface of clay soils overlying interbedded chalks, marls, limestones, and shales of Cretaceous age. (Griffith et al. 2004).

The Project route crosses Late-Cretaceous, Eocene, Pleistocene and recent (Holocene) age deposits (Table 2.1; Figure 2.1). The portion of the Project route near the northern terminus of the Project alignment and north of the Medina River is primarily underlain by Late-Cretaceous age Navarro Group and Marlbrooke Marl, undivided. The Project route to the north, south, and encompassing the Medina River is underlain by Terrace deposits of Holocene age. The underlying geology of the southern terminus of the Project area is the Wilcox Group, undivided of Eocene age.

Table 2.1. Geologic Units Traversed by the Project Area

Geologic Unit Name	Geologic Code	Age	Acreage	Percent
Navarro Group and Marlbrook Marl	Kknm	Late Cretaceous	8.4	12.1
Fluviatile Terrace Deposits	Qt	Pleistocene	31.2	45.0
Wilcox Group, undivided	Ewi	Eocene	24.2	34.9
Alluvium	Qal	Holocene (Recent)	3.4	4.9
Uvalde Gravel	T-Qu	Pliocene	2.2	3.1
Total			**69.3**	**100**

The deposits most relevant to prehistoric settlement and the integrity of archaeological sites are the Pleistocene and Holocene deposits. These deposits are mapped along the Medina River bisected by the Shepherd Transmission Line alignment. These consist of Pleistocene-aged fluviatile terrace deposits and Holocene-aged alluvium (Barnes 1976; Fisher 1977, 1981). The fluviatile terrace deposits are described as gravel, sand, silt, and clay with common pebbles and cobbles of chert, quartzite, igneous rock, and metamorphic rock. The Holocene alluvium is described as occupying floodplain and low terraces composed of local gravel, sand, silt, clay, and organic matter (Barnes 1976; Fisher 1977, 1981).

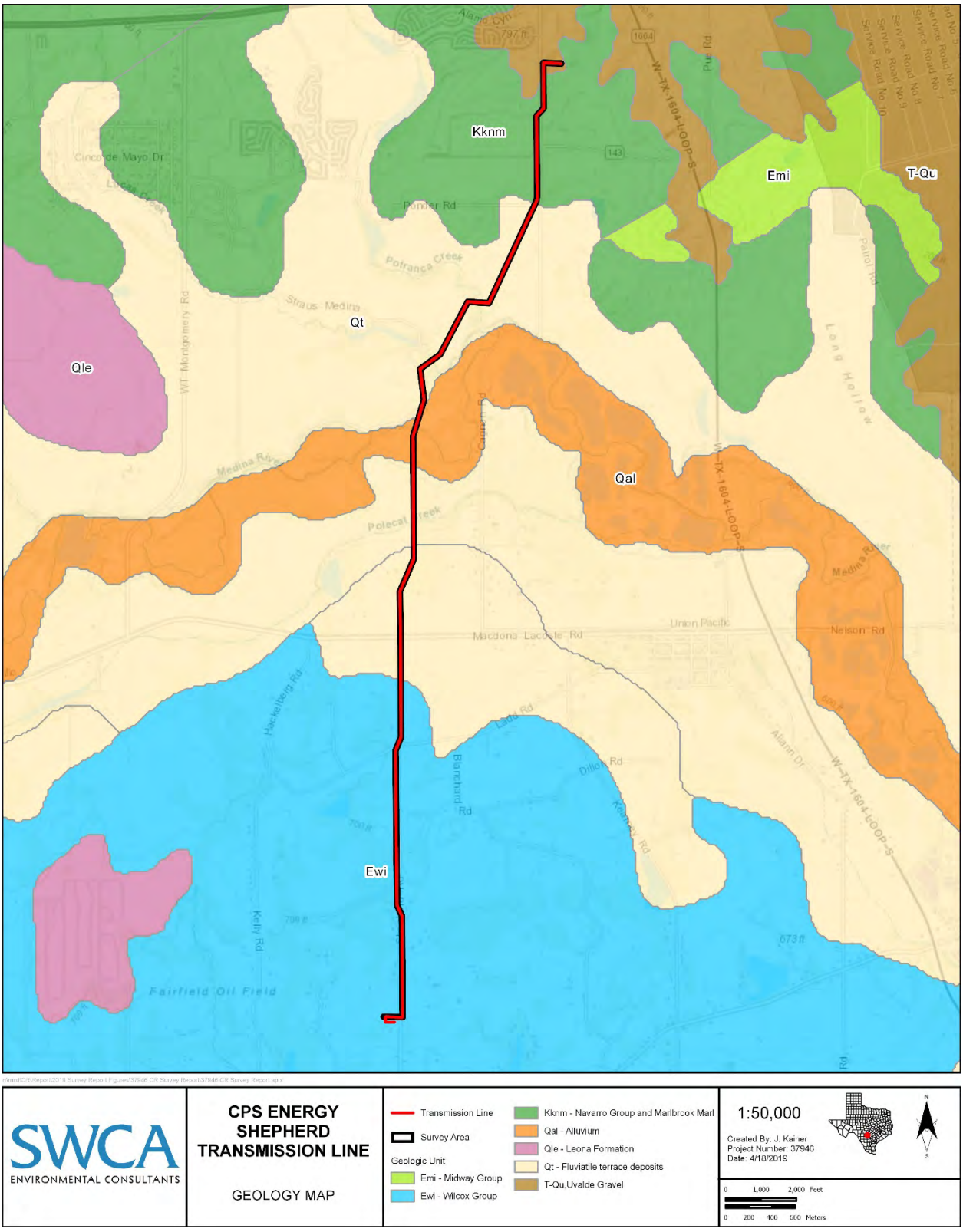

Figure 2.1. Geology of the Project area.

Soils

Soil survey data for the proposed Project alignment in Bexar County was derived from the Natural Resources Conservation Service (NRCS) (2019). The Project alignment traverses 18 soil series with the most prevalent being Houston Black gravelly clay, Branyon clay and Laparita clay loams (Table 2.2; Figure 2.2).

Table 2.2. General Soil Series Units within the Project APE

Soil Type	Symbol	Acreage	Percent
Houston Black gravelly clay	HuB, HuC, HuD	10.3	14.9
Heiden-Ferris complex, severely eroded	HoD3	3.0	4.3
Loire clay loam, occasionally flooded	Fr	5.4	7.8
Branyon clay	HtA, HtB	12.0	17.3
Sunev clay loam	VcA, VcB	9.5	13.7
Lewisville silty clay	LvA	6.2	8.9
Laparita clay loam	OrB	11.4	16.5
Floresville fine sandy loam	WbB, WbC	4.1	5.9
San Antonio clay loam	SaB, SaC	2.3	3.3
Miguel fine sandy loam	CfB	3.3	4.8
Atco clay loam	KcC2	0.3	0.4
Patrick soils	PaC	1.5	2.2
Total		**69.3**	**100**

Flora

The surveyed Project area is located in the Northern Blackland Prairie ecoregion of the Texas Blackland Prairies (Griffith et al. 2004). The present environment consists of scrub brush with prolific mesquite, juniper, and cacti across pastureland.

The most characteristic vegetation observed around the Project area includes pecan (*Carya illinoensis*), Shumard oak (*Quercus shumardii)*, eastern cottonwood (*Populus deltoids)*, southern hackberry (*Celtis laevigata*), cedar elm (*Ulmus crassifolia*), bur oak (*Quercus macrocarpa*), blackjack oak (*Quercus marilandica*), mesquite (*Prosopis glandulosa*), American elm (*Ulmus americana*), Texas oak (*Quercus texana*), Ashe juniper (*Juniperus ashei*), bitternut hickory (*Carya cordiformis*), and sand post oak (*Quercus margaretta*), with an understory of bunch grasses (e.g., Silveanus dropseed, Mead's sedge, bluestems, and long-spike tridens), and common forbs included asters, prairie bluet, prairie clovers, and black-eyed Susan (*Rudbeckia hirta*) (Griffith et al. 2004).

Fauna

The Project area corresponds to the convergence of the broader Tamaulipan and Balconian biotic provinces of Texas defined by Blair (1950).

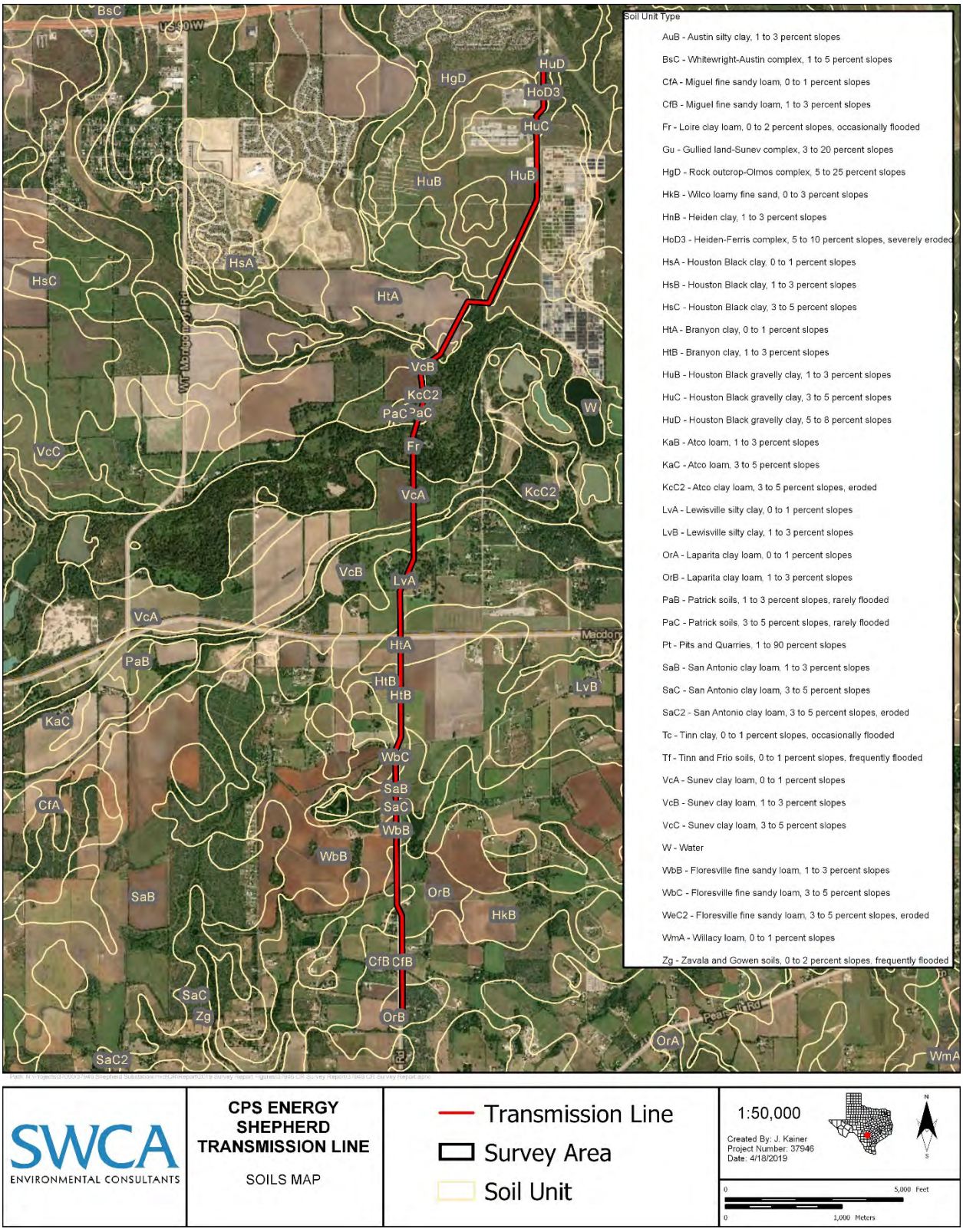

Figure 2.2. Soil map units crossed by the Project.

Mammals common among these biotic provinces and the Project area include striped skunk (*Mephitis mephitis*), white-tailed deer (*Odocoileus virginianus*), opossum (*Didelphis virginiana*), raccoon (*Procyon lotor*), armadillo (*Dasypus novemcinctus*), black-tailed jackrabbit (*Lepus californicus*), and deer mouse (*Peromyscus maniculatis*). Less common are the predatory mammals, including the coyote (*Canis latrans*), bobcat (*Lynx rufus*), and gray fox (*Urocyon cinereoargenteus*) (Burt and Grossenheider 1976; Schmidly 1983). In addition, bison (*Bison bison*), mountain lion (*Felis concolor*), and black bear (*Ursus americanus*) would have been present prehistorically (Davis and Schmidly 1994).

Bird species composition is fairly diverse with numerous breeding, migrant, and wintering species present (Kutac and Caran 1994). Typical birds within the Project area include black vultures (*Coragyps atratus*), turkey vultures (*Cathartes aura*), northern bobwhite (*Colinus virginianus*), mourning dove (*Zanaida macroura*), northern mockingbird (*Mimus polyglottos*), red tailed hawk (*Buteo jamaicensis*), American robin (*Turdus migratorius*), and many sparrows (Davis and Schmidly 1994; Kutac and Caran 1994).

In addition to mammals and birds, Blair (1950) identifies a wide variety of amphibians and reptiles within the biotic provinces. Some reptiles common to the Project area include the yellow mud turtle (*Kinosternon flavescens flavescens*), common musk turtle (*Sternotherus odoratus*), the ornate box turtle (*Terrapene ornata ornata*), eastern box turtle (*Terrapene carolina carolina*), prairie lizard (*Sceloporus undulatus garmani*), Texas spiny lizard (*Sceloporus olivaceus*), eastern yellowbelly racer (*Coluber constrictor flaviventris*), Texas rat snake (*Elaphe obsoleta lindheimeri*), western cottonmouth (*Agkistrodon piscivorus leucostoma*), western diamondback rattlesnake (*Crotalus atrox*), and the timber rattlesnake (*Crotalus horridus*). Amphibians found within the Project area include the small mouth salamander (*Ambystoma texanum*), Woodhouse's toad (*Bufo woodhousii*), Gulf coast toad (*Bufo valliceps*), bullfrog (*Rana catesbeiana*), and the Strecker's chorus frog (*Pseudacris streckeri*) (Conant and Collins 1998; Kutac and Caran 1994; Werler and Dixon 2004).

Paleoenvironment

An accurate determination of possible cultural remains within a region requires a review of past environmental conditions. Vegetative cover, geology, and soils all affect the character of a drainage system, which in turn is affected by climate. To accomplish this review, proxy data (e.g., bog pollen, speleothems, and various isotopic analyses) from several regional studies were used to reconstruct the paleoenvironment for the late Pleistocene and Holocene in south central Texas (Bousman 1998; Cooke et al. 2003; Nordt et al. 2002; Toomey 1993). Not all data are unanimously accepted and there are gaps in the record, but SWCA finds the interpretation provided here as the best current fit.

After the last glacial maximum approximately 18,000 B.P., cooler temperatures and more mesic conditions existed than currently found in the Central Texas region, South Texas Plains, and Texas Coastal Plain (Bousman 1998; Bryant and Holloway 1985; Bryant and Shafer 1977; Hudler 2000; Musgrove et al. 2001; Nordt et al. 2002, 2007; Sylvia and Galloway 2006; Toomey 1993). These conditions prevailed until 15,000 B.P. and again around 12,000 B.P. when pollen data and isotopic analyses show glacial melt waters entered the Gulf of Mexico and triggered arid and presumably warmer conditions in southern and Central Texas (Bousman 1998:214; Nordt et al. 2002:182). This assessment is supported by low growth rates on speleothems from dated stalagmites in several central Texas caves (Musgrove et al. 2001). The more recent xeric period was followed by a shift back to cooler temperatures and moist conditions in central and southern Texas, which continued into the Early Holocene (Bousman 1998:214).

From the Early to Middle Holocene (approximately 10,500–5,000 B.P.), the proxy data suggest that the climate became gradually warmer and drier (Bryant and Shafer 1977; Toomey 1993). These data suggest a decrease in tree canopy and more open grassland for central and south-central Texas (Bousman 1998),

which correlates to various fauna indicator species from cave deposits (Hudler 2000; Toomey 1993), the presence or extinction of various Molluscan fauna (Neck 1983, 1987), and shifts in C_3–C_4 plant production (Nordt et al. 1994, 2002). This prominent period of warmer temperatures, decreasing moisture, and forest retreat is called the Altithermal or Hypsithermal (Collins 2004; Neck 1987; Story 1990; Toomey 1993). These conditions existed with some minor deviations and probably localized variations (Hudler 2000:88–89). One anomaly of note is a brief episode of moister conditions in southern and central Texas occurring around 6,000 B.P., seen by an increase in arboreal pollen and composition levels of isotopic carbon (Bousman 1998; Nordt et al. 2002:186). This brief cool and moist episode was immediately followed by another extremely arid and warm climate (Bousman 1998; Nordt et al. 2002). This xeric period lasting approximately 1,000 years is exhibited by a drastic reduction in arboreal pollen and an increase in grassland pollen with the former reaching its lowest point and the latter reaching its zenith at approximately 5,000 B.P. (Bousman 1998).

From this arid and warm period extreme, the Late Holocene climate is described as gradually increasing in moisture and cooling in temperature (Bousman 1998; Nordt et al. 2002, 2007). The mesic indicators of this time were exhibited through a gradual increase in woodland canopy and data from stable isotope analyses in buried soils (Bousman 1998; Nordt et al. 2002, 2007). Nordt et al. (2007:159) characterize this period as a 'cool interlude' before conditions again transitioned into a more xeric and warmer climate. This arid interval extends from approximately 2,600 to 1,000 B.P. before again becoming slightly more mesic and continuing as such up to the present (Nordt et al. 2007). The last 1,000 years are indicated to have some brief fluctuations of arid conditions occurring around 300–500 B.P. before trending toward modern climates of the present (Bousman 1998:216).

CHAPTER 3. CULTURAL SETTING

Introduction

Although not all time periods are normally encountered during a single project, CTA reporting guidelines require the development of a regional cultural sequence. This overview verifies that SWCA researchers are cognizant of material culture expressions within the region and these types of artifacts and features were considered during survey. The archaeological standard measurement of years is designated before present (B.P.), with the present defined for absolute dating methods as taking effect January 1, 1950.

The proposed Project area is situated within the South Texas archaeological region (Collins 2004; Prewitt 1981; Turner and Hester 1999). Although this archaeological region is arbitrarily defined, it is recognized by a combination of physiographic and vegetational characteristics that presumably influenced prehistoric systems of subsistence and settlement (Perttula 2004:6). Archaeological investigations in this defined region and others are largely focused on identifying broad-scale diachronic changes in the prehistoric record across large geographic zones. It warrants mentioning that these archaeological regions define specific geographic areas where prehistoric communities with common cultural traits are located, but hunter-gatherer groups by definition are nomadic. Regardless, there are some indications of environmentally based behaviors specific to each of these regions. One such example in the South Texas archaeological region is the large number of heavily eroded open camp sites in the region. Thus, the arbitrary construct of the archaeological regions are ideally used as a reference to examine how previous inhabitants (prehistoric and historic) have adjusted to living in the respective region through time. Ultimately, the recognized changes in subsistence and technology may provide data for inferring changes in social complexity (e.g., economy) that can be contrasted with other archaeological regions.

The following prehistoric cultural history derives its information from several central Texas regional chronologies: Black (1989), Collins (1995, 2004), Hester (1980a, 1995, 2004), Johnson and Goode (1994), which build upon the seminal efforts of Suhm (1960) and Prewitt (1981, 1985). Furthermore, as mentioned above, significant archaeological sites within the Central and South Texas archaeological regions and the Edwards Plateau have contributed important information to understanding prehistory.

Prehistoric Period

The following prehistoric cultural sequence is divided into three periods: Paleoindian, Archaic, and Late Prehistoric. The Archaic period is subdivided into four subperiods: Early, Middle, Late, and Transitional. The Historic period follows the Late Prehistoric, announcing the arrival of Europeans to central Texas.

Paleoindian Period

Human occupation of the Central and South Texas archaeological regions is thought to have begun approximately 11,000 years ago. This period correlates with the end of the late Pleistocene, the last ice age in North America. These early Texans are characterized by small, but highly mobile bands of foragers who were specialized hunters of Pleistocene megafauna; however, Paleoindians probably used a much wider array of resources including small fauna and plant foods (Bousman et al. 2002; Bousman et al. 2004; Bever and Meltzer 2007; Dering 2007; Meltzer and Bever 1995). Faunal remains from Kincaid Rockshelter and the Wilson-Leonard site (41WM235) support this view (Collins 1998; Collins et al. 1989). Longstanding ideas about Paleoindian technologies also are being challenged.

Surficial and deeply buried sites, rock shelter sites, and isolated artifacts represent Paleoindian occupations in the central Texas region. Although Paleoindian site types are not well documented in the

region, they can be generally classified according to broad site type categories extrapolated from nearby regions. Both open and protected (rock shelter) types are known. Usually these sites are near permanent sources of water such as tributary creeks or springs. Bison kill sites, open and protected campsites, and non-occupation lithic sites are known from the Paleoindian period in Texas. Intra-site features include hearths and isolated burials. The Wilson-Leonard site (41WM235), 41BX52, and 41BX229 contain stratified Paleoindian deposits (Hester 1980b). The lower component at the Wilson-Leonard site contained a Paleoindian burial (Collins et al. 1998).

Collins (2004) divides the Paleoindian period into early and late subperiods. Two projectile point styles, Clovis and Folsom, are included in the early subperiod. Clovis chipped stone artifact assemblages, including the diagnostic fluted lanceolate Clovis point, were produced by bifacial, flake, and prismatic-blade techniques on high-quality and oftentimes nonnative lithic materials (Collins 1990). Along with chipped stone artifacts, Clovis assemblages include engraved stones, bone and ivory points, stone bolas, and ochre (Collins 1995:381; Collins et al. 1992). Clovis points are found evenly distributed along the eastern edge of the Edwards Plateau, where the presence of springs and outcrops of chert-bearing limestone are common (Meltzer and Bever 1995:58). Sites within the area yielding Clovis points and Clovis-age materials include Kincaid Rockshelter (Collins et al. 1989) and San Macros Springs (Takac 1991). Analyses of Clovis artifacts and site types suggest that Clovis peoples were well-adapted, generalized hunter-gatherers with the technology to hunt larger game but not solely rely on it.

In contrast, Folsom tool kits—consisting of fluted Folsom points, thin unfluted (Midland) points, large thin bifaces, and end scrapers—are more indicative of specialized hunting, particularly of bison (Collins 2004:117). Folsom point distributions, both their frequency and spatial patterning, differ from the Clovis patterns, suggesting a shift in adaptation patterns (Bever and Meltzer 2007; Meltzer and Bever 1995:60 and 74). Folsom points appear more frequently in the coastal plain as well as the South Texas plain, which encompasses the southern half of the transmission line alignment. As Folsom points are almost exclusively found in plains settings (they are conspicuously lacking in the Edwards Plateau), the technology perhaps marks a more specialized adaptation, likely to a more intensive reliance on *Bison antiquus*.

Postdating Clovis and Folsom points in the archaeological record are a series of dart point styles (primarily unfluted lanceolate darts) for which the temporal, technological, or cultural significance is unclear. Often, the Plainview type name is assigned these dart points, but Collins (2004:117) has noted that many of these points typed as Plainview do not resemble Plainview type-site points in thinness and flaking technology. Investigations at the Wilson-Leonard site (see Bousman 1998) and a statistical analysis of a large sample of unfluted lanceolate points by Kerr and Dial (1998) have shed some light on this issue. At Wilson-Leonard, the Paleoindian projectile point sequence includes an expanding-stem dart point termed Wilson, which dates to ca. 10,000–9,500 B.P. Postdating the Wilson component is a series of unfluted lanceolate points referred to as Golondrina-Barber, St. Mary's Hall, and Angostura, but their chronological sequence is poorly understood. Nonetheless, it has become clear that the artifact and feature assemblages of the later Paleoindian subperiod appear to be Archaic-like in nature and in many ways may represent a transition between the early Paleoindian and succeeding Archaic periods (Collins 2004:118).

Archaic Period

The Archaic period for the Central Texas archaeological region dates from ca. 8,800 to 1,300–1,200 B.P. (Collins 2004) and generally is believed to represent a shift toward hunting and gathering of a wider array of animal and plant resources and a decrease in group mobility (Willey and Phillips 1958:107–108). In the eastern and southwestern United States and on the Great Plains, development of horticultural-based, semi-sedentary to sedentary societies succeeded the Archaic period. In these areas, the Archaic truly represents a developmental stage of adaptation as Willey and Phillips (1958) define it. For central Texas,

this notion of the Archaic is somewhat problematic. An increasing amount of evidence suggests that Archaic-like adaptations were in place before the Archaic (Bousman et al. 2002; Collins 1998, 2004:117–118; Collins et al. 1989) and that these practices continued into the succeeding Late Prehistoric period (Collins 2004:118–119; Prewitt 1981:74). In a real sense, the Archaic period of central Texas is not a developmental stage, but an arbitrary chronological construct and projectile point style sequence. Establishment of this sequence is based on several decades of archaeological investigations at stratified Archaic sites along the eastern and southern margins of the Edwards Plateau. Collins (2004) and Johnson and Goode (1994) have divided this sequence into three parts—early, middle, and late—based on perceived (though not fully agreed upon by all scholars) technological, environmental, and adaptive changes. However, Turner and Hester (1999) and Black (1989) have designated another period at the end of the Archaic, referred to as Transitional Archaic or Terminal Archaic.

EARLY ARCHAIC

The Early Archaic period (8,800–6,000 B.P.) is better documented than the Paleoindian period; however, a complete understanding of cultural patterns does not yet exist. Early Archaic sites are small, and their tool assemblages are diverse (Weir 1976:115–122), suggesting that populations were highly mobile and low density (Prewitt 1985:217). It has been noted that Early Archaic sites are concentrated along the eastern and southern margins of the Edwards Plateau (Johnson and Goode 1994; McKinney 1981). This distribution may indicate climatic conditions at the time, given that these environments have more reliable water sources and a more diverse resource base than other parts of the region.

Artifact assemblages of the Early Archaic include projectile points styles such as Hoxie, Bulverde, Gower, Wells, Martindale, and Uvalde, as well as early split stem projectile points. A variety of choppers and gouges, such as the triangular, concave based bifaces known as Guadalupe tools, and the distally beveled Clear Fork unifaces are present in the archaeological record. A variety of expediency tools, often nothing more than utilized flakes, are increasingly present in the Early Archaic (Black 1989).

The construction and use of rock hearths and ovens, which had been limited during the Paleoindian period, become commonplace in the Early Archaic. The use of rock features suggests that retaining heat and releasing it slowly over an extended period were important in food processing and cooking and reflects a specialized subsistence strategy. Such a practice probably was related to cooking plant foods, particularly roots and bulbs, many of which must be subjected to prolonged periods of cooking to render them consumable and digestible (Black et al. 1997:257; Wandsnider 1997; Wilson 1930). Botanical remains, as well as other organic materials, are often poorly preserved in Early Archaic sites, so the range of plant foods exploited and their level of importance in the overall subsistence strategy are poorly understood. But recovery of charred wild hyacinth (*Camassia scilloides*) bulbs from an Early Archaic feature at the Wilson-Leonard site provides some insights into the types of plant foods used and their importance in the Early Archaic diet (Collins 1998). At the Gatlin Site (41KR621) in Kerr County, the researchers interpreted two types of cooking based upon the encountered burned rock features (Houk et al. 2008). The first type is small-scale grilling/smoking of fauna and flora resources while the second type attributed to the earth ovens was large scale baking of flora and possibly fauna (Houk et al. 2008:13-17–13-18). The Gatlin researchers examined similar features from other Early Archaic sites in the region and noted that there is a wide variety concerning the occurrence of small and large burned rock features. Some Early Archaic sites solely contained large earth ovens, whereas others had a ratio as high as 3:1 small to large features (Houk et al. 2008:13-18). Ultimately, the researchers concluded that supplementary data should be considered to garner a more complete interpretation of Early Archaic activities.

Significant Early Archaic sites include the Icehouse Site in Hays County (Oksanen 2008), Richard Beene site in Bexar County (Thoms and Mandel 2007), the Camp Pearl Wheat and Gatlin sites in Kerr County

(Collins et al. 1990; Houk et al. 2008), and the Jetta Court site in Travis County (Wesolowsky et al. 1976).

MIDDLE ARCHAIC

Cultural patterns during the Middle Archaic period (6,000–4,000 B.P.), point toward an increased sedentary population intensively harvesting acorns, prickly pear "tuna," and pecans, and hunting small and medium-size game such as deer and turkey. The increase in the number of Middle Archaic sites and burials supports the concept of a larger, more sedentary population (Black and McGraw 1985; Prewitt 1981:73; Weir 1976:124, 135). Large bands may have formed at least seasonally to occupy a single area, or small groups may have used the same sites for longer periods (Weir 1976:130–131).

Sites of the Middle Archaic are numerous and often large in size. Burned rock middens are found at many sites with Middle and Late Archaic components in the Central Texas archaeological region. The development of burned rock middens toward the end of the Middle Archaic suggests a greater reliance on plant foods, although tool kits still imply a considerable dependence on hunting (Prewitt 1985:222–226). Middle Archaic projectile point styles include Bell, Andice, Calf Creek, Taylor, Nolan, and Travis. Other artifacts from the Middle Archaic are choppers, gouges, and expediency tools such as the small, bifacial and unifacial Clear Fork tools. Grinding stones and bases, referred to as manos and metates, show up in Middle Archaic artifact assemblages as well as a number of perforators, drills and awls. Chipped, polished, and ground stone artifacts are common in central Texas and surrounding regions. Less frequently encountered artifacts include tools and ornaments of bone, antler, and marine shell (Turner and Hester 1999).

Bell and Andice points reflect a shift in lithic technology from the preceding Early Archaic Martindale and Uvalde point styles (Collins 2004:120). Johnson and Goode (1994:25) suggest that the Bell and Andice darts are parts of a specialized bison-hunting tool kit. They also believe that an influx of bison and bison-hunting groups from the Eastern Woodland margins during a slightly more mesic period marked the beginning of the Middle Archaic. Though no bison remains were recovered, Bell and Andice points and associated radiocarbon ages were recovered from the Gatlin site (Houk et al. 2008), Cibolo Crossing (Kibler and Scott 2000), Panther Springs Creek, and Granberg II (Black and McGraw 1985) sites in Bexar County.

Bison populations disappeared as more-xeric conditions returned during the latter part of the Middle Archaic. Later Middle Archaic projectile point styles (Nolan and Travis) represent another shift in lithic technology (Collins 2004:120–121; Johnson and Goode 1994:27). At the same time, this shift to drier conditions saw the burned rock middens develop, probably because intensified use of geophytic or xerophytic plants meant the debris from multiple rock ovens and hearths accumulated as middens on stable to slowly aggrading surfaces, as Kelley and Campbell (1942) suggested many years ago. Johnson and Goode (1994:26) believe that the dry conditions promoted the spread of yuccas and sotols, and that it was these plants that Middle Archaic peoples collected and cooked in large rock ovens.

LATE ARCHAIC

During the succeeding Late Archaic period (4,000 to 1,300–1,200 B.P.), populations continued to increase (Prewitt 1985:217). As evidenced by stratified Archaic sites such as Loeve-Fox, Cibolo Crossing, and Panther Springs Creek, the Late Archaic components contain the densest concentrations of cultural materials of all the Archaic periods. Establishment of large cemeteries along drainages also suggests certain groups had strong territorial ties (Story 1985:40).

Middle Archaic subsistence technology, including the use of rock and earth ovens, continues into the Late Archaic period. Collins (2004:121) states that, at the beginning of the Late Archaic period, the use of rock

ovens and the resultant formation of burned rock middens reached its zenith and that the use of rock and earth ovens declined during the latter half of the Late Archaic. There is, however, mounting chronological data that midden formation culminated much later and that this high level of rock and earth oven use continued into the early Late Prehistoric period (Black et al. 1997:270–284; Kleinbach et al. 1995:795). A picture of prevalent burned rock midden development in the eastern part of the Central Texas archaeological region after 2,000 B.P. is gradually becoming clear. This scenario parallels the widely recognized occurrence of post-2,000 B.P. middens in the western reaches of the Edwards Plateau (Goode 1991).

The use of rock and earth ovens (and the formation of burned rock middens) for processing and cooking plant foods suggests that this technology was part of a generalized foraging strategy. Considering the amount of energy involved in collecting plants, constructing hot rock cooking appliances, and gathering fuel, the caloric return of most plant foods is relatively low (Dering 1999). This suggests that plant foods were part of a broad-based diet (Kibler and Scott 2000:134) or part of a generalized foraging strategy, an idea Prewitt (1981) put forth earlier. At times during the Late Archaic, this generalized foraging strategy appears to have been marked by shifts to a specialized economy focused on bison hunting (Kibler and Scott 2000:125–137). Castroville, Montell, and Marcos dart points are elements of tool kits often associated with bison hunting (Collins 1968). Archaeological evidence of this association is seen at Bonfire Shelter in Val Verde County (Dibble and Lorrain 1968), Jonas Terrace in Medina County (Johnson 1995), Oblate Rockshelter in Comal County (Johnson et al. 1962:116), John Ischy in Williamson County (Sorrow 1969), and Panther Springs Creek in Bexar County (Black and McGraw 1985).

TRANSITIONAL ARCHAIC

As Collins (2004:122–123) notes, diverse and comparatively complex archaeological manifestations toward the end of the Late Archaic attest to the emergence of kinds of human conduct without precedent in the area. This period (2,250–1,250 B.P.), referred to as the Transitional Archaic (Turner and Hester 1999) or Terminal Archaic (Black 1989), is not recognized by all researchers. Other chronologies terminate the Late Archaic at around 1,200–1,250 B.P. (Collins 2004; Johnson and Goode 1994) to encompass this later subperiod. Johnson et al. (1962) originally designated the Transitional Archaic as a subperiod of the Archaic because of the similarities between the latest dart point types and the earliest arrow point types. Since then, however, the designation has failed to be universally accepted by researchers. In two recent chronologies for central Texas, Collins (2004) does not include the Transitional as a subperiod of the Archaic, and Johnson and Goode (1994) separate the Late Archaic into two subperiods designated Late Archaic I and Late Archaic II. The Transitional Archaic, as it is used here, closely corresponds to Johnson and Goode's (1994) Late Archaic II, but begins after the appearance of Marcos points, not with it. In this scheme, the Transitional Archaic coincides with the last two style intervals recognized by Collins (2004) for the Late Archaic subperiod.

During the Transitional Archaic, smaller dart point forms such as Darl, Ensor, Fairland, and Frio were developed (Turner and Hester 1999). These points were probably ancestral to the first Late Prehistoric arrow point types and may have overlapped temporally with them (Carpenter et al. 2006; Hester 1995; Houk and Lohse 1993).

Several researchers believe that the increased interaction between groups at the end of the Late Archaic was an important catalyst for cultural change (Collins 2004; Johnson and Goode 1994). This change may have included increased regional stress and conflict between groups as interaction became more frequent (Houk et al. 1997). In Bexar County, for instance, researchers noted a distinct shift in settlement patterns during this period (Houk et al. 1997). Groups began to use hilltops as camps rather than just lithic procurement locations. These elevated locations would have provided points from which to observe game

and other groups of humans as they moved through the surrounding creek valleys and upland prairies (Houk et al. 1997).

Overall, the Archaic period represents a hunting and gathering way of life that was successful and remained virtually unchanged for more than 7,500 years. This notion is based in part on fairly consistent artifact and tool assemblages through time and place and on resource patches that were used continually for several millennia, as the formation of burned rock middens show. This pattern of generalized foraging, though marked by brief shifts to a heavy reliance on bison, continued almost unchanged into the succeeding Late Prehistoric period.

Late Prehistoric Period

Introduction of the bow and arrow and, later, ceramics into the Central Texas archaeological region marks the Late Prehistoric period (1,250–350 B.P.). Population densities dropped considerably from their Late Archaic peak (Prewitt 1985:217). Subsistence strategies did not differ greatly from the preceding period, although bison again became an important economic resource during the latter part of the Late Prehistoric period (Prewitt 1981:74). Rock and earth ovens were utilized for plant food processing (Black et al. 1997; Kleinbach et al. 1995:795). Horticulture came into play very late in the region but was of seemingly minor importance to overall subsistence strategies (Collins 1995:385).

Artifact assemblages include Scallorn, Perdiz, and Edwards projectile points, worked stone, thermally altered stone, hematite, bone, and shell. The points are associated with the use of the bow and arrow in the region, probably introduced sometime around 1,350–1,150 B.P.

The earlier Austin phase (identified by Scallorn and Edwards points) and the later Toyah phase (defined through Perdiz points) divide the Late Prehistoric period throughout central Texas (Black 1989; Story 1990). These divisions were originally recognized by Suhm (1960) and Jelks (1962), and remain an accepted separation of the period. Although a distinct change in the material culture between the two phases can be seen in the archaeological record, there is some debate over the cultural underpinnings that prompted the change. The different arrow point styles (and other associated artifacts in the assemblage) may represent distinct cultural groups (Johnson 1994), but others challenge this view (e.g., Black and Creel 1997), and attribute the change to a spread of new technological ideas in response to the increase of a different economic resource in bison populations (Ricklis 1992). Nevertheless, prehistoric communities traced through cultural remains assigned to the Austin phase (1,250–650 B.P.), like many of the Archaic period cultures before them, relied on a hunting and gathering subsistence with more of an emphasis on gathering (Prewitt 1981:83). Communities attributed to the Toyah phase (650–200 B.P.) relied more on bison procurement (Prewitt 1981:84).

Around 1,000–750 B.P., slightly more-xeric or drought-prone climatic conditions returned to the region, and bison came back in large numbers (Huebner 1991; Toomey 1993). Using this vast resource, Toyah peoples were equipped with Perdiz point-tipped arrows, end scrapers, four-beveled-edge knives, and plain bone-tempered ceramics. Toyah technology and subsistence strategies represent a completely different tradition from the preceding Austin phase. Collins (1995:388) states that formation of burned rock middens ceased as bison hunting and group mobility obtained a level of importance not witnessed since Folsom times. Although the importance of bison hunting and high group mobility hardly can be disputed, the argument that burned rock midden development ceased during the Toyah phase is tenuous. A recent examination of Toyah-age radiocarbon assays and assemblages by Black et al. (1997) suggests that their association with burned rock middens represents more than a “thin veneer” capping Archaic-age features. Black et al. (1997) claim that burned rock midden formations, although not as prevalent as in earlier periods, was part of the adaptive strategies of Toyah peoples.

Historic Period

The historic period in Texas begins in 1528 near Galveston Island with the encounter between the Pánfilo de Narváez expedition and a Karankawa group. After disaster befell the expedition, one of the members, Cabeza de Vaca, spent six years wandering through Texas in the 1530s. Cabeza de Vaca traversed coastal Texas and parts of the interior and recounted in great ethnographic detail the peoples he encountered (Chipman 1992). Based in part from his exploits and suggestions of a kingdom of gold, the Coronado expedition was formed to search for a "northern" Cuzco or Teotihuacan, and by 1540 it crossed into New Mexico, and into Texas (Fehrenbach 1978).

The following historic discussion focuses on the San Antonio region and the significance of this region during the historic period and the creation of Texas independence, sovereignty and statehood.

Early Historic to A.D. 1718

The Native Americans living in the missions along the San Antonio River were referred to by the Spanish as "Coahuiltecans." The name comes from a southern tribe named after the Spanish province of "Coahuila," which later became a Mexican state. The term "Coahuiltecan" is a generalized term and makes no distinction between language and cultural differences of the tribes living in the area. The abundant berries, nuts and fish made San Pedro Springs an attractive place to camp and/or live (Johnston 1947; Ramsdell 1968).

The San Antonio area was first explored in 1691 by the Governor of the Spanish Province of Texas, Domingo Terán de los Ríos, and Father Damián Massenet. The pair traveled to San Pedro Springs where they encountered a hunter-gather tribe named Payaya. In their village named Yanaguana, the Payaya lived in simple huts made of brushwood and grass. The river and village were renamed after San Antonio de Padua by Terán and Massenet (Johnston 1947).

Further Spanish exploration was conducted in 1709 by Father Antonio de San Buenaventura y Olivares. Father Olivares was the first to express interest in setting up a mission in the San Antonio area (Fehrenbach 2018; Johnston 1947).

Spanish Texas: 1718 to 1821

San Antonio de Béxar Presidio, located on the west bank of the San Antonio River, was founded in 1718. In the same year, Mission San Antonio de Valero, later known as the Alamo, was transferred from the Rio Grande by Father Olivares. This mission was named after St. Anthony of Padua and the Marquis de Valero, the Viceroy of New Spain. The church was originally constructed of adobe and the huts of wood and thatch (Johnston 1947; Schoelwer 2018).

La Villita, an Indian village about 1,500 feet south of the Alamo, was built around 1722. The Indians from the Mission San Antonio de Valero lived in La Villita in crude huts called "jacales" (Johnston 1947:31). Jacales were typically constructed with an upright line of poles sunk into a footing ditch and then woven horizontally with smaller sticks. The walls were subsequently covered with adobe. Later, La Villita served as a home to the families of soldiers who protected the mission (Johnston 1947).

The villa of San Fernando de Béxar was founded in 1731 by the Canary Islanders. The Canary Islanders were a small group, totaling 56 people, sent by Spain to colonize the province of Texas. Under the leadership of Juan Leal Goraz, the village of San Fernando de Béxar was founded near the Presidio de Béxar and the first civil government in Texas was formed (Butterfield 1968; Ramsdell 1968).

In 1773, San Antonio de Béxar became the capital of Spanish Texas. By 1790, most of the Indians living in San Antonio had either already abandoned the missions or died from diseases like small-pox and the measles brought in by Europeans. Mission San Antonio de Valero was secularized in 1794 and mission land, excluding the church and convent, was divided amongst the few Indians that remained in the area (Johnston 1947).

Spain and Mexican revolutionists fought over San Antonio throughout the early 1800s. The Casas revolt of 1811 ended with the assertion of power by the Spanish regime. Captain Juan Bautista de las Casas went against the Spanish authority and was arrested and sent to Mexico. In Monclova, he was tried and found guilty of treason and shot to death. His head was sent back to San Antonio as a sign of defeat (Caldwell 2018; Ramsdell 1968).

San Antonio declared for Mexican independence in 1813 but was recaptured by Royalist forces in the battles of Salado Creek and Medina. During this period of unrest, conditions in Texas were becoming worse. Inadequate provisions and neglected agricultural fields along with the fear of political and military upheavals forced many Texans to abandon their homes and move elsewhere (Chipman 1992; Fehrenbach 2018; Heusinger 1951).

After the suppression of the revolutionary forces by the Spanish crown, Commandant Joaquín de Arredondo enforced lethal punishment for republican soldiers and sympathizers. The lethality and tyrannical reprisal of Arredondo would force many to flee Texas and increase dissatisfaction with Spanish rule amongst San Antonio de Béxar citizens (Chipman 1992: 236-237). By the summer of 1821 Mexico had declared independence from Spain and Texas became incorporated into the Mexican Republic.

Texas Revolution, Independence and Statehood: 1821 to 1848

During the Texas Revolution, San Antonio was the site of several battles, including the siege of Bexar and the battle of the Alamo (Fehrenbach 2018).

General Martín Perfecto de Cós, along with 650 men, fortified the plaza of San Antonio de Béxar west of the San Antonio River and the Alamo to the east. Texan volunteers arrived in San Antonio on October 12, 1835 to set up camp. Upon hearing the Mexican army's morale and rations were low, a council was held to decide whether to attack. Commanding Officer, Edward Burleson and most of the other officers voted to end the siege. One man spoke up and asked "Who will go with Old Ben Milam into San Antonio?" (House 1949:47). Approximately 300 men joined Milam and the battle finally began on December 5, 1835. General Cós focused his troops at the Alamo but was unsuccessful in holding San Antonio. By the morning of December 9, 1835, Cós surrendered (Barr 2018; House 1949).

On February 23, 1836, nearly 150 American volunteers took refuge from the approaching Mexican Army in the Alamo Mission in San Antonio, Texas, under orders from Colonel William B. Travis (Hatch 1999). A standoff between the Texian Revolutionary Army and the Mexican Army, lasting 13 days, ended in complete annihilation of the Alamo defenders and a victory for the Mexican General Antonio Lopez de Santa Anna (Huffines 1999).

The Alamo Garrison had been acquired following the defeat of Mexican General Martin Perfecto de Cós' army in the December 1835 Battle of San Antonio. The subsequent formation of the Matamoros Expedition cost the Alamo much-needed supplies and men. This expedition was created with the intentions of invading Mexico through the city of Matamoros; however, the plan was never executed due to political turmoil in the Texas government. Some relief came over the next few months with the arrivals of Col. Jim Bowie, Col. William B. Travis and David Crockett; each bringing 12 to 30 additional men. Rumors of the approaching Mexican army of nearly 2,000 men soon followed (Hatch 1999).

General Santa Anna arrived in San Antonio with between 1,800 and 2,100 men on February 23, 1836. Upon their arrival Col. Travis ordered his men to retreat into the Alamo (Hatch 1999). Gen. Santa Anna raised a red flag signifying "no quarter–no mercy" and received a cannon shot from the Texians in defiance (Hatch 1999:20). Another defiant cannon is rumored to have been shot in response to a request for an unconditional surrender. In a letter sent February 24, 1836, addressed to the "People of Texas and all Americans in the World," Col. Travis pleas for assistance and states "if this call is neglected, I am determined to sustain myself as long as possible & die like a soldier who never forgets what is due his own honor & that of his country. Victory or Death" (Groneman 2001:6).

Over the next few days the Alamo defenders suffered shortages of provisions and water, constant bombardment on the Alamo and psychological warfare through the nights ordered by Gen. Santa Anna. On the third day of the siege, Mexican troops created a diversion at the Alamo's main gate in an attempt to cross the San Antonio River and reach the south wall of the Alamo through La Villita. The Texians repelled both attacks and subsequently burned buildings in close proximity to the Alamo to deny shelter for Santa Anna's men in La Villita (Hatch 1999). Gen. Santa Anna ordered many small attacks in an attempt to breach the Alamo's walls. Many Mexicans lost their lives in the process; however, no Texians were killed in the 12-day siege before the final battle (Hatch 1999; Huffines 1999).

On March 4, Gen. Santa Anna held a Council of War to decide plans of attack and the fate of prisoners. The final decision to attack the Alamo with full force was made the following day, March 5, 1836 (Hatch 1999). The Mexican army moved into position just after midnight on March 6 and waited for the signal to attack. This call came around 5 o'clock in the morning when a soldier cried out "Viva Santa Anna!" (Huffines 1999:134). With the element of surprise lost, Santa Anna ordered his troops to begin the attack on the Alamo garrison (Huffines 1999).

The vicious battle, lasting only 90 minutes, left every Texian combatant dead. The number of Mexican dead is a matter of debate, with numbers ranging from 100 to 1,600; uncounted more were wounded. The Texian bodies were burned on funeral pyres on either side of the Alameda. Santa Anna won the battle at the Alamo but victory and independence was won by the Texans two weeks later in the Battle of San Jacinto (Hatch 1999; Huffines 1999).

After Mexican forces were removed from San Antonio in December of 1836, the Republic of Texas began organizing Bexar County. The next month, San Antonio was chartered as the county seat. Despite these progressions, many conflicts continued to occur in San Antonio including the Council House Fight of 1840 and two Mexican invasions in 1842 (Fehrenbach 2018).

1848 to 1900

After Texas entered the Union in 1845, San Antonio's already diverse population grew dramatically. The Irish came to Texas in the late 1830s to early 1840s and established "Irish Flat." Germans settled in San Antonio in the 1850s introducing the "Bier Halle" (Butterfield 1968:21) to the area. French immigrants added artists and artisans to the culture of the city. Later immigrants to the area included Polish, Italians, Greeks, Syrians and in 1910 Chinese, all of which formed small communities within the city of San Antonio.

Culture and architecture from each immigrant community have seeped into San Antonio and merged together, forming a rich cultural community. This diverse culture is evident as you observe historic missions and Victorian mansions built next to modern offices and homes (Butterfield 1968; Fehrenbach 2018).

On March 2, 1861, Texas seceded from the Union and soon after the Civil War began. San Antonio was a Confederate storage area as well as a location to form military units; however, the city kept its distance from most of the fighting (Fehrenbach 2018).

After the Civil War, industries such as cattle, distribution, ranching, mercantile, gas and oil, and military centers in San Antonio prospered. The arrival of a railway transportation system in San Antonio in 1877 inspired economic growth throughout the city (Fehrenbach 2018; House 1949). Modernization increased dramatically between the 1880s and the 1890s, compared to the rest of the United States. Civic government, utilities, electric lights and street railways, street paving and maintenance, water supply, telephones, hospitals, and a power plant were all established or planned around this time (Butterfield 1968; Fehrenbach 2018).

1900 to 1950

In 1921, a disastrous flood engulfed Houston and St. Mary's Street with approximately 9 feet of water. The Olmos Dam was built in response to this event to prevent further flooding, as well as the straightening and widening of sections of the San Antonio River. Another recommendation was to construct an underground channel in downtown San Antonio and covering portions of the river with concrete. This last idea upset many people, but eventually the compromise was reached in creating a Riverwalk with shops and restaurants. Construction of this Riverwalk was completed in 1941 (House 1949).

As the United States entered into World War II, San Antonio became an important military center and other city activities and construction ceased for nearly 5 years. Fort Sam Houston, Kelly, Randolph, Brooks, and Lackland Air Force bases are all active military training centers today (Heusinger 1951).

Tourism is one of San Antonio's most important industries, drawing tens of thousands of visitors every year. More recent features include theme parks, zoos, museums, gardens, parks, and sporting attractions. The Riverwalk, also known as the Paseo del Rio, consists of more than 2.5 miles of shops and restaurants as well as a boat ride along the channel. This is one of San Antonio's most visited attractions.

San Antonio Missions National Historical Park includes Mission Concepción (1731), Mission San José (1720), Mission San Juan Capistrano (1731), and Mission San Francisco de la Espada (1741). The Alamo (Mission San Antonio de Valero) in addition to the four previously mentioned Spanish Colonial missions also comprise the UNESCO World Heritage Site. Additionally, San Fernando Cathedral (1758), the Spanish Governor's Palace (1749), the Quadrangle at Fort Sam Houston (1878), and the Bexar County Courthouse (1891) are visited due to their interesting architecture.

CHAPTER 4. METHODS

The investigations detailed in this report were designed to identify cultural resources in the Project area and, to the extent possible, recover sufficient information to evaluate the eligibility of all cultural resources within the Project area to be listed on the National Register of Historic Places (NRHP). SWCA's investigations included background research and an intensive field survey. The methods and the level of effort used in these investigations were developed in accordance with Section 106 of the NHPA and meet or exceed the minimum requirements of the ACT.

Background Research

SWCA performed a cultural resources records review in February 2019 to determine if the Project area has been previously surveyed for cultural resources or if any cultural resources have been recorded within or near the Project area. To conduct this review, an SWCA archaeologist reviewed the relevant Texas USGS 7.5-minute quadrangle maps on the THC's Texas Archeological Sites Atlas (Atlas). These sources provided information on the nature and location of previously conducted cultural resources investigations, previously recorded cultural resources sites, locations of NRHP districts and properties, sites designated as State Antiquities Landmarks (SALs), Official Texas Historical Markers, Recorded Texas Historic Landmark, cemeteries, and local neighborhood surveys. Previous cultural resources investigations listed on the Atlas are limited to projects under purview of the ACT or the NHPA, as amended; therefore, the Atlas does not necessarily list all previous work conducted within a specific area. In addition, completed projects under these regulations may not be posted to the Atlas due to a delay between the completion of fieldwork and the completion of reports. SWCA examined a 1-mile zone surrounding the Project area's centerline in order to account for potentially mis-plotted items and to provide additional context for defining landforms with archaeological potential.

The SWCA background investigations also included a review of historic maps and aerials, including historical USGS topographic maps (USGS 2019) and Stoner System maps (ca. 1930–1940) that contain information on potential historic resources.

Cultural Resources Survey Methods

SWCA archaeologists completed the cultural resources survey contained within the Straus-Medina Conservation Bank in August 2018. SWCA submitted a technical memorandum to the THC addressing the field assessment within the conservation easement on August 22, 2018. The THC concurred with the findings on September 19, 2018. Detailed results regarding this segment of the Shepherd Transmission Line Project can be found in Appendix A. The remaining field survey consisted of a crew of three archaeologists surveying approximately 4.8 miles (7.7 km) of the 5.6-mile-long (9.0-km-long) transmission line route from January 22 to 25, 2019. The Project area was surveyed by pedestrian survey supplemented by systemic shovel testing.

Subsurface investigations consisted of the excavation of shovel tests, as well as the utilization of a hand-operated bucket auger. Shovel tests were excavated in 20-cm arbitrary levels to 1 m in depth unless soil characteristics or bedrock precluded reaching that depth. Auger tests were excavated in 20-cm arbitrary levels to a maximum depth of 3 meters unless soil characteristics or bedrock precluded reaching that depth. Archaeologists screened the matrix through ¼-inch mesh, and plotted the location of each excavation using a hand-held sub-meter accurate global positioning system (GPS) receiver. Each shovel and auger test was recorded on a standardized form to document the excavations. SWCA archaeologists used a Munsell color chart and U.S. Department of Agriculture terminology to describe soil properties.

For linear corridor surveys, the CTA/THC's survey standards minimally require 16 shovel tests per mile within an approximate 100-foot-wide (30.5-m-wide) corridor. For a project of this length (5.6 miles [9.0 km]), the shovel test investigations would require 90 shovel tests. SWCA exceeded the minimum requirements by excavating 109 shovel tests and seven auger tests probes.

The ACT requires the undertaking be evaluated for its potential to impact significant unrecorded as well as known NRHP/SAL-eligible cultural resources as the Project's activities will involve more than 5 acres / 5,000 cubic yards of land disturbance or potentially affect archaeological sites. As currently designed, the Project area traverses two previously investigated prehistoric archaeological sites, 41BX1839 and 41BX1840 (see Appendix A), and one newly identified prehistoric archaeological site 41BX2270, discussed further below. The survey was of sufficient intensity to determine the nature, extent, and, if possible, potential significance of any new cultural resources located within the Project area and to confirm the avoidance of sites 41BX1839 and 41BX1840. During the survey, the archaeologists examined the ground surface and any erosional profiles for cultural resources.

SWCA archaeologists employ both metric (e.g., centimeters [cm] and meters) and English units of measurement (e.g., inches and feet) when conducting investigations within the Project area. In compliance with archaeological standard practices, archaeologists used metric units to record investigations (such as shovel tests, auger probes, and backhoe trenches), as well as prehistoric archaeological resources (such as camp sites, features, and artifacts). Archaeologists recorded historic resources, such as farmsteads and associated historic features, using English units.

SWCA conducted a non-collection survey; archaeologists tabulated, analyzed, and documented artifacts encountered in the field, but did not collect artifacts. Following the review and acceptance of the final cultural resources report, all records and photographs will be curated with the Center for Archaeological Research at the University of Texas at San Antonio (UTSA-CAR), per requirements of the ACT in accordance with the CTA guidelines.

Significance Determination

Although this project does not have a federal nexus, Section 106 of the NHPA (Public Law 89-665), as amended, and its implementing regulations, "Protection of Historic and Cultural Properties" (36 CFR 800), include accepted standards on evaluating cultural resource significance that are generally applied to all cultural resource projects. The NHPA finds that an adverse effect occurs "when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP."

The criteria for determining the significance of a cultural resource is established by the National Park Service (36 CFR 60.4). These criteria state that "the quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and:

A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
B. that are associated with the lives of persons significant in our past; or
C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. that have yielded, or may be likely to yield, information important in prehistory or history."

CHAPTER 5. RESULTS OF BACKGROUND REVIEW

Previous Cultural Resources Investigations

The background review determined that most of the Project alignment south of the Medina River has not been previously subjected to cultural resources survey. Seven surveys have been conducted within 1.0 mile (1.6 km) of the Project area north of the Medina River, four of which are adjacent to or within 300 feet of the Project corridor (Figure 5.1; Tables 5.1 and 5.2).

In 1995, the Texas Department of Transportation (TxDOT) conducted an area survey encompassing FM 143, which intersects Cagnon Road near the northern terminus of the Project corridor. There is no additional information available regarding the investigation other than the centroid point of prehistoric lithic procurement site 41BX1150 (Table 5.3). In 1998, the UTSA-CAR conducted an area survey on behalf of Bexar County, which parallels the Project corridor southwest of the intersection of Cagnon Road and FM 143 for 0.26 mile (0.43 km). The investigation encountered prehistoric site 41BX1272 in a disturbed context and the construction of the Bexar County Correctional Facility was allowed to proceed (Cargill et al. 1998). In 2010, SWCA conducted a linear survey on behalf of San Antonio Water System (SAWS) for the Medina River Sewer Outfall project, which parallels the Project corridor within the Straus-Medina ranch and conservation easement. The investigation identified sites 41BX1839 and 41BX1840, which are further discussed in Appendix A. In 2011, SWCA conducted a second linear survey on behalf of SAWS for the Water Resources Integration Pipeline project located immediately east of the northern terminus of the Project alignment. The investigation identified 15 sites, including 41BX1705, none of which were considered eligible for designation as a SAL; it was determined that no further work was necessary (Lawrence et al. 2013).

Three additional cultural resources surveys have been completed within the 1.0-mile background review area (see Table 5.2). Due to the location of these surveys beyond the Project area, they do not affect the present Project. However, the previous investigations within 1 mile of the Project area serve to provide background knowledge to aid in the execution of the planned investigations.

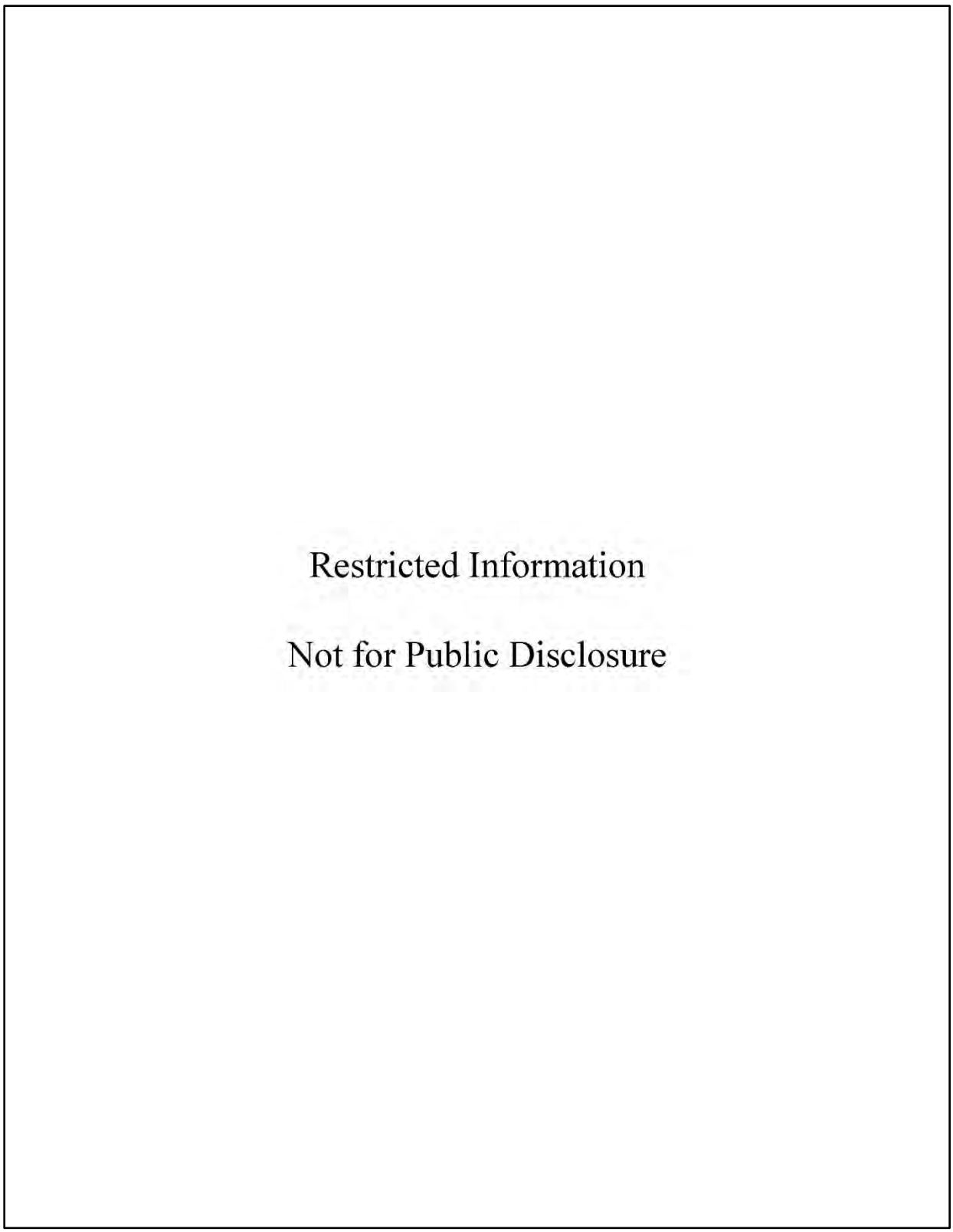

Figure 5.1. Known Cultural Resources within 1 mile of the Project area.

Table 5.1. Previously Completed Cultural Resources Investigations within 300 Feet of Project Area

Project Type	Project Date	Antiquities Permit No.	Agency	Comments
Area Survey	1995	N/A	TxDOT	Immediately east of Cagnon Road and the Project corridor. Survey of FM 143 to Loop 1604 to Cagnon Road, encompassing prehistoric site 41BX1150. No additional information available on the Atlas (THC 2019; TxDOT 1995).
Area Survey	1998	1954	Bexar County	Intersects the Project corridor. Located west of Cagnon Road. Investigation encountered prehistoric site 41BX1272 in a disturbed context. Work was recommended to proceed. Investigating firm: UTSA-CAR (Cargill et al. 1998).
Survey	2010	5129	SAWS	Intersects the Project corridor within the Straus-Medina Conservation Bank. Investigations identified 45 archaeological sites, including 41BX1839 and 41BX1840. No further work was recommended within the project area (Hartnett et al. 2013).
Area Survey	2011	3486	SAWS	Immediately east of the northern terminus of Project corridor. Investigating firm: SWCA Environmental Consultants. Linear survey of an approximately 45-mile pipeline, wherein site 41BX1705 and 14 others were recorded and designated ineligible for NRHP or SAL listing (Lawrence et al. 2013).

Table 5.2. Previously Completed Cultural Resources Investigations within 1.0 Mile of Project Area

Project Type	Project Date	Antiquities Permit No.	Agency	Comments
Linear Survey	1991	N/A	TxDOT	0.46-mile (0.75 km) northeast of the northern terminus of the Project corridor. No additional information available on the Atlas (THC 2019).
Survey, Testing	2010	5624	TxDOT	0.5-mile (0.8 km) north of the northern terminus of the Project area. Investigating firm: Blanton & Associates, Inc. (Young and Sanchez 2014).
Linear Survey	2018	8312	SAWS	0.5-mile (0.8 km) east of the northern terminus of the Project area. Linear survey that revisited sites 41BX1150 and 41BX2117. It was recommended to the THC that the two sites be combined into one site, 41BX1150, and the boundary extended to encompass site 41BX2117 (Nichols 2018).

Recorded Archaeological Sites

Two previously identified archaeological sites (41BX1839 and 41BX1840) intersect the Project area within the Straus-Medina Conservation Bank Segment. Information regarding the results of these revisits during SWCA's August 2018 mobilization can be found in Appendix A. One additional previously recorded archaeological site is within 300 feet of the Project area. Site 41BX1150 is a lithic procurement site located immediately adjacent to the northern segment of the Project alignment (see Table 5.3).

Thirteen additional previously recorded archaeological sites are located within 1.0 mile of the Project alignment: 8 of which are lithic procurement sites (Figure 5.1; Table 5.4). These sites are located well beyond the Project area and will not be adversely affected by Project construction.

Table 5.3. Previously Recorded Archaeological Sites within 300 Feet of the Project Area

Site Name	Site Type	NRHP and/or SAL Eligibility	Recommendations	SWCA Project Evaluation
41BX1839	Prehistoric Campsite	Ineligible in ROW	Avoidance	Intersects the Project corridor within the Straus-Medina Conservation Bank. Deeply buried site located on a terrace of the Medina River. SWCA revisited site in August 2018, where the boundary was extended. Avoidance recommended (Appendix A).
41BX1840	Prehistoric Lithic Scatter	Ineligible in ROW	No further work	Intersects the Project corridor within the Straus-Medina Conservation Bank. Surficial lithic scatter representing various reduction process stages situated in a plowed field. Revisited by SWCA in August 2018. No further work recommended (Appendix A).
41BX1150	Prehistoric Lithic Scatter	Ineligible in ROW	None on site form	50 feet (15 m) east of the Project alignment. Lithic procurement site of unknown age with early-stage reduction flakes, tested cobbles, a scraper and crude bifaces. A revisit in 2018 recommended the boundary be extended to include site 41BX2117. No further work recommended (Nichols 2018). Due to its distance, newly recorded site 41BX2270 is likely an extension of site 41BX1150.

Table 5.4. Previously Recorded Archaeological Sites within 1.0 Mile of the Project Area

Site Name	Site Type	NRHP and/or SAL Eligibility	Recommendations	SWCA Project Evaluation
41BX774	Prehistoric Lithic Procurement	Undetermined	None on site form	0.9-mile (1.4 km) northwest of the northern terminus of the Project alignment. Early to late archaic lithic procurement site consisting of chert nodules and cobbles, cores, initial stage bifaces and flakes (THC 2019). Due to its distance from the APE, this site would not be affected by the Project.
41BX1272	Prehistoric Lithic Scatter	Ineligible	None on site form	0.5-mile (0.7 km) west of the Project alignment. Lithic scatter composed of bifaces, cobble tool, unifaces, cores, core fragments and unmodified debitage. Site was 100% collected and minimal research value was noted. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (Cargill et al. 1998).
41BX1633	Prehistoric Lithic Procurement	Undetermined	No further work	0.9-mile (1.4 km) west of the northern terminus of the Project alignment. A sparse scatter of debitage, three early stage bifaces, and multiple tested cobbles and cores isolated to the surface. Site was noted as possibly functioning as a lithic procurement area. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (THC 2019).

Site Name	Site Type	NRHP and/or SAL Eligibility	Recommendations	SWCA Project Evaluation
41BX1634	Prehistoric Lithic Procurement	Undetermined	No further work	0.4-mile (0.7 km) west of the northern terminus of the Project alignment. A sparse scatter of debitage, three early stage bifaces and multiple tested cobbles and cores isolated to the surface. Site was noted as possibly functioning as a lithic procurement area. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (THC 2019).
41BX1705	Prehistoric Lithic Procurement	Ineligible in ROW	No further work	0.5-mile (0.7 km) east of the Project alignment. The site consists of a tested cobble scatter with limited lithic procurement production and two crude bifaces. The site may be a continuation of site 41BX1150. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (Lawrence et al. 2013).
41BX1841	Prehistoric Lithic scatter	Ineligible in ROW	No further work.	1.0-mile (1.6 km) west of the Project alignment. A sparse lithic scatter consisting of one large core tool, one core fragment and three to five flake fragments isolated to the ground surface. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (Hartnett et al. 2013).
41BX1842	Prehistoric Lithic Scatter	Ineligible in ROW	No further work	0.6-mile (1.0 km) west of the Project alignment. A sparse lithic debitage scatter consisting of 15–20 surface artifacts, including burned rock. Buried artifacts were observed out of context and disturbed by pipeline construction. No further work recommended (Hartnett et al. 2013).
41BX1843	Prehistoric Campsite	Ineligible in ROW	No further work	0.5-mile (0.8 km) west of the Project alignment. A burned rock feature likely representative of a small, ephemeral campsite of an unknown age with little research value. Due to its distance from the APE, this site would not be affected by the Project. No further work recommended (Hartnett et al. 2013).
41BX2117	Prehistoric Lithic Procurement	Ineligible	No further work	0.7-mile (0.9 km) northeast of northern terminus of the Project alignment. Lithic procurement site of an undetermined age. Site has undergone significant ground-disturbing activities and is located in close proximity to site 41BX1150. It was recommended to the THC that the sites be combined into one site, otherwise, no further work recommended (Nichols 2018).
41BX2118	Prehistoric Lithic Procurement	Ineligible	No further work	0.8-mile (1.3 km) northeast of northern terminus of the Project alignment. Diffuse surface scatter of tools and debitage relating to lithic procurement activities. Site has undergone significant ground disturbing activities. No further work recommended (Nichols 2018).
41BX2119	Prehistoric Lithic Procurement	Ineligible	No further work	0.8-mile (1.3 km) northeast of northern terminus of the Project alignment. Diffuse lithic scatter consisting of three tools and pieces of debitage. Site has undergone significant ground disturbing activities. No further work recommended (Nichols 2018).

Site Name	Site Type	NRHP and/or SAL Eligibility	Recommendations	SWCA Project Evaluation
41BX2120	Multicomponent	Ineligible	No further work	0.6-mile (1.0 km) northeast of northern terminus of the Project alignment. Lithic procurement site and historic farmstead which was demolished. Two early stage bifaces and one core was observed. Site has undergone significant ground disturbing activities. No further work recommended (Nichols 2018).
41BX2121	Historic Structure	Ineligible	No further work	0.7-mile (1.2 km) northeast of northern terminus of the Project alignment. Site contains a water storage tank with little research value. No further work recommended (Nichols 2018).

Cemeteries

The background review determined that there are three cemeteries plotted within 300 feet of the Project alignment (i.e., San Isidro, Tripp, and Arnold Cemeteries) (Table 5.5). Additionally, two cemeteries (i.e., Lessing and Becker Cemeteries) are located within 1 mile of the Project centerline (THC 2019). The Project centerline does not traverse any of the identified cemeteries. These cemeteries do not pose an issue for Project constructability if the current proposed route is maintained.

Table 5.5. Previously Recorded Cemeteries within 1.0 Mile of the Project Area

Cemetery No.	Cemetery Name	SWCA Project Evaluation
BX-C047	San Isidro	Immediately adjacent to the Project alignment at the southeastern intersection of Ladd and Shepherd Roads. Will not be impacted if current proposed route is maintained.
BX-C049	Tripp	870 feet (265 m) west of the Project alignment. Will not be impacted if current proposed route is maintained.
BX-C050	Arnold	785 feet (240 m) west of the Project alignment. Labeled the Medina Ranch Cemetery, it is the location of the burial place of Hendrick Arnold. Will not be impacted if current proposed route is maintained.
BX-C051	Becker	0.7-mile (1.2 km) east of the Project alignment. Not located within or adjacent to Project area.
BX-C048	Lessing	0.4-mile (0.7 km) east of the Project alignment. Not located within or adjacent to Project area.

Henrick Arnold House

The background review revealed that one locally-designated landmark (Reference No. 192404) lies 1.0-mile (1.6 km) west of the middle of the Project alignment. The Henrick Arnold House, located within the Straus Medina Ranch, encompasses a large area of land given to Arnold by the Republic of Texas for his services as a soldier. He served as a scout and participant in the siege and capture of San Antonio in 1835 and was a spy during the Texas Revolution (Thompson 2018). Portions of the Straus-Medina Conservation Bank fall within the property. Arnold is interred 0.9-mile (1.5 km) east of the property and 785 feet (265 m) west of the Project area (BX-C050). This property is located well beyond the Project area and will not be impacted by the proposed activities.

Historic Map Review

When field archaeologists encountered structures or structural remains, SWCA consulted historical USGS topographic maps dating from 1856 to 1967 (USGS 2019) and Stoner System Maps (Stoner Maps) (ca. 1930–1940) to aid in evaluating the age of the structures or features. There are no structures depicted within the Project corridor on the historic topographic maps (USGS 2019).

Stoner Map Book 1 contains aerial overviews of the Project area and information regarding property ownership. Field archaeologists did not encounter any structures during the survey; however, the proposed Project route is crossed by the Southern Pacific Rail Road, then labeled as the G.H. & S.A. Rail Road (Sheet 1131C). Polecat Creek is depicted south of the Medina River (Sheet 1131). Lucas Creek, illustrated as San Lucas Creek, is depicted north of the Medina River (Sheet 1101). Most of the property encompassed by the Straus-Medina Conservation Bank easement appears to have been owned by M. T. Montgomery (Sheet 1101). The associated aerial overviews depict the Project area as agricultural fields or vast pastureland with moderate vegetation lining the banks of the Medina River.

CHAPTER 6. FIELD INVESTIGATION RESULTS

Introduction

During a field mobilization in August 2018, SWCA conducted preliminary intensive survey investigations of the approximately 0.8-mile-long Straus-Medina Conservation Bank Segment. SWCA submitted a technical memorandum to the THC addressing the field assessment within the conservation easement on August 22, 2018. The THC concurred with the findings on September 19, 2018. Detailed information regarding this portion of the investigation can be found in Appendix A. From January 22 to 25, 2019, SWCA conducted intensive cultural resources investigation of the remaining 4.8 miles (7.7 km) of the 5.6-mile-long (9-km-long) Shepherd Transmission Line Project in Bexar County, Texas (Appendix B). SWCA excavated a total of 109 shovel tests and seven auger test probes to assess the presence of subsurface cultural remains within the Project alignment (Appendix C). An additional three shovel test locations (i.e., shovel tests LV010, SS01, and SS019) were recorded as "no digs" due to disturbances and are not included in the totals above.

As a result of the January 2019 survey, one prehistoric site (41BX2270) was newly identified. During the August 2018 efforts, SWCA revisited two previously recorded sites, 41BX1839 and 41BX1840, and a detailed discussion of these sites can be found in Appendix A. All investigations were conducted in accordance with the regulations and guidelines of ACT Permit No. 8526, the THC/CTA's survey standards, and Section 106 of the NHPA. The following provides a brief summary of investigations and cultural resources identified.

Site 41BX2270

Site 41BX2270 is a diffuse prehistoric-age lithic artifact scatter from an undetermined archaeological period located immediately east of Cagnon Road, 0.57-mile (0.92 km) south of U.S. Highway 90, 0.55-mile (0.88 km) west of Charles Anderson Loop 1604, and 0.21-mile (0.33 km) north of FM 143 (Figure 6.1). The site is east of Potranca Creek at 730 amsl with slopes ranging from 5 to 10 percent. The moderate downward slope trends to the east, southeast, and south within the recorded site boundary. Potranca Creek is a tributary of the Medina River, which lies 0.6-mile (1.0 km) to the west. The site traverses the northernmost terminus of the proposed transmission line along the east/west axis for 275 feet (84 m) before turning along the north/south axis for 0.24-mile (0.39 km). The Fabian Dale Dominguez State Jail and Bexar County Public Works are located to the west of site 41BX2270 and Cagnon Road. The site and the surrounding landscape consists of ranch and pasture land with moderately dense, scrub brush vegetation. The site is bounded on the west by the Cagnon Road ROW and the Project corridor to the east. The archaeological remains of the site are restricted to a surface context on private land. SWCA field personnel only assessed the portion of the site within the 100-foot-wide survey corridor and readily apparent artifacts located immediately adjacent to the Project area. Ground surface visibility across the site was approximately 50 percent, with moderate limestone and chert cobbles littered across the surface.

SWCA archaeologists recorded site 41BX2270 on January 24 and 25, 2019 (Figures 6.2 and 6.3). Field personnel completed a pedestrian survey supplemented by intensive shovel testing efforts along the proposed transmission line corridor. The investigators observed a diffuse frequency of artifacts along the ground surface. Due to suitable ground surface visibility, the extent of the site within the Project area was determined primarily through pedestrian survey. Shovel testing efforts complemented the pedestrian survey with 12 tests excavated. One shovel test was positive for subsurface cultural material. An undiagnostic brown glass bottle shard was observed at 12 inches (30 cm) below surface (Figures 6.4 and 6.5). Although the artifact may be historic in age, no other temporally diagnostic material or additional positive shovel tests were encountered.

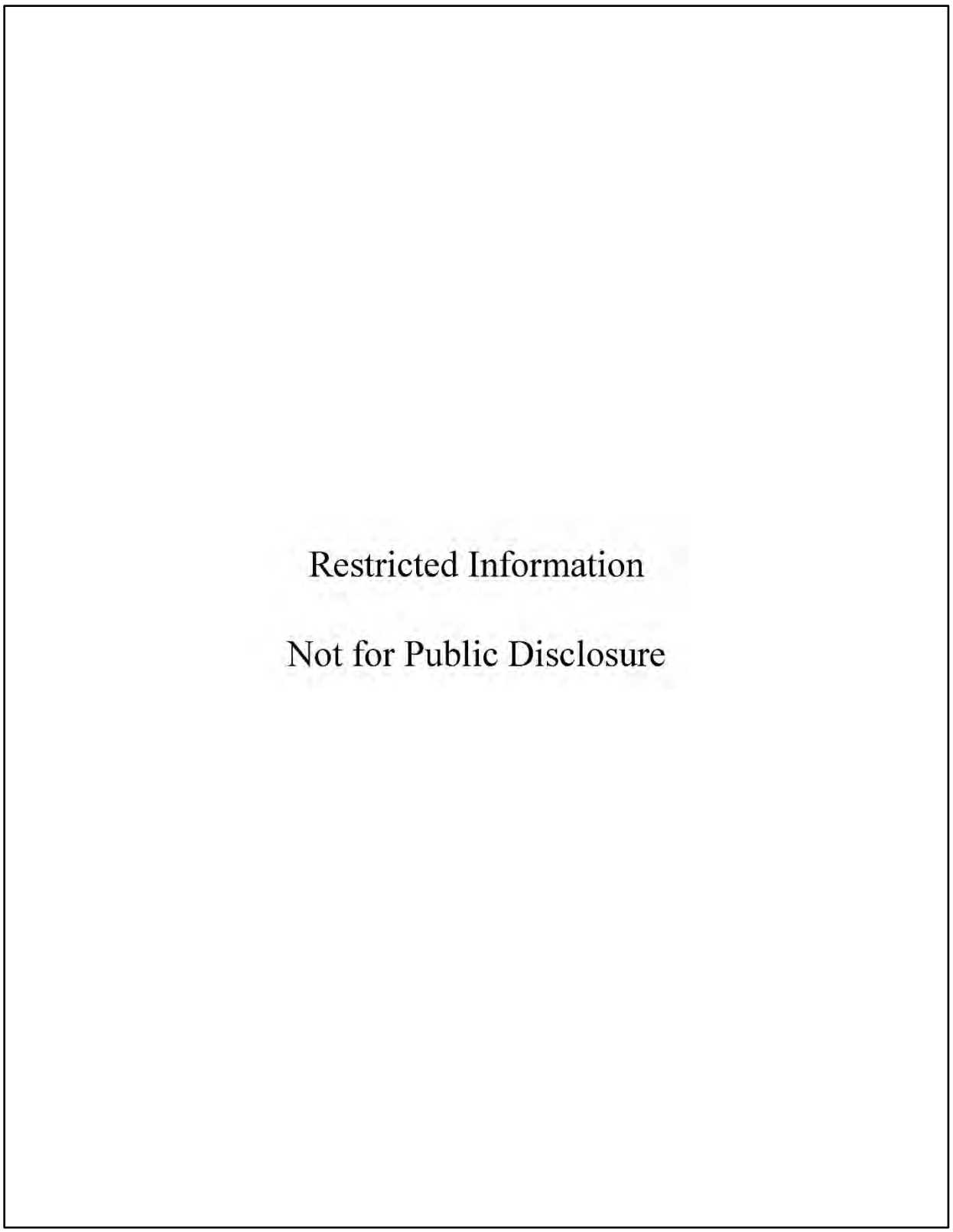

Figure 6.1. Site 41BX2270 map illustrating the extent of the boundary within the Project area.

Figure 6.2. Overview of site 41BX2270 setting, facing east.

Figure 6.3. Overview of site 41BX2270 showing upland setting with heavy surface cobbles, facing west.

Figure 6.4. Profile overview of positive shovel test RJ022 at site 41BX2270.

Figure 6.5. Brown bottle shard observed in RJ022 at 20–30 cmbs within 41BX2270 site boundary.

The limits of the Project area artificially constrained the identified site boundary, and the site likely extends east and south of the proposed transmission line corridor. The accessible portion of site 41BX2270 measures 3.15 acre (1.25 ha). All artifacts observed at the site were photo-documented and tabulated in the field and then left at the site in accordance with SWCA's non-collection methodology (Figures 6.6–6.8). Shovel tests were typically excavated to an average depth of 11.8 inches (30.0 cm) and terminated at impenetrable gravels and compact soil. According to the NRCS (2019) the soil present at the site consists of Houston Black gravelly clay, 5 to 8 percent slopes and Heiden-Ferris complex, 5 to 10 percent slopes, severely eroded. Subsurface testing typically revealed a very dark grayish brown to very dark gray (10YR 3/2 to 7.5YR 3/1) clay loam (0 to 8 inches [0 to 20.0 cm] below surface) over a dark gray (7.5YR 4/1) clay (8 to 16 inches [20.0 to 40.0 cm] below surface) on top of impenetrable gravels and cobbles. All observed prehistoric cultural material is confined to the surface and there is no depth to the prehistoric deposit present at site 41BX2270. The soil data and shovel test results for site 41BX2270 are presented in Table 6.1.

Cultural material observed at site 41BX2270 includes lithic debitage (n=±20), tested cobbles (n=±10), edge-modified flakes (n=5), cores (n=5), primary flakes (n=±10), secondary flakes (n=±10), tertiary flakes (n=2), and one biface. No chronologically diagnostic projectile points were located during the investigation. The low frequency of artifacts observed across the site and the surficial limitation of the deposit indicate overall that the site contains low research potential beyond its locational information.

Site 41BX2270 contains an assemblage typical for procurement of raw material for the purposes of lithic tool manufacturing and was likely repeatedly visited over thousands of years. Similar sites are ubiquitous across the central Texas region and in proximity to the Project area (41BX774, 41BX1150, 41BX1633, 41BX1634, 41BX1705, 41BX2117, 41BX218, 41BX2119, 41BX2120) and site 41BX2270 is likely an extension of lithic procurement site 41BX1150. Due to the common nature of the lithic scatter present at 41BX2270 and the absence of contextual information, SWCA assesses the portion of the site within the Project area as not eligible for the NRHP and recommends no further work.

Figure 6.6. Biface and edge-modified flakes present at site 41BX2270.

Figure 6.7. Sample of edge-modified flakes present at site 41BX2270.

Figure 6.8. Overview of site 41BX2270 lithic artifacts recovered from the ground surface.

Table 6.1. Shovel Test Data from Survey of Site 41BX2270

Shovel Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/Negative	Comments/Reason For Termination
LV022	41BX2270	0-13	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at basal clay.
LV023	41BX2270	0-8	10YR 3/1	very dark gray	Silty Clay Loam	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered.
		8-45	10YR 3/2	very dark grayish brown	Silty Clay	>20% Gravels, Roots	Negative	No cultural material encountered. Terminated at basal clay.
LV024	41BX2270	0-22	10YR 2/1	black	Silty Clay Loam	>20% Cobbles, Gravel	Negative	No cultural material encountered. Terminated at large dense rock lens.
LV025	41BX2270	0-30	10YR 2/2	very dark brown	Silty Clay Loam	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ022	41BX2270	0-20	7.5YR 3/1	very dark gray	Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	7.5YR 3/1	very dark gray	Clay Loam	5-10%	Positive	1 piece of brown glass shard/bottle rim observed at 30 cmbs.
		30-40	7.5YR 4/1	dark gray	Sandy Clay Loam	5-10% Limestone fragments	Negative	No cultural material encountered. Terminated at impenetrable gravel. greater than 20%.
RJ023	41BX2270	0-20	10YR 2/1	black	Clay Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	10YR 2/1	black	Clay	>20% Cobbles, Large Rock Frags	Negative	No cultural material encountered. Terminated at gravel bed greater than 20%.
RJ024	41BX2270	0-30	7.5YR 3/1	very dark gray	Clay Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		30-40	10YR 5/4	yellowish brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.

Shovel Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/Negative	Comments/Reason For Termination
SS022	41BX2270	0-15	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
SS023	41BX2270	0-15	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
SS024	41BX2270	0-20	7.5YR 3/1	very dark gray	Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	7.5YR 3/1	very dark gray	Clay Loam	5-10% Small Limestone fragments	Negative	No cultural material encountered.
		30-40	7.5YR 4/1	dark gray	Sandy Clay Loam	5-10% Limestone fragments	Negative	No cultural material encountered. Terminated at impenetrable gravel. greater than 20%.
SS025	41BX2270	0-20	10YR 2/1	black	Clay	>20% Cobbles, Gravels, Pebbles, Water	Negative	No cultural material encountered. Terminated at compact soil.

CHAPTER 7. SUMMARY AND RECOMMENDATIONS

On behalf of CPS Energy, SWCA conducted a cultural resources survey under ACT Permit No. 8526 for the Shepherd Transmission Line Project in Bexar County, Texas. The survey physically / visually examined a 75- to 100-foot-wide, 5.6-mile-long project corridor; the total surveyed Project footprint measured 69.3 acres (28.0 ha). The investigations involved an intensive cultural resources survey examining 100 percent of ground surface exposures within the proposed Project corridor and the excavation of 110 shovel tests and seven auger test probes.

Investigations included a thorough background and historic map review in addition to the intensive pedestrian survey of the Project area. The background literature review determined that most of the Project alignment south of the Medina River has not been previously subjected to cultural resources survey. Seven surveys have been conducted within 1.0 mile (1.6 km) of the Project area north of the Medina River, four of which are adjacent to or within 300 feet of the Project corridor. Additionally, the SWCA review identified three previously recorded archaeological sites within 300 feet (91.4 m) of the Project alignment. Sites 41BX1839 and 41BX1840 intersect the Project area within the Straus-Medina Conservation Bank Segment. Site 41BX1150, a lithic procurement site, is located immediately adjacent to the northern segment of the Project alignment. Thirteen additional previously recorded archaeological sites are located within 1.0 mile of the Project alignment. Appendix A discusses the results of site revisits (41BX1839 and 41BX1840) completed across the Strauss-Medina Conservation Bank Segment.

SWCA identified prehistoric archaeological site 41BX2270 during the 2019 field investigation. Site 41BX2270 is a diffuse, surficial lithic artifact scatter that likely extends outside the Project area. It is SWCA's professional opinion that the portion of the site within the Project area lacks the necessary qualities for listing on the NRHP. SWCA has concluded that a determination of **No Historic Properties Affected** is appropriate for site 41BX2270 and recommends no further cultural resources investigations.

SWCA has made a reasonable and good faith effort to identify NRHP-eligible cultural resources within the APE. All investigations were conducted in accordance with the regulations and guidelines of the ACT, THC/CTA standards, and Section 106 of the NHPA.

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APPENDIX A

Straus-Medina Conservation Bank Segment–Technical Memorandum

SWCA
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TECHNICAL MEMORANDUM – ACT Permit #8526

To: Dr. Casey Hanson
Texas Historical Commission
1511 Colorado St., Austin, TX 78701
By email to Casey.Hanson@thc.texas.gov and by eTRAC

From: Zachary Overfield, M.A., RPA

Date: August 22, 2018

Re: **Field Assessment Results**
CPS Energy Shepherd Transmission Line Project
Straus Medina Conservation Bank Segment

INTRODUCTION

SWCA Environmental Consultants (SWCA) conducted a cultural resources investigation on behalf of CPS Energy for the Straus Medina Conservation Bank segment of the proposed Shepherd Transmission Line Project (Project) in Bexar County, Texas (Figure 1). The Project will involve installing approximately 5.6-miles (9-kilometer [km]) of new overhead electric transmission monopoles within west San Antonio. The Straus Medina segment comprises about 0.8 mile (1.3 km) of the line. It is currently subject to the Antiquities Code of Texas (ACT) and Historic Preservation and Design Sections of San Antonio's Unified Development Code.

The purpose of the investigation was to identify any substantial cultural resource sites located within the Project area, establish vertical and horizontal site boundaries as appropriate , and evaluate their significance within the project right-of-way. All work was done in accordance with the Archeological Survey Standards for Texas as set forth by the Council of Texas Archeologists (CTA) and adopted by the Texas Historical Commission (THC).

This letter report discusses the following: project setting, background literature review results, field methodology, conclusions, and recommendations. In summary, the Straus Medina Conservation Bank field investigation revisited previously identified site 41BX1840 and expanded the boundary of 41BX1839 based on the fieldwork results. Site 41BX1839 is a deeply buried prehistoric campsite on the terrace of the Medina River with an overall low frequency archaeological assemblage. Due to the deep deposits identified at site 41BX1839, SWCA recommended avoidance by moving a planned tower location. CPS Energy did this action and intends to avoid the site by spanning the identified boundary. Site 41BX1840 is a high density prehistoric artifact scatter along the surface of a plowed agricultural field. Due to the surficial nature of the site and the absence of diagnostic artifacts and intact cultural features, SWCA recommends site 41BX1840 as not eligible with the Project right of way (ROW).

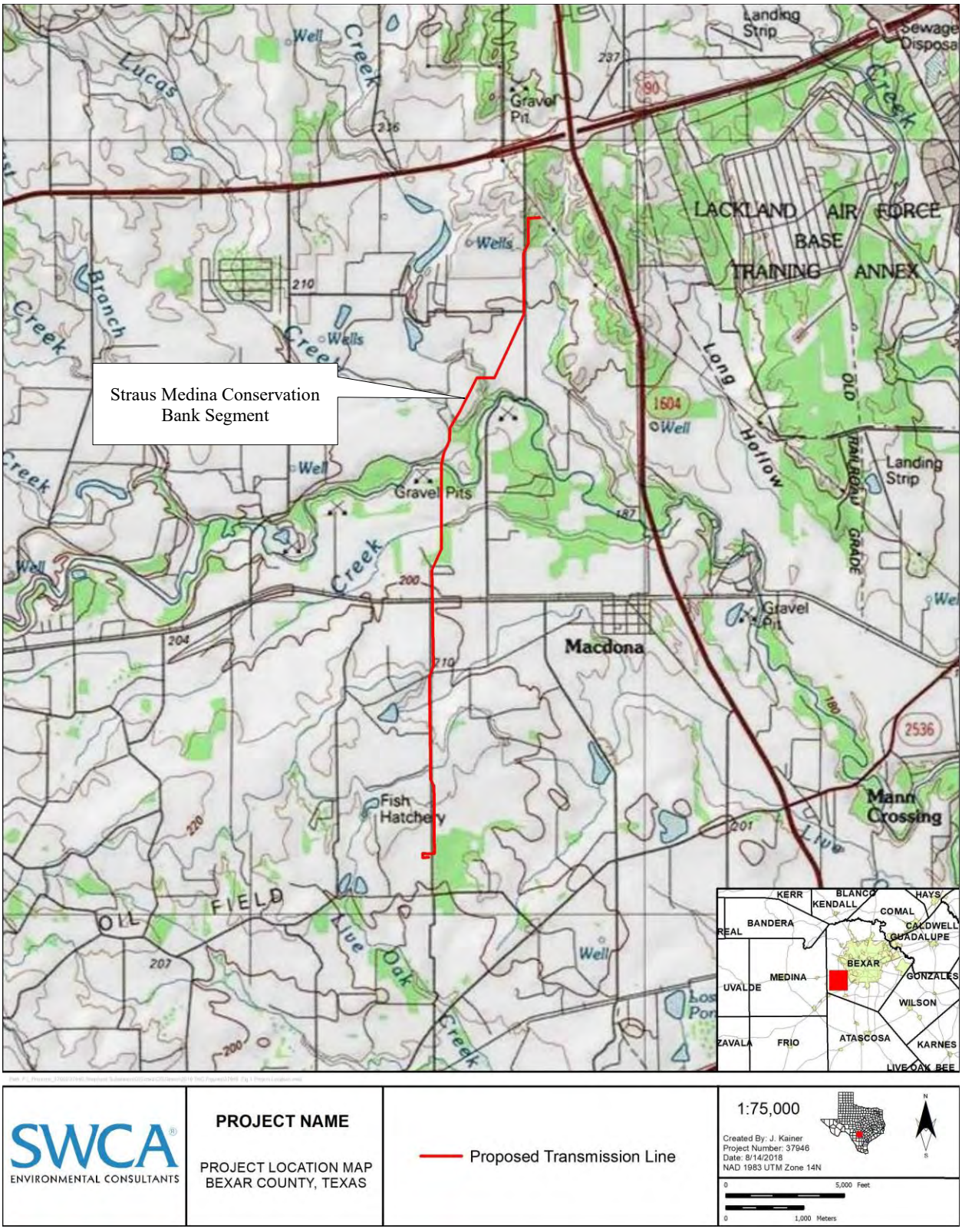

Figure 1. Project area location.

PROJECT SETTING

The project area is in Bexar County within the far western portion of San Antonio on the Culebra Hill, TX, and Macdona, TX U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps. It is within the City's Extra-Territorial Jurisdiction and is therefore also subject to the City's Unified Development Code. The setting is generally rural and parallels to the west side of Gagnon Road.

The proposed project will be built in two phases. The first phase (0.85-mile) will be in the central portion and cross the Straus Medina conservation easement lands. The second phase (~4.75-miles) will extend from these areas, connecting to an existing transmission line north of FM 143 and a new substation site to the south, west of Shepherd Road. Both phases are scheduled to be built starting in late 2018 or early 2019.

Geology

The underlying geology of the project area is mapped through five distinct units (USGS 2018). The north end near Loop 1604 is situated on Pliocene age Uvalde Gravel (Qu) deposits which include caliche cemented gravels with chert, quartz and limestone that are situated in highland zones. Traversing southward toward the Medina River the line crosses first the Upper Taylor Group (KKnm) which is Cretaceous in age and includes deposits of marl, siltstone, sandstone and clays. Secondly it traverses then Quaternary / Holocene-age fluvial terrace (Qt) deposits associated with the San Antonio River and Leon Creek floodplains. At the Medina River itself the formation is a separate Quaternary alluvial deposit associated with the current floodplain (Qal). South of the Medina River the line again crosses Qt deposits before reaching near its southern terminus the Wilcox Group the fine-grained sedimentary rocks formed in the Tertiary Periodand designated the Wilcox Group formation (Ewi).

Soils

Various soil series are crossed by the proposed transmission line (NRCS 2018). The upland areas north of the Medina River include some rock outcrops and 5-25 percent sloping areas associated with the Olmos complex (HgD) along with level farmland that include Houston and Branyon clays (Hs and Hb, respectively). The Medina River itself has more loam and includes the Sunev clay loam (Vc) and Atco loam (Ka) series. Rising south from the Medina River bank it traverses mainly level landforms used for farmland with clay and loam surficial deposits including the Branson clays (Ht), Laparita clay loam (Or) and San Antonio clay loam (Sa) series.

PREVIOUS INVESTIGATIONS AND RECORDED SITES

Records in the Texas Site Atlas indicate that most of the Project line has not been previously subjected to cultural resources surveys except where it crosses the Straus-Medina ranch and conservation easement. Seven surveys have been recorded within 1.0-mile (1.6 km) to the CPS Energy project since 1991, all north of the Medina River. Five intersect portions of the project corridor (Table 1). Most result from the proposed Shepherd line being at the previous survey's edge or crosses over them in a perpendicular manner. An exception is where CPS will partially extend into and parallel an approximately 0.8-mile long San Antonio Water System easement segment located on the Straus Medina ranch and conservation easement lands. The SAWS investigation involved a 150-ft wide corridor surveyed in 2009-2010 and included nine backhoe trenches excavated near or overlapping the Straus Medina line survey right-of-way (Figure 2). Two sites were identified within this area: 41BX1839 and 41BX1840, discussed below (Figure 3).

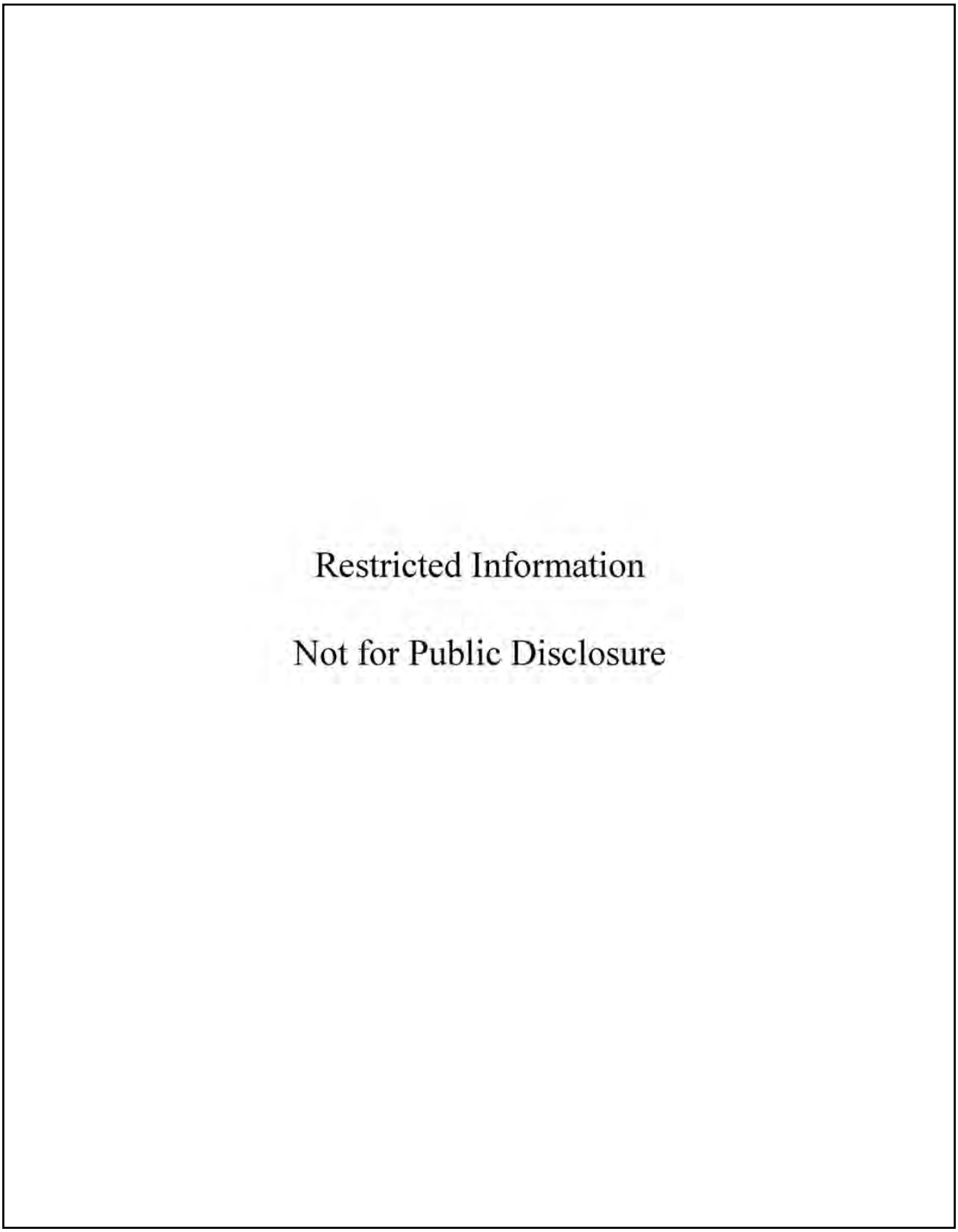

Figure 2. Project area location in relation to known cultural resources and previous surveys.

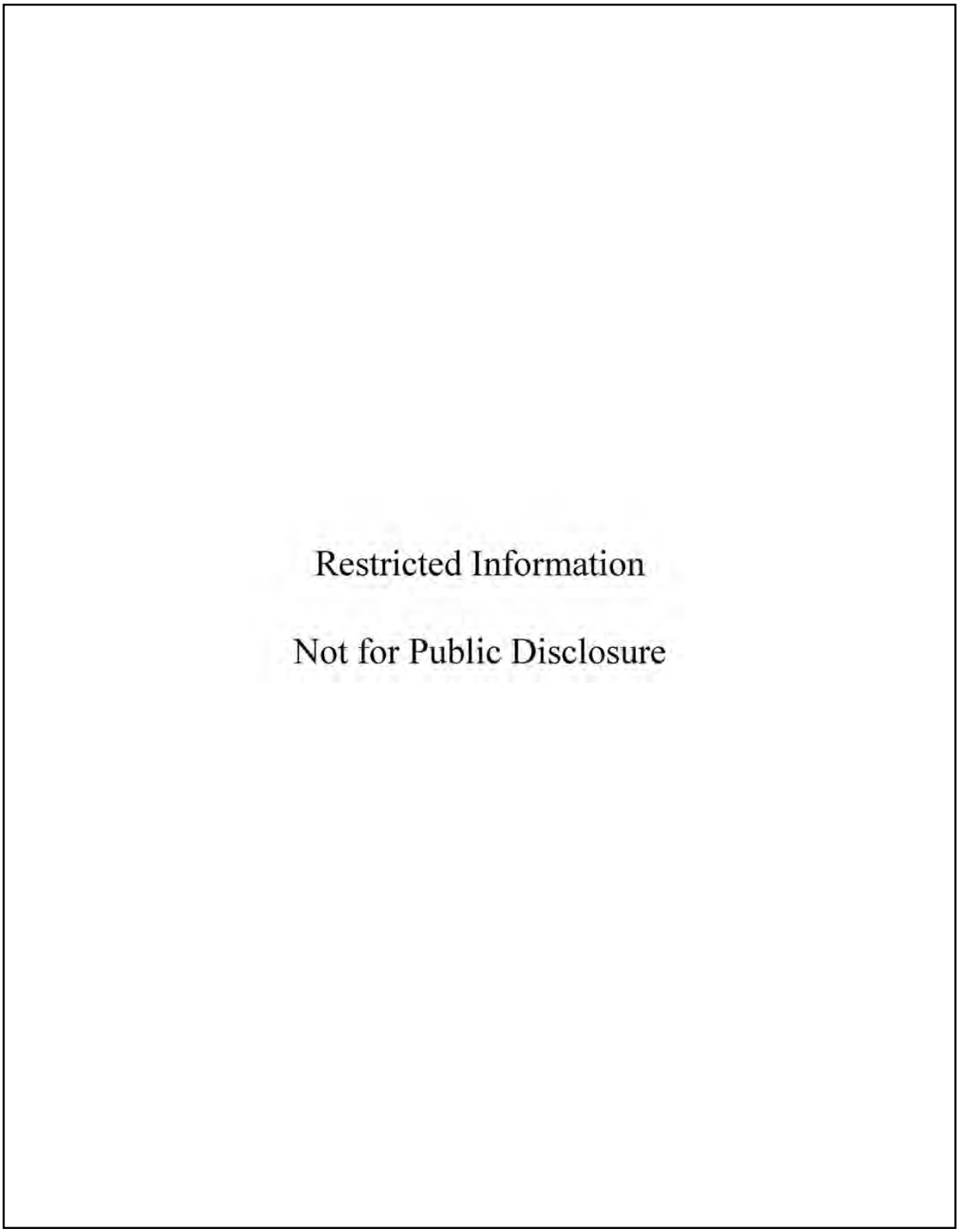

Figure 3. Straus-Medina Conservation Lands in relation to 41BX1839, 41BX1840 and previous trenches.

Table 1: Previous Cultural Resource Surveys Performed within 1.0-mile of Project Area

Atlas File	Agency Involved	Fieldwork Type	Date	TAC Permit
8400002762	Texas Dept. Of Transportation	Survey	1995	n/a
8400008477	Texas Dept. Of Transportation	Survey	1991	n/a
8500009861	Bexar County	Survey	1998	1954
8500017838	San Antonio Water System	Survey	2010	5129
8500025577	Texas Dept. Of Transportation	Survey	2011	5624
8500041366	San Antonio Water System	Survey	2011	n/a
8500080534	San Antonio Water System	Survey	2018	8312

*** shaded entries indicate survey overlaps project area corridor**

Fifteen known cultural resources are located within 1.0-mile of the total Shepherd project corridor: 10 archaeological sites and five cemeteries (Tables 2a-2c). The only known site that the project intersects is 41BX1840, situated within the Straus Medina ranch and easement shown in Figure 3. This site is a relatively dense surface lithic scatter that was tested through four trenches during the 2010 SAWS Medina River Sewer Outfall project and identified as not being NRHP-eligible. Site 41BX1839 is in the same area as 41BX1840, less than 100 feet to the northwest of the Shepherd line corridor. It contained deeper deposits up to 130 cm below surface but was also assessed as NRHP-ineligible due to the sparse artifact recoveries and lack of features.

Another site (41BX1150) and the San Isidro cemetery are plotted within 300 feet in other line segments. Site 41BX1150's western edge is adjacent to the proposed Shepherd transmission line corridor where it intersects FM143 and Gagnon Road. This site was identified as part of the 1995 TxDOT survey for FM143 and displayed lithic debitage and tools from the surface to about 80 cm below surface. It was revisited during a 2018 SAWS survey. The 1995 database entry does not record a NRHP assessment, although the 2018 survey recommended it as not NRHP-eligible within the assessed right-of-way. The San Isidro cemetery is situated to the east side of Shepherd Road at its Ladd Road intersection. The proposed transmission line will be placed on the west side of Shepherd Road, away from its fenced boundary.

The other cultural resources are located well away from proposed Shepherd line activities and will not be project concerns.

Table 2a: Known Cultural Resources Intersecting Project Centerline

Feature	Name	Type	Age	NRHP-status
Archaeological Site	41BX1840	Lithic Scatter	Prehistoric	Ineligible in ROW

Table 2b: Known Cultural Resources Within 300 Feet of Project Centerline

Feature	Name	Type	Age	NRHP-status
Archaeological Site	41BX1150	Lithic Scatter	Prehistoric	Not Assessed
Archaeological Site	41BX1839	Lithic Scatter	Prehistoric	Ineligible in ROW
Cemetery	San Isidro	Cemetery	Historic	Not Assessed

Table 2c: Known Cultural Resources Within 1.0-mile of Project Centerline

Feature	Name	Type	Age	NRHP-status
Archaeological Site	41BX774	Lithic Scatter	Archaic Prehistoric	Not Assessed
Archaeological Site	41BX1272	Lithic Scatter	Prehistoric	Ineligible
Archaeological Site	41BX1633	Lithic Scatter	Prehistoric	Not Assessed
Archaeological Site	41BX1634	Lithic Scatter	Prehistoric	Not Assessed
Archaeological Site	41BX1705	Lithic Scatter	Prehistoric	Ineligible in ROW
Archaeological Site	41BX1842	Lithic Scatter	Prehistoric	Ineligible in ROW
Archaeological Site	41BX1843	Campsite	Prehistoric	Ineligible in ROW
Cemetery	Arnold	Cemetery	Historic	Not Assessed
Cemetery	Becker	Cemetery	Historic	Not Assessed
Cemetery	Lessing	Cemetery	Historic	Not Assessed
Cemetery	Tripp	Cemetery	Historic	Not Assessed

Historic Map Review

A review of the TxDOT Historic Overlay and local Stoner System Maps from the 1930-1940s revealed land ownership and multiple buildings and structures located within 500 feet of the CPS Energy Project corridors. The project area has developed in a relatively consistent pattern – mainly agricultural fields and pastureland with some suburban residential entering the area in the past few decades as San Antonio increased its population and extended its boundaries.

FIELD METHODS

The field survey consisted of a crew of three archaeologists surveying approximately 0.8-miles (1.3-km-long) of the 5.6-mile-long (14-km-long) transmission line route on August 16, 2018. The Project area was surveyed by pedestrian survey supplemented by systemic shovel and hand auger testing. The archaeologists examined ground surface exposures and erosional surfaces for cultural resources. SWCA archaeologists excavated the shovel tests at an interval ranging from 328 feet (100 m) to 98 feet (30 m) based on the archaeological probability of the Project area, as determined by the Project Archaeologist and Principal Investigator. As currently designed, the Project area crosses two previously investigated prehistoric archaeological sites, 41BX1839 and 41BX1840. The survey was of sufficient intensity to determine the nature, extent, and, if possible, potential significance of any new cultural resources located within the Project area and to develop appropriate management strategies for 41BX1839 and 41BX1840.

The ACT requires the undertaking be evaluated for its potential to impact significant unrecorded as well as known SAL-eligible cultural resources. The current Project undertakings involve monopole locations that are within the known site boundaries.

SWCA archaeologists employ both metric (e.g., centimeters [cm] and meters) and English units of measurement (e.g., inches and feet) when conducting investigations within the Project area. In compliance with archaeological standard practices, archaeologists used metric units to record investigations (such as shovel tests, auger probes, and backhoe trenches), as well as prehistoric

archaeological resources (such as camp sites, features, and artifacts). Archaeologists recorded historic resources, such as farmsteads and associated historic features, using English units.

Subsurface investigations consisted of the excavation of shovel tests, as well as the utilization of a hand-operated bucket auger. Shovel tests were excavated in 20-cm arbitrary levels to 1 m in depth unless soil characteristics or bedrock precluded reaching that depth. Auger tests were excavated in 20-cm arbitrary levels to a maximum depth of 3-meters unless soil characteristics or bedrock precluded reaching that depth. Archaeologists screened the matrix through ¼-inch mesh and plotted the location of each excavation using a hand-held sub-meter accurate Global Positioning System (GPS) receiver. Each shovel and auger test were recorded on a standardized form to document the excavations. SWCA archaeologists used a Munsell color chart and U.S. Department of Agriculture terminology to describe soil properties.

SWCA conducted a non-collection survey; archaeologists tabulated, analyzed, and documented artifacts encountered in the field, but did not collect. Following the review and acceptance of the final cultural resources report, all records and photographs will be curated with the Center for Archaeological Research at the University of Texas at San Antonio, per requirements of the ACT in accordance with the CTA guidelines.

FIELD RESULTS

On August 16, 2018, SWCA conducted intensive survey investigations within the approximately 0.8-mile (1.3-km) Straus Medina segment of the Shepherd Project transmission line corridor. As noted, this segment is proximate to prehistoric archaeological sites 41BX1839 and 41BX1840. SWCA excavated a total of 26 shovel tests and seven auger test probes in order to assess the Project's potential effect on these two sites as well as any unrecorded cultural resources.

SWCA completed all investigations in accordance with the regulations and guidelines of ACT Permit No. 8526 and the THC/CTA survey standards and guidelines. A brief summary of the investigation and cultural resource sites identified is presented below.

Site 41BX1839

Site 41BX1839 is a prehistoric campsite located on the terrace of the Medina River within an agricultural field. Straus Medina Road is located immediately east, Montgomery Road is 1.15 miles (2.5 km) west, and Cagnon Road is 0.31-mile (0.5-km) east (Figure 4). The Medina River is 640 feet (195 m) to the south at 640 to 650 amsl. This site and 41BX1840 were recorded in 2009 during a cultural resources investigation for the SAWS Medina River Sewer Outfall Project (Hartnett et al. 2012). The archaeological deposits at 41BX1839 includes low densities of lithic debitage, charcoal, and mussel shell in a deeply buried subsurface context.

During the 2018 revisit SWCA field personnel completed a pedestrian survey supplemented by intensive shovel testing efforts along the Project area (Figures 5 to 10). SWCA excavated 13 subsurface tests (shovel and auger tests) within the delineated site boundary. Six tests contained cultural resources. The investigators recovered debitage, charcoal, and mussel shell from 11.8 to 59.1 inches (30 to 150 cm) below surface, mostly in low numbers, with the greatest quantity of cultural materials concentrated at depths of 7.9 to 19.7 inches (20 to 50 cm) below surface. Based on the extent of the artifact scatter, the site likely extends to the east, into the forested area. The eastern and western site boundary limits are artificially constrained by the Project right-of-way. In addition to the shovel tests excavated within the site, field personnel conducted 2 shovel tests and 1 auger test at 32.8 feet (10 m) and 65.5 feet (20 m) south of the delineated site boundary and did not observe any additional archaeological material.

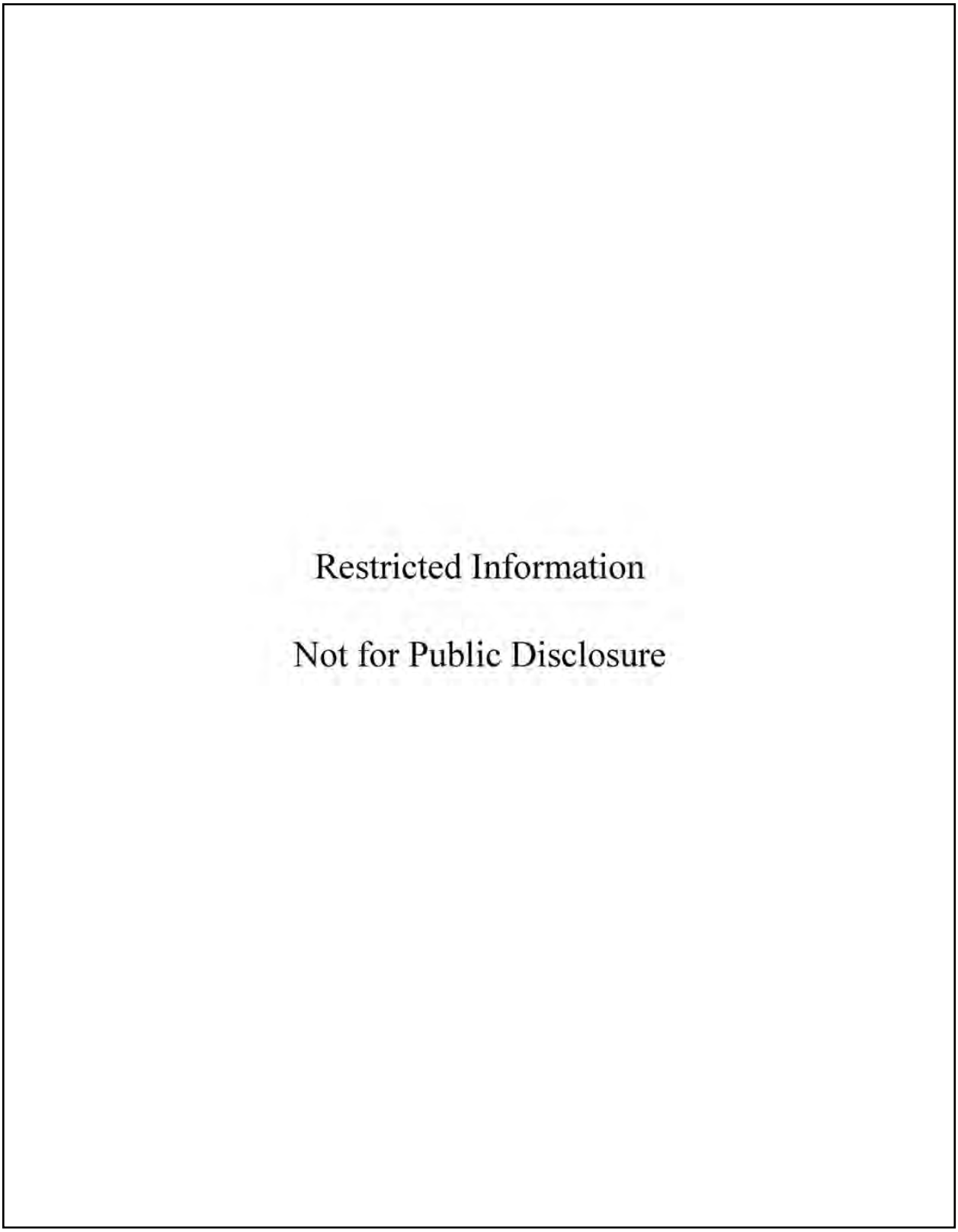

Figure 4. Survey results map of site 41BX1839 revisit, illustrating extent of identified boundary.

Figure 5. Overview of site 41BX1839 in overgrown agricultural field, facing west.

Figure 6. Overview of original Tower 18 location, within the newly extended site boundary, facing north.

Figure 7. Positive Auger 05 overview adjacent to original Tower 18 location.

Figure 8. Artifacts observed in Auger 05 probe within newly extended site 41BX1839 boundary. Debitage and charcoal noted at 130-150 cmbs.

Figure 9. Modified flake observed in AE12 at 30-40 cmbs.

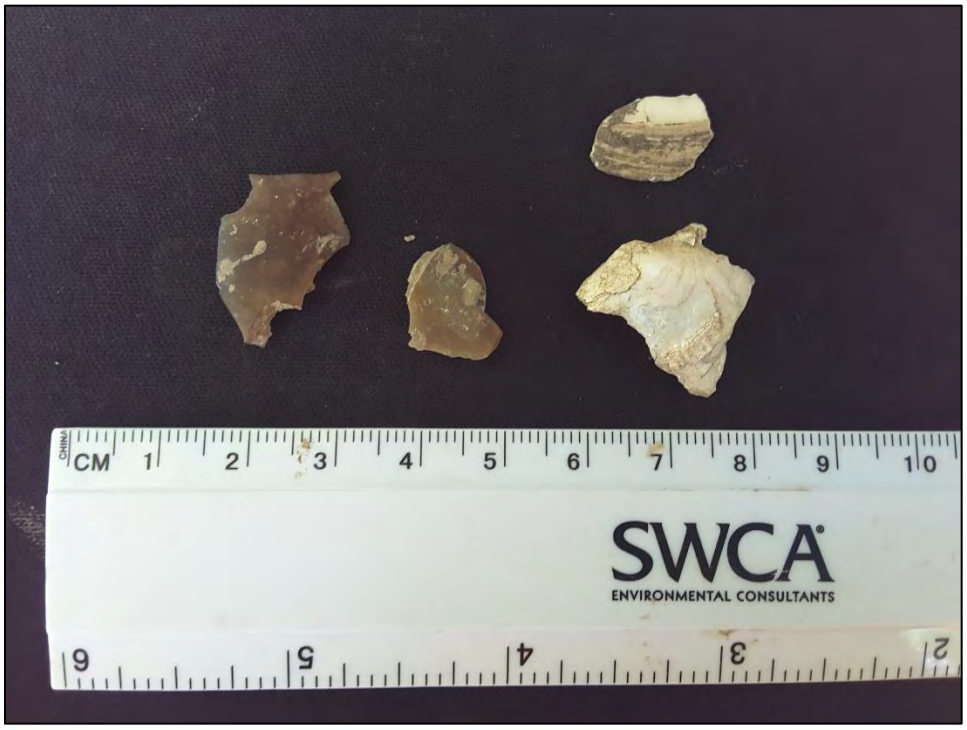

Figure 10. Artifacts observed in SS01 at 20-30 cmbs, within newly extended site 41BX1839 boundary.

All artifacts observed at the site were photo-documented and tabulated in the field and then left at the site in accordance with the ACT permit scope of work. The detailed results of the subsurface tests and the associated soil data are presented in Table 3.

Cultural material within site 41BX1839 includes low frequencies of lithic debitage (n= ±4), mussel shell fragments (n= ±2) and charcoal (n= ±3). No chronologically diagnostic tools were located during the investigation. The artifact depth and ecofact presence indicates the potential for intact archaeological features not affected by historic land surface disturbances. If present, these features could provide meaningful archaeological information and meet NRHP-eligibility criterion (36 CFR 60.4(d)). The SAL-eligibility for site 41BX1839 cannot be determined without more intensive testing measures.

CPS Energy proposes to avoid site 41BX1839 by relocating a planned monopole location (Tower 18, see Figure 4) to the southwest so it lies outside the defined boundary and spans the site in its entirety. This will avoid negative impacts to the site. SWCA recommends this course of action be followed with the following measures: (1) that the final pole location be verified in the design plans prior to construction; and (2) that safety fencing or similar marking measures be erected here to ensure construction heavy machinery does not leave the road, in order to prevent disturbance to the ground surface within the site boundary.

Table 3. Subsurface Testing Data from Survey of 41BX1839

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Material/ Depth	Comments / Reason For Termination
Auger 05	0-50	10YR 4/3	brown	Silt Loam	>20% Cobbles, Gravels, Pebbles, Snail Shell	Negative	–	No cultural material encountered.
	50-150	10YR 5/4	yellowish brown	Silt Loam	1-5% Calcium Carbonate, Snail Shell	**Positive**	2-lithic debitage and charcoal nodules observed 130-150 cmbs	Auger probing started at 50 cmbs.
	150-244	10YR 6/3	pale brown	Silt Loam	10-20% Calcium Carbonate, Snail Shell	Negative	–	No cultural material encountered. Terminated at compact soil.
AE11	0-30	10YR 4/2	dark grayish brown	Sandy Clay Loam	5-10% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at gravel bar
AE12	0-40	10YR 4/4	dark yellowish brown	Sandy Clay Loam	1-5% Gravels, Pebbles	**Positive**	–	Terminated at compact soil.
AE13	0-10	10YR 4/3	brown	Sandy Clay Loam	–	Negative	–	No cultural material encountered.

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Material/ Depth	Comments / Reason For Termination
	10-65	10YR 5/4	yellowish brown	Sandy Loam	–	Negative	–	No cultural material encountered. Terminated at compact soil.
AE17	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at compact soil.
AE18	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at compact soil.
AE19	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at compact soil.
AE20	0-50	10YR 4/4	dark yellowish brown	Clay Loam	–	Negative	–	No cultural material encountered. Terminated at compact soil.
AE21	0-15	10YR 4/4	dark yellowish brown	Sandy Loam	>20% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at gravel.
AE22	0-15	10YR 4/4	dark yellowish brown	Sandy Loam	>20% Gravels, Pebbles	Negative	–	No cultural material encountered. Terminated at gravel.
AE23	0-20	10YR 3/3	dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	–	No cultural material encountered.
	20-30	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	–	No cultural material encountered.
	30-40	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	**Positive**	Charcoal observed at 40cmbs	–
	40-60	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	**Positive**	1-lithic debitage 40-50 cmbs.	Auger probing started at 60 cmbs.
	60-100	10YR 4/3	brown	Sandy Loam	1-5% White filaments increasing with depth	Negative	–	No cultural material encountered. Terminated at depth.
JW01	0-10	10YR 5/4	yellowish brown	Silt Loam	–	Negative	–	No cultural material encountered.

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Cultural Material/ Depth	Comments / Reason For Termination
	10-40	10YR 6/4	light yellowish brown	Silty Clay Loam	–	**Positive**		Terminated at change in methodology.
SS01	0-50	10YR 3/4	dark yellowish brown	Silty Clay Loam	1-5% Large Rock Frags	**Positive**	1-lithic debitage observed at 30cmbs.	
	50-70	10YR 4/2	dark grayish brown	Silty Clay Loam	1-5%	Negative	–	Terminated at compact soil.
SS03	0-50	10YR 3/4	dark yellowish brown	Silty Clay Loam	1-5% Large Rock Frags	**Positive**	3-pc marine shell observed 20-30 cmbs. 2-lithic debitage observed 30-50 cmbs.	
	50-60	10YR 4/2	dark grayish brown	Silty Clay Loam	1-5%	Negative	–	Terminated at compact soil.

Site 41BX1840

Site 41BX1840 was recorded in 2009 during the SAWS Medina River Sewer Outfall Project as a dense surficial prehistoric lithic scatter site from an undetermined archaeological period (Hartnett et al. 2012). It is situated within a plowed agricultural field east of Lucas Creek and south of Potranca Creek at approximately 650 amsl, with slopes ranging from 0 to 1 percent. Lucas and Potranca Creeks are tributaries to the Medina River, which lies 0.1 mile (0.2 km) to the southeast. The proposed Shepherd Project transmission line traverses the site along the northeast-southwest axis (Figure 11). The surrounding landscape is primarily agricultural with a riparian ecosystem within the Straus Medina Conservation Bank Easements. Archaeological materials at the site are constrained to the surface. SWCA field personnel physically assessed the portion within the 100-foot Project right-of-way but saw readily apparent artifacts present to both sides. Ground surface visibility across the site ranged from 75 to 100 percent.

During the August 16, 2018 field effort SWCA personnel completed a pedestrian survey supplemented by intensive shovel and auger testing efforts within the proposed transmission line corridor. The investigators observed a high frequency of artifacts along the ground surface. Due to suitable ground surface visibility, the extent of agricultural disturbance, and the previous THC eligibility determination of "ineligible within right of way", SWCA completed the shovel testing effort at a 328-foot (100-m) interval. Subsurface testing efforts included four shovel tests and three auger probes; all were negative. Artifacts observed at the site were photo-documented and tabulated in the field and then left at the site in accordance with SWCA's non-collection methodology (Figures 12-17). A full detailed description of the subsurface testing efforts and soil profiles are present in Table 4.

Cultural material observed at site 41BX1840 included lithic artifacts representing various reduction process stages. Similar sites are ubiquitous across the south Texas region. No chronologically diagnostic projectile points were located. Its surficial nature and the absence of tools, diagnostic artifacts, and possible intact features indicates the site contains low research potential beyond its locational information. SWCA has assessed the site as ineligible for the NRHP within the assessed right-of-way.

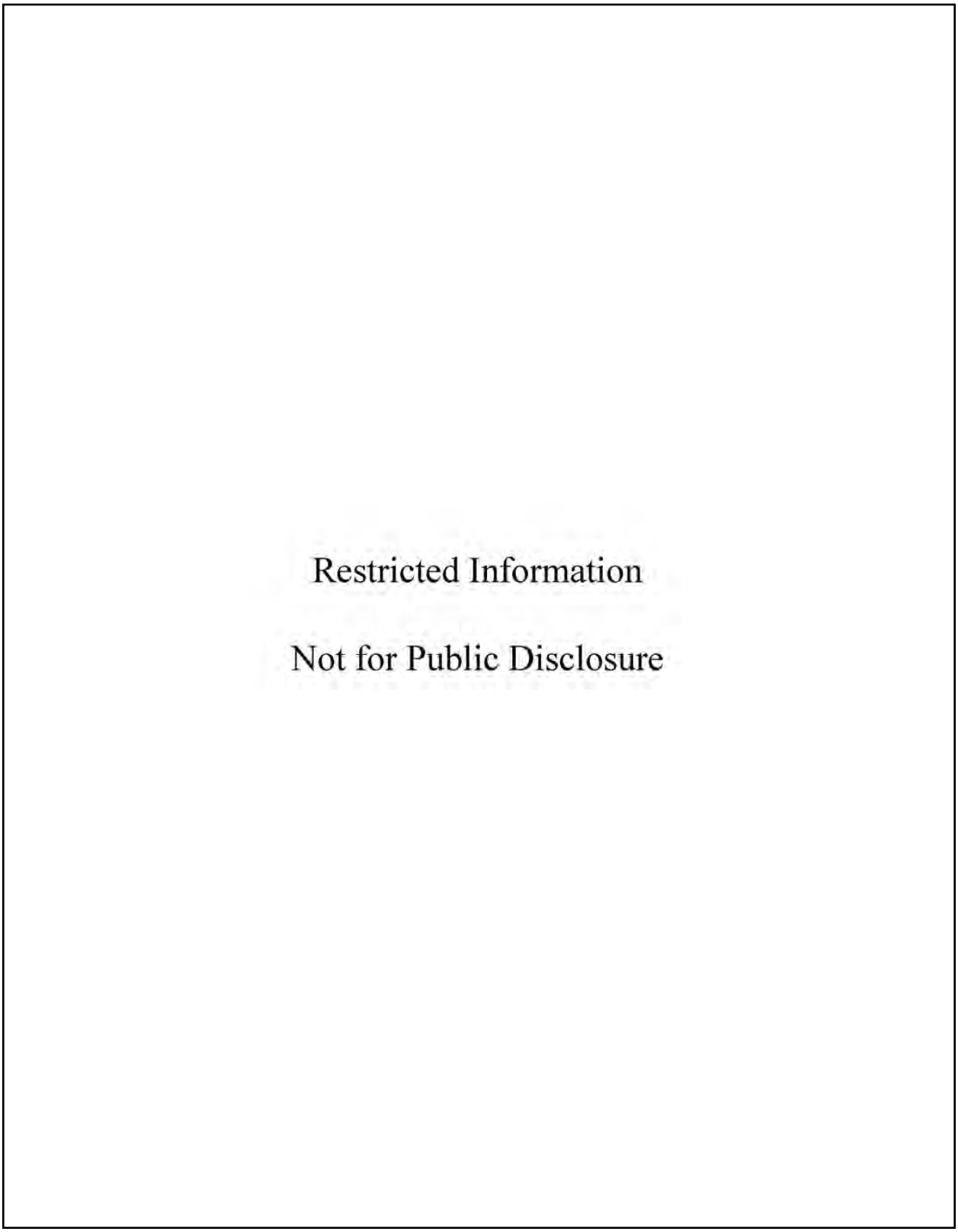

Figure 11. Site 41BX1840 map illustrating the extent of the boundary within the Project area.

Figure 12. Overview of site 41BX1840, facing southwest.

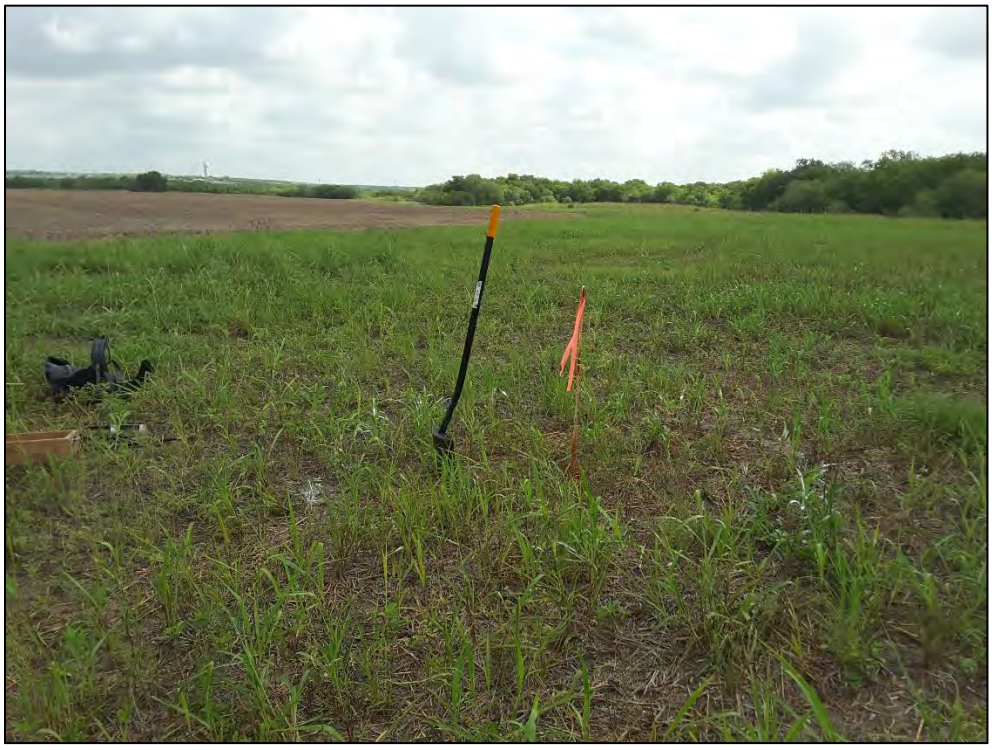

Figure 13. Overview of site 41BX1840 and location of Auger03/proposed Tower 16, facing north-northeast.

Figure 14. Auger 01 overview adjacent to proposed Tower 14 and within the northern extent of site 41BX1840 boundary.

Figure 15. Auger 03 overview adjacent to proposed Tower 16, within southern extent of site 41BX1840 boundary.

Figure 16. Artifact sample observed on surface at site 41BX1840.

Table 4. Subsurface Testing Data from Survey of site 41BX1840

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments / Reason For Termination
AUGER01	0-40	10YR 3/4	dark yellowish brown	Clay Loam	10-20% Calcium Carbonate, Mottles, Pebbles	Negative	Location of proposed Tower 14. No cultural material encountered.
	40-95	10YR 5/4	yellowish brown	Silty Clay Loam	>20% Calcium Carbonate, Mottles, Pebbles	Negative	Auger probe starting at 55 cmbs. No cultural material encountered.
	95-190	10YR 6/4	light yellowish brown	Silty Clay Loam	10-20% Calcium Carbonate, Snail Shell	Negative	No cultural material encountered.
	190-210	10YR 7/4	very pale brown	Silty Clay	>20% Calcium Carbonate	Negative	No cultural material encountered. Terminated at bedrock.

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments / Reason For Termination
AUGER02	0-60	10YR 3/1	very dark gray	Silty Clay Loam	1-5% Calcium Carbonate, Pebbles, Snail Shell	Negative	Location of proposed Tower 15. No cultural material encountered.
	60-115	10YR 3/1	very dark gray	Silty Clay	5-10% Calcium Carbonate, Mottles, Snail Shell	Negative	Auger probing started at 60cmbs. No cultural material encountered.
	115-175	10YR 7/2	light gray	Silty Clay	>20% Calcium Carbonate, Cobbles, Gravels, Mottles, Pebbles, Snail Shell	Negative	No cultural material encountered. Terminated at bedrock.
AUGER03	0-90	10YR 3/1	very dark gray	Silty Clay	1-5% Mottles, Pebbles, Snail Shell	Negative	Location of proposed Tower 16. Auger probing started at 55 cmbs. No cultural material encountered.
	90-160	10YR 5/3	brown	Silty Clay Loam	5-10% Calcium Carbonate, Mottles, Pebbles	Negative	No cultural material encountered.
	160-200	10YR 7/2	light gray	Silty Clay	>20% Calcium Carbonate	Negative	No cultural material encountered. Terminated at compact soil.
AE03	0-30	10YR 2/2	very dark brown	Clay Loam	>20% Gravels, Mottles, Pebbles	Negative	No cultural material encountered.
	30-55	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments / Reason For Termination
AE04	0-20	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
	20-45	10YR 2/2	very dark brown	Sandy Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE05	0-20	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
	20-45	10YR 2/2	very dark brown	Sandy Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE06	0-30	10YR 2/2	very dark brown	Clay Loam	–	Negative	No cultural material encountered.
	30-60	10YR 2/2	very dark brown	Sandy Clay Loam	10-20% Mottles	Negative	No cultural material encountered. Terminated at compact soil.

CONCLUSION AND RECOMMENDATIONS

SWCA conducted a cultural resources investigation at the approximately 0.8-mile (1.3-km) Straus Medina Conservation Bank segment of the proposed 5.6-mile (9-km) Shepherd Transmission Line Project on August 16, 2018. SWCA field archaeologists assessed the Project right-of-way and revisited sites 41BX1839 and 41BX1840, previously identified in 2009 during the SAWS Medina River Sewer Outfall Project (Hartnett et al. 2012).

Site 41BX1839 is a low-density, deeply buried lithic artifact scatter likely attributable to short-term campsites associated with seasonal resource exploitation activities. Due to the depth of identified artifacts and the presence of mussel and charcoal at depth, the site may have NRHP or SAL-eligible archaeological deposits. CPS Energy will avoid the site by moving a planned tower and span the entirety of the known boundary within the Project area. SWCA recommends this course of action be followed with the following measures: (1) that the final pole location be verified in the design plans prior to construction; and (2) that safety fencing or similar marking measures be erected here to ensure construction heavy machinery does not leave the road and prevent disturbance to the ground surface within the site boundary. If for some reason the tower cannot be moved outside of the 41BX1839 boundary shown in Figure 4, then SWCA recommends additional fieldwork in the form of mechanical backhoe trenching or construction monitoring.

Site 41BX1840 is a surficial lithic artifact scatter situated within an extensively plowed field. Due to the absence of diagnostic artifacts and intact cultural features, it is the professional opinion of SWCA that site 41BX1840 does not meet the SAL-eligibility criteria. No additional archaeological work is recommended for this location or at the remainder of the assessed Project right-of-way.

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APPENDIX B

Cultural Resources Survey Results — Mapbook

Restricted Information

Not for Public Disclosure

Restricted Information

Not for Public Disclosure

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SWCA® ENVIRONMENTAL CONSULTANTS

CPS ENERGY SHEPHERD TRANSMISSION LINE

- Proposed Transmission Line
- Survey Area
- Pole Location
- Negative Shovel Test
- Not Excavated

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NAD 1983 UTM Zone 14N

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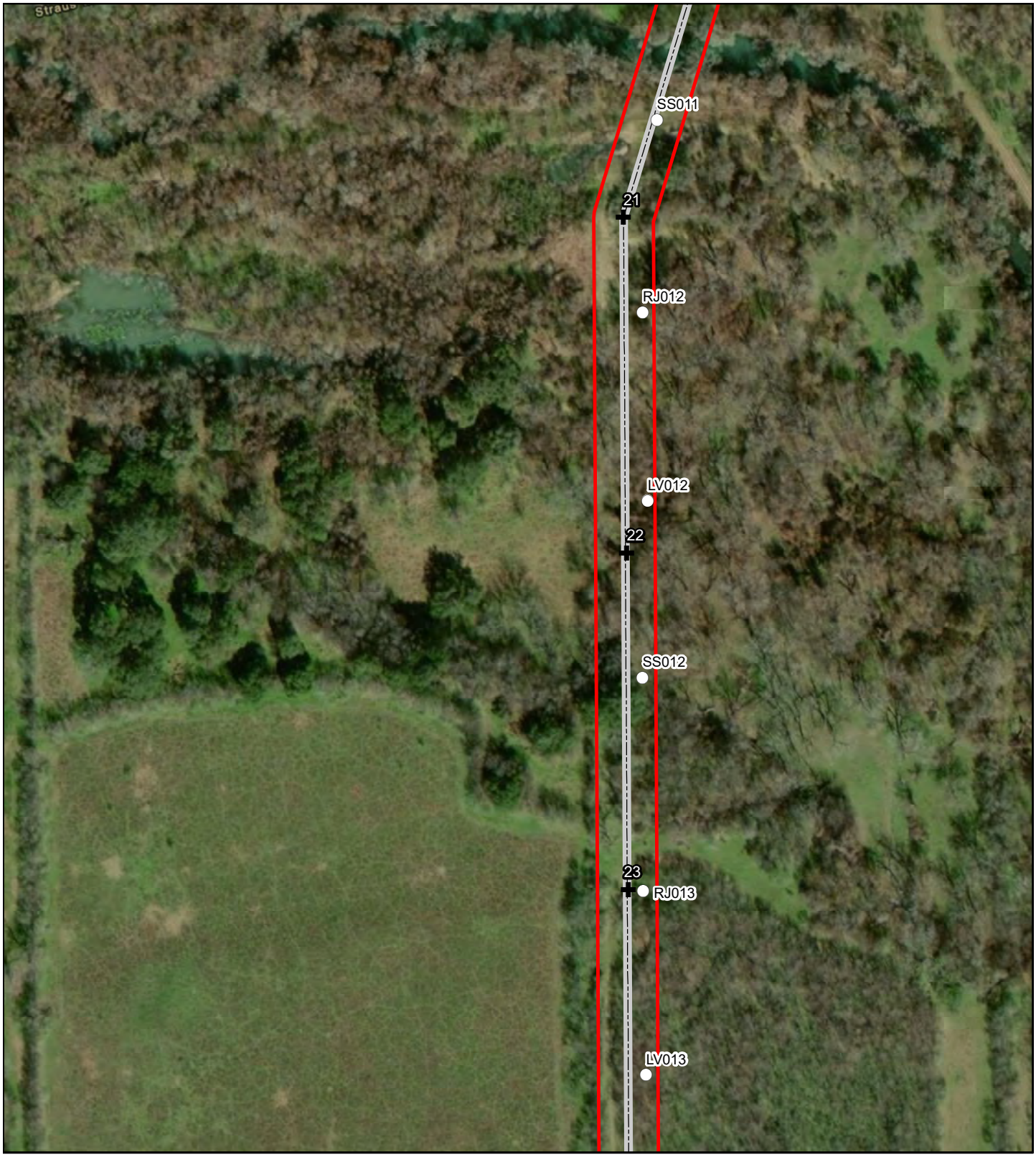

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Proposed Transmission Line
Survey Area
Pole Location
Negative Shovel Test

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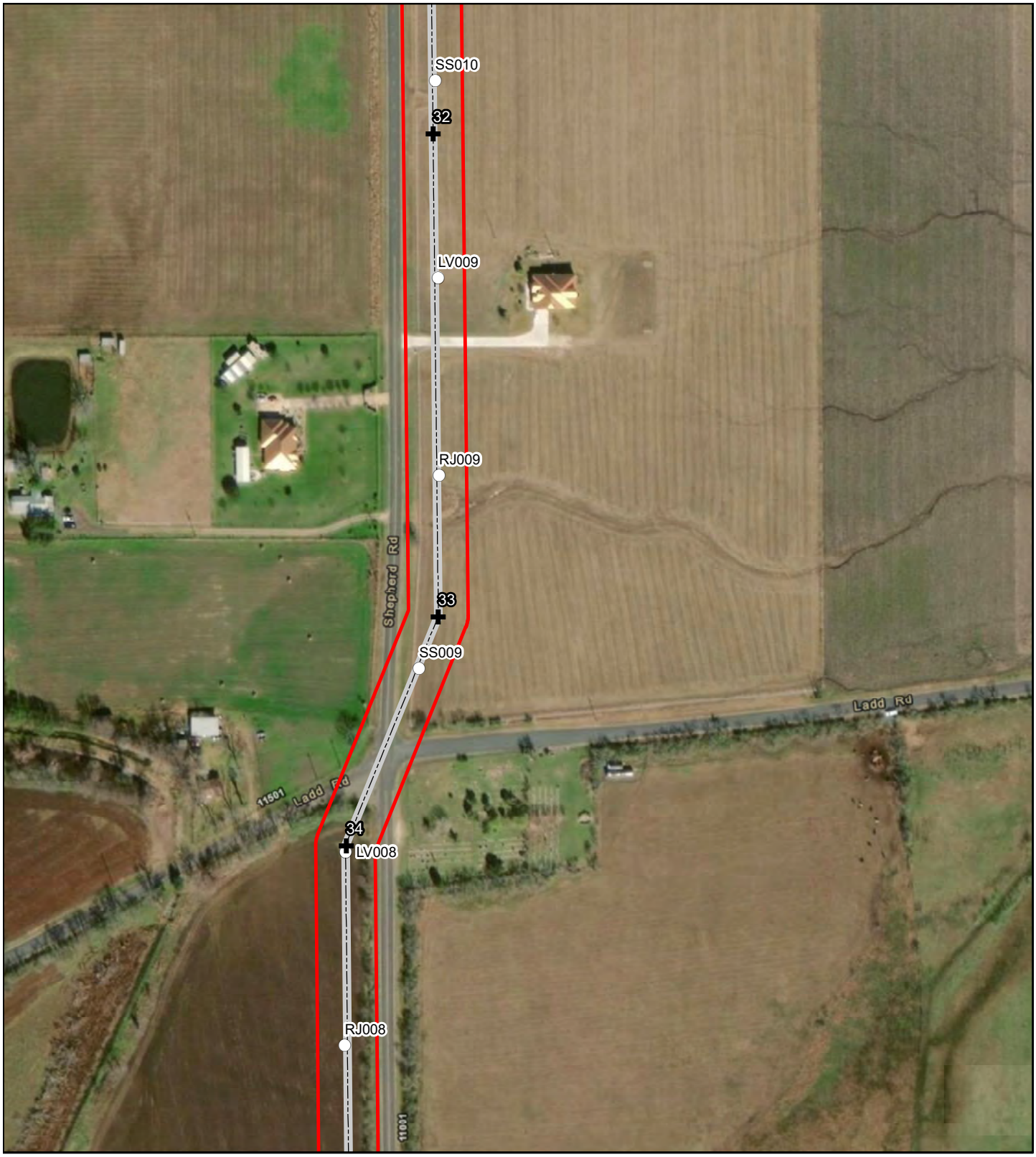

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Proposed Transmission Line
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Negative Shovel Test

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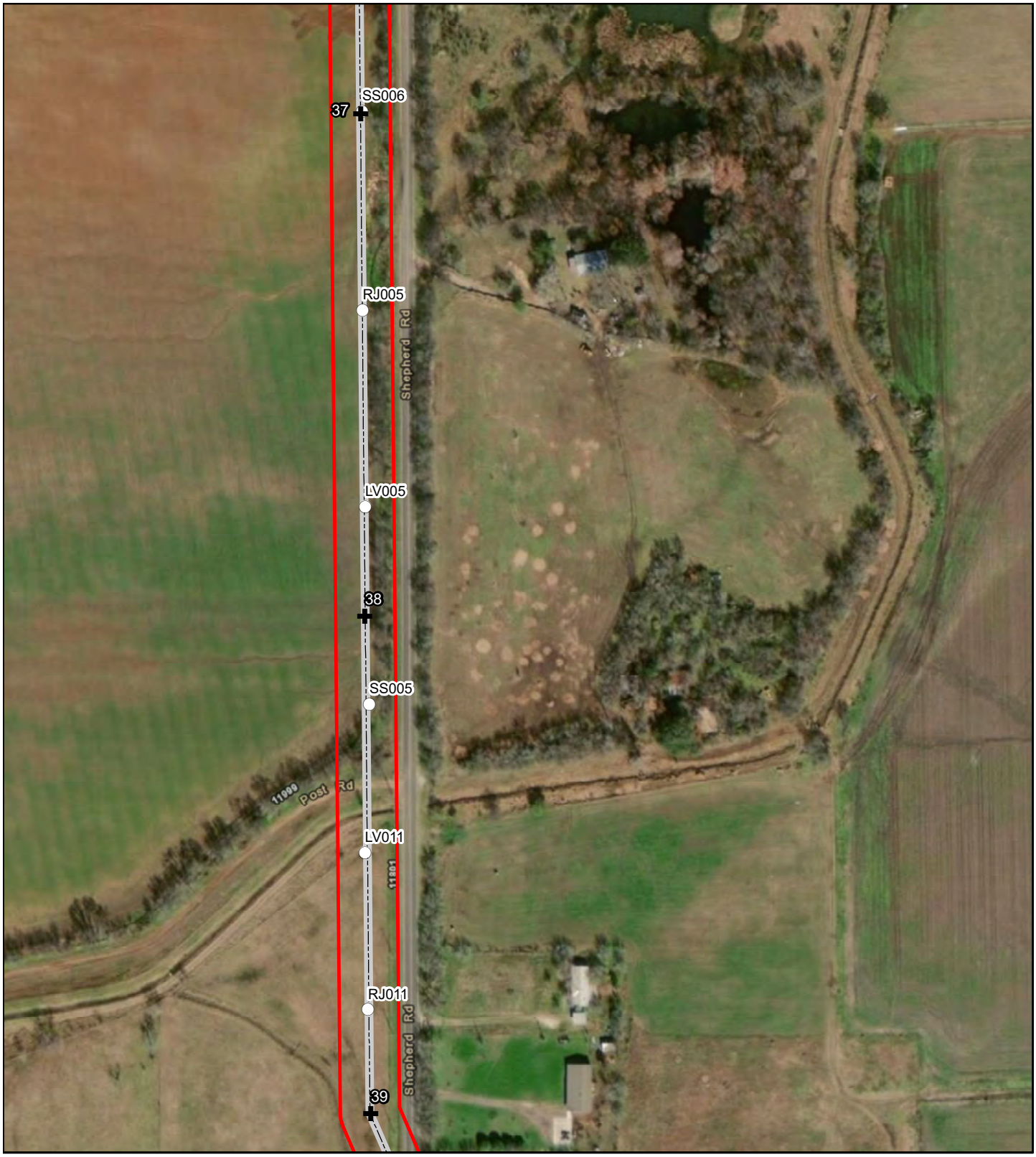

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SWCA® ENVIRONMENTAL CONSULTANTS

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- Pole Location
- Negative Shovel Test
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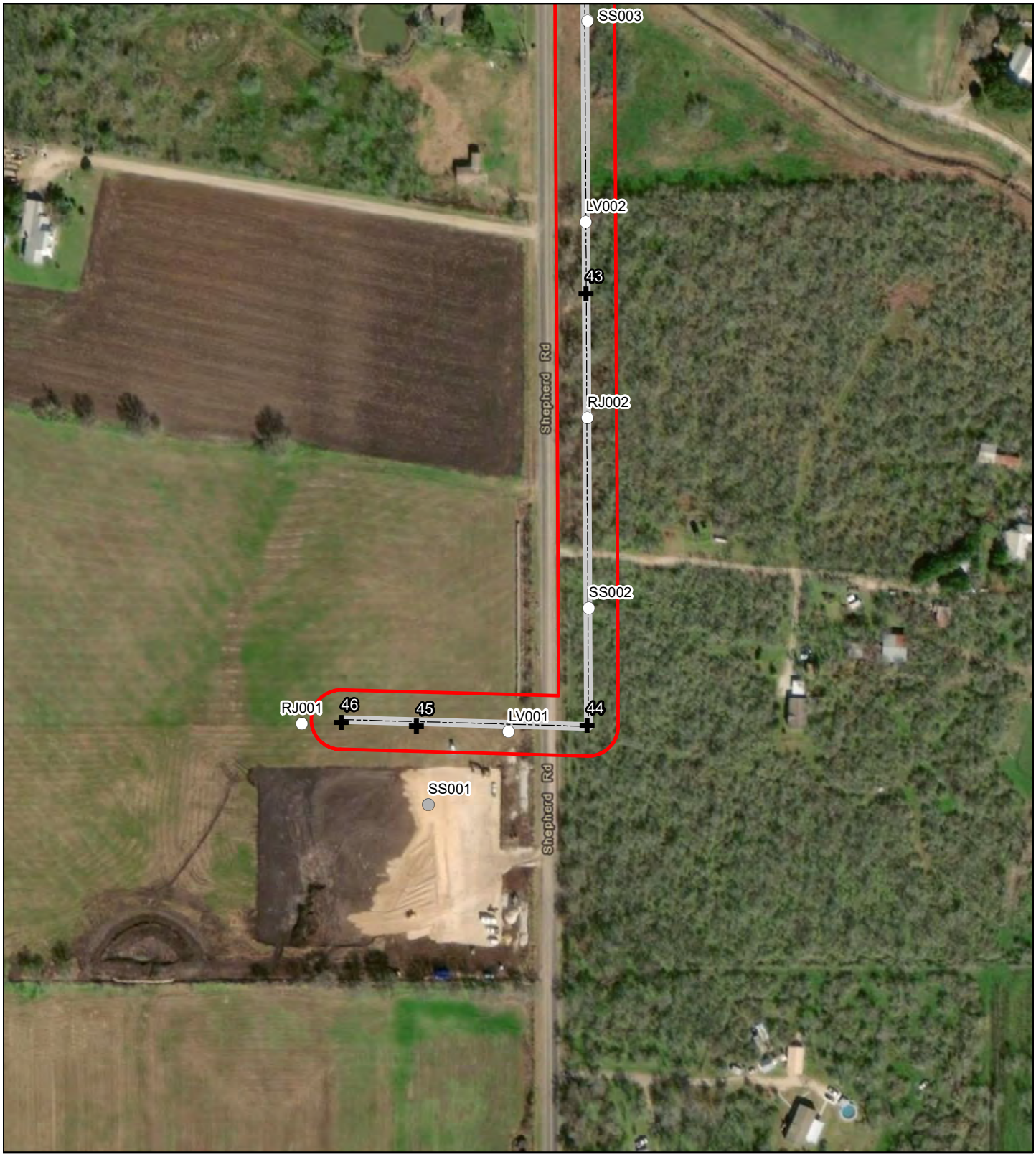

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- Proposed Transmission Line
- Survey Area
- Pole Location
- Negative Shovel Test
- Not Excavated

1:3,200

Created By: J. Kainer
Project Number: 37946
Date: 9/30/2019
NAD 1983 UTM Zone 14N

0 250 Feet

0 50 Meters

APPENDIX C

Subsurface Testing Data

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
AUGER01	41BX1840	0-40	10YR 3/4	dark yellowish brown	Clay Loam	10-20% Calcium Carbonate, Mottles, Pebbles	Negative	Tower 14 location. No cultural material encountered.
		40-95	10YR 5/4	yellowish brown	Silty Clay Loam	>20% Calcium Carbonate, Mottles, Pebbles	Negative	Auger probe starting at 55 cmbs. No cultural material encountered.
		95-190	10YR 6/4	light yellowish brown	Silty Clay Loam	10-20% Calcium Carbonate, Snail Shell	Negative	No cultural material encountered.
		190-210	10YR 7/4	very pale brown	Silty Clay	>20% Calcium Carbonate	Negative	No cultural material encountered. Terminated at bedrock.
AUGER02	41BX1840	0-60	10YR 3/1	very dark gray	Silty Clay Loam	1-5% Calcium Carbonate, Pebbles, Snail Shell	Negative	No cultural material encountered.
		60-115	10YR 3/1	very dark gray	Silty Clay	5-10% Calcium Carbonate, Mottles, Snail Shell	Negative	Tower 15 location. Auger probing started at 60 cmbs. No cultural material encountered.
		115-175	10YR 7/2	light gray	Silty Clay	>20% Calcium Carbonate, Cobbles, Gravels, Mottles, Pebbles, Snail Shell	Negative	No cultural material encountered. Terminated at bedrock.
AUGER03	41BX1840	0-90	10YR 3/1	very dark gray	Silty Clay	1-5% Mottles, Pebbles, Snail Shell	Negative	Tower 16 location. Auger probing started at 55 cmbs. No cultural material encountered.
		90-160	10YR 5/3	brown	Silty Clay Loam	5-10% Calcium Carbonate, Mottles, Pebbles	Negative	No cultural material encountered.
		160-200	10YR 7/2	light gray	Silty Clay	>20% Calcium Carbonate	Negative	No cultural material encountered. Terminated at compact soil.
AUGER04	NA	0-30	10YR 3/1	very dark gray	Silty Clay Loam	1-5% Gravels, Pebbles, Snail Shell	Negative	Tower 17 location. No cultural material encountered.
		30-40	10YR 7/4	very pale brown	Silty Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	Auger probing started at 30 cmbs. Very distinct layer of road base. No cultural material encountered.
		40-150	10YR 3/1	very dark gray	Silty Clay	>20% Calcium Carbonate, Mottles, Pebbles, Snail Shell	Negative	No cultural material encountered.
		150-230	7.5YR 4/4	brown	Silty Clay	1-5% Calcium Carbonate, Mottles, Snail Shell	Negative	No cultural material encountered. Terminated at depth.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
AUGER05	41BX1839	0-50	10YR 4/3	brown	Silt Loam	>20% Cobbles, Gravels, Pebbles, Snail Shell	Negative	Tower 18 location. No cultural material encountered. Auger probing started at 50 cmbs.
		50-150	10YR 5/4	yellowish brown	Silt Loam	1-5% Calcium Carbonate, Snail Shell	Positive	Two lithic debitage and charcoal nodules observed at 130-150 cmbs.
		150-244	10YR 6/3	pale brown	Silt Loam	10-20% Calcium Carbonate, Snail Shell	Negative	No cultural material encountered. Terminated at compact soil.
AUGER06	NA	0-65	10YR 3/1	very dark gray	Silty Clay Loam	>20% Pebbles, Gravels, Cobbles, Asphalt, Mottles	Negative	Tower 19 location. No cultural material encountered. Terminated at bedrock.
AUGER07	NA	0-10	10YR 4/3	brown	Silt Loam	>20% Calcium Carbonate, Mottles, Pebbles, Snail Shell	Negative	SS02, shovel tested. No cultural material encountered.
		10-170	10YR 5/3	brown	Silty Clay Loam	1-5% Cobbles	Negative	Auger probing started at 50 cmbs. No cultural material encountered.
		170-190	10YR 7/4	light yellowish brown	Sand	1-5% Calcium Carbonate	Negative	No cultural material encountered. Terminated at bedrock.
AE01	NA	0-50	10YR 2/2	very dark brown	Clay	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE02	NA	0-50	10YR 2/2	very dark brown	Clay	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE03	41BX1840	0-30	10YR 2/2	very dark brown	Clay Loam	>20% Gravels, Mottles, Pebbles	Negative	No cultural material encountered.
	41BX1840	30-55	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE04	41BX1840	0-20	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		20-45	10YR 2/2	very dark brown	Sandy Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE05	41BX1840	0-20	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		20-45	10YR 2/2	very dark brown	Sandy Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE06	41BX1840	0-30	10YR 2/2	very dark brown	Clay Loam	–	Negative	No cultural material encountered.
		30-60	10YR 2/2	very dark brown	Sandy Clay Loam	10-20% Mottles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
AE07	NA	0-25	10YR 3/3	dark brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	No cultural material encountered.
		25-65	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
AE08	NA	0-25	10YR 2/2	very dark brown	Sandy Loam	–	Negative	No cultural material encountered.
		25-35	7.5YR 7/6	reddish yellow	Clay Loam	>20% Gravels, Mottles, Pebbles	Negative	No cultural material encountered.
		35-55	10YR 2/2	very dark brown	Silty Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE09	NA	0-55	10YR 2/2	very dark brown	Silty Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE10	NA	0-25	10YR 2/2	very dark brown	Sandy Loam	–	Negative	No cultural material encountered.
		25-35	7.5YR 7/6	reddish yellow	Clay Loam	>20% Gravels, Mottles, Pebbles	Negative	No cultural material encountered.
		35-55	10YR 2/2	very dark brown	Silty Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE11	41BX1839	0-30	10YR 4/2	dark grayish brown	Sandy Clay Loam	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel bar.
AE12	41BX1839	0-40	10YR 4/4	dark yellowish brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Positive	Terminated at compact soil.
AE13	41BX1839	0-10	10YR 4/3	brown	Sandy Clay Loam	–	Negative	No cultural material encountered.
		10-65	10YR 5/4	yellowish brown	Sandy Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE14	NA	0-50	10YR 2/2	very dark brown	Sandy Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE15	NA	0-15	7.5YR 4/4	brown	Sandy Loam	>20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel.
AE16	NA	0-15	7.5YR 4/4	brown	Sandy Loam	>20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel.
AE17	41BX1839	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE18	41BX1839	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
AE19	41BX1839	0-45	10YR 4/4	dark yellowish brown	Sandy Clay Loam	10-20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
AE20	41BX1839	0-50	10YR 4/4	dark yellowish brown	Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
AE21	41BX1839	0-15	10YR 4/4	dark yellowish brown	Sandy Loam	>20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel.
AE22	41BX1839	0-15	10YR 4/4	dark yellowish brown	Sandy Loam	>20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel.
AE23	41BX1839	0-20	10YR 3/3	dark brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		20-30	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		30-40	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Positive	Charcoal observed at 40 cmbs.
		40-60	10YR 4/3	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Positive	One lithic debitage observed at 40-50 cmbs.
		60-100	10YR 4/3	brown	Sandy Loam	1-5% White filaments increasing with depth	Negative	Auger probing started at 60 cmbs. No cultural material encountered. Terminated at depth.
JW01	41BX1839	0-10	10YR 5/4	yellowish brown	Silt Loam	–	Negative	No cultural material encountered.
		10-40	10YR 6/4	light yellowish brown	Silty Clay Loam	–	Positive	Terminated at change in methodology.
LV001	NA	0-10	10YR 2/2	very dark brown	Silty Clay Loam	1-5% Pebbles, Roots	Negative	No cultural material encountered.
		10-55	10YR 2/1	black	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
LV002	NA	0-15	10YR 3/2	very dark grayish brown	Sandy Clay Loam	>20% Gravels	Negative	No cultural material encountered.
		15-60	10YR 2/1	black	Silty Clay Loam	>20% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
LV003	NA	0-30	10YR 3/2	very dark grayish brown	Silty Clay	10-20% Roots	Negative	No cultural material encountered.
		30-60	7.5YR 3/4	dark brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
LV004	NA	0-10	10YR 3/2	very dark grayish brown	Silty Clay Loam	–	Negative	No cultural material encountered.
		10-30	10YR 3/3	dark brown	Silty Clay	–	Negative	No cultural material encountered.
		30-55	10YR 4/2	dark grayish brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
LV005	NA	0-10	10YR 4/3	brown	Loamy Sand	1-5% Gravels	Negative	No cultural material encountered.
		10-30	10YR 3/1	very dark gray	Silty Clay Loam	1-5% Gravels	Negative	No cultural material encountered.
		30-55	10YR 2/1	black	Clay	>20% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
LV006	NA	0-10	10YR 4/3	brown	Loamy Sand	1-5% Gravels	Negative	No cultural material encountered.
		10-30	10YR 3/1	very dark gray	Silty Clay Loam	1-5% Gravels	Negative	No cultural material encountered.
		30-55	10YR 2/1	black	Clay	>20% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
LV007	NA	0-10	10YR 4/2	dark grayish brown	Sandy Clay Loam	–	Negative	No cultural material encountered.
		10-50	10YR 3/2	very dark grayish brown	Clay Loam	1-5% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
LV008	NA	0-10	10YR 3/2	very dark grayish brown	Sandy Clay Loam	1-5% Cobbles, Gravels	Negative	No cultural material encountered.
		10-55	10YR 3/1	very dark gray	Clay	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
LV009	NA	0-8	10YR 2/2	very dark brown	Clay Loam	1-5% Roots	Negative	No cultural material encountered.
		8-55	10YR 2/2	very dark brown	Clay	1-5% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
LV010	NA	No Dig	–	–	–	–	Negative	Other. Adjacent to road and in prior right of way
LV011	NA	0-50	10YR 3/1	very dark gray	Silty Clay	1-5% Gravels	Negative	No cultural material encountered. Terminated at basal clay.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
LV012	NA	0-5	10YR 3/2	very dark grayish brown	Silt Loam	–	Negative	No cultural material encountered.
		6-45	10YR 3/3	dark brown	Silty Clay Loam	>20% Roots	Negative	No cultural material encountered. Terminated at root too large to cut through (greater than 10 cm).
LV013	NA	0-5	10YR 2/1	black	Loam	>20% Decaying Vegetation	Negative	No cultural material encountered.
		6-30	10YR 3/2	very dark grayish brown	Silty Clay	10-20% Roots	Negative	No cultural material encountered.
		31-75	10YR 4/3	brown	Clay	–	Negative	No cultural material encountered. Terminated at basal clay.
LV014	NA	0-10	10YR 2/2	very dark brown	Silty Clay Loam	>20% Roots	Negative	No cultural material encountered.
		11-50	10YR 3/2	very dark grayish brown	Silty Clay	–	Negative	No cultural material encountered.
		51-100	10YR 3/3	dark brown	Clay	–	Negative	No cultural material encountered. Terminated at depth.
LV015	NA	0-10	10YR 2/2	very dark brown	Silty Clay Loam	Charcoal	Negative	No cultural material encountered.
		10-20	10YR 3/3	dark brown	Silty Clay Loam	–	Negative	No cultural material encountered.
		20-60	10YR 4/4	dark yellowish brown	Silty Clay	–	Negative	No cultural material encountered.
		60-75	10YR 4/4	dark yellowish brown	Silty Clay	>20% Gravels	Negative	No cultural material encountered. Terminated at eroding bedrock limestone gravels.
LV016	NA	0-10	10YR 3/2	very dark grayish brown	Silt Loam	5-10% Gravels, Charcoal	Negative	No cultural material encountered.
		10-50	10YR 2/1	black	Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
LV017	NA	0-23	10YR 2/1	black	Clay Loam	>20% Gravels, Roots	Negative	No cultural material encountered. Terminated at disturbed line and encountered bright yellow/orange construction fill.
LV018	NA	0-10	10YR 4/2	dark grayish brown	Loamy Sand	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at disturbed construction backfill.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
LV019	NA	0-20	10YR 2/1	black	Silty Clay Loam	>20% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-40	10YR 2/2	very dark brown	Silty Clay Loam	>20% Cobbles	Negative	No cultural material encountered. Terminated at disturbed backfill light colored fill.
LV020	NA	0-30	10YR 3/2	very dark grayish brown	Silty Clay Loam	5-10% Roots and crops	Negative	No cultural material encountered.
		30-70	10YR 3/1	very dark gray	Silty Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
LV021	NA	0-10	10YR 2/2	very dark brown	Silty Clay Loam	5-10% Pebbles, Roots	Negative	No cultural material encountered.
		10-60	10YR 3/3	dark brown	Silty Clay	5-10% Mottles	Negative	No cultural material encountered. Terminated at basal clay.
LV022	41BX2270	0-13	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at depth.
LV023	41BX2270	0-8	10YR 3/1	very dark gray	Silty Clay Loam	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered.
		8-45	10YR 3/2	very dark grayish brown	Silty Clay	>20% Gravels, Roots	Negative	No cultural material encountered. Terminated at basal clay.
LV024	41BX2270	0-22	10YR 2/1	black	Silty Clay Loam	>20% Cobbles, Gravel	Negative	No cultural material encountered. Terminated at large dense rock lens.
LV025	41BX2270	0-30	10YR 2/2	very dark brown	Silty Clay Loam	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
LV026	NA	0-10	10YR 3/1	very dark gray	Silty Clay	>20% Dense tall grass roots	Negative	No cultural material encountered.
		10-22	10YR 3/1	very dark gray	Silty Clay	>20% Cobbles	Negative	No cultural material encountered. Terminated at solid rock layer with overlying rounded cobbles and water-soaked sediments.
LV027	NA	0-55	10YR 3/1	very dark gray	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
LV028	NA	0-7	10YR 3/2	very dark grayish brown	Silty Clay Loam	1-5% Gravels	Negative	No cultural material encountered.
		7-70	10YR 3/3	dark brown	Silty Clay	–	Negative	No cultural material encountered. Terminated at basal clay.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
RJ001	NA	0-40	10YR 2/1	black	Clay	–	Negative	No cultural material encountered.
		40-50	10YR 2/1	black	Clay	1-5% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
RJ002	NA	0-40	10YR 2/1	black	Clay	–	Negative	No cultural material encountered.
		40-50	10YR 2/1	black	Clay	1-5% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
RJ003	NA	0-40	7.5YR 3/4	dark brown	Sandy Clay Loam	–	Negative	No cultural material encountered.
		40-60	7.5YR 3/4	dark brown	Sandy Clay Loam	Mottles	Negative	No cultural material encountered. Terminated at compact soil.
RJ004	NA	0-30	7.5YR 4/4	brown	Sandy Clay Loam	–	Negative	No cultural material encountered.
		30-40	7.5YR 4/4	brown	Clay Loam	5-10% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
RJ005	NA	0-10	10YR 5/4	yellowish brown	Sandy Loam	1-5% Pebbles	Negative	No cultural material encountered.
		10-50	10YR 3/1	very dark gray	Clay Loam	–	Negative	No cultural material encountered.
		50-70	10YR 3/1	very dark gray	Clay	1-5% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
RJ006	NA	0-30	7.5YR 4/4	brown	Clay Loam	–	Negative	No cultural material encountered.
		30-40	7.5YR 3/3	dark brown	Clay	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ007	NA	0-20	7.5YR 4/4	brown	Clay Loam	–	Negative	No cultural material encountered.
		20-50	7.5YR 2.5/2	very dark brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
RJ008	NA	0-30	10YR 3/3	dark brown	Clay	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		30-50	10YR 3/3	dark brown	Clay	5-10% Gravels, Mottles, Pebbles	Negative	No cultural material encountered. Terminated at basal clay.
RJ009	NA	0-40	10YR 3/1	very dark gray	Clay	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ010	NA	0-50	10YR 3/1	very dark gray	Clay	1-5% Pebbles	Negative	No cultural material encountered.
		40-50	10YR 3/3	dark brown	Clay	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
RJ011	NA	0-40	10YR 2/1	black	Clay	1-5% Pebbles	Negative	No cultural material encountered.
		40-50	10YR 2/1	black	Clay	10-20% Mottles	Negative	No cultural material encountered. Terminated at basal clay.
RJ012	NA	0-10	10YR 2/1	black	Silt Loam	10-20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered.
		10-30	7.5YR 5/3	brown	Sandy Loam	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at bedrock.
RJ013	NA	0-30	7.5YR 5/2	brown	Clay	–	Negative	No cultural material encountered.
		30-40	7.5YR 6/2	pinkish gray	Clay Loam	–	Negative	No cultural material encountered. Terminated at compact soil.
RJ014	NA	0-30	10YR 2/1	black	Silt Loam	10-20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered.
		30-50	7.5YR 5/3	brown	Sandy Loam	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at bedrock.
RJ015	NA	0-40	7.5YR 3/2	dark brown	Clay Loam	–	Negative	No cultural material encountered.
		40-50	7.5YR 4/3	brown	Clay Loam	5-10% Gravels, Mottles, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ016	NA	0-10	7.5YR 4/2	brown	Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		10-30	10YR 7/6	yellow	Sandy Clay Loam	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ017	NA	0-40	7.5YR 3/2	dark brown	Clay Loam	–	Negative	No cultural material encountered.
		40-50	7.5YR 4/3	brown	Clay Loam	5-10% Gravels, Mottles, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ018	NA	0-30	10YR 2/1	black	Clay Loam	–	Negative	No cultural material encountered.
		30-50	10YR 3/2	very dark grayish brown	Clay	5-10% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
RJ019	NA	0-60	10YR 3/2	very dark grayish brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
RJ020	NA	0-20	7.5YR 4/4	brown	Loam	5-10% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-40	7.5YR 3/3	dark brown	Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
RJ021	NA	0-20	7.5YR 3/3	dark brown	Clay Loam	10-20% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	7.5YR 3/3	dark brown	Clay Loam	–	Negative	No cultural material encountered. Terminated at tree roots.
RJ022	41BX2270	0-20	7.5YR 3/1	very dark gray	Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	7.5YR 3/1	very dark gray	Clay Loam	5-10%	Positive	Brown bottle glass shard observed at 30 cmbs.
		30-40	7.5YR 4/1	dark gray	Sandy Clay Loam	5-10% Limestone fragments	Negative	No cultural material encountered. Terminated at impenetrable gravel. greater than 20%.
RJ023	41BX2270	0-20	10YR 2/1	black	Clay Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	10YR 2/1	black	Clay	>20% Cobbles, Large Rock Frags	Negative	No cultural material encountered. Terminated at gravel bed greater than 20%.
RJ024	41BX2270	0-30	7.5YR 3/1	very dark gray	Clay Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		30-40	10YR 5/4	yellowish brown	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
RJ025	NA	0-30	10YR 3/1	very dark gray	Clay	10-20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at gravel bed greater than 20%.
RJ026	NA	0-40	10YR 2/1	black	Clay	1-5% Cobbles	Negative	No cultural material encountered. Terminated at impassible stone.
RJ027	NA	0-50	10YR 3/1	very dark gray	Clay	–	Negative	No cultural material encountered. Terminated at compact soil.
RJ028	41BX2270	0-10	10YR 3/2	very dark grayish brown	Silty Clay Loam	1-5% Roots	Negative	No cultural material encountered.
		10-40	10YR 4/2	dark grayish brown	Silty Clay	1-5% Cobbles	Negative	No cultural material encountered.
		40-70	10YR 4/4	dark yellowish brown	Clay	10-20% Mottles	Negative	No cultural material encountered. Terminated at basal clay.
SS01	41BX1839	0-50	10YR 3/4	dark yellowish brown	Silty Clay Loam	1-5% Large Rock Frags	Positive	One lithic debitage observed at 30 cmbs.
		50-70	10YR 4/2	dark grayish brown	Silty Clay Loam	1-5%	Negative	Terminated at compact soil.
SS02	NA	–	–	–	–	–	–	See Auger07

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
SS03	41BX1839	0-50	10YR 3/4	dark yellowish brown	Silty Clay Loam	1-5% Large Rock Frags	Positive	Three pieces of marine shell observed at 20-30 cmbs. Two lithic debitage observed at 30-50 cmbs.
	41BX1839	50-60	10YR 4/2	dark grayish brown	Silty Clay Loam	1-5%	Negative	Terminated at compact soil.
SS001	NA	No Dig	–	–	–	–	–	Caliche surface/ substation at the southern terminus of Project alignment already constructed.
SS002	NA	0-70	7.5YR 3/1	very dark gray	Clay	1-5% Snail Shell, Sand	Negative	No cultural material encountered. Terminated at basal clay.
SS003	NA	0-35	7.5YR 4/4	brown	Sandy Clay Loam	1-5%	Negative	No cultural material encountered.
		35-45	7.5YR 3/2	dark brown	Clay	10-20% Mottles	Negative	No cultural material encountered. Terminated at basal clay.
SS004	NA	0-70	7.5YR 3/1	very dark gray	Clay	1-5% Snail Shell, Sand	Negative	No cultural material encountered. Terminated at basal clay.
SS005	NA	0-20	7.5YR 4/4	brown	Sandy Clay Loam	1-5% Gravels, Pebbles	Negative	No cultural material encountered.
		20-50	10YR 2/1	black	Clay	10-20% Gravels, Pebbles	Negative	No cultural material encountered.
		50-60	10YR 2/1	black	Clay	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
SS006	NA	0-45	7.5YR 4/4	brown	Sandy Clay	10-20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
SS007	NA	0-45	7.5YR 4/4	brown	Sandy Clay	10-20% Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.
SS008	NA	0-70	10YR 4/3	brown	Clay Loam	5-10% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at basal clay.
SS009	NA	0-40	10YR 3/2	very dark grayish brown	Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at basal clay.
SS010	NA	0-40	10YR 3/2	very dark grayish brown	Clay Loam	1-5% Pebbles	Negative	No cultural material encountered. Terminated at basal clay.
SS011	NA	0-15	10YR 3/2	very dark grayish brown	Clay Loam	>20% Cobbles, Gravels, Pebbles	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
SS012	NA	0-50	10YR 4/3	brown	Clay Loam	1-5%	Negative	No cultural material encountered.
		70	10YR 5/3	brown	Clay Loam	1-5% Mottles	Negative	No cultural material encountered. Terminated at compact soil.
SS013	NA	0-40	10YR 4/3	brown	Clay Loam	1-5%	Negative	No cultural material encountered. Terminated at basal clay.
SS014	NA	0-45	10YR 4/3	brown	Clay Loam	1-5%	Negative	No cultural material encountered. Terminated at basal clay.
SS015	NA	0-30	10YR 4/3	brown	Clay Loam	1-5%	Negative	No cultural material encountered. Terminated at basal clay.
SS016	NA	0-40	10YR 3/2	very dark grayish brown	Clay Loam	5-10% Calcium Carbonate, Mottles, Snail Shell	Negative	No cultural material encountered. Terminated at basal clay.
SS017	NA	0-40	10YR 3/2	very dark grayish brown	Clay Loam	5-10% Calcium Carbonate, Mottles, Snail Shell	Negative	No cultural material encountered. Terminated at basal clay.
SS018	NA	0-15	10YR 3/2	very dark grayish brown	Clay Loam	1-5% Mottles	Negative	No cultural material encountered. Terminated at disturbed.
SS019	NA	No Dig	–	–	–	–	Negative	Paved parking lot.
SS020	NA	0-45	10YR 3/1	very dark gray	Clay Loam	1-5%	Negative	No cultural material encountered. Terminated at basal clay.
SS021	NA	0-65	10YR 3/1	very dark gray	Clay Loam	1-5%	Negative	No cultural material encountered. Terminated at basal clay.
SS022	41BX2270	0-13	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at depth.
SS023	41BX2270	0-13	10YR 3/2	very dark grayish brown	Clay	>20% Cobbles, Gravels, Large Rock Frags, Pebbles	Negative	No cultural material encountered. Terminated at depth.
SS024	41BX2270	0-20	7.5YR 3/1	very dark gray	Loam	1-5% Cobbles, Pebbles	Negative	No cultural material encountered.
		20-30	7.5YR 3/1	very dark gray	Clay Loam	5-10% Small Limestone fragments	Negative	No cultural material encountered.
		30-40	7.5YR 4/1	dark gray	Sandy Clay Loam	5-10% Limestone fragments	Negative	No cultural material encountered. Terminated at impenetrable gravel. greater than 20%.
SS025	41BX2270	0-20	10YR 2/1	black	Clay	>20% Cobbles, Gravels, Pebbles, Water	Negative	No cultural material encountered. Terminated at compact soil.

Test No.	Site	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Positive/ Negative	Comments/ Reason for Termination
SS026	NA	0-40	10YR 2/1	black	Clay Loam	10-20% Cobbles, Gravels, Pebbles, Water	Negative	No cultural material encountered. Terminated at compact soil.
SS027	NA	0-65	10YR 2/1	black	Clay Loam	10-20% Cobbles, Gravels, Pebbles, Water	Negative	No cultural material encountered. Terminated at compact soil.
SS028	NA	0-40	10YR 3/2	very dark grayish brown	Clay Loam	1-5% Snail Shell	Negative	No cultural material encountered. Terminated at basal clay.
SS029	NA	0-25	10YR 4/4	dark yellowish brown	Clay Loam	10-20% Gravels, Mottles, Pebbles, Snail Shell	Negative	No cultural material encountered. Terminated at basal clay.
CR001	NA	0-40	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR002	NA	0-50	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR003	NA	0-45	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR004	NA	0-40	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR005	NA	0-40	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR006	NA	0-50	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR007	NA	0-50	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR008	NA	0-45	10YR 3/1	very dark gray	Clay Loam	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.
CR009	NA	0-40	10YR 3/1	very dark gray	Clay	5-10% Gravels	Negative	No cultural material encountered. Terminated at compact soil.