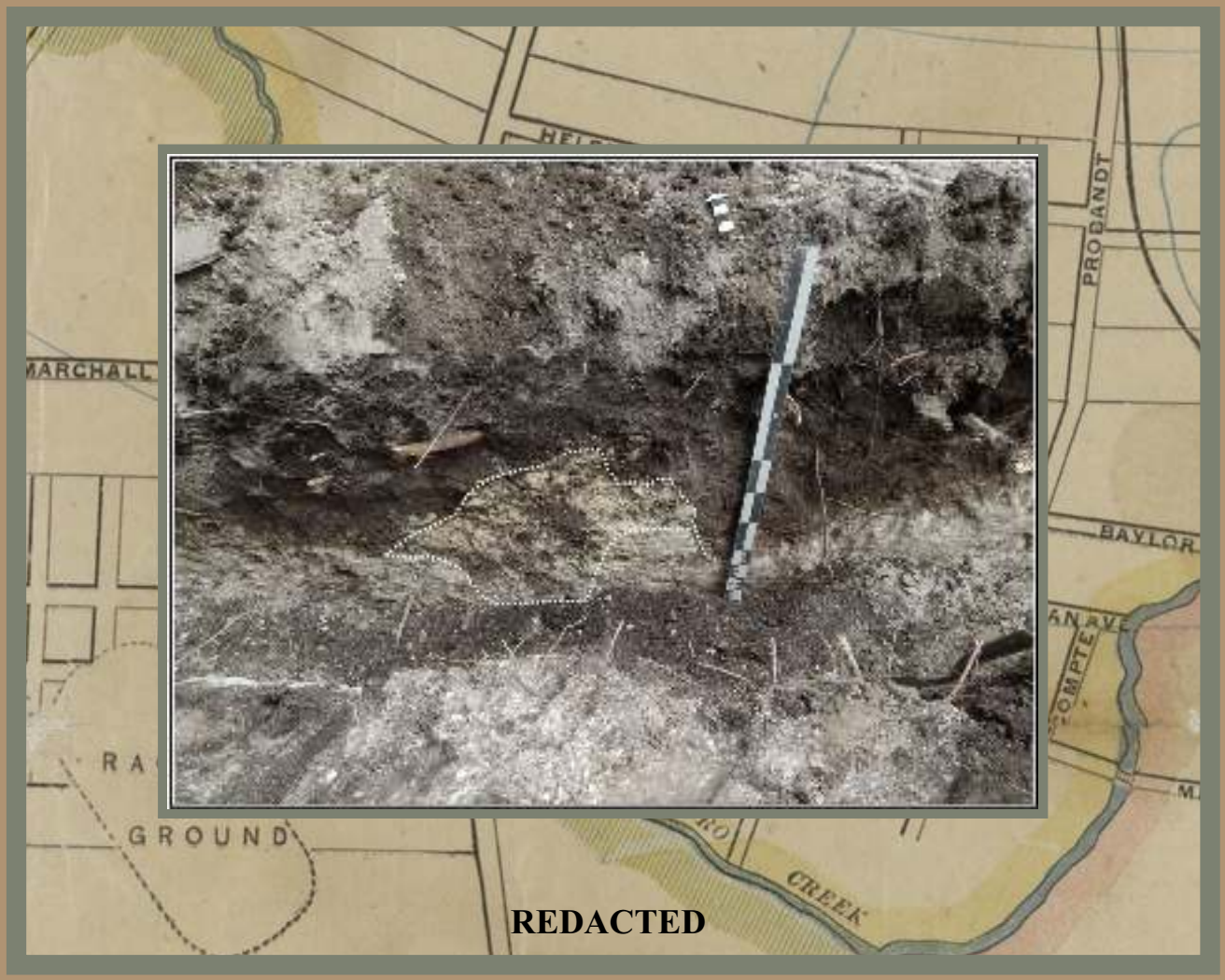
Archaeological Survey for 821 Probandt Subdivision Plat, San Antonio, Texas

by

Sarah Wigley



Principal Investigator
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Prepared for:
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Archaeological Report, No. 494

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Abstract:

On July 21, 2021, the Center for Archaeological Research (CAR) at the University of Texas at San Antonio (UTSA) completed an archaeological survey with backhoe trenching within a 0.37 ha (0.91-acre) private lot located in south-central San Antonio, Bexar County, Texas. The work was conducted in response to a request from 602 Roosevelt, LLC, in advance of development of the property. The City of San Antonio Office of Historic Preservation (COSA-OHP) requested an archaeological survey prior to development during the re-platting process due to concerns about the possible presence of the San Pedro Acequia (41BX337), a portion of the city's Spanish colonial irrigation system, on the property. The project falls under the Historic Preservation and Design Section of the COSA Unified Development Code, with COSA-OHP having review authority. Sarah Wigley served as the Project Archaeologist and Dr. Raymond Mauldin served as the Principal Investigator.

Backhoe trenching was conducted in areas of the property identified by archival resources as potential locations of the *acequia.* In total three backhoe trenches (BHTs) were excavated. Feature 1, a shallow, unlined ditch feature lacking cultural material, was recorded in the southwestern portion of the property, in alignment with the trajectory of the *acequia* depicted on an 1889 map. The feature was recorded as a section of site 41BX337, and avoidance of impact to the feature is recommended. No artifacts were collected during the course of the project. Records generated during the course of the project are permanently curated at the CAR as accession number 2441.

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Table of Contents:

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List of Figures:

List of Tables:

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Acknowledgements:

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Chapter 1: Introduction

On July 21, 2021, the CAR conducted an archaeological survey with backhoe trenching at 821 Probandt in response to a request from 602 Roosevelt, LLC. The COSA-OHP requested an archaeological survey of the property prior to development due to concerns about the possible location of the San Pedro Acequia (41BX337) on the property. The San Pedro Acequia is a portion of San Antonio's Spanish colonial irrigation system, constructed in the eighteenth century.

The project area is a roughly 0.37 ha (0.91 acre) section of private property bounded by Probandt Street on the east, and private property on the north, south and west, located in south-central San Antonio, Bexar County, Texas (Figure 1-1). The project falls under the Historic Preservation and Design Section of the COSA Unified Development Code, with COSA-OHP having review authority. Sarah Wigley served as the Project Archaeologist and Dr. Raymond Mauldin served as the Principal Investigator.

Figure 1-1. Project area.

Three backhoe trenches were excavated on the property. Feature 1, an unlined section of the San Pedro Acequia (41BX337), was documented in BHT 1 on the western side of the property. No artifacts were collected, and the only cultural materials noted were clear safety glass and modern beer bottle fragments. The San Pedro Acequia is a designated National Historic Civil Engineering Landmark, and has previously been found eligible for the National Register of Historic Places (NRHP) and designation as a State Antiquities Landmark (SAL). Impact to this site should be avoided during development. Records generated during the course of this project will be permanently curated at the CAR.

Report Organization

This report consists of five chapters, including this introduction. Chapter 2 provides a discussion of the project area background, including a review of the project area environment, culture history, and previous archaeology conducted in the area. Chapter 3 discusses the field and laboratory methods employed during the course of the project. Chapter 4 provides a discussion of the results of the investigations. Chapter 5 includes a project summary as well as the CAR's recommendations.

Chapter 2: Project Background

This chapter provides a discussion of the natural environment and culture history of the project area. The chapter concludes with a discussion of the previous archaeological investigations conducted in the area.

Environment

The city of San Antonio is positioned where the southernmost Great Plains meet the Gulf Coast, demarcated by the Balcones Escarpment (Petersen 2001). The Balcones Escarpment is the result of a series of faults found between the Edwards Plateau and the Gulf (Eckhardt 2021). The city is also located near a significant climate boundary, partitioning a humid-subtropical zone to the east from a semi-arid zone to the west (Petersen 2001). The city's location near these significant geological and climactic boundaries results in a varied resource base, which attracted settlers of European descent as well as Native Americans to the region (de la Teja 2001). The area contains a number of reliable freshwater sources, many of which, including the San Antonio River, are fed by freshwater artesian springs created by the fault zone, as well as the Edwards Aquifer, located south of the Edwards Plateau (Eckhardt 2021; Peterson 2001). Northern Bexar County is located within the borders of the Balconian biotic province, which is described as an intermediate ecological area between the eastern forest and the western desert, while south and southeastern Bexar County is within the Tamaulipan biotic province, which has a semi-arid climate and is dominated by thorny brush (Blair 1950).

Bexar County's climate is subtropical-subhumid. Average high temperatures range from 17 degrees Celsius (62 degrees Fahrenheit) in January to 36 degrees Celsius (96 degrees Fahrenheit) in July, and average lows range from 4 degrees Celsius (39 degrees Fahrenheit) in January to 23 degrees Celsius (73 degrees Fahrenheit) in July (Long 2020). The annual rainfall is highly seasonal and variable from year to year (Peterson 2001), but averages 79 cm (31 in; Long 2020). The growing season, on average, lasts 265 days a year, with freezes beginning in late November and ending in early March (Long 2020).

The project area is located between the San Pedro Creek and the San Antonio River, approximately 740 meters (2,428 ft) north of the confluence of the two waterways. These permanent sources of fresh water, both spring fed, were some of the most important natural resources in the San Antonio area, attracting both prehistoric and historic settlement (de la Teja 2001; Eckhardt 2021). The creek and the river both experienced decreases in flow due to the drilling of wells into the aquifer in the nineteenth century. Flooding of both water sources and the resulting destruction has been an issue throughout the city's history, and in response channelization and other significant modifications have been carried out (Eckhardt 2021). The project area is primarily undeveloped aside from two residences on the eastern boundary. Today, the surrounding area is a mix of residential and commercial development. Elevations within the project area are 191-194 m (627-637 ft) above sea level.

Soils within the project area consist of Patrick soils (PaB; Figure 2-1). These soils are found on paleo terraces of one to three percent slopes and rarely flood. They are not prime farmland. They consist of a layer of clay loam over a layer of very gravelly sand, and reach depths of more than 203 cm (80 in). They are well drained (NRCS 2021).

The project area is part of the Southern Chalky Ridge ecological site (NRCS 2021). This ecological site is a tallgrass prairie characterized by soils that are high in calcium carbonate. The tallgrass prairie was historically dominated by tall perennial bunchgrasses, including big bluestem (*Anthropogon gerardii*), Indiangrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). A wide variety of forbs, midgrass species, and mottes of live oak (*Quercus virginiana*) and hackberry (*Celtis* spp.) are also present. Faunal species characteristic of the site include bobwhite, mourning dove and white-tailed deer. More than 99 percent of the original vegetation of this ecological site has been lost since the nineteenth century, first to agriculture, and later to urban development (NRCS 2021).

Culture History

The project area locale includes significant prehistoric and historic sites. A general review is provided for these periods.

Prehistoric Texas

The prehistoric record in Texas is generally divided into the Paleoindian, Archaic, and Late Prehistoric periods. Many of the recorded prehistoric sites in Bexar County are associated with the deposits surrounding the San Antonio River (THC 2021). Bexar County's archaeological record has been included in reviews of both Central (Collins

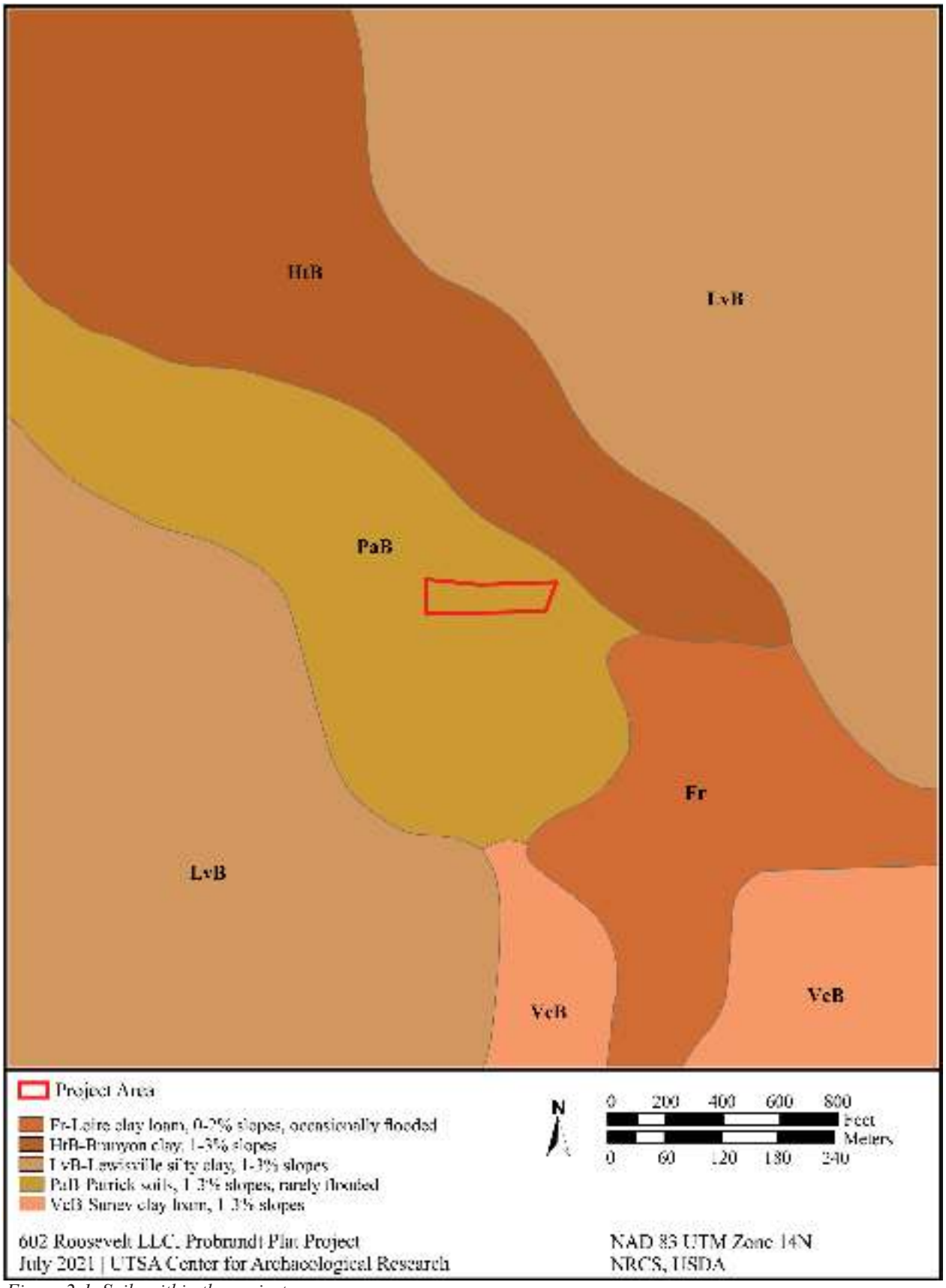

Figure 2-1. Soils within the project area.

2004) and South (Hester 1980) Texas as the county is near the cultural area boundary between the two as commonly drawn by archaeologists. The following summary generally follows a Central Texas chronology.

The Paleoindian period in Central Texas spans 13,000-9000 BP. In-depth reviews of this time period are available (see Bousman et al. 2004). Groups inhabiting the area during this period are generally characterized as highly mobile (Bousman et al. 2004). Temporally diagnostic artifacts from the period include Folsom and Clovis points, among others (see Turner et al. 2011). Faunal remains from Paleoindian components on sites such as Lubbock Lake (41LU1) and Wilson-Leonard (41WM235) suggest a broad subsistence base (Bousman et al. 2004). Within Bexar County, multiple sites have Paleoindian components. These include the St. Mary's Hall site (41BX229; Hester 2020), and the Richard Beene site (41BX831; Bousman et al. 2004; McGraw and Hindes 1987; Thoms and Clabaugh 2011).

The Archaic period in Central Texas ranges from 9000-1200 BP. The period is characterized by several technological developments, including an increased diversity of material culture and the use of heated rock technology (Carpenter and Hartnett 2011; Collins 2004; Johnson and Goode 1994; Thoms and Clabaugh 2011). The period is often subdivided into Early, Middle and Late Archaic periods (see Collins 2004; Hester 2004). Temporally diagnostic artifacts from the Early Archaic period (9000-6800 BP) include Angostura, Early Split Stem, and Martindale-Uvalde dart points, among others (Collins 2004). The Middle Archaic spans 6800-4200 BP. Temporally diagnostic artifacts from this period include Calf Creek, Bell-Andice, Nolan, and Travis points, among others (Collins 2004; Turner et al. 2011). The Late Archaic spans 4200-1200 BP. Temporally diagnostic artifacts from the Late Archaic include a wide variety of types, with Pedernales, Ensor, and Frio points common (Collins 2004). Many Archaic Period components have been recorded in Bexar County, including 41BX1 (Olmos Dam; Lukowski 1988; Orchard and Campbell 1954), 41BX17 (Munoz et al. 2011; Schuetz 1966; Wigley 2018), 41BX323 (Figueroa and Dowling 2007; Houk et al. 1999; Houk and Miller 2001; Katz and Fox 1979; Meskill et al. 1995; Meskill et al. 2000; Miller et al. 1999; Miller and Barile 2001), and 41BX1396 (Barile et al. 2002; Carpenter et al. 2008; Katz and Fox 1979).

The Late Prehistoric period begins at 1200 BP and terminates around 350 BP (see Carpenter 2017; Kenmotsu and Boyd 2012). The time period is divided into two intervals, Austin (1200-750 BP) and Toyah (750-350 BP). The period is characterized by a shift to bow and arrow technology, evidenced by arrow points such as Scallorn and Perdiz (Collins 2004). The Toyah style interval of this period also includes the adoption of ceramic technology (Collins 2004). There is evidence that burned rock middens increased in use (Black et al. 1997; Mauldin et al. 2003). Bison remains are common on Late Prehistoric sites (Mauldin et al. 2012), though they may have been more intensively exploited toward the end of the period (Lohse et al. 2014). Sites with significant Late Prehistoric components in Bexar County include 41BX256 (Osburn et al. 2007; Padilla and Nickels 2010; Padilla and Trierweiler 2012; Scurlock et al. 1976) and site 41BX323 (Figueroa and Dowling 2007; Houk et al. 1999; Houk and Miller 2001; Katz and Fox 1979; Meskill et al. 2000; Miller et al. 1999; Miller and Barile 2001), discussed previously, which also includes a Late Prehistoric component.

Historic Texas

In Central Texas, the historic period began with the first documented appearance of Europeans in AD 1528. Although early interactions between Europeans and Native People in the area were infrequent, the lifeways of the indigenous populations were still significantly impacted by the spread of disease brought to the continent by European settlement as well as the arrival of Native American groups from other regions of North America fleeing European incursions (Foster 1998; Kenmotsu and Arnn 2012).

In 1519, following the Alonso Álvarez de Pineda voyage, Spain laid claim to the area that would become Texas but made little attempt to establish settlement (Chipman and Joseph 2010). Motivated by concerns about the French colonization in Louisiana in the early 1700s and encroachment into Texas in 1685 by René-Robert Cavelier, Sieur de la Salle's expedition, the Spanish government endeavored to strengthen its hold on Texas, which previously was sparsely populated by Europeans (Cruz 1988). Missions established in East Texas in the early 1700s were intended to secure Spain's hold on the area. Additionally, a Spanish expedition intending to initiate contact with the indigenous population and prevent them from establishing trade relationships with the French reached San Pedro Springs in present-day San Antonio on April 13, 1709 (Cruz 1988).

The primary institutions Spain employed to secure its colonies were the missions, intended to assimilate the indigenous population through religious conversion; the presidio, which played a military defensive role; and the establishment of chartered town settlements (Cox 1997; de la Teja 1995). The mission and the presidio were intended to be transitory institutions, whose land and possessions would ultimately be distributed among successfully converted indigenous

families (de la Teja 1995). The Spanish Colonial *acequia* system in San Antonio was established to serve as a source of water and irrigation for the individuals associated with these institutions. San Antonio is one of the few large cities of Spanish origin that still contains traces of its original *acequia* system, spanning more than 80 km (50 mi.; Cox 2005).

Mission San Antonio de Valero (41BX6), the first Spanish settlement established in what would become San Antonio, was founded on May 1, 1718, on the west bank of the San Antonio River south of San Pedro Springs (Habig 1968:38). The Presidio de Béxar and the Villa de Bexar were established four days later. Initially, these settlements were located near San Pedro Springs, possibly within modern-day San Pedro Park (Meissner 2000), although firm archaeological evidence of these early settlements is lacking. The mission was moved to the east bank of the San Antonio River about a year later, and it was moved a third time to its final location following storm damage in 1724 (Habig 1968:44). The villa and presidio were relocated in 1722 (Habig 1968:38). Archaeological material associated with this second location of the presidio, including a Spanish Colonial sheet midden, have been documented at site 41BX2088 (McKenzie et al. 2016).

Four more missions were founded to the south along the San Antonio River between 1720 and 1731 (de la Teja 1995). Mission San José (41BX3) was founded by the College of Nuestra Senora de Guadalupe at Zacatecas in 1720 near or at the future location of Mission Concepción. It was moved to its present location sometime in 1721, possibly due to conflict with Mission Valero. Missions Concepción (41BX12), San Juan (41BX5), and Espada (41BX4) were founded by the Franciscan college at Queretaro and moved from East Texas in 1731 due to escalating conflict with France in that area. Mission Concepción was founded in the vicinity of two previously abandoned mission sites and likely used some of the existing infrastructure from those previous attempts at colonization, including partially constructed *acequia* systems. The Concepción, or Pajalache, Acequia (41BX1887) is traditionally considered the oldest of the mission *acequia* systems, although its exact construction date has never been determined (Cox 2005; Ivey 2018). Missions San Juan Capistrano and Mission Espada are the southernmost of the San Antonio missions. Construction of more permanent buildings and improvements to existing structures at the missions continued gradually until the 1790s, when secularization began; a detailed structural history of the San Antonio missions is provided by Ivey (2018). Archaeological work at the missions over the years has documented construction history and lifeways of mission inhabitants; summaries of work conducted in the San Antonio mission environs are provided by Scurlock and colleagues (1976), Ivey and Fox (1999) and Ivey (2018). Construction of the missions' *acequia* systems began early in their history due to their significance to the success of the settlements.

Although an early, unofficial town settlement associated with the presidio began to develop with the arrival of presidio soldiers and their families, this settlement lacked legal status (de la Teja 1991). The arrival of a group of immigrants from the Canary Islands in 1731 marked the establishment of the Villa de San Fernando de Béxar (de la Teja 1995; Poyo 1991). The villa was granted water rights to the San Pedro Creek (de la Teja 1995). The early years of the settlement were marked with conflict between the villa, the missions, and the earlier settlers, particularly over land and irrigation (de la Teja 1991, 1995; Poyo 1991). An *acequia* for the new settlement, the San Pedro (41BX337) was in operation by 1735 (Cox 2005: 35). The San Pedro Acequia was approximately 6.4 km (4 mi) in length, and watered 161 ha (400 ac) south of the villa (Cox 2005). It ran south from San Pedro Springs between San Pedro Creek and the San Antonio River (Cox 2005), returning to the San Antonio River about 455 m (1,493 ft) south of the project area.

The Zacatecan College took over administration of all the San Antonio missions in 1772. Secularization of the missions began in 1793 (Cox 1997; de la Teja 1995; Ivey 2018). The Mission Valero compound subsequently served primarily a military function in the city, and it was, significantly, the site of the Battle of the Alamo in 1836. The other missions were not fully secularized until 1824, when their churches and furnishings were inventoried and surrendered (Habig 1968).

After partial secularization in 1794, the secular properties of the lower missions (Missions San José, Concepción, San Juan, and Espada), including houses, *acequias*, and fields, became the property of the Native American inhabitants of the missions. Mission Concepción became a *visita*, or subordinate church, of Mission San José after 1794, and Mission Espada became a *visita* of Mission San Juan. There was significant decline in the number of inhabitants at Mission San José and Mission Concepción after 1794. Buildings fell into disrepair, and Mission Concepción was abandoned by 1813, following considerable conflict in the area. Both Mission San Juan and Mission Espada remained inhabited. The number of Hispanic occupants at Missions San Juan and Espada increased as Native Americans abandoned the settlements, and the military remained until the 1830s. After secularization, mission buildings experienced significant decay, and at Concepción stone from the mission buildings was sold for use in large institutional projects into the 1840s (Ivey 2018).

A failed uprising for independence from Spain in 1812 depleted San Antonio's population and negatively affected the city's development for decades (Cox 1997). Mexico gained independence from Spain in 1821, and Texas became part of the state of Coahuila. Texas revolted against Mexico in 1835. Mexican General Martín Perfecto de Cos fortified the old Mission Valero against the Texans, including diverting a branch of the *acequia* to flow outside the mission compound (Cox 1997). An early engagement, the Battle of Concepción, occurred in the vicinity of the project area (Meissner et al. 2007). The Texans defeated General Cos, but they were defeated themselves by Santa Anna after a 13-day siege in 1836 in what became known as the Battle of the Alamo (Cox 1997). A number of sites downtown include features associated with this military activity, including a trench associated with General Cos' occupation of Main Plaza at 41BX1752 (Hanson 2016) and a Mexican fortification trench associated with the Siege of Bexar at 41BX2170 (Kemp et al. 2019). In the fall of 1836, Santa Anna was ultimately defeated, and Texas became a Republic (Cox 1997).

During the century that followed Texas' break with Mexico, San Antonio saw considerable growth despite the impact of numerous conflicts. In December of 1837, San Antonio was incorporated as one of the early acts of the newly established Republic of Texas. A number of epidemics impacted the city's population during the early- to mid-1800s, spread in part by pollution of the city's *acequia* system. The city attempted to combat the issue by establishing standards of cleanliness, but the issue remained ongoing (Cox 2005). After a turbulent period in which Texas saw conflict with both Mexico, which did not accept the new Republic's independence, and local Native American groups, Texas became part of the United States in 1846 (Cox 1997).

In the 1840s, a number of French and German immigrants began to settle in San Antonio and the surrounding area. By the 1850s, recent European settlers outnumbered the Mexican and Anglo populations in the city (Cox 1997). Texas seceded from the United States, joined the Confederacy in 1861, and primarily served a supply role during the Civil War. Five years later, Texas surrendered to the Union and rejoined the United States (Wooster 2021).

The arrival of the railroad in 1877 resulted in significant growth in San Antonio (Cox 1997). The late 1800s saw infrastructure and economic development throughout the city, including water, electric, and gas utilities (Heusinger 1951). The City attempted to update the *acequia* system with the construction of new ditches, including the construction of the Alazán ditch in 1875. The adoption of the new water works system in 1878 transformed the *acequia* system into, primarily, a drainage system, and water flow was reduced in the 1890s due to the increased drilling of wells. As a result of these infrastructural changes in the city, as well as ongoing cleanliness issues, the San Pedro Acequia was the last urban *acequia* to be closed in 1912 (Cox 2005). The San Juan and Espada Acequias were the only ditches that remained in operation, maintained by private ditch companies for farming (Cox 2005).

Previous Archaeology

A review of the Texas Archaeological Sites Atlas identified eight sites within a 1 km (0.6 mi) radius (Table 2-1, Figure 2-2). The archaeological sites span the prehistoric through the historic periods, and include historic structures, irrigation ditches, and prehistoric occupations. The project area is also located immediately west of the Mission Parkway Historic District, which is bounded by Probandt Street.

Site 41BX12, Mission Concepción is located approximately 681 m (2,234 ft) southeast of the project area. Mission Concepción is a Spanish colonial mission. It has been designated as a State Antiquities Landmark (THC 2021),

Table 2-1. Archaeological Sites Located Within 1 km (0.6 mi) of the Project Area

Trinomial	Time Period	Description
41BX12	Spanish colonial	Spanish colonial mission
41BX257	Spanish colonial/historic	Residence
41BX278	Early 19th century	Historic house and mill
41BX1665	Late Prehistoric	Occupation
41BX1887	Spanish colonial	Irrigation ditch
41BX2017	Late 19th and early 20th century	Residential/commercial
41BX2171	Historic	Well
41BX2179	Transitional Archaic	Lithic scatter/occupation
41BX2357	Prehistoric/historic	Burned rock scatter, engineered structure

Figure 2-2. Previously recorded archaeological sites within 1 km (0.6 mi) of the project area.

is listed on the National Register of Historic Places (THC 2021), and is part of the Mission Historic District (Clark et al. 1975), the San Antonio Missions National Historic Park (NPS 2021), and the San Antonio Missions UNESCO World Heritage Site (UNESCO 2021). The site has been the subject of numerous previous archaeological projects, beginning in the 1930s (Ivey and Fox 1999). Kemp (2020) provides a discussion of previous excavations at the site in his report on the CAR's recent work at the mission. Much of the work has been associated with the installation of utilities and infrastructure.

The Padre Navarro House (41BX257) was originally recorded during the Mission Parkway Survey (Scurlock et al. 1976). The site is located about 880 m (2,887 ft) south of the project area near San Pedro Creek. It consists of a caliche block house constructed in the early 1800s, known for its occupation by Padre Navarro, a parish priest from Mission Concepción, and Roy Bean, a Texas judge who lived in the house in the 1870s (Scurlock et al. 1976; THC 2021).

The Yturri-Edmunds house and mill (41BX278) was originally recorded during the Mission Parkway Survey (Scurlock et al. 1976). The site is located approximately 931 m (3,055 ft) south of the project area. At the time it was recorded, the mill was thought to date to 1824, as that was the date Manuel Yturri Castillo received a grant for the land (Scurlock et al. 1976). However, later investigations conducted by GMI suggest the mill was already present on the property and is Spanish Colonial in age, with a likely construction date of 1807 (Iruegas et al. 2009). The site was recommended as eligible for the NRHP and is a part of the Mission Historic district.

Site 41BX1665 is a Late Prehistoric site recorded in 2006 in Roosevelt Park by Abasolo Archaeological Consultants (THC 2021). The site is located approximately 795 m (2,608 ft) east of the project area. Chipped stone and fire-cracked rock were recovered from the surface and to a depth of 1.5 m (5 ft) in backhoe trenches, and the site was considered potentially associated with the mission period. Site 41BX1665 was designated as a SAL in 2007 (THC 2021). The site has also been recommended as eligible for the NRHP (THC 2021). Further testing conducted in 2009 (Ahr and DeFreece Emery 2010) expanded the site boundaries, and revealed that it contained potentially intact and stratified deposits dating to the Late Prehistoric and/or Early Historic periods. The site was revisited during a monitoring project conducted by Raba-Kistner in 2019, which found the site disturbed in the areas monitored (Whitaker 2021).

Site 41BX1887 is the Concepción Acequia (Hanson 2011). The *acequia* had been documented in previous investigations associated with the mission (Ivey and Fox 1999; Tennis et al. 2001), but had not been formally assigned a trinomial. The portion recorded as 41BX1887 is located about 950 m (3,117 ft) east of the project area and was documented in 2011 by PBS&J during the course of the Mission Road Realignment Project (Hanson 2011). It was recorded as a deep, wide earthen ditch feature containing significant dumping of late 19th to early 20th century artifacts.

Site 41BX2017 was recorded by Terracon during the course of a survey in 2014 (THC 2021). The site consists of a thin scatter of Late Historic material, located about 974 m (3,196 ft) north of the project area. The material is related to residential expansion of the city in the late statehood period and later components to industrial development of the area. No cultural features were recorded. The site was found to be lacking in research potential and no further work was recommended.

Site 41BX2171 is a historic well recorded by Pape-Dawson Engineers in 2015. The site is located about 931 m (3,055 ft) north of the project area. The feature consists of a dry-stacked limestone cobble well that remains about 75 percent intact. Further archival research was recommended to determine the well's significance (THC 2021).

Site 41BX2179 is an Archaic to Late Prehistoric period site located about 579 m (1900 ft) east of the project area along the San Antonio River. A Frio point was recovered from the site, and a feature at the site returned two radiocarbon dates falling between 680 BP and 1050 BP. It was recorded during the course of the Lone Star Brewery District project by Pape-Dawson Engineers in 2017 (THC 2021). Deposits including chipped stone, FCR, burned clay, charcoal, and various historic materials extended to a depth of 115 centimeters below surface (cmbs; 45 in) in backhoe trenches. No further work was recommended.

Site 41BX2357 is a site containing both prehistoric and historic materials recorded during the course of the CPS Energy Ballpark project by Raba Kistner in 2020 (THC 2021). The site is located about 605 m (1,985 ft) east of the project area near the San Antonio River. The site included a burned rock scatter and the remains of a wooden post extending from 20-91 cmbs (8-36 in). It was recommended as ineligible for the NRHP or designation as a SAL within the project area.

Archaeological Background of San Pedro Acequia (41BX337)

A section of the San Pedro Acequia was documented in 1977 by CAR on the grounds of the Commander's House

on Flores Street in central San Antonio. The *acequia* was initially exposed in a plumbing trench. It had been capped with a thin layer of cement. The *acequia* was stone lined, measuring 150 cm (5 ft) in width with walls approximately 50-60 cm (1.6-2 ft) wide and a channel 105 cm (3 ft) deep. A small gate opening into a stone-lined lateral ditch was also documented. The only artifacts recovered from the *acequia* were brick fragments and a mule shoe (Fox 1978).

The site trinomial (41BX337) was recorded by CAR in 1979 (Valdez and Eaton 1979). A portion of the *acequia* was encountered during backhoe trenching by CAR in 1979 south of the U.S. Arsenal. The two northernmost sections identified were unlined, while two stone-lined sections of a bend in the *acequia* were recorded near Flores and Johnson streets. All identified sections were 1-20 m (3-66 ft) north and west of the projected alignment based on archival review (Valdez and Eaton 1979). Further investigation of the area (Frkuska 1981) revealed the *acequia* had been re-routed at one point, and both unlined and stone-lined sections were present. Ceramic, glass, and metal artifacts were recovered.

Lined and unlined portions of the San Pedro Acequia (41BX337) have continued to be encountered during the course of construction projects in San Antonio (THC 2021). Multiple sections of the San Pedro Acequia have been documented near the current VIA Metropolitan Transit headquarters (Cox 1986, 1993). The section previously documented nearest to the project area was recorded by SWCA in 2019 on Cevallos Street, about 1.2 km (0.7 mi) north of the project area. This section was unlined and contained historic fill dating to the 19th and early 20th centuries. The feature was documented at 30 cmbs (12 in; THC 2021). Review of historical maps of the area (COSA-OHP Acequia Maps and J.J. Olson and Sons 1889 Map) indicated that the San Pedro Acequia was projected to cross the project area, in slightly different locations (Figure 2-3).

Figure 2-3. Projected trajectories of the acequia within the project area.

Chapter 3: Methodology

This chapter details the field and laboratory methods employed during this investigation. The discussion includes analytical definitions, methods of excavation, laboratory processing methodology, and curation standards.

Field Methods

The scope of work prepared for COSA-OHP proposed the excavation of two backhoe trenches (BHT) along the projected trajectory of the *acequia* (41BX337) based on two different archival maps. The goal of this configuration was to intersect the potential alignment the San Pedro Acequia (41BX337). A third trench (BHT 3) was excavated west of BHT 1 in order to try to locate the more northern portion of Feature 1.

Trenches were on average 10-15 m (33-49 ft) in length, with the exception of BHT 3, which was shorter (2.4 m), and excavated in order to specifically target Feature 1. Backhoe trenches were approximately 1 m (3.3 ft) wide, and 1.5 m (4.9 ft) deep unless a feature or other obstruction was encountered. Backhoe excavations followed guidance as established by OSHA Trenching and Safety Standards.

A standard form was completed for all trenches. Archaeologists produced measured drawings of a 1 m (3.3 ft) representative section of the stratigraphy of each trench, including descriptions of soil type. Trench profiles were photographed. Prior to documentation, the soil stratigraphy and backdirt were examined for evidence of cultural material. No artifacts were collected during the course of this project. All BHT locations were recorded using a Trimble Geo XT GPS unit and hand-sketched onto aerial photographs.

When features were encountered, excavation was halted, and the City Archaeologist was notified. Features were documented using a standard form and photographed, supported by hand-drawings where appropriate. Their locations were recorded by GPS. The Project Archaeologist maintained a daily log of activities. Activities documented in this log were supported by digital data, including GPS observations and photographs. A photographic log was maintained in addition to the daily log.

Laboratory Methods

All records obtained and/or generated during the project were prepared in accordance with 36 CFR part 79 and THC requirements for State Held-in-Trust collections. Digital photographs were printed on acid-free paper, labeled with archivally appropriate materials, and placed in archival-quality sleeves. All field forms were completed with pencil. Upon completion of the project, all project-related documentation was permanently curated at the CAR as accession number 2241.

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Chapter 4: Project Results

On July 21, 2021, CAR excavated three exploratory backhoe trenches within the project area (Figure 4-1). Feature 1, identified as an unlined segment of the San Pedro Acequia (41BX337), was recorded during the course of trenching. The feature is small, shallow, and lacking in cultural material, but corresponds roughly with the *acequia* trajectory depicted on the 1889 J.J. Olson map. No other features were observed during the course of backhoe trenching, and no artifacts were collected.

Backhoe Trenches

In total, three backhoe trenches were excavated within the project area (Figure 4-2). The portion of the project area subject to testing is undeveloped, and partially wooded, with brush recently cleared from the surface. Several shallow depressions were noted at the surface, as well as modern trash such as plastic and glass containers. No artifacts or cultural features were noted. The first two trenches, BHTs 1 and 2, were placed in order to intersect the projected trajectory of the *acequia* identified in historical maps. Feature 1 was documented within BHT 1. The third trench, BHT 3, was placed in order to attempt to intersect the projected path of Feature 1 along the north side of the property.

BHT 1

BHT 1 was located in the southwest quadrant of the property. It was intended to target the projected trajectory of the *acequia* depicted on the 1889 JJ Olsen map. It extended 12 m (39 ft) and was oriented east to west. It was 70 cm (26 in) wide and reached a maximum depth of 107 cm (42 in). Soils were shallow, and consisted of three layers. Layer 1 was a soft, dark grayish brown (10YR 4/2)

Figure 4-1. BHT and feature locations within the project area.

clay loam containing a great deal of roots, extending from approximately 0-30 cmbs (0-12 in). Layer 2 consisted of more compact very dark grayish brown (10YR 3/2) clay soils, extending from approximately 30-75 cmbs (12-30 in). Layer 3 consisted of white caliche soils (10YR 8/1) extending from approximately 75-107 cmbs (30-42 in; the trench termination). Soils were culturally sterile, with the exception of a small amount of modern trash (brown container glass, likely from a beer bottle) in the first 15 cmbs (6 in). Feature 1 was identified in both profiles of BHT 1, at the far western end of the trench.

Feature 1

Feature 1 was recorded in the north and south profiles of BHT 1 (Figure 4-3). It consisted of a ditch-shaped feature in the trench profile, containing mottled very pale brown caliche gravels (10YR 8/2) in dark grayish brown silty clay (10YR 4/2). No artifacts were observed associated with the feature. It was identified at 40 cmbs (16 in). The feature was 70 cm (28 in) wide and extended to the caliche soils, approximately 90 cmbs (35 in). The feature aligns closely with the projected trajectory of the *acequia* on the 1889 map. While the feature is quite small and shallow for an *acequia* alignment, it would have been at the far southern end of the *acequia*, in an area that was still undeveloped during the period that the *acequia* was closed. Additionally, the shallow soils could have contributed to the small size of the feature within the project area.

BHT 2

BHT 2 was located in the central portion of the project area. The trench was intended to target the possible *acequia* trajectory depicted on the COSA-OHP Acequia Maps. It extended 14 m (46 ft) and was oriented east to west. The trench was 70 cm (28 in) wide and reached a maximum depth of 110 cmbs (43 in). The soil profile was very similar to BHT 1, consisting of three layers (Figure 4-4). Layer 1 was soft, very dark gray (10YR 3/1) clay loam containing a great deal of roots, extending from approximately 0-40 cmbs (0-16 in). Layer 2 consisted of more compact, very dark grayish brown

Figure 4-2. View of the project area facing east.

Figure 4-3. Feature 1 in the north profile of BHT 1, outlined in white.

Figure 4-4. BHT 2 south profile.

(10YR 3/2) clay, extending from approximately 40-90 cmbs (16-35 in). Layer 3 consisted of powdery white caliche soils (10YR 8/1), extending from 90 cmbs (35 in) to the trench termination at 110 cmbs (43 in). No cultural features or artifacts were observed within the trench, with the exception of small amount of modern trash (clear safety glass and brown bottle glass) in the first 15 cmbs (6 in).

BHT 3

BHT 3 was located in the northwest quadrant of the project area, about 20 m (66 ft) north of BHT 1. It was intended to intercept the alignment of Feature 1 at the northern edge of the property. The trench was 2.4 m (8 ft) long and 80 cm (32 in) wide, and oriented east to west. The trench reached a maximum depth of 45 cmbs (18 in) before excavation could not continue because limestone bedrock was encountered at 35 cmbs (14 in). The bedrock was examined to ensure that it was not part of a limestone structure, but was clearly natural and continuous across the length and width of the trench (Figure 4-5). No evidence of Feature 1 was identified in BHT 3, and no cultural material was observed. Potentially, the path of the *acequia* would have had to divert around this high portion of bedrock in order to flow through this area.

Figure 4-5. BHT 3 termination; note limestone bedrock.

Summary

Three backhoe trenches were excavated within the 0.37 ha (0.91 acre) project area in an attempt to locate the San Pedro Acequia (41BX337). Feature 1, documented in BHT 1, was identified as a potential unlined segment of the *acequia*. There was no cultural material associated with the feature. No other features or cultural material were recorded within the project area.

Chapter 5: Summary and Recommendations

On July 21, 2021, CAR conducted an archaeological investigation with backhoe trenching of a lot located at 821 Probandt Street. The lot is private property in the process of being re-platted in advance of development. COSA-OHP requested an archaeological investigation of the property due to concern that the alignment of the San Pedro Acequia (41BX337) bisected the property.

Three backhoe trenches were excavated on the project. Feature 1 appears to be a shallow, unlined segment of the *acequia*. The feature was documented near the south western edge of the property within BHT 1. The features aligns with the trajectory of the *acequia* as depicted on an 1889 map of the area. No associated cultural material was encountered, and no artifacts were collected. No other features were encountered.

The San Pedro Acequia has previously been found eligible for the NRHP and designation as a SAL. CAR recommends that construction activities avoid the feature. However, should avoidance not be possible, then CAR recommends archaeological monitoring be initiated during any construction in the area of Feature 1. Should the *acequia*, or other buried cultural features be encountered during any construction, work in the immediate area should cease and COSA-OHP should be consulted on additional actions that may be necessary to protect or mitigate the cultural remains. Finally, note that all records generated during the course of this project, including a copy of this report, are curated permanently at the CAR curation facility on the UTSA Main Campus as accession number 2241.

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References Cited:

Ahr, S.W., and S.N. DeFreece Emery
2010 *Archeological and Historic Resources Survey of Two Alternative Playground Locations at Roosevelt Park in San Antonio Bexar County, Texas.* URS Miscellaneous Reports of Investigations, URS Corporation, Austin, Texas.

Barile, K.S., B.A. Houk, and K.A. Miller
2002 *A Cultural Resource Survey of the San Antonio Water System's Customer Distribution Line Project, City of San Antonio, Bexar County, Texas*. SWCA Cultural Resource Report No. 02-304.

Black, S.L., L.W. Ellis, D.G. Creel, and G.T. Goode
1997 *Hot Rock Cooking on the Greater Edwards Plateau: Four Burned Rock Midden Sites in West Central Texas.* Studies in Archeology 22. Texas Archeological Research Laboratory, The University of Texas at Austin. Archeology Studies Program, Report 2. Texas Department of Transportation Environmental Affairs Department, Austin.

Blair, W.F.
1950 *Biotic Provinces of Texas*. Texas Journal of Science, 1(2): 93-116.

Bousman, C.B., B.W. Baker, B.W., and A.C. Kerr
2004 Paleoindian Archaeology in Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 205-265. Texas A&M University Press, College Station.

Carpenter, S.M.
2017 The Toyah Complex of South and Central Texas: Long-range Mobility and the Emergence of Dual Economies. *Plains Anthropologist* 62(242):133-156.

Carpenter, S., M.C. Cody, and K. Miller
2008 Interim report-*Results of Archaeological Survey for the Brackenridge Park Renovation Project, City of San Antonio, Bexar County, Texas*. SWCA Interim Report 2008.

Carpenter, S., and C. Hartnett
2011 Archaic Macroeconomic Spheres: A Case Study from Fort Hood, Central Texas. *Bulletin of the Texas Archaeological Society* 82:223-251.

Chipman, D.E., and H.D. Joseph
2010 *Spanish Texas, 1519-1821*. Rev. ed. University of Texas Press, Austin.

City of San Antonio (COSA) Office of Historic Preservation (OHP)
2021 Acequia Maps. Electronic resource, https://www.sanantonio.gov/historic/Archaeology/Acequia Maps, accessed July 8, 2021.

Clark, J., A. Benavides, D. Scurlock, and D. Isham
1975 Mission Parkway. National Register of Historic Places Nomination Form. National Park Service.

Collins, M.B.
2004 Archeology in Central Texas. In *The Prehistory of Texas*, edited by T.K. Perttula, pp. 205-265. Texas A&M University Press, College Station.

Cox, I.W.
1986 *Excavations of Portions of the San Pedro Acequia (41BX337) and a Search for the Arocha Acequia, San Antonio, Texas.* Archaeological Survey Report, No. 161. Center for Archaeological Research, The University of Texas at San Antonio.

1993 *Excavation of a Portion of the San Pedro Acequia (41BX337) VIA Metropolitan Transit System Parking Lot, San Antonio, Bexar County, Texas*. Archaeological Survey Report, No. 219. Center for Archaeological Research, The University of Texas at San Antonio.

1997 The Growth of San Antonio. In *Archaeology at the Alamodome: Investigations of a San Antonio Neighborhood in Transition.* Volume 1, Historical, Architectural, and Oral History Research, edited by A.A. Fox, M. Renner, and R.J. Hard, pp. 8-44. Archaeological Survey Report, No. 236. Center for Archaeological Research, The University of Texas at San Antonio.

2005 *The Spanish Acequias of San Antonio*. Maverick Publishing Company, San Antonio.

Cruz, G.R.
1988 *Let There Be Towns: Spanish Municipal Origins in the American Southwest, 1610-1810*. Texas A&M University Press, College Station.

de la Teja, J.F.
1991 Forgotten Founders: The Military Settlers of Eighteenth Century San Antonio de Bexar. In *Tejano Origins in Eighteenth-Century San Antonio,* edited by G.E. Poyo and G.M. Hinajosa, pp. 27-41. University of Texas Press, Austin.

1995 *San Antonio de Bexar: A Community on New Spain's Northern Frontier.* University of New Mexico Press, Albuquerque.

2001 "A Fine Country with Broad Plains-the Most Beautiful in New Spain": Colonial Views of Land and Nature. In *On the Border: an Environmental History of San Antonio,* edited by C. Miller, pp 41-56. University of Pittsburgh Press, Pennsylvania.

Eckhardt, G.
2021 The Edwards Aquifer Website. Electronic document, edwardsaquifer.net, accessed July 30th, 2021.

Figueroa, A.L., and J.J. Dowling
2007 *Additional Phase II Testing at 41BX323 in Brackenridge Park, San Antonio, Texas.* Archaeological Report No. 377, The Center for Archaeological Research, The University of Texas at San Antonio.

Foster, W.C.
1998 *The La Salle Expedition to Texas: The Journal of Henri Joutel 1664-1687*. Texas State Historical Association, Austin.

Frkuska, A.J.
1981 *Archaeological Investigations at the San Pedro Acequia, San Antonio, Texas.* Archaeological Survey Report, No. 103. Center for Archaeological Research, The University of Texas at San Antonio.

Habig, M.A.
1968 *The Alamo Chain of Missions: A History of San Antonio's Five Old Missions.* Franciscan Herald Press, Publishers of Franciscan Literature, Chicago.

Hanson, C.
2011 *Intensive Archaeological Survey "Mission Trails" Enhancement Project, Package IV, Mission Road Realignment Bexar County, Texas*. Document No. 110001, PBS&J, San Antonio, Texas.

2016 *Archaeological Investigations for the Main Plaza Redevelopment Project, San Antonio, Bexar County, Texas*. Atkins, Austin.

Hester, T.R.
1980 11,000 Years of South Texas Prehistory. In *Digging into South Texas Prehistory,* pp. 131-164. Corona Publishing, San Antonio.

2004 The Prehistory of South Texas. In *The Prehistory of Texas,* edited by T.K. Perttula, pp. 127-155. Texas A&M University Press, College Station.

2020 St. Mary's Hall Site. Handbook of Texas Online, Texas State Historical Association. Electronic Resource, https://www.tshaonline.org/handbook/entries/st-marys-hall-site, accessed October 23, 2020.

Heusinger, E.W.
1951 *A Chronology of Events in San Antonio: Being a Concise History of the City Year by Year, From the Beginning of its Establishment to the End of the First Half of the Twentieth Century*. Standard Printing, San Antonio.

Houk, B. and K.A. Miller
2001 *The Brackenridge Park Rehabilitation Project Archaeological Survey, San Antonio, Bexar County, Texas.* SWCA Cultural Resource Report No. 00-331.

Houk, B.A., K.A. Miller, R.K. Meadows, and C.W. Ringstaff
1999 *Archaeological Investigations at 41BX323, Brackenridge Park, San Antonio, Bexar County, Texas*. SWCA Cultural Resource Report No. 99-67.

Iruegas, S.A., M.T. Iruegas, D. Hill, and V. Moore
2009 San Antonio Mission Trails Statewide Transportation Enhancement Project Volume III Construction Package IV: An Intensive Archaeological Survey and National Register Testing at Historic Yturri-Edmunds Mill, Roosevelt Park, and Eagleland Neighborhood, Bexar County, Texas. GTI Environmental Inc., Houston, Texas.

Ivey, J.E.
2018 *Of Various Magnificence: The Architectural History of the San Antonio Missions in the Colonial Period and the Nineteenth Century.* Center for Cultural Sustainability, The University of Texas at San Antonio.

Ivey, J.E., and A.A. Fox
1999 *Archaeological Investigations at Mission Concepción and Mission Parkway.* Archaeological Survey Report, No. 114. Center for Archaeological Research, The University of Texas at San Antonio.

Johnson, L., and G.T. Goode
1994 A New Try at Dating and Characterizing Holocene Climates, as Well as Archeological Periods, on the Eastern Edwards Plateau. *Bulletin of the Texas Archeological Society* 65: 1-51.

Katz, S.R., and A.A. Fox
1979 *Archaeological and Historical Assessment of Brackenridge Park, City of San Antonio, Texas.* Archaeological Survey Report no. 33, Center for Archaeological Research, the University of Texas at San Antonio.

Kemp, L.
2020 *Archaeological Monitoring and Sampling of Excavations at Mission Concepción (41BX12), San Antonio, Bexar County, Texas.* Archaeological Report No. 474, Center for Archaeological Research, the University of Texas at San Antonio.

Kemp, L., J.E. Zapata, C.M.M. McKenzie, M. Pfeiffer, and R. Curilla
2019 *Archaeological Monitoring of the Downtown Street Reconstruction Project at North Main Avenue and Soledad Street and the State Antiquities Landmark Testing of 41BX2164 and 41BX2170, San Antonio, Bexar County, Texas.* Archaeological Report, No. 462. Center for Archaeological Research, The University of Texas at San Antonio.

Kenmotsu, N.A., and J.W. Arnn
2012 The Toyah Phase and the Ethnohistoric Record: A Case for Population Aggregation. In *The Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes*, edited by N.A. Kenmotsu and D.K. Boyd, pp. 19-43. Texas A&M University Press, College Station.

Kenmotsu, N.A., and D.K. Boyd
2012 The Toyah Phase in Texas: An Introduction and Retrospective. In *The Toyah Phase of Central Texas, Late Prehistoric Economic and Social Processes,* edited by N.A. Kenmotsu and D.K. Boyd, pp. 1-18. Texas A&M University Press, College Station.

Lohse, J.C., D.B. Madsen, B.J. Culleton, and D.J. Kennett
2014 Isotope Paleoecology of Episodic Mid-to-late Holocene Bison Population Expansions in the Southern Plains, U.S.A. *Quaternary Science Reviews* 102:14-26.

Long, C.
2020 "Bexar County." Handbook of Texas, Texas State Historical Association. Electronic document, https://www.tshaonline.org/handbook/entries/bexar-county, accessed July 30, 2021.

Lukowski, P.D.
1988 *Archaeological Investigations at 41BX1, Bexar County, Texas.* Archaeological Report, No. 135. The Center for Archaeological Research, the University of Texas at San Antonio.

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

Mauldin, R., J. Thompson, and L. Kemp
2012 Reconsidering the Role of Bison in the Terminal Late Prehistoric (Toyah) Period in Texas. In *Toyah Phase of Central Texas: Late Prehistoric Economic and Social Processes,* edited by N.A. Kenmotsu, pp. 90-110. Texas A&M University Press, College Station.

McGraw, A.J., and K. Hindes
1987 *Chipped Stone and Adobe: A Cultural Resources Assessment of the Proposed Applewhite Reservoir, Bexar County, Texas.* Archaeological Report No. 163, Center for Archaeological Research, the University of Texas at San Antonio.

McKenzie, C.M.M., L. Martinez, and R. Mauldin
2016 *Archaeological Monitoring and Test Excavations at the 1722 Presidio San Antonio de Bexar (Plaza de Armas Buildings), San Antonio, Bexar County, Texas.* Archaeological Report, No. 445.Center for Archaeological Research, The University of Texas at San Antonio.

Meissner, B.A.
2000 *An Archaeological Assessment of San Pedro Park (41BX19), San Antonio, Texas*. Archaeological Survey Report, No. 269. Center for Archaeological Research, The University of Texas at San Antonio.

Meissner, B.A., I.W. Cox, J.D. Weston, and B.K. Moses.
2007 *San Antonio Mission Trails Statewide Transportation Enhancement Project Volume II: Construction Packages 2 and 3: Archaeological Testing and Monitoring Construction of the Mission Trails Hike and Bike Trails, City of San Antonio, Bexar County, Texas*. Archaeological Report, No. 374, Center for Archaeological Research, the University of Texas at San Antonio.

Meskill, F., L. Shaw, and S. Black
2000 *Excavations at 41BX323, the Witte Museum Parcel, Archaic Period Occupations on the Banks of the San Antonio River, Bexar County, Texas.* Technical Series Report No. 50, Texas Archeological Research Laboratory.

Miller, K.A., S. Carpenter, L.C. Nordt, C. Howell, and C. Ringstaff
1999 *Archaeological Testing of 41BX323 and Portions of the Historic Second Waterworks Canal, Brackenridge Park, San Antonio, Bexar County, Texas.* SWCA Cultural Resources Report No. 98-62.

Miller, K.A., and K.S. Barile
2001 *Archaeological Investigations at the Brackenridge Driving Range, City of San Antonio, Bexar County, Texas.* SWCA Cultural Resource Report 01-250.

Munoz, C.M., R.P. Mauldin, J.L. Thompson, and S.C. Caran
2011 *Archeological Significance Testing at 41BX17/271, the Granberg Site: A Multi-Component Site along the Salado Creek in Bexar County, Texas.* Archaeological Survey Report, No. 393. Center for Archaeological Research, The University of Texas at San Antonio.

Natural Resources Conservation Service (NRCS)
2021 Web Soil Survey. United States Department of Agriculture. Electronic document, https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm,accessed July 30th, 2021.

Olson, J.J. and Sons
1889 J.J. Olson and Sons Map. On file at the Center for Archaeological Research, UTSA.

Orchard, C.D., and T.N. Campbell
1954 Evidence of Early Man from the Vicinity of San Antonio, Texas. *The Texas Journal of Science* 4:454-465.

Osburn, T. L., C.D. Frederick, and C.G. Ward
2007 *Phase II Archaeological Investigations at Sites 41BX254, 41BX256, 41BX1628, and 41BX1621 within the Historical Mission Reach Project Area, San Antonio, Texas.* Miscellaneous Reports of Investigations No. 373. Prepared for United States Army Corps, of Engineers, Fort Worth District, by Geo-Marine Inc., Plano, Texas.

Padilla, A.E., and D.L. Nickels
2010 *Archaeological Data Recovery on Three sites along the San Antonio River, Bexar County, Texas*. Project No. 011-038. Ecological Communications Corporation, Austin, Texas.

Padilla, A.E., and W.N. Trierweiler
2012 *Investigation of a Middle Archaic Domestic Structure: Further Archeological Excavations at 41BX256*. Texas Antiquities Permit 5023. AmaTerra Environmental, Inc., Austin, Texas.

Petersen, J.F.
2001 San Antonio: An Environmental Crossroads on the Texas Spring Line. In *On the Border: an Environmental History of San Antonio,* edited by C. Miller, pp.17-41. University of Pittsburgh Press, Pennsylvania.

Poyo, G.E.
1991 The Canary Island Immigrants of San Antonio: From Ethnic Exclusivity to Community in Eighteenth-Century Bexar. In *Tejano Origins in Eighteenth-Century San Antonio,* edited by G.E. Poyo and G.M. Hinajosa, pp. 41-61. University of Texas Press, Austin.

Schuetz, M.K.
1966 *The Granberg Site: An Archaic Indian Habitation in Bexar County, Texas*. Witte Museum Studies, No. 1. San Antonio, Texas.

Scurlock, D., A. Benavides Jr., D. Isham, and J. Clark Jr.
1976 *An Archeological and Historical Survey of the Proposed Mission Parkway, San Antonio, Texas.* Archeological Survey Report No. 17. Texas Historical Commission, Office of the State Archeologist, Austin.

Tennis, C.T., I.W. Cox, J.J. Durst, D.D. Edmondson, B.A. Meissner, and S.A. Tomka
2001 *Archaeological Investigations at Four San Antonio Missions: Mission Trails Underground Conversion Project.* Archaeological Survey Report, No. 297, Center for Archaeological Research at the University of Texas at San Antonio.

Texas Historical Commission (THC)
2021 Texas Archeological Sites Atlas. Texas Historical Commission. Electronic document, https://atlas.thc.state.tx.us/, accessed July 30th, 2021.

Thoms, A.V., and P.A. Clabaugh
2011 The Archaic Period at the Richard Beene Site: Six Thousand Years of Hunter-Gatherer Family Cookery in South-Central North America. *Bulletin of the Texas Archaeological Society* 82:77-117.

Turner, E.S., T.R. Hester, and R.L. McReynolds
2011 *Stone Artifacts of Texas Indians*. Taylor Trade Publishing, Lanham, Maryland.

United Nations Educational, Scientific and Cultural Organization (UNESCO)
2021 San Antonio Missions. Electronic document, https://www.nps.gov/saan/learn/index.htm, accessed July 30th, 2021.

Valdez, F. Jr., and J. Eaton
1979 *Preliminary Archaeological Investigations of Part of the San Pedro Acequia, San Antonio, Texas*. Archaeological Survey Report, No. 85. Center for Archaeological Research, The University of Texas at San Antonio.

Whitaker, J.M.
2021 *Cultural Resources Investigations for the Utility Repair in Roosevelt Park Project, San Antonio, Bexar County, Texas.* Cultural Resources Report No. 20-025, Raba Kistner, San Antonio, Texas.

Wigley, S.
2018 Hunter-Gatherer Mobility at the Granberg Site (41BX17), Bexar County, Texas. Master's thesis, The University of Texas at San Antonio.

Wooster, R.A.
2021 Civil War. Handbook of Texas Online. Texas State Historical Association. Electronic document, https://tshaonline.org/handbook/online/articles/qdc02, accessed May 4, 2021.