

**GEOARCHEOLOGICAL TESTING FOR THE PROPOSED  
SAN ANTONIO WATER SYSTEM  
OLMOS BASIN CENTRAL WATERSHED (C-3), REACHES 1-4:  
JOSEPHINE STREET TO THE WITTE MUSEUM,  
SAN ANTONIO, TEXAS**

*DRAFT FINAL REPORT*

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## MANAGEMENT SUMMARY

San Antonio Water System plans to construct the Olmos C-3, Reaches 1-4, sewer main in the city of San Antonio, Bexar County, Texas. Geo-Marine, Inc., of Plano, Texas, was subcontracted by Weston Solutions, the contractor for SAWS, to provide archeological investigations for the project. The APE begins north of downtown San Antonio at Josephine Street, proceeds north on Avenue B, then crosses into Lion's Field Adult Center to the front of the club house paralleling Broadway Street. The project corridor then shifts west and crosses Mulberry Avenue and proceeds north on Avenue B to the Witte Museum at 3801 Broadway Street.

The archeological survey consisted of two phases of investigations. The first phase consisted of drilling 34 geotechnical/geomorphologic borings along the project corridor from Josephine Street to the Witte Museum. Based upon the analysis of the borings, the southern portion of the project area had high potential for containing buried, stratified, and preserved cultural deposits despite some disturbance in the uppermost levels that would not affect potential in situ cultural deposits at a deeper depth. Conversely, the potential for cultural deposits along the portion of the project area north of Lion's Field Adult Center decreased significantly along the line of borings where the A soil horizon has been removed, the level of disturbance is higher, or the thickness of the fluvial deposits is much greater.

The second phase, consisting of six backhoe trenches, focused its investigation on a target area, from Mill Race Road to Lion's Field Adult Center, within the project area. Minimal cultural material was found in the backdirt from BHT 1, BHT 3, and BHT 6 (a piece of debitage; a

decorated brass clip or hinge; and a wire nail and a ceramic floor tile fragment, respectively). Conversely, the backfill from BHT 5 yielded chert debitage and fire-cracked rock, necessitating further investigations through excavation of a 1-x-5-m test unit. Based upon site criteria, the extent of BHT 5 warranted definition as an archeological site and was designated 41BX1953. Based on geoarcheological analysis, however, the cultural material was determined to be in a secondary context, likely the result of downwashes during significant rain or flood events. In addition, site 41BX1953 lacked context because no temporal diagnostics or datable <sup>14</sup>C materials were encountered. Therefore, the portion of site 41BX1953 within the current project area is recommended not eligible for inclusion in the National Register or for designation as a State Archeological Landmark, but since the site may extend beyond the project corridor and has not been fully investigated, the site as a whole is recommended as of unknown eligibility.

As a result of intensive archeological survey consisting of 34 borings and six backhoe trenches, it is recommended that the proposed construction will not have an effect on significant cultural deposits in the project right-of-way.

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Several Geo-Marine personnel and associates were involved in this project and their participation and insights are appreciated. Melissa Green served as Principal Investigator throughout the process of this investigation. Fieldwork was conducted by archaeologist Leonard Kemp and geoarcheologist Dave Shanabrook. Erin King assisted with the review of historic maps and aerial photography and also created the maps presented in this document. Sharlene Allday edited this report, and Denise Pemberton was responsible for its formatting and production.

## CHAPTER 1 INTRODUCTION

San Antonio Water System (SAWS) plans to construct the Olmos Basin Central Watershed (C-3), Reaches 1–4, sewer main in the city of San Antonio, Bexar County, Texas. Weston Solutions, the contractor for SAWS, subcontracted cultural resources investigation for the project to Geo-Marine, Inc. (Geo-Marine project number 30401.01.18), of Plano, Texas. This archeological investigation was conducted to fulfill compliance with Section 106 of the National Historic Preservation Act (NRHP) of 1966, as amended through 2000 [16 U.S.C. § 470 et seq.; P.L. 89-665; 80 Stat.915], requiring cultural resources survey. In addition, SAWS, as a political subdivision of the state of Texas, is mandated to comply with the Antiquities Code of Texas [Title 9, Chapter 191, the Natural Resources Code of Texas]. Accordingly, the present investigation was conducted under Texas Antiquities Code Permit Number 6104. The ultimate goal was to identify and inventory cultural resources properties contained within the area of potential effects (APE) and to evaluate their potential for inclusion in the National Register of Historic Places (NRHP) or for designation as a State Archeological Landmark (SAL).

The APE is approximately 2.59 kilometers (km; 1.6 miles [mi]) in length and has a construction easement of 10 meters (m; 32 feet [ft]). The APE begins north of downtown San Antonio at Josephine Street, proceeds north on Avenue B, then crosses into Lion’s Field Adult Center to the front of the club house paralleling Broadway Street. The project corridor then shifts west and crosses Mulberry Avenue and proceeds north on Avenue B to the Witte Museum at 3801 Broadway Street (Figure 1).

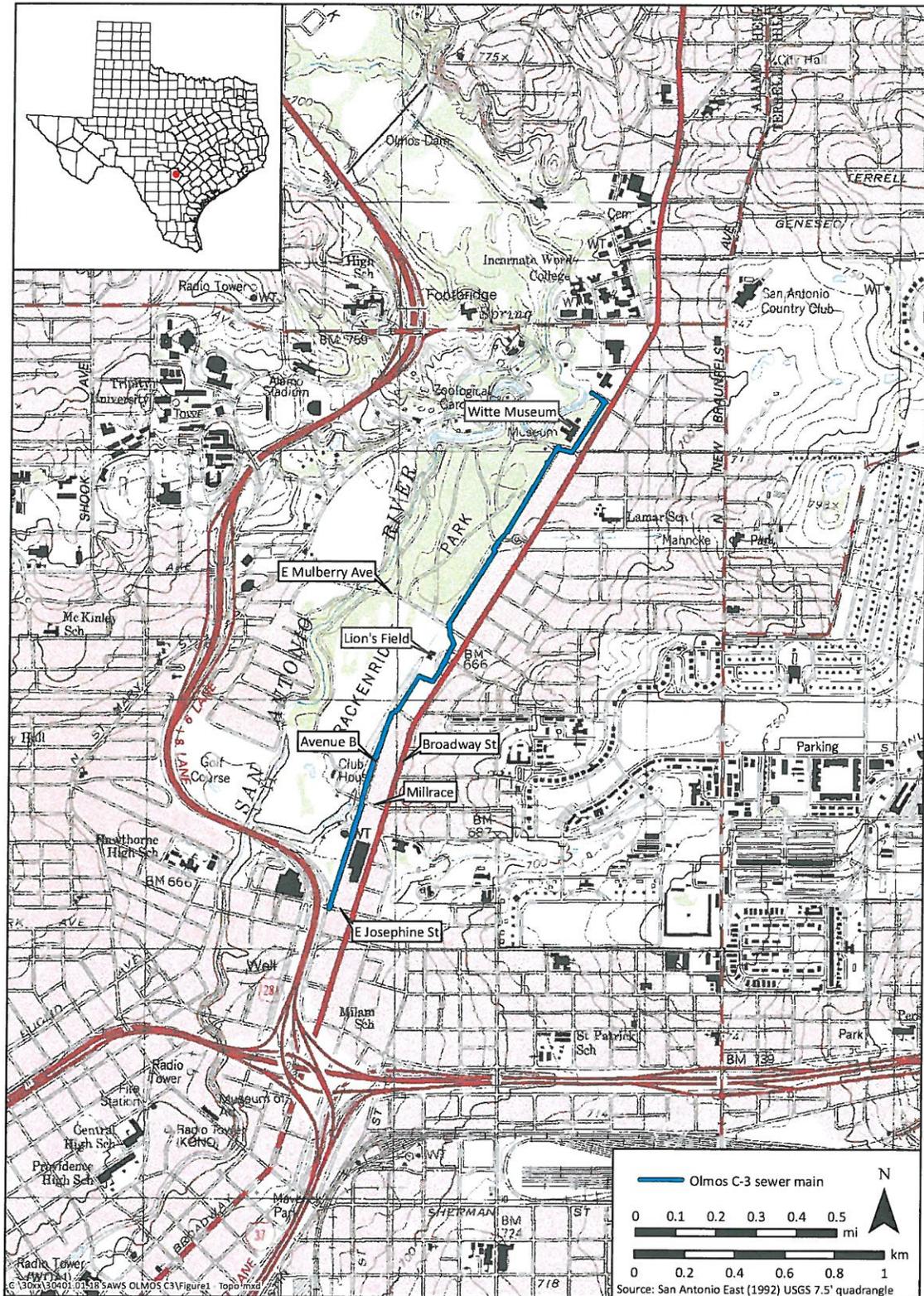


Figure 1. Location of the SAWS Olmos C-3, Reaches 1-4, APE in San Antonio.

The archeological survey consisted of two phases of investigations. The first phase was composed of drilling 34 geotechnical/geomorphologic borings along the project APE from Josephine Street to the Witte Museum, 3801 Broadway Street. The second phase, consisting of six backhoe trenches, focused its investigation on a target area from Mill Race Road to Lion's Field Adult Center, within the overall APE.

The first phase consisted of a series of geotechnical boreholes (Fugro 2010, 2011) previously excavated as part of the sewer replacement design, and the reports of those investigations were supplied to Geo-Marine for the current project; however, the bore samples themselves were no longer available for examination by a geoarcheologist. Therefore, through consultation with the Texas Historical Commission (THC) and Kay Hindes, the city of San Antonio archeologist, it was decided that additional coring be conducted within or as close to the project easement as possible. Those core samples would then be examined by a geoarcheologist to determine the level of disturbances found below the surface and the locations of intact Holocene horizons that could contain potential archeological deposits. Subsequently, 15 geomorphological core samples (Cores 1A–9A and 12A–17A) were excavated at approximately 150-m (492-ft) intervals and between the previous set of borehole locations (excluding Boreholes B-10 and B-11, which were outside the project area to the east) during the week of April 16–19, 2012. The cores were examined on April 26–27, 2012, at the Terracon Consultants, Inc., office in San Antonio where they are currently being stored.

For the second phase, which was based upon the analysis of the combined geotechnical and geomorphological samples, Geo-Marine proposed a maximum of eight backhoe trenches in the targeted southern portion of the proposed water line along Avenue B from north of Mill Race Road to south of the clubhouse at Lion's Field Adult Center; the THC and the San Antonio city archeologist concurred with this proposal. The ideal location of the backhoe trenches was to offset them from the replacement line due to the number and proximity of utilities in the project corridor, and to place them at a 50-m (164-ft) interval from each other. Trenches were to measure approximately 6 m (20 ft) in length and be excavated to a maximum depth of 3 m (10 ft). The project archeologist was given discretion to move trench locations, to eliminate any trench, and to adjust length or depth based upon the presence of utility lines, disturbed landform, and/or safety concerns. If intact archeological deposits or features were encountered, a test unit would be placed within or adjacent to the trench to determine the type and integrity of the deposit or

feature. Because of buried utilities, six backhoe trenches were excavated on December 4–5, 2012, and monitored by project archeologist Leonard Kemp and geoarcheologist Dave Shanabrook.

All materials generated from this project will be permanently housed at the Center for Archaeological Research (CAR) at the University of Texas at San Antonio.

## **CHAPTER 2 ENVIRONMENTAL CONTEXT**

### **PHYSIOGRAPHY**

Bexar County includes portions of three physiographic regions: the Edwards Plateau, the Blackland Prairie, and the Rio Grande Plain (also known as the South Texas Coastal Plain). The Edwards Plateau is north and west; the Blackland Prairie is east and southeast; and the Rio Grande Plain is south and southwest. The Balcones Fault Zone, which runs through this area of Texas, is characterized by undulating and hilly topography that ranges from about 213 to 335 m (700–1,100 ft) above mean sea level (amsl). The area is dissected by small streams (Taylor and Richmond 1966). Chert, a raw material for the production of stone tools, is found in outcrops throughout the project area, particularly in the Balcones area. At the southern fringe of the Edwards Plateau, the Balcones Canyonlands is a natural subregion of Texas that has a landscape dissected by numerous high-gradient streams in steep-sided canyons that flow south and southeast to the Gulf of Mexico (Riskind and Diamond 1988:1).

### **GEOLOGY AND SOILS**

The Geologic Atlas of Texas maps the surficial geology underlying the project area as consisting of Quaternary Fluvial Terrace deposits (Bureau of Economic Geology 1983). The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), shows two soil map units within the project area: Trinity and Frio soils, 0 to 1 percent slopes; and Lewisville silty clay, 1 to 3 percent slopes (NRCS 2013).

The Trinity and Frio series are alluvial soils that lie within the project area from Josephine Street northward to the southern portion of Lion's Field Adult Center. These soils are frequently flooded and deep, dark-colored, and nearly level, with slow surface drainage and slow permeability. A typical soil profile begins with dark gray, calcareous clay topsoil that is approximately 127 centimeters (cm; 50 inches [in]) deep. Underlying the topsoil is gray, calcareous clay extending 38 cm in depth (15 in) that terminates in a clayey alluvium down-washed from clayey, upland soils (Soil Survey Staff 2013).

Lewisville silty clay is mapped on the northern portion of the project area from Lion's Field to the Witte Museum. The map unit is commonly attributed to nearly level to rolling landscapes underlain by limestone. Similar to the previous map units, Lewisville soils commonly form within Quaternary alluvium of mixed sources. Lewisville soils are well drained and moderately permeable. The soil begins with dark grayish brown silty clay topsoil that is approximately 41 cm (16 in) thick. This is underlain by a series of carbonate-rich dark grayish brown to brown B horizons to a depth of at least 157 cm (62 in; Soil Survey Staff 2013). Figure 2 shows the geomorphology, hydrology, and soils of the project area. It is important to note that the project is in an urban area that has been impacted to one degree or another by the construction of roadways, utilities, and both industrial and residential structures.

## CLIMATE

Bexar County has a modified subtropical climate. Winters are mild, with northerly winds prevailing, and summers are hot, with southeasterly winds prevailing. Strong winds and heavy rains occasionally occur as the result of tropical storms in the Gulf of Mexico. The San Antonio area has an average of 265 frost-free days. The warmest months are May through October. Temperatures rarely fall below -6.6 degrees Celsius (°C; 20° Fahrenheit [F]). The average daily maximum and minimum temperatures for December–January range from about 4.4 to 15.5°C (40–60°F), and from 21 to 35°C (70–95°F) for July–August (Taylor and Richmond 1966:102, 118–119, Table 11).

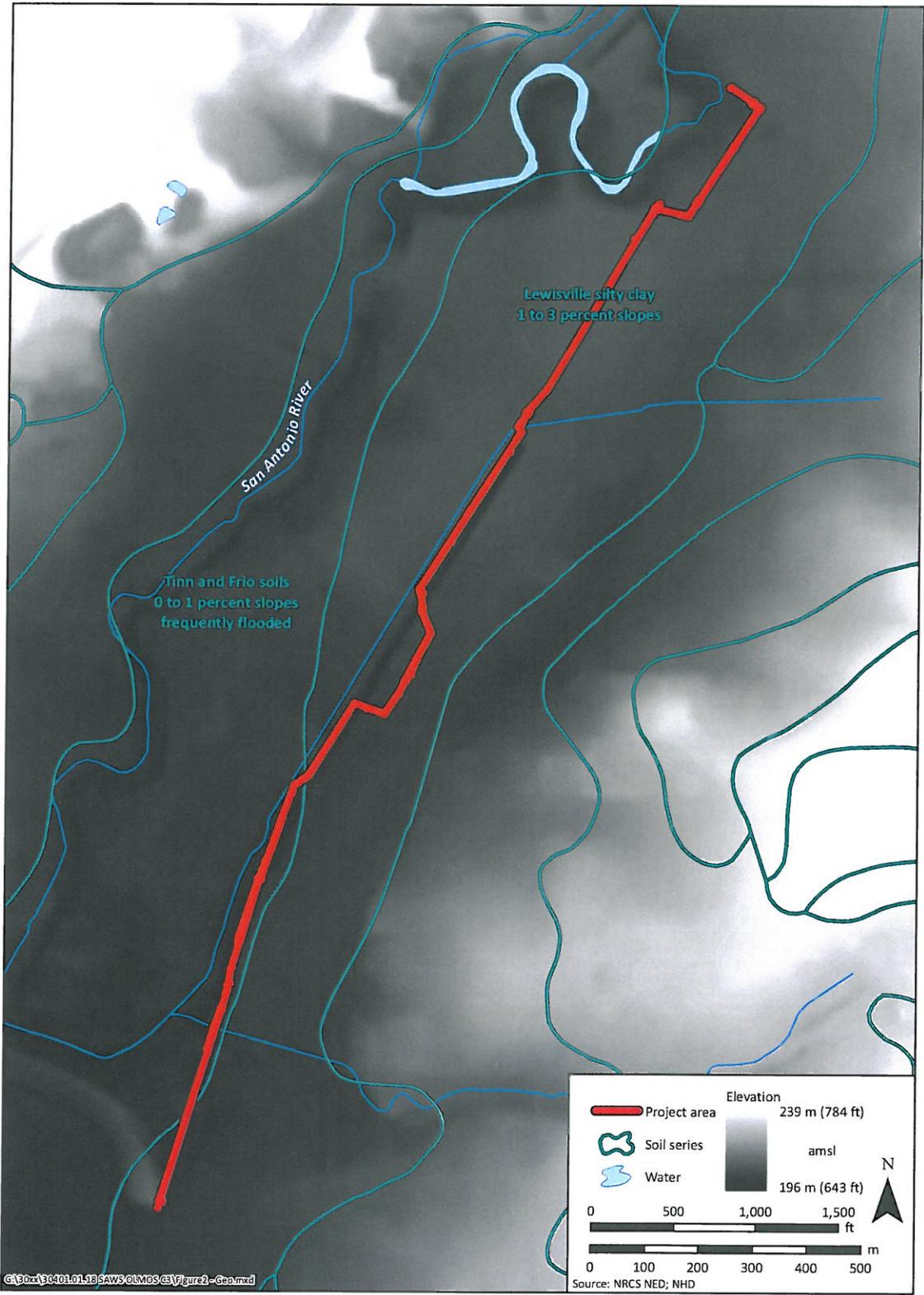


Figure 2. Geomorphology, hydrology, and soils of the project area.

Precipitation, about 71 cm (28 in) annually, is generally distributed throughout the year, with the highest rainfalls occurring in May and September. Winter is the period of lowest precipitation. Thunderstorms account for most of the rains from April through September. Light hail often accompanies spring thunderstorms. Because of the presence of steep slopes, thin rocky soils, and narrow valleys/canyons in the northwest, portions of Bexar County are subject to flooding during heavy rain events. During the winter, snow is rare and most precipitation occurs as light rains or drizzles. The average minimum and maximum monthly precipitation, respectively, occurs during November (about 3.6 cm [1.4 in]) and September (about 8.9 cm [3.5 in]) (Taylor and Richmond 1966:118, Table 11).

## FLORA

As indicated previously, Bexar County is situated in a transitional zone between three physiographic regions. Therefore, the flora is a mixture of three biotic provinces: the Balconian (associated with the Edwards Plateau), the Texan (associated with the Blackland Prairie), and the Tamaulipan (associated with the South Texas Coastal Plain) (Table 1). Each is represented to varying degrees (Blair 1950).

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Table 1  
Flora Associated with Three Biotic Provinces

Province <sup>1</sup>	Description
Balconian	Scrub forest (Mexican cedar, Texas oak, stunted live oak), mesic forest (large live oak, elm, hackberry, pecan), mesquite throughout
Texan	Oak-hickory forests in sandy soils dominated by post oak, blackjack oak, and hickory; Tall-grass Prairies in clay soils
Tamaulipan	Present day—brushland, dominated by thorny brush (mesquite, acacia, and mimosa), white brush, and prickly pear; Historically—grassland and savannah <sup>2</sup> .

<sup>1</sup> Source: Provinces per Blair (1950)

<sup>2</sup> Source: Bogush (1952); Bray (1906); Inglis (1964)

Vegetation consists of mixed evergreen-deciduous woodlands along the edge of the escarpment, grading into deciduous woodlands, and finally into forest in riparian and deep canyon settings. Prior to European settlement, the vegetation setting along the southeastern border of the Edwards Plateau was predominantly grasslands, with woodlands and forests limited to hillsides and deeply incised limestone canyons (Weniger 1988). The mixture of grasslands and riparian forests, in addition to the nearby Blackland Prairie, would have provided prehistoric and the earliest historic inhabitants of the region with ample game and edible plant resources.

## FAUNA

Bexar County is in a faunal transitional zone that is characterized by an intermixture of vertebrate fauna from other biotic provinces: Austroriparian, Tamaulipan, Chihuahuan, and Dansan (Blair 1950:113–115). Major mammalian fauna include white-tailed deer, raccoon, coyote, fox, bobcat, opossum, fox squirrel, eastern cottontail, black-tailed jackrabbit, beaver, eastern wood rat, badger, skunk, river otter, and the extirpated pronghorn and bison (Blair 1950:113–114; Schmidly 1983). Important nonmammalian species consist of turkey, bobwhite, western box turtle, snapping turtle, channel catfish, and sunfish (Blair 1950:113–115; Bull and Farrand 1977; Ernst and Barbour 1972; Hubbs 1982; Schmidly 1983; Taylor and Richmond 1966:3–4). Most of these species were of economic importance to prehistoric and the earliest historic populations of the region.

## **CHAPTER 3 CULTURAL CONTEXT**

### **PREHISTORIC CHRONOLOGY (9500 B.C.–A.D. 1500)**

The project area falls within the southern portion of the Central Texas archeological region. The archeological record for Central Texas reflects the full North American cultural sequence; therefore, evidence of human occupation spans a time period of roughly 12,000 years. The Central Texas prehistoric cultural sequence presented in the following discussion is divided into region-specific cultural-historical subperiods within four broad cultural stages—Paleo-Indian, Archaic, Late Prehistoric, and Historic—that differentiate the broadly recognized North American cultural trends (Table 2). These four major cultural stages are briefly summarized in the following cultural history of the Central Texas area, which derives primarily from the work of Black (1989), Collins (1995, 2004), Hester (2004), Prewitt (1981, 1985), Suhm (1960), Suhm et al. (1954), and Weir (1976).

#### **Paleo-Indian**

The earliest widely accepted human occupation of North America is termed the Paleo-Indian stage (9500–6800 B.C.). Cooler, wetter conditions were in place at 10,000 B.C. toward the end of the Pleistocene epoch, and although a general drying trend continued through Paleo-Indian times, climatic conditions were more stable than during the subsequent Holocene epoch. This cultural stage is often characterized as a culture of small but highly mobile bands of foragers who were specialized hunters of Pleistocene megafauna. Most Paleo-Indian sites are deeply buried and difficult to find, leaving the highly visible, but often fortuitously discovered, mammoth kill sites

Table 2  
Central Texas Prehistoric Cultural Sequence

Stage	Cultural-Historical Subperiod	Date (Converted Years Before Present [B.P.])*
Paleo-Indian	Early	9500–8000 B.C. (11,500–10,000 B.P.)
	Late	8000–6800 B.C. (10,000–8,800 B.P.)
Archaic	Early	6800–4000 B.C. (8,800–6,000 B.P.)
	Middle	4000–2000 B.C. (6,000–4,000 B.P.)
	Late	2000 B.C.–A.D. 750 (4,000–1,200 B.P.)
Late Prehistoric	Austin phase	A.D. 750–1200 (1,200–750 B.P.)
	Toyah phase	A.D. 1200–1500 (750–450 B.P.)
Historic		Post-A.D. 1500

\*B.P. based on date of 1950

as the primary evidence of Paleo-Indian life-ways. Recent studies address this bias and emphasize that large kills probably contributed little to overall food requirements; rather, a primary reliance on other game animals and plant resources was more likely (Ferring 1989). Subsistence in this stage certainly included large herbivores such as mammoth, bison, and horse, but was probably based more consistently on smaller animals such as various species of turtle, land tortoise, alligator, mice, badger, and raccoon (Collins et al. 1989; Story 1990) and, presumably, also included an array of plants (Collins 1998). The defining Paleo-Indian trait is the fluted projectile point tradition. Projectile points of the Early Paleo-Indian subperiod were made from high quality toolstone and indicate high technical skill in flaking, exhibiting a hallmark “flute,” which is a long, shallow flake scar that extends from the base toward the tip of the point on one or both sides.

The Paleo-Indian stage in Texas, as across North America, is the earliest substantiated cultural period. The Paleo-Indian stage in Central Texas falls into early and late subperiods, which encompass three archeological complexes. The Llano and Folsom complexes comprise the Early Paleo-Indian subperiod (9500–8000 B.C.), and the Late Paleo-Indian (8000–6800 B.C.) reflects the Plano complex. These complexes are not unique to Central Texas, for their ranges extended into the Southwest and Great Plains.

The Early Paleo-Indian subperiod is based on two projectile point styles: Clovis and Folsom. The Llano complex is represented by the Clovis projectile point, the oldest point type found in North America. Much research energy has been devoted to the makers of Clovis points, but the material record of Llano peoples is largely limited to hunting activities. Clovis assemblages include the diagnostic fluted lanceolate Clovis point, along with engraved stones, bone and ivory points, stone bolas, and ochre (Collins 1995; Collins et al. 1992). Sites with Clovis components reported in Central Texas include Kincaid Rockshelter (41UV2; Uvalde County), Wilson-Leonard (41WM235; Williamson County), Gault (41BL323; Bell County), Horn Shelter 2 (41BQ46; Bosque County), Pavo Real (41BX52; Bexar County), and Crockett Gardens (41WM419; Williamson County). Surface finds of distinctive Clovis points are also reported from a number of other localities (Meltzer and Bever 1995).

By about 9000 B.C. (11,000 years ago) the cool, wet climatic conditions of the Pleistocene had given way to Holocene warming and drying. This change coincides with the extinction of Pleistocene megafauna, most notably the mammoth, and is concurrent with the earliest record of the Folsom complex. Like the Llano complex, the Folsom complex is best known for the Folsom projectile point. Shorter than Clovis points, "classic" Folsom points exhibit fine parallel flaking and large flutes that extend across most of each face. Midland points, commonly believed to occur later in time, may represent unfluted Folsom points, apparently made to offset the production risks involved in fluting (Amick 1995). Another trademark of the Folsom complex is the association of Folsom points with the remains of now-extinct bison (*Bison antiquus*), usually found in the context of massive kills of bison herds run into ravines. Such sites are conspicuous, and thus much of what is known about Folsom subsistence and technology comes from lithic artifacts found at these sites or nearby processing sites. Folsom tool kits consisted of the fluted Folsom and the thin, unfluted (Midland) points, large thin bifaces, and end scrapers that were more conducive to specialized hunting, particularly of *Bison antiquus* (Collins 1995:382).

By approximately 8000 B.C. (10,000 years ago), the climate trended toward more moderate conditions, and the megafauna from the Early Paleo-Indian subperiod were no longer available. Most of the associated faunal evidence dated to the Late Paleo-Indian Plano complex reflects a human subsistence pattern based on deer and other smaller animals. Horn Shelter No. 2 (Forrester 1985) located on the Brazos River in Bosque County, Hinds Cave (Shafer and Bryant 1977) in Val Verde County, and Wilson-Leonard (Collins 1998) in Williamson County have

yielded subsistence data indicating that a variety of vertebrate fauna was consumed by the Late Paleo-Indian peoples.

The Late Paleo-Indian Plano complex is represented by a greater diversity of projectile points (e.g., Plainview, Angostura, Scottsbluff, and Golondrina), which, still in lanceolate form, were unfluted. In contrast to evidence from the earlier subperiod, late subperiod points are associated with modern bison (*Bison bison*) and often occur as surface finds throughout Central Texas. The beginning of Prewitt's (1981) Early Archaic, or Circleville phase, is considered in this report as the Late Paleo-Indian Plano complex but has also been called the "Pre-Archaic" (see Sollberger and Hester 1972). The Late Paleo-Indian Plano complex defies convenient labeling, because it exhibits a unique blend of lanceolate and stemmed points that appear to correspond with life-ways reflective of Archaic subsistence alongside Paleo-Indian mobility. Again, little is known about the complex in Central Texas, but toward the latter part of the Late Paleo-Indian subperiod, lanceolate points began to be replaced by stemmed points. Settlement-subsistence strategies probably more closely approximated those of the Archaic than those of the Early Paleo-Indian subperiod. More diverse sites are associated with this subperiod, including not only the mass bison kills, which by the Late Paleo-Indian subperiod consist only of modern bison (*Bison bison*), but also campsites and residences. The characteristics of the Wilson, Golondrina-Barber, and St. Mary's Hall components are more Archaic-like in that burned rock features are found, although the features are much smaller and contain less rock than the burned rock features in the subsequent Archaic.

### **Archaic**

Toward the end of the Late Paleo-Indian subperiod, a great variety of projectile point styles began to appear. The subsequent Archaic stage (6800 B.C.–A.D. 750) is broadly characterized by stemmed and side-notched dart points and by the appearance of ground and pecked stone tools. The Archaic represents a more generalized style of hunting and gathering as a way of life, and the subsistence pattern may have become more diffuse, reflecting a greater exploitation of local environments as smaller game animals, fish, and wild plant foods increased in dietary importance. Like their predecessors, Archaic peoples apparently continued to follow a nomadic way of life,

traveling seasonally to utilize different food resources in various localities (cf. Weir 1976). McGraw and Hindes (1987:47) have noted the following:

In northern and central Bexar County, major occupation sites are situated on stream terraces and are usually associated with one or a series of spatially proximate, often buried, burned rock middens. An extensive distribution of chipped stone debitage and a variety of diagnostic projectile points indicate recurring occupations that span several thousand years. Major Late Prehistoric sites, in contrast, are often physically discrete from these earlier sites.

The Archaic is generally divided into Early, Middle, and Late subperiods (Black 1989; Collins 1995, 2004; Story 1985) based on diagnostic projectile point styles and associated radiocarbon assays (Collins 1995, 2004). By the Middle Archaic in southern Central Texas, some regional distinctiveness is apparent archeologically, as evidenced primarily by increased techno-stylistic diversity among projectile point types. Interplay between influential factors of population increase and environmental change toward greater aridity and climatic variability probably drove adaptive change throughout the Archaic. The following discussion follows Story's (1985) broader subdivisions of the Early, Middle, and Late Archaic, although Prewitt's (1981) discussion of various phases within these subperiods provides much of the information discussed.

The most archeologically obvious changes from the Paleo-Indian to the Early Archaic (6800–4000 B.C.) are the appearance of ground stone implements and the shift from the lanceolate points of the Paleo-Indian tradition to the stemmed and side-notched dart points emblematic of the Archaic. Three recognized point styles (Angostura, Early Split Stem [Gower and Jetta], and Martindale-Uvalde) indicate that the makers tended to occupy the better-watered eastern part of the Edwards Plateau (Collins 1998:65). Assemblages also include Clear Fork and Guadalupe bifaces, as well as manos, metates, hammerstones, burins, circular scrapers, and a variety of other bifaces. Few burials have been assigned to this subperiod (Prewitt 1981:77–79; Story 1985:34–35), and settlement/subsistence systems are “hypothesized to have been diffuse, utilizing a variety of resources and frequently shifting the loci of subsistence activities rather than intensifying the use of any specified resource” (Story 1985:39).

Projectile point types constitute the primary source of information about the Early Archaic, but Prewitt (1981, 1985) uses point types to define four phases: the Circleville, San Geronimo, Jarrell, and Oakalla. This refinement is questioned by some as unsubstantiated since few intact sites are known (see Black 1989:26; Black and McGraw 1985), but the tendency for many Early

Archaic sites to occur around the Balcones Escarpment leads several researchers to infer that this area was a refuge from drier conditions in Central Texas and on the coastal plains (McKinney 1981; Story 1985). Concentrations of Early Archaic sites along the southern and eastern margins of the Edwards Plateau may be indicative of climatic conditions at the time, because these environments had more reliable water sources and a diverse subsistence base. The margins of the Edwards Plateau are ecotonal in character and may have provided reliable resources during times of environmental stress (Story 1985:31, 34). Convincing paleoenvironmental data on the climatic conditions of this subperiod are, nonetheless, still lacking.

Early Archaic sites are small (Weir 1976:115–122), suggesting that populations were highly mobile and that their densities were low (Prewitt 1985:217). Early Archaic sites are usually described as open campsites (such as Loeve, Wilson-Leonard, Richard Beene, Sleeper, Jetta Court, Youngsport, Camp Pearl Wheat, and Landslide) or lithic procurement stations. Only a few campsites located in rockshelters (e.g., Kincaid Rockshelter) occur on the Edwards Plateau during this subperiod. The location of lithic procurement sites is determined by the natural distribution of cherts. Large and varied burned-rock features (Sleeper, Camp Pearl Wheat, Wilson-Leonard, Richard Beene) become common in the latter part of the Early Archaic, and domestic structures (Turkey Bend Ranch) and caches (Linder) are also known in the Early Archaic (Collins 1998:64). Freshwater mussel, deer, and small game appear to have been important food resources. Hearths are occasionally found at Early Archaic sites and can be stone-lined, basin-shaped, or flat. The appearance of ground stone signifies a shift to plant resources, and the diversification of lithic technology appears to reflect an increased reliance on gathering.

The Middle Archaic (4000–2000 B.C.) marks the first subperiod of Central Texas distinctiveness as an archeological region. The subperiod exhibits more numerous and more varied sites than the preceding Early Archaic. This cultural manifestation is characterized by a population increase; the development of regionally distinct cultural patterns; and changes in settlement patterns, economic and social systems, and technology (Prewitt 1985). In addition, territorial boundaries may have begun to emerge (Story 1985:39).

Burned-rock middens, which often consist of massive amounts of fire-cracked limestone, are, however, the preeminent archeological features of the Middle Archaic. Many of these middens may represent earthen ovens used to process live oak acorns (see Weir 1976), as well as for

roasting succulents or other plants and animals. Many Central Texas tree species disappeared from the paleoenvironmental record at this time, leaving live oak forests to dominate the landscape. A renewed focus on deer, which themselves were well suited for the oak-savanna environment, is likely. Weir (1976:124–130) suggests that an expansion of oak forests influenced the development of an economic system that focused on the exploitation of deer, acorns, and other hardwood nuts. Prewitt (1985:222–226) notes that the abundance of rock middens indicates a greater reliance on plant foods, although tool kits still imply a strong reliance on hunting.

Middle Archaic sites in Central Texas are represented by rockshelters, campsites, lithic quarries, and kill sites (Weir 1976), as well as by the burned-rock middens that first appeared toward the end of the Early Archaic. Other features include basin hearths and large flat hearths. Data concerning mortuary practices are few except for the end of the Middle Archaic, for which cremations have been reported (Prewitt 1981:81). Three generalized point styles characterize this subperiod: Bell-Andice-Calf Creek, Taylor, and Nolan-Travis. Bifaces, a variety of scrapers, unifaces, and grinding stones are also present. Prewitt (1981:73) suggests that the proportion of projectile points (50 percent) compared to total number of tools is indicative of a balance between the exploitation of plant and animal resources.

Late Archaic (2000 B.C.–A.D. 750) life-ways began similarly to those of the Middle Archaic, but notable changes occurred, characterized by the emergence of new cultural patterns as well as the intensification of preexisting ones (Story 1985:45). Coastal marine shells, used either as ornaments or as raw materials for ornaments, were exchanged with inland groups, at least on a limited basis, in return for finished lithic tools and/or siliceous raw material (Story 1985:48). The use of burned-rock middens throughout the Late Archaic appears to have been a major part of the subsistence strategy because a decrease in the importance of hunting, inferred from the low ratio of projectile points in relation to other tools in site assemblages, may have occurred (Prewitt 1981:74). Bison, which had been absent from the area for most of the Archaic, were however once again available in the region (Dillehay 1974).

Late Archaic sites include rockshelters, campsites, and large cemeteries. The establishment of these large cemeteries along drainages suggests strong territorial ties by certain groups (Story 1985:40). Cemeteries, burial sites where at least two individuals were buried in proximity, imply repeated use of space for the burial of a group of people's dead. The location and use of the

larger cemeteries are believed to be the result of the same cultural group using a place on the landscape to reaffirm their rights of descent and control/access to critical resources (see discussion in Taylor 1998 and Taylor et al. 1995:627–631).

Late Archaic cemeteries in South and Central Texas exhibit a significant energy investment and often contain mortuary furniture. When artifacts are found in burial contexts, they represent discrete points in time, or part of the package of tools or objects that would have been used during a particular occupation period. Burial artifacts, then, provide the unique opportunity to glimpse an assemblage that may not be possible in other site contexts where multiple occupations may be overprinted, as is common in terrace settings. From general ethnographic studies of hunter-gatherer groups, it is suspected that grave goods represent a sampling of utilitarian and ornamental items used and possessed in life by those individuals, hinting at the social status and personae of the deceased (Binford 1971), and a recognition that such burial goods would be needed in the deceased's next life (Perttula 2001).

In Central Texas, on the Edwards Plateau, burials in sinkholes and caves appear to be relatively common (Kibler 2001). Below the escarpment, however, cemeteries are found along river drainages and often contain mortuary goods. There appears to be an association of deer antler and deer antler racks in late Middle Archaic and Late Archaic mortuary contexts. Evidence of this association is primarily based on items recovered from large burials in riverine settings at such sites as Loma Sandia (41LK28) in Live Oak County, Olmos Dam (41BX1) in the Blackland Prairie below the Edwards Plateau escarpment in Bexar County, and Ernest Witte (41AU36) along the lower Brazos River in Austin County (Perttula 2001).

Other features found at Late Archaic sites include basin hearths, arcuate hearths, earth ovens, and mussel shell caches. The lithic assemblages contain a variety of dart point styles (e.g., Bulverde, Pedernales-Kinney, Lange-Williams-Marshall, Marcos-Montell-Castroville, Ensor-Frio-Fairland, and Darl); Erath, San Gabriel, and Hare bifaces; graters; scrapers; a variety of unifaces and bifaces; grinding stones; and boatstones. Except for Montell and Fairland, the point styles for the Late Archaic are among the most widely distributed dart points (Prewitt 1985). Other artifacts include ulna flakers, bone beads and awls, stone and marine shell gorgets, and freshwater mussel shell pendants (Prewitt 1981:81–82).

## Late Prehistoric

The Late Prehistoric subperiod (A.D. 750–1500) is marked by the replacement of atlatl-and-dart with bow-and-arrow technology. Ceramics were also adopted within this subperiod. Basin-shaped and flat hearths and burned clay/charcoal lenses and pits are the predominant archeological features. There is a continuation of Late Archaic burial practices, with flexed and semi-flexed burials occurring near habitation sites, usually in cemeteries but also as isolated occurrences. Some burials were cremations, carried away from cemeteries and placed in shallow pits.

The subperiod is divided into two main phases, the Austin (A.D. 750–1200) and Toyah (A.D. 1200–1500), and each is marked by distinctive cultural traits. Once believed to be contemporaneous, Jelks's (1953, 1962) work at the Blum Rockshelter and the Kyle site demonstrated the temporal separation between Austin and Toyah components by locating stratigraphically distinct Perdiz arrow points above older Austin phase Scallorn arrow points. The Late Prehistoric chronology of southern Texas is closely aligned with that of Central Texas, particular in terms of Toyah cultural manifestations (Hester 1995:443).

The Austin phase is characterized by a shift to the use of the bow and arrow. Common are Scallorn and other related side-notched (e.g., Edwards) arrow points, as well as broad-based hunting and gathering as the main mode of subsistence (Turner and Hester 1999:173). Common artifacts for this subperiod include numerous bifaces, Clear Fork gouges, scrapers, and grinding stones. Typical features included basin hearths, pits, and cemeteries. The interments at Austin phase cemeteries such as Loeve-Fox (41WM230; Prewitt 1974, 1981) and the Coleman site (41BX568; Potter et al. 2005) show evidence of increased nutritional stress and social violence. In addition, the mortuary program followed by Austin phase populations appears to contrast with that of the preceding Late Archaic subperiod peoples of the area (Potter et al. 2005). There is less investment in mortuary goods or personal adornment during this phase, and the antlers that occur in numerous Late Archaic cemeteries are poorly represented in Late Prehistoric cemeteries.

The broad-based subsistence patterns of the Austin phase focused largely on gathering, though hunting of deer along with exploitation of freshwater mussels and snails is also suggested to have been important (Prewitt 1981:83; Ricklis and Collins 1994). The diagnostic projectile points of

the Austin subperiod are the Scallorn and Granbury. Austin phase components have been found at sites along waterways throughout Bexar County (e.g., Cibolo Creek [sites 41BX379, 41BX746, 41BX1005], Salado Creek [sites 41BX699, 41BX1007, 41BX1433]), the San Antonio River [site 41BX567] and the Medina River [sites 41BX1076, 41BX1104]) (Texas Archeological Sites Atlas). Friday bifaces and unifaces, other bifaces, scrapers, ground stone, ulna flakers, and bone awls are among the wide variety of tools. Other artifacts include painted stones, bone beads, and marine shell beads and pendants. Projectile points are proportionately more common during the Austin phase as hunting appears to have become increasingly important. The widespread occurrence of Scallorn points outside of Central Texas and the frequency of marine shell indicate a broad cultural entity and/or extensive trade networks in the Late Prehistoric.

The Toyah phase is the better known Late Prehistoric phase. It is distinct from the preceding Austin phase and is marked archeologically by Perdiz and similar contracting-stem arrow points, pottery, bevel-edged bifacial knives, perforators, and end scrapers (Black 1986, 1989, Creel 1991; Hester 1980, 1995; Jelks 1962; Johnson 1994; Kelley 1986; Prewitt 1981). Perishable artifacts such as cordage and basketry are found at some sites. Corncobs have also been recovered, indicating either trade relations with agricultural peoples or some degree of horticulture (Prewitt 1981:74). Extensive trade relations are also indicated by the presence of Caddo ceramics, such as Bullard Brushed, among other imported types. Toyah phase burials sometimes contain artifacts, but it is not established that these are grave goods. Perdiz and Clifton points found in burials may be from fatal wounds and indicative of increased conflict. Sites in Bexar County associated with the Toyah phase have been recorded in Government Canyon (e.g., 41BX133, 41BX141) and along Cibolo Creek (41BX372), the Medina River (41BX528), and Culebra Creek (41BX1422, 41BX1423) (Texas Archeological Sites Atlas).

During the Toyah phase, a climatic shift to moister conditions allowed the savannas and grasslands to advance, bringing the return of the bison. Subsistence strategies shifted even further toward hunting in response to the reoccupation of Central Texas by bison (Dillehay 1974). Deer, however, probably continued to be an important resource (Black and McGraw 1985). The importance of bison to the Toyah economy is readily deduced from the makeup of artifact assemblages represented at a number of archeological sites. The Buckhollow site (41KM16) produced an abundance of Perdiz arrow points of many varieties (Johnson 1994). Also found were Harahey knives, most of them containing four beveled edges. The knife use wear is

representative of cutting bison hides and flesh—a hypothesis supported by the recovery of large numbers of bison bones. Also indicative of the importance of bison is the recovery of large end scrapers from the site. The presence of edge rounding and polish on bit ends indicates use on fresh hides, most of which were probably bison (Johnson 1994). The Hinojosa site (41JW8), located in Jim Wells County in southern Texas, represents a Late Prehistoric Toyah base camp dating from A.D. 1300–1500 (Black 1986). Specialized hunting adaptations are evident from the archeological materials, though a broad subsistence base of fish, soft-shell turtle, aquatic birds, and mussel shell was also exploited. Deer figured prominently in the overall assemblage, with bison and pronghorn antelope also contributing a significant portion to overall subsistence (Black 1986). A major component of the highly adaptive bison-oriented Toyah phase tool kit is the end scraper used for processing hides. Creel (1991) has suggested that these tools are indicative of the importance of trade in bison hides during the Late Prehistoric and Early Historic subperiods. Bison bones occur in great frequency in many Late Prehistoric Toyah phase sites. Excavations at 41LK201 and 41MC222 along the Frio River drainage contained abundant bison bone, with the latter site dating to around A.D. 1260–1290 (Hester 1980; Highley 1986).

### **Historic Native American**

The Historic Native American stage (post-A.D. 1500) in Central Texas represents the local expression of sweeping cultural change for native peoples across North America. Spanish missionization corresponds to the first European influence in Texas, but it probably did not have dramatic effects until the 1600s when native groups sought refuge at the missions from encroaching Apache and, later, Comanche groups. Changes through gradual cultural adoption and exchange of Spanish life-ways and materials occurred throughout the seventeenth century. After the 1700s, European material culture became pervasive. Metal, glass, European clothing, and guns became important to native peoples, replacing traditional items.

The early history of southern and Central Texas is the most richly documented in the state. The numerous Spanish expeditions into these parts of the region resulted in records and journals that provide sparse glimpses into the past of the native peoples. Nevertheless, limited ethnographic cultural data exist for the native groups that occupied this immediate area preceding the establishment of the missions. Campbell and Campbell (1996) present a list of the groups

occupying Mission San Juan and Mission Espada, as well as the other missions in the area. For many of the groups listed, however, original territorial ranges can only be speculated, and their material culture cannot be differentiated from other groups residing in the missions at the time. In the nineteenth century, the term “Coahuiltecan,” for Coahuilteco, was coined by a Mexican linguist for a related group of native languages in the region (Campbell and Campbell 1996:17). The name came from the Mexican state of Coahuila, which included the northern part of New Spain and most of the area occupied by present-day Texas. Over the last century, the term “Coahuiltecan” was widely adopted for use in referring to the whole of the native groups living on the southern Texas plains region and into Mexico. Although the term originally described a group of related languages, it devolved into a common misinterpretation that was applied to a widespread ethnically related culture believed to speak the same Coahuiltecan language. This terminology was far from correct. In fact, the people who were subsumed under this umbrella term represented distinct ethnic groups with distinct cultures and diverse languages and dialects (Hester 1998).

Few Historic Native American archeological sites have been investigated in the San Antonio/Bexar County area. Supposed sites relating to the historic-era Indian contact period are usually characterized by multiple components that span a long period of time. Since the historic Indian period lasted only roughly 200 years, the material evidence occurs at shallow depths below surface or entirely on the surface. Consequently, it is prone to modern disturbance. Stratigraphic separation between the Late Prehistoric and Historic Native American contact components is often limited or nonexistent. Excavations at site 41MC296, a historic-era native encampment on Elm Creek in McMullen County, illustrate that European trade items were introduced to the South Texas native peoples in advance of the Spanish *entrada*. Conversely, at the Olmos Dam site (41BX1) in Bexar County, historic-era seasonal encampments made by native peoples traveling the “Peyote Trail” to northern Mexico were documented as late as the 1920s (Lukowski 1988).

Numerous river crossing sites with possible contact period components were identified during historical research and survey for the Applewhite Reservoir in San Antonio. They include the Dolores/Perez/Applewhite Crossing (41BX682); Pampopa/Paso del Talon (41BX680), one of the documented crossings used by Native Americans prior to Spanish use; Sabinitas/Jett/Palo Alto Crossing (41BX857); and Paso de las Garzas (41BX697) (Hindes 1992). Archeological

investigations were conducted at the Pampopa-Talon crossing site (41BX528), where important roads connecting San Antonio to points along the Rio Grande pass over the Medina River. Between 1731 and 1737, the Pampopa fled mission confinement and were pursued to their *rancherías* near the “Old Ford” of the Medina River. Historic accounts tell of encampments of the Pampopa and other Indian groups nearby (Thoms and Ahr 1995). The Pampopa Crossing/Ford has been positively identified at sites 41BX527 and 41BX528 on the Medina River.

## **HISTORIC CHRONOLOGY (A.D. 1500s–EARLY 1900s)**

### **Spanish Exploration and Settlement**

The initial European presence in Texas occurred in 1519 when Álvarez de Piñeda mapped the coastline of Texas under the order of Francisco Garay, then governor of Jamaica. Piñeda laid claim to all the land between Florida and the Rio Grande in the name of the Spanish Crown. His explorations were followed by those of Alvar Núñez Cabeza de Vaca in the 1530s. Cabeza de Vaca was a member of the 1527–1528 expedition of Pánfilo de Narváez, a large expedition charged with surveying much of the land in the southeastern United States. While inland, the Narváez group became separated from the ships. Because of hostile Indians and food shortages, Narváez led his men in improvised watercrafts along the Gulf of Mexico coastline, hoping to reach the Pánuco River. A hurricane destroyed most of the group, but shipwrecked a few of the men, including Cabeza de Vaca, on the Texas coast, probably on present-day Galveston Island, in 1528. De Vaca lived among the coastal Indians for the next eight years. After being enslaved by hostile Indians, he eventually made his escape, arriving at a Spanish outpost to the west in 1536. He was the first non-Indian to wander through the Texas region, and his writings about his travels were the first accounts of the area, generating excitement over the prospect of gold and leading to subsequent Spanish expeditions to the region in search of the precious commodity. Soon, Spanish authorities commissioned Francisco Vázquez de Coronado, governor of the Spanish province of Nueva Galicia, to lead an expedition into the American Southwest in 1540 in search of the fabled Seven (Golden) Cities of Cibola to the north (Fehrenbach 1968:23). The expedition was a dismal failure in its attempt to find the legendary gold, but did succeed in exploring some of present-day Texas and New Mexico. In 1539, Hernando de Soto’s expedition landed in

present-day Florida and over the next four years traveled across the southeastern United States. After de Soto's death at the Mississippi River, Luis de Moscoso de Alvarado took command of the expedition. By 1542, the Moscoso group had traveled as far west as Texas (Hester 1989:199) in an attempt to reach New Spain (present-day Mexico).

As it became apparent that there were no cities of gold to exploit, settlement was somewhat slowed until French interest in the region stimulated the Spanish to renew their colonizing efforts. After word came in 1685 that Rene-Robert Cavelier, Sieur de La Salle, had established an outpost somewhere on the Texas coast, the Spanish were motivated to send various expeditions to locate and eradicate the outpost. The threat that the French presented became almost an obsession with the Spanish:

The specter of French invasion brooded over the Spanish colony in New Mexico for nearly two centuries. Somewhere—perhaps from the wilds of New France, perhaps from the coast of the Gulf of Mexico, at some incalculable distance—an indeterminable number of Frenchman were periodically thought to threaten the silver mines of New Spain. . . . Beset with internal problems, woefully conscious of their weakness and isolation, New Mexicans started at the very shadow of intruders on the vague periphery of their province [John 1975:155].

This attitude encouraged the establishment of missions and presidios in East Texas to buffer against further French encroachment into the region (Fox 1989:85).

Alonso de León mounted various expeditions into Texas between 1686 and 1690. In 1691, Domingo Terán was appointed governor of the province. He, accompanied by Padre Massanet, set out to determine what French activities were occurring in the region and to establish a series of missions among the Indians. In this pursuit, they came into the region of present-day San Antonio, both commenting on the fine plains and large numbers of buffalo they encountered (McGraw and Hindes 1987:64). Padre Massanet called the area “San Antonio de Padua” in honor of St. Anthony of Padua and suggested that it would make a suitable location for a mission. A small garrison of men was left there, and the Presidio of San Antonio de Béxar was initiated (McGraw and Hindes 1987:64). At least one source believes that the site of the presidio was initially called “the ‘level lands without woods’ which . . . de Terán and Massanet crossed when they continued their journey” (Habig 1968:160).

Activities in the area were curtailed during the Eleven Years' War of Spanish Succession (1702–1713); but when the Frenchman Louis Juchereau de St. Denis traveled over much of the province undetected in 1714, the Spanish were galvanized into action. A series of missions was planned throughout the frontier areas of New Spain. For example, in 1716, an expedition led by Captain Domingo Ramón set out for East Texas to establish missions and a presidio, including one at a site between the Red and Sabine rivers at Los Adaes (de la Teja 1988:51–51).

In response to the remoteness of the settlements in East Texas, the Spanish soon recognized that a “way-station” was necessary to bridge the distance between the newly settled missions and San Juan Bautista on the Rio Grande. The need for an intermediate location had been evident for some time, and “Terán . . . considered the upper San Antonio River valley, with its abundant water supply, woods and agricultural land, the ideal site for missions and towns” (de la Teja 1988:53). Of like mind was Fray Antonio de San Buenaventura Olivares who had been impressed with the area during his visit in 1709. Martín de Alarcón, who had been recently appointed governor to the province, considered the opinions. It was decided that two missions were to be founded: one on the San Antonio River and one on the San Colorado River, with the former established first. The viceroy ordered not only missionaries and soldiers to populate the new missions, but settlers and families, artisans, and livestock as well (de la Teja 1988:55).

The three-pronged approach that the Spanish used for settlement—which included presidio, mission, and civilian settlements—proved to be more successful than the establishment of mission and presidio or presidio alone (Gilmore 1991). This was certainly true in the case of San Antonio. On May 1, 1718, a group led by Alarcón and including Fray Olivares founded the Mission San Antonio de Valero on San Pedro Creek, and on May 5, 1718, the presidio and the villa of San Antonio de Béxar were established. Although ceremonially the city was founded in 1718, no actual construction was begun until 1719 due to the lack of men and materials (McGraw and Hindes 1987:66).

A total of five missions was eventually built on the San Antonio River, all within a 12-mile radius of the present city of San Antonio. They are, in order of establishment: Mission San Antonio de Valero (1718), Mission San José (1720), Mission Nuestra Señora de la Purísima Concepción (1731), Mission San Juan de Capistrano (1731), and Mission San Francisco de la Espada (1731). The last three had initially been established in East Texas, but were relocated to the San Antonio

River area. All of the missions in present-day San Antonio were administered by the order of Saint Francis. Mission San José was under the authority of the College of Zacatecas, and the remaining four were under the authority of the College of Querétaro. In 1773, all the San Antonio missions were placed under the auspices of the College of Zacatecas (Jackson 1986:33). Each ministered to different groups of Indians.

During the early 1700s, population growth was slow in the San Antonio area. Initially, most inhabitants were members of military households. Alarcón's first settlement had included "an engineer, stone mason, blacksmith, and a number of women and children" (de la Teja 1988:56). Fray Celiz, the chronicler of the Alarcón expedition, noted that the first attempts in 1718 to locate settlement sites were unsuccessful. A stable water supply for the missions was necessary for both crop production and human and animal consumption. Because of the relatively arid San Antonio environment, the missions needed an effective way to enhance the available water supply. The Franciscans adopted a system of irrigation ditches—called *acequias*—introduced into Spain by Moslems, and began construction in 1719 on a 15-mile network of seven gravity-flow ditches, five dams, and an aqueduct to distribute water to about 3,500 acres of cultivated land (National Park Service [NPS] 2005). The *acequias* are, in order of construction: Concepción/Pajalache (1791), Alamo Madre (1724), San José (1730), San Juan (1731), Espada (1731), San Pedro (ca. 1738), and Alazan (1872) (Guerra 1987:17–21). Once the first of the *acequias* was operational, settlers "expected a large crop of maize, beans, and other produce" (de la Teja 1988:57).

By 1721, San Antonio had become a series of wood and mud huts (*jacales*), typical of a Spanish frontier settlement. All settlers, both military and civilian, were dependent on the garrison for defense, communications, and, initially, civil administration. The missions of San Antonio attracted a variety of Indian groups, primarily Coahuiltecan and Karankawan hunter-gatherers, during the mid 1700s, but also attracted Indians of other origins, some of whom were fleeing Spanish disruptions in Nuevo León and other regions of northern Mexico (Hester 1989:200). However, not all Indian groups were interested in what the missions had to offer:

When our arms were first introduced in Texas, our foremost object was the propagation of faith, by the means of evangelic predication; but, notwithstanding the endeavors and apostolic zeal of the Reverend Missionaries, we could not succeed in gathering the Indians around the Missions. Used to a roving and unrestrained life, the Nations of that extended territory refused to submit to the merciful yoke of the Church, finding it rather burdensome, owing to their depraved habits. Unable to attract them to us of their own free will, we never availed ourselves of force. . . . [Buquor 1935:2].

Mission settlements were disrupted frequently from 1721 to 1749 by raiding Apaches. Even after a formal truce had been signed in 1749, thievery and limited hostilities took place throughout the rest of the century (de la Teja 1988:61). During the last half of the 1700s, hostilities also were occurring with various Comanche bands, who disapproved of the tentative link between the Spanish and the Apache.

At the expense of the Spanish Crown, colonists from the Canary Islands had been sent to colonize other areas with great success. The harsh economic conditions that existed on the islands, coupled with the promise of land, made the islanders eager emigrants (de la Teja 1988:67). On March 9, 1731, a group of colonists from the Canary Islands came to the area and were to have a profound effect on the region. As originally conceived, an additional 400 islander families would immigrate into the region. When it became apparent that this endeavor would be too costly, the idea was abandoned and no additional families were ever recruited (de la Teja 1988:68). The Canary Islanders were given control over lands previously allotted to the military settlers. They also were given control over the town council and effectively barred established settlers from participating in local government (de la Teja 1988:68). Eventually, local elections took place in which the sitting council elected its successors. Although these elections were full of irregularities, in the end they did provide a means by which new settlers could share in town government.

Initially, town lots were only distributed among Canary Islanders. The distribution of land to the islanders involves the first record of the San Antonio Town Tract (on which the city proper is located). Captain Juan Antonio Pérez de Almazán, who served as commander and superior justice (*justicia mayor*) of San Antonio, began to lay the tract for the town of San Antonio in 1731. He had to work around the existing presidio and missions (de la Teja 1988:122) because, in general, the land west of San Pedro Creek was considered less desirable because of its vulnerability to Indian attack.

Population growth in the area continued at a steady rate due to a variety of factors and in part to established access into the region via *El Camino Real*, also known as the King's Highway or the Old San Antonio Road. This "road" was not one fixed route, but one that altered with the season and the year. San Antonio de Béxar, as an established way-station, became a hub for the various routes (McGraw and Hindes 1987).

Land use outside of Béxar during the Spanish period was chiefly confined to large-scale ranching activities. Ranching during the eighteenth century was very relaxed. Round-ups amounted to little more than the gathering of wild, unbranded stock when meat or hide and tallow were needed (McGraw and Hinds 1987:71). This lax attitude can be attributed primarily to the small population and the lack of markets. However, some ranches in what is today Bexar County were more productive (McGraw and Hinds 1987:72).

Outside political factors during the latter half of the eighteenth century had a great impact on the region. The completion of the Seven Years' War (1754–1762) and the signing of the Treaty of Paris in 1763 resulted in the French and Spanish ceding most of the lands east of the Mississippi River to England, and Spain acquiring the Louisiana Territory from France. This, of course, put an end to the years of Spanish paranoia and called for a reassessment of the situation in New Spain (McGraw and Hinds 1987:74). Local effects included the selection of Béxar as the new provincial capital.

The American Revolution encouraged economic growth in the region. Cattle from the ranches in the Béxar area were rounded up for sale in Louisiana to the Spanish who were fighting the British along the Gulf Coast (McGraw and Hinds 1987). Another change in the region was the beginning secularization of the missions by 1794. Secularization—the transition from mission status into secular Spanish society, based on official royal decree—was in part a result of the missions' decline in status as a response to the removal of the French threat. The second factor in secularization was the decline of the missions' indigenous inhabitants in the 1790s as those populations assimilated into Spanish society, achieving a major goal of the mission system, through intermarriage or conversion to Christianity. Pressure from the surrounding civilians for mission farmland (*labores*) increased as mission populations fell, and eventually secularization was complete by 1824 as the last of the *labores* were privatized, divided, and distributed among the remaining mission Indians and the local population (Reese 1995:K-9; Spanish Missions 2001).

Political events continued to have a rapid impact on the region. The Louisiana Purchase in 1803 brought about the establishment of a “no-man’s land” between the Texas and Louisiana border. Both Spain and America were eager to avoid a costly war. The Louisiana Purchase, however, did generate increased American interest in Texas. Many from the former French province were eager to emigrate:

In view of the fact that the said province has been retroceded to the French Republic and they have sold it to the United States of America, numerous noble, influential, and rich families, as well as some poor ones, desire to move to the provinces under your command in order that they might live under the Spanish flag and enjoy the same kind treatment that they, as well as their predecessors, have previously enjoyed. . . . the universal love and loyalty felt for the Spanish government is so great that we are satisfied and believe there will be more than a thousand families, more than two hundred of them of the Spanish nation, who will come as soon as they sell their lands . . . [Hatcher 1934:278].

This kind of attitude was not, however, prevalent throughout the Spanish colonies. Growing discontent with Spanish rule (which had been rapidly deteriorating) in the provinces resulted in 10 bitter years of strife, beginning in 1810 and culminating with Mexican Independence in 1821. These years had a profound effect in the region of what is today San Antonio. Filibusterers, encouraged by the claim that Texas was actually American territory, made forays into the province. In addition, battles were waged between Spanish loyalists and revolutionaries, and control of San Antonio de Béxar changed back and forth several times. In a particularly bloody incident, 1,000 persons in the province who were, or were accused of being, revolutionaries were rounded up and executed or exiled. Much of the improved farmland around Béxar was left fallow, and the town itself was almost abandoned because of the scarcity of food (Fehrenbach 1968:130).

### **Mexican Statehood**

The period following Mexican Independence brought a slow improvement in the conditions around San Antonio de Béxar. Beginning in 1823, immigration laws were changed to allow *empresarios* to offer lands to heads of families willing to settle in Texas. The policy had been initially investigated by the Spanish as a means of securing its territory and providing a buffer zone against Indian attack. In fact, Moses Austin had applied for and received permission to bring American colonists to Texas in 1821, before Mexican Independence (Fehrenbach 1968:135). Austin had been granted the right to settle 300 families in Texas, but he never saw his grant. By the time he returned to his home in Missouri, his health had broken, and before his death he only had time to beg his son Stephen to carry out his plans (Fehrenbach 1968:136).

Stephen F. Austin willingly followed in his father's footsteps, and because of the liberal land policies, first of Spain and later of Mexico, he had many eager volunteers ready to accompany him. Colonists had to be of good moral character and were required to become Spanish (then

Mexican) citizens. They were also required to convert to Catholicism, although this requirement was not rigorously enforced. Under Spanish/Mexican law, land was distributed as follows: one labor (177 acres) to each family engaged in farming, one league (4,428 acres) to each family engaged in ranching, and one-third league (1,461 acres) to each single rancher (Fehrenbach 1968:140). The government charged a flat title fee, and Austin received a fee. The law required the land to be developed in two years or be forfeited. In all, 297 titles were issued, and only seven were forfeited. Most of the settlers claimed to be ranchers for obvious reasons.

In San Antonio de Béxar, local politics were affected by the Mexican Constitution of 1824. Former Spanish provinces were turned into sovereign states, and Texas and Coahuila were combined into one state with Saltillo named as its capital. The legislature of Coahuila passed its own colonization laws in 1825. This continued to open up the area to Euro-American settlement, and in all, there were some 26 *empresarios* in colonial Texas.

After a decade of *empresarios*, over 20,000 Euro-Americans, with their slaves, were in Texas. The impact of this can be understood when realizing that the *empresarios* managed to settle more of Texas in a decade than the government of Spain had settled in three centuries.

One of the effects of increased immigration was the opening and improvement of roadways, many of which followed the earlier Spanish *caminos*. The influx of settlers into the region brought changes in local politics as well, with Anglo-American immigrants gaining more power. In many areas of Texas, Mexicans were becoming politically overshadowed by the new immigrants. This situation alarmed the Mexican government, who passed the Decree of April 6, 1830, prohibiting the further “colonization of Mexican territory by citizens of adjacent countries—meaning the United States” (Fehrenbach 1968:165). This decree also prohibited the importation of slaves and further alienated the Anglo-American settlers.

From 1832 to 1835, a series of conflicts and temporary solutions continued to drive a wedge between Texas and Mexico. When the Texans met in San Felipe de Austin in 1835, they adopted resolutions and framed a state convention (to form a state separate from Coahuila). Shortly afterward, when it became known that a Mexican army under Presidente Antonio López de Santa Anna had crossed the Rio Grande bound for San Antonio de Béxar to squelch the rebellious Texans, a call to arms was issued, and hostilities were begun in earnest (Fehrenbach 1968:193).

Many of the conflicts of what would come to be known as the Texas Revolution were fought in and around the modern city of San Antonio. These engagements culminated in the battle at the Alamo (formerly Mission San Antonio de Valero) in the spring of 1836. At the same time that the Alamo was under siege, elected representatives of the Texans were meeting at Washington-on-the-Brazos, and on March 2, 1836, the Texas Declaration of Independence was signed. After his victory at the Alamo, Santa Anna's forces were defeated by the Texans at the Battle of San Jacinto, and the Republic of Texas was born.

### **Texas Republic**

In 1836, the Republic of Texas was a “backwater” with about 40,000 residents, most of whom were subsistence farmers. When elections were first held in 1836, the Texans voted overwhelmingly to approve a union with the United States, but the issue of slavery stood in the way of annexation for 10 years.

The government of the new republic was a loosely organized affair. Among the many problems facing the new republic was the fact that “[t]here was no money economy, nor any money. There were no banks or improved roads or organized schools. There was no industry—everything from pins to powder had to be imported from the United States” (Fehrenbach 1968:247). The Texans quickly replaced the old Spanish/Mexican conventions with the more familiar American ones.

Bexar County was formed in 1836, with a population that was predominantly Mexican. However, the new republic was eager to encourage immigration, and it did so by offering its most abundant commodity—land. Travelers across the region wrote enthusiastic letters back home.

Texas is certainly one of the finest countries in the world, the salubrity of her climate and the luxuriance of her soil is beyond doubt unparalleled in the known world,—here it seems to be one perpetual spring [Hale 1836].

Under the Republic of Texas Constitution, settlers fell into one of three classes, which dictated the disbursal of land:

First Class—arrived before March 2, 1836

Heads of Household: one league and one labor (4,428 acres and 177 acres)

Single Man: one-third league (1,461 acres)

Second Class—arrived between March 2, 1836, and October 1, 1837

Heads of Household: 1,280 acres

Single Man: 640 acres

Third Class—arrived between October 1, 1837, and January 1, 1840

Heads of Household: 640 acres

Single Man: 320 acres.

The new settler to Texas had to find unclaimed land on his own and often would not be able to procure land in his county of residency. The responsibility for providing witnesses who could attest to the arrival date fell to the settler, as did the costs for the survey and filing fees. In most counties, the Board of Land Commissioners went to work without delay because of the extreme importance of land to the citizens. The later land laws established under the state of Texas were set up in much the same way, but with land also being granted preemptively, through “squatters’ rights.” Land also was distributed in differing amounts for military service. “Thus, it was virtually impossible . . . for a Texas family to be landless” (Fehrenbach 1968:283).

With the question of annexation to the United States unanswered, Mexico again laid claim to Texas as part of its territories in 1837. During this period, San Antonio and Bexar County once more became the setting for numerous hostilities between Mexican and Texan forces. Finally, after truce had been declared in 1843, the question of annexing Texas was once again raised in the U.S. Congress. By this time, sentiment had shifted in the United States, and on December 29, 1845, Texas was annexed officially.

### **American Statehood**

The annexation of Texas by the United States brought about many changes in the region. Commerce, which had faltered in the Texas Republic period during hostilities with Mexico, improved. San Antonio became a center for stagecoach travel into the region (McGraw and

Hindes 1987:95). Immigration from the rest of the United States increased rapidly, as did the arrival of refugees from abroad. The population became much more diversified with the organized immigration of Alsatian, French, and German colonists. These colonists clustered in Castroville and New Braunfels. From there the German colonists spread into the Balcones Escarpment regions west and north of San Antonio to communities like Helotes and Leon Springs (McNatt et al. 2000:29). One interesting fact relating to San Antonio is that “by 1850, and for many years afterward, European, mostly German, immigrants in San Antonio outnumbered both Mexicans and Anglos” (Fehrenbach 1968:285).

During the early years of statehood, the San Antonio region continued to be “Anglicized.” This was true in all areas and was demonstrated by a growing use of more “Anglo” types of architecture and building materials. In San Antonio itself, small businesses thrived and fledgling industries developed.

Military exploration of the lands west of San Antonio was necessary to open the west to trade and settlement. The military exploration and presence also served to defend the frontier and enable military personnel and civilians to identify and claim tracts of land to the west. The military was charged in 1849 with finding a suitable road for commerce between San Antonio and El Paso. The route identified followed the well-established Pinta Trail that connected San Antonio to Fredericksburg, Presidio San Saba, and eventually El Paso. This was known as the upper route and present-day IH 10 West now follows this historic road (Freeman 1994). The lower route followed a more southerly route and passed over the Seco, Frio, Nueces, and Devils rivers before arriving in El Paso from San Antonio.

In Texas, the political situation, like that throughout the United States, was uneasy during the 1850s. When the rest of the South seceded from the Union in 1860–1861, the state of Texas voted overwhelmingly to follow. In general, the region around San Antonio fared better than most during the Civil War. When San Antonio was named the headquarters for the Cavalry of the West in 1864, some of the smaller communities actually benefited from this posting because of the increased travel through the region (McGraw and Hindes 1987:99).

The initial years after the Civil War, however, brought several setbacks in the region. Much of the area had suffered from a severe drought in 1863. In some areas where slaves once had worked large plantations, tenant farming became the norm. In the latter years of the century, land speculation seemed to be very common.

### **History of Brackenridge Park**

The project area is adjacent to present-day Brackenridge Park, through which the once-abundant waters of the San Antonio River coursed. The control and exploitation of the San Antonio River was a factor that ensured the development of early San Antonio. The area encompassing the park is also emblematic of the history of the city during the late nineteenth and early twentieth centuries, as well as the source of current archeological investigation into the city's prehistoric past (see Ulrich and Pfeiffer 2010 for a comprehensive history of Brackenridge Park).

Two of the first *acequias* originated just to the north of Brackenridge Park and conveyed water through the park. The first was *Acequia Madre* built between 1719 and 1720 (Cox 2005) and provided water to Mission San Antonio de Valero and farm lands belonging to the mission. The second was *Acequia Labor de Arriba* (Upper Labor *Acequia*) built between 1776 and 1778 (Cox 2005). The lands that would form the park were used as agricultural fields and pastures up to the 1850s (Katz and Fox 1979; Pfeiffer 2012).

Much occurred historically on the land that is the present-day Brackenridge Park. After 1823, the Garza family, who had bought land in the southern portion of the park, built a grist mill. Although its location is unknown, Katz and Fox (1979) speculate it may be associated with the area around Mill Race Road. In the 1840s, limestone quarries were built along the western edge of the park (Katz and Fox 1979). In 1852, the land that encompassed the headwaters of the San Antonio River was bought from the city by James Sweet, a city alderman (Katz and Fox 1979; Pfeiffer 2012). The public was alarmed by this action because of the high value of water for irrigation and personal use as well as the perception of backroom dealings between the city and a city official. In 1863, the Confederate government bought 78 acres of land to construct a tannery. However, due to deprivations from the Civil War, the tannery never functioned to capacity. The Alamo Portland and Roman Cement Plant was built in 1880 (Katz and Fox 1979).

George Brackenridge moved to San Antonio in 1865 and formed the San Antonio National Bank in 1866. In 1869, Brackenridge acquired the San Antonio Headwaters tract and adjacent lands. Brackenridge was perceived by the city and public as both a benefactor to the city as well as a shrewd businessman who exploited its resources for his own gain. This characterization is supported by the cancellation of the San Antonio Headwaters sale (1872) by Brackenridge to the city after a public outcry of potential profit (Pfeiffer 2012). This outcry occurred despite the need by the growing city for untainted public waters after cholera epidemics in the late 1860s. Brackenridge and his partners subsequently began to purchase more riverfront land. In 1883, Brackenridge assumed ownership of the Water Works Company (also known as the San Antonio Water Supply Company) formed in 1877 (Katz and Fox 1979). This company supplied potable water to the residents of San Antonio through a reservoir near present-day Mahncke Park (Katz and Fox 1979). A second waterworks plant was built in 1886 because of increased demand by customers (Katz and Fox 1979). Because this area was a source of water, the creation of water power facilities spurred the growth of local industrial businesses.

In 1899, Brackenridge donated 199 acres through the Water Works Company to the city for use as a park, with stipulations (Katz and Fox 1979; Pfeiffer 2012). These stipulations included the control of a 250-ft-wide strip of land adjacent to River Avenue (now known as Broadway Street), of a 25-ft-wide strip along each side of the river, and of the east bank of Upper Labor Ditch. The Water Works Company maintained control of the two entrances to the park from Broadway Street. Brackenridge sold his interest in the San Antonio Water Supply Company in 1905 (Katz and Fox 1979).

Between 1899 and the 1930s, the park was enlarged and improved with the donation of additional lands as well as infrastructure enhancements by the city. The Lion's Field portion of the project area was used as pasture for deer, bison, and elk. It was purchased by the city between in 1916 and 1920 (Katz and Fox 1979). The Lion's Club Athletic Field and Playground Field served as the first supervised playground in San Antonio and was maintained and operated by the Lions Club (Katz and Fox 1979; Pfeiffer 2012). The Brackenridge Municipal Golf Course was constructed in 1916 by renowned golf designer A. W. Tillinghast (King and Trimble 2012). Avenue B was expanded from Mill Race Road to Lion's Field between 1911 and 1922 based on Sanborn map review. The San Antonio Zoo was built on the former grounds of the Confederate tannery in 1916. In 1917, the Japanese Garden was created from the abandoned quarry on the

western edge of the park. The Witte Museum was erected in 1926, and the Pioneer Museum built in 1936.

Since the 1940s, Brackenridge Park has remained essentially the same with the exception of the construction of Highway 281 during the 1960s. In 1998, the San Antonio River Improvements Project was announced by the city of San Antonio, Bexar County, the San Antonio River Authority, the U. S. Army Corps of Engineers, and the San Antonio River Foundation (San Antonio River Improvements Project 2013). This project was designed to make improvements to the San Antonio River from Hildebrand Avenue to Loop 410 South. Included in the project was the “Museum Reach” portion that would make improvements to Brackenridge Park with the addition of hike and bike trails, and constructed wetlands near the Witte Museum. As a result of these improvements to the park and its infrastructure, archeological survey and mitigation was mandated to comply with national, state, and city laws and regulations pertaining to historical resources, and numerous investigations have occurred (e.g., Figueroa and Dowling 2007; Figueroa et al. 2006; Houk 2002; Ulrich 2011; Ulrich and Pfeiffer 2010).

## CHAPTER 4 METHODS

### LITERATURE SEARCH AND PREVIOUS INVESTIGATIONS

Prior to conducting fieldwork, a literature search of any previously recorded sites or National Registered-listed properties within a 1-mile radius of the project area was conducted through the Texas Archeological Sites Atlas. Both Brackenridge Park, through which the project crosses, and the University of the Incarnate Word, located north of the project area, are listed State Archeological Landmarks. Although no sites were found within the project APE, 21 sites are within the 1-mile radius (Table 3); in addition to formal sites, several “collection” areas were identified in the files, but never formally designated as sites (Katz and Fox 1979).

In addition, historical maps and aerial photographs were consulted to identify previous historical features within the project APE. These features include the presence of *acequias*, roadways, and/or historic-era buildings or structures. One such feature is the presence of a manmade pit in the southwestern portion of the Lion’s Field Adult Center shown on the 1903 U.S. Geological Survey (USGS) map.

### FIELDWORK

The archeological survey consisted of two phases of investigations. The first phase was composed of drilling 34 geotechnical/geomorphologic borings along the project APE from Josephine Street to the Witte Museum, 3801 Broadway Street. The second phase consisting of six backhoe trenches focused its investigation on a target area, from Mill Race Road to Lion’s Field Adult Center, within the APE.

Table 3  
Archeological Sites within 1 Mile of the SAWS Olmos Basin (C-3), Reaches 1–4, Project Area

Site Number	Component	Cultural Affiliation/ Time Period	Site Type	NRHP or SAL Status
41BX13	Prehistoric	Late Prehistoric	Prehistoric village/camp	SAL
41BX170	Historic	Undefined	Undefined	Unknown
41BX171	Historic	Early 1900s	City dump/quarry	Unknown
41BX261	Historic/ Prehistoric	1888–1911/ Unknown	Historic dump/ Lithic manufacturing site	Unknown
41BX264	Prehistoric	Unknown	Burned rock features	Potential SAL
41BX283	Historic	Late 19th/Early 20th c.	Historic quarry	Unknown
41BX284	Historic	Unknown	Mill	Unknown
41BX285	Historic	Unknown	Historic foundation	Unknown
41BX289	Historic	1852	Residence of George Brackenridge	Unknown
41BX293	Prehistoric	Unknown	Undefined	Unknown
41BX321	Prehistoric	Unknown	Lithic scatter	Unknown
41BX322	Prehistoric	Unknown	Lithic scatter	Unknown
41BX323	Prehistoric	Unknown	Lithic scatter	SAL
41BX1273	Historic/ Prehistoric	Spanish Colonial/ Unknown	Upper Labor Dam/ Prehistoric campsite	Potential SAL
41BX1396	Prehistoric	Early Archaic	Burned rock middens	SAL
41BX1425	Historic/ Prehistoric	Ca. 1910	Historic house	Unknown
41BX1754	Historic/ Prehistoric	Early 20th c./ Unknown	Miraflores Park/ Prehistoric component	Eligible
41BX1773	Historic/ Prehistoric	Unknown/ Unknown	Historic and prehistoric artifact scatters	Unknown
41BX1798	Historic/ Prehistoric	Late 19th c./ Unknown	San Antonio Water Works Co./ Prehistoric habitation	Unknown
41BX1892	Historic	Spanish Colonial	Quarry	Potential SAL
41BX1899	Prehistoric	Unknown	Lithic scatter	Unknown

An initial set of 19 geotechnical boreholes was previously done by Fugro Consultants, Inc. Unfortunately those cores were not currently available to be analyzed by a geoarcheologist. Thus, in consultation with the THC and the city archeologist, Geo-Marine proposed an additional 15 geomorphological cores strictly to aid in the determination of placement of backhoe trenches for deep archeological survey. Soil samples recovered from these core sampling tubes were examined to determine texture, color, composition, and other characteristics, in addition to the examination of each soil column for cultural materials. These observations were used to determine the presence of intact Holocene deposits with stable surfaces that could contain potential archeological features and/or deposits, or to exclude areas within the APE that were unlikely to contain intact archeological features and/or deposits.

Based upon analysis of the core samples, six backhoe trenches were excavated to determine the potential for intact archeological deposits or features within a target area of the project APE from Mill Race Road (Backhoe Trench [BHT] 1 and BHT 2) to Lion's Field Adult Center (BHT 3–BHT 6). Backhoe trenches were placed slightly offset from the replacement line due to the number and proximity of utilities in corridor, and at an approximate interval of 50 m from each other. The ideal backhoe trenches were planned to be approximately 6 m (20 ft) in length and excavated to a depth of 3 m (10 ft) if appropriate. The project archeologist was given the discretion to move trench locations, to eliminate any trench, and to adjust length or depth based upon the presence of utility lines, disturbed landform, and/or safety concerns. Profiles and soil descriptions were completed for all trenches, in addition to the examination of each trench for cultural materials and/or features. If intact archeological deposits or feature were encountered or suspected to be present, a small excavation unit was placed off the trench to further investigate the feature or deposit to aid in determining function and/or integrity. One small unit was excavated off BHT6 to further to investigate cultural material found in the backfill.

#### **Site Definition**

A site is defined on the basis of content and extent and contains cultural items of at least two different artifactual materials or classes (e.g., prehistoric stone tool manufacturing debris of different raw materials, or manufacturing debris in combination with stone tools). Should any cultural resources be located within a trench, the site would be recorded to the extent possible within the backhoe trench. Cultural remains meeting these criteria are designated as a site, recorded on a Texas Archeological Site Data Form, and submitted to the Texas Archeological Research Laboratory (TARL) in Austin for official site trinomial assignment.

#### **National Register of Historic Places Criteria**

The assessment of significance of cultural resources properties is based on federal guidelines. The criteria to evaluate properties for inclusion in the NRHP are codified under the authority of the National Historic Preservation Act of 1966. Based on regulations set forth by the Advisory Council on Historic Preservation (ACHP), any resource that is included in or eligible for inclusion in the National Register is a "historic property." According to federal regulations, "The

term ‘eligible for inclusion in the National Register’ includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet National Register listing criteria” (36 CFR §800.2[e]). The ACHP has set forth the following guidelines to define significance and to determine eligibility of cultural resources:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, 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 [39 CFR Part 60].

### **Texas State Archeological Landmark Criteria**

A State Archeological Landmark is designated by the Texas Historical Commission and receives legal protection under the Antiquities Code of Texas. For a building, listing in the National Register of Historic Places is a prerequisite for SAL designation.

SAL designation stipulates that the property cannot be removed, altered, damaged, salvaged, or excavated without a permit from the THC. This designation encourages preservation and ensures that resources that cannot be preserved are at least properly documented.

Under the Texas Antiquities Code at the state level, archeological sites may be considered significant and be recognized or designated as an SAL provided that at least one of the following conditions is met:

- (1) The archeological site is situated on lands owned or controlled by the State of Texas or one of its political subdivisions; or
- (2) The archeological site is situated on private lands that have been specifically designated as an SAL . . . and fits at least one of the following criteria:
  - (A) Preservation of materials must be sufficient to allow application of standard archeological techniques to advantage;
  - (B) The majority of artifacts are in place so that a significant portion of the site’s original characteristics can be defined through investigation;

- (C) The site has the potential to contribute to cumulative culture history by the addition of new information;
- (D) The site offers evidence of unique or rare attributes; and/or
- (E) The site offers a unique and rare opportunity to test techniques, theory, or methods or preservation, thereby contributing to scientific knowledge [Texas Natural Resources Code 1977; Title 9, Chapter 191, Texas Antiquities Committee, Section 191.094 and Chapter 41.7, Antiquities Code of Texas].

### **CURATION FACILITY**

All collected artifacts, notes, forms, and photographs obtained during this project will be curated at the Center for Archaeological Research at the University of Texas at San Antonio.

## **CHAPTER 5**

# **GEOMORPHOLOGICAL DESCRIPTIONS OF BORING AND TRENCHING INVESTIGATIONS FROM JOSEPHINE STREET TO WITTE MUSEUM**

### **INTRODUCTION TO BORING INVESTIGATIONS**

The APE is east of the current channel of the San Antonio River, either on the floodplain itself or the low fluvial terraces that border the floodplain's eastern margin. Previously, 19 geotechnical boring samples (Boreholes B-1 through B-19) were made to gather data from this area: 18 geotechnical bores were excavated in late 2010, and an additional geotechnical bore was excavated in August 2011 in the northeast corner of the Witte Museum property, bringing the total previous geotechnical borehole samples to 19 (Fugro 2010, 2011).

Because these previous samples were no longer available for analysis, additional geomorphological cores were placed among the previous boreholes. Currently, an additional 15 geomorphological core samples—Cores 1A through 9A, and 12A through 17A were excavated to collect samples for geomorphological study (note that because Boreholes B-10 and B-11 were outside the current project area [Figure 3a], designations for “Core 10A” and “Core 11A” were not used during the present geomorphological coring so as to stay within and retain the original numbering sequence of previous Boreholes B-1 through B-19). These 34 total borings were located along a southwest-to-northeast-trending line directly adjacent to and slightly west of Avenue B or, in two cases (Cores 8A and 9A), Broadway Street (Figure 3b; see Figure 3a). Figure 4 shows the profiles of the 15 geomorphological cores excavated and analyzed by Geo-Marine.

IMAGE  
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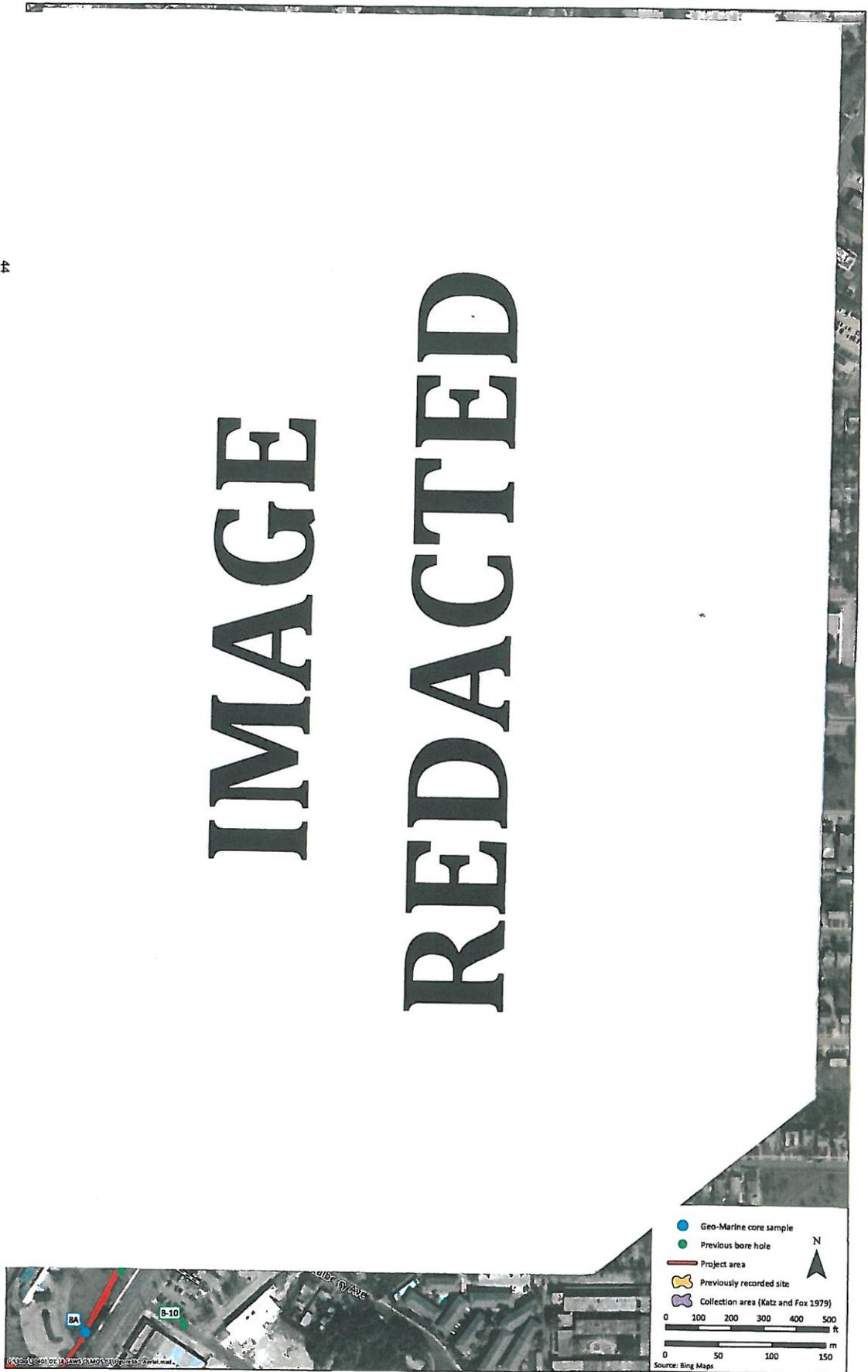


Figure 2b. Aerial of the northeastern half of the proposed Oimos C-3 sewer replacement line showing the locations of previous geotechnical boreholes and current geomorphological cores as well as previously recorded sites adjacent to the project area.

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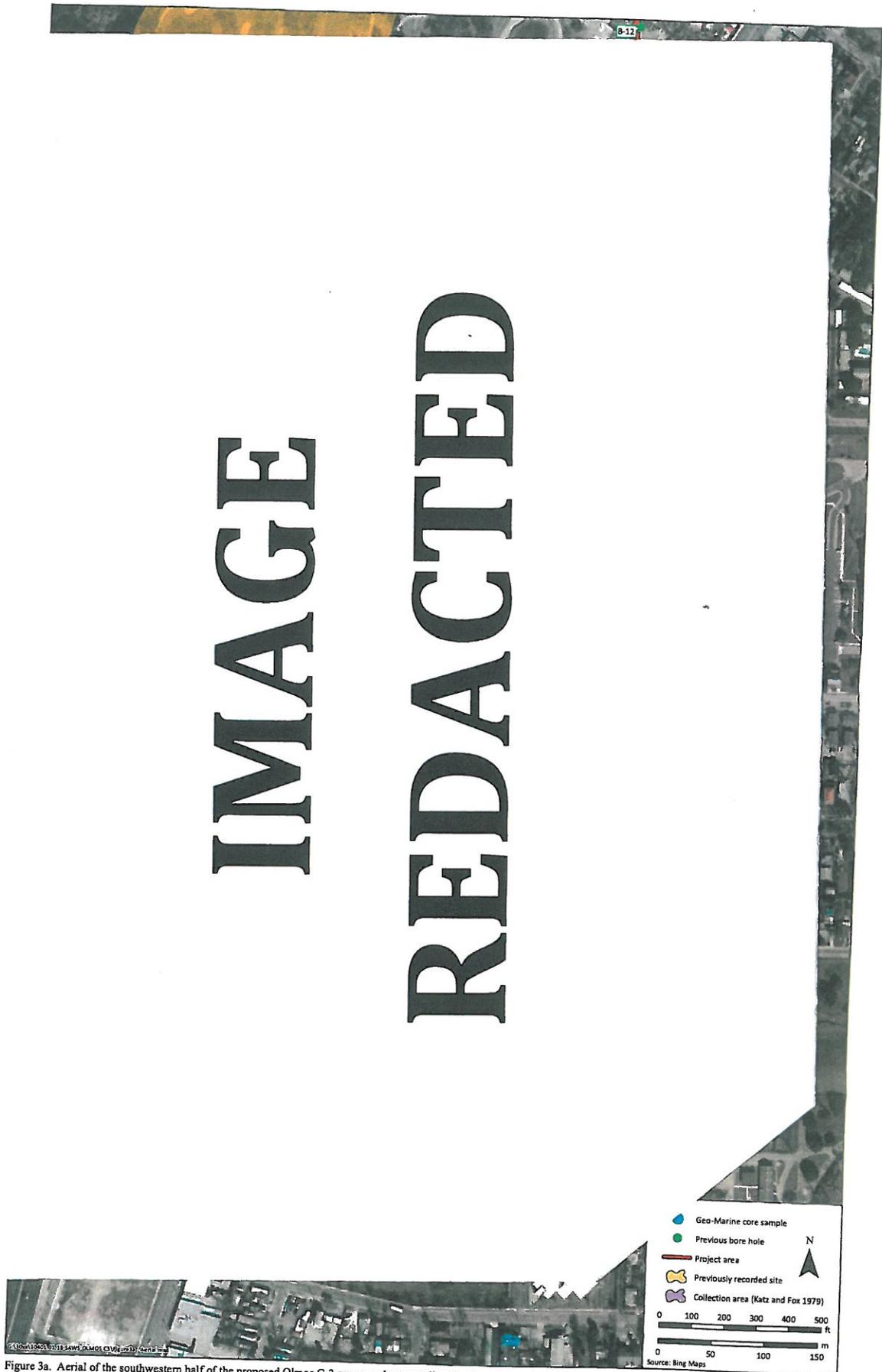


Figure 3a. Aerial of the southwestern half of the proposed Olmos C-3 sewer replacement line showing the locations of previous geotechnical boreholes and current geomorphological cores as well as previously recorded sites adjacent to the project area.

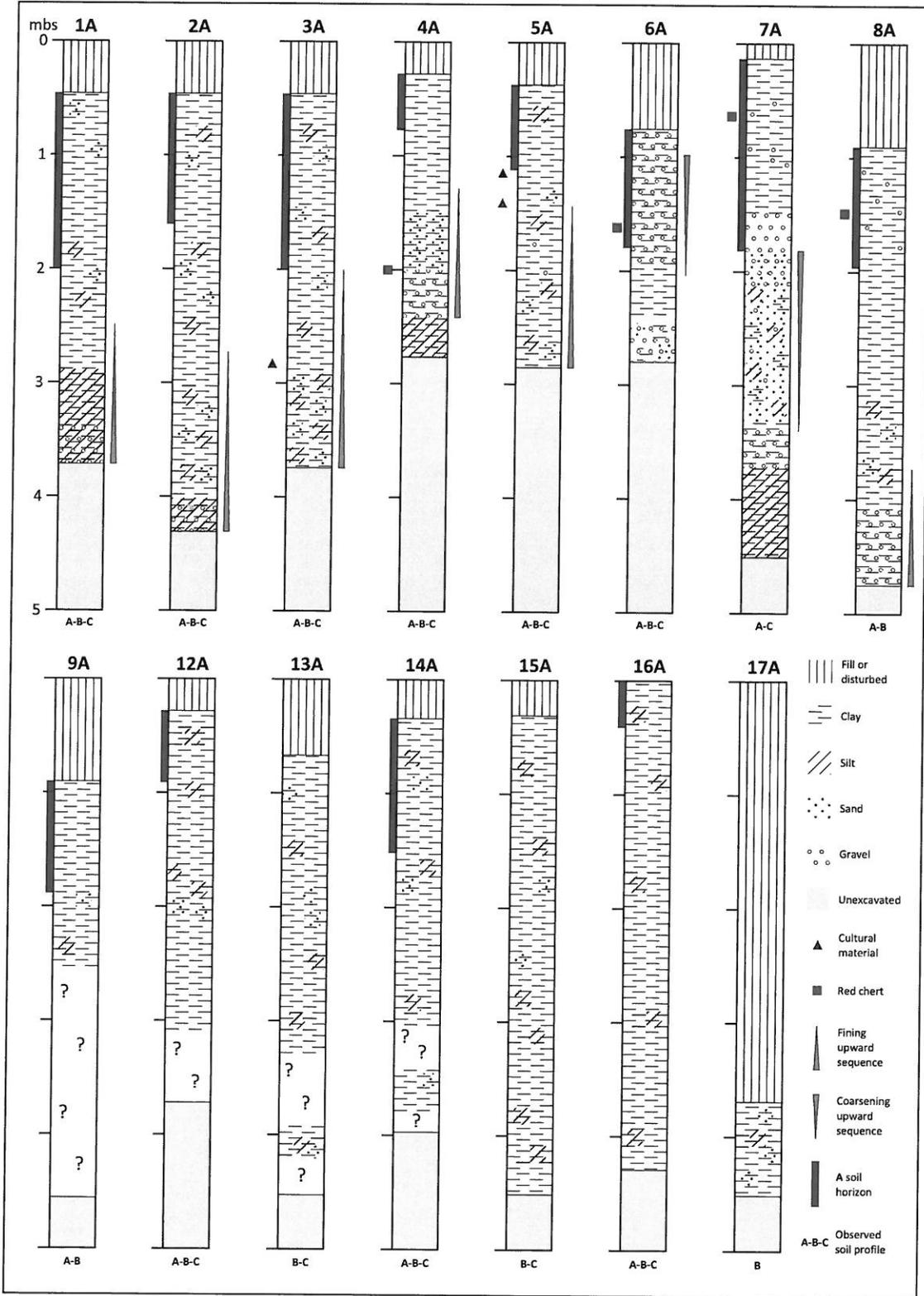


Figure 4. Profile diagrams of geomorphological Cores 1A-9A and 12A-17A.

### **Core 1A**

Core 1A was located on Avenue B approximately 100 m (370 ft) north of Josephine Street on the west side of Avenue B (see Figures 3a and 4). The core reached a maximum depth of 3.66 m below surface. The upper 43 cm of the core consisted of fill. It was divided into three horizons, beginning with an A1ca horizon (43–135 cm below surface [cmbs]) of black to very dark gray (10YR 2/1 to 10YR 3/1) slightly silty clay followed by an A2ca, very dark brownish gray (10YR 3/2) very slightly sandy, silty clay. The B1ca horizon (135–196 cmbs) consisted of very dark brownish changing to a lighter dark grayish brown (10YR 4/2) slight sandy, silty clay. This was followed by B2cca horizon of brown to yellowish brown (10YR 5/3 to 10YR 5/4) transitioning to a pale brown (10YR 6/3) silty clay. Calcareous concretions that were noted in the B horizon increased with depth. The core terminated at a C1c horizon (244–318 cmbs) of light gray (10YR 7/1 to 10YR 7/2) very silty clay grading to clayey silt followed by a C2C horizon (318–366 cmbs) described as clayey, sandy silt. No cultural material was observed in the core.

### **Core 2A**

Core 2A was located on Avenue B approximately 255 m (836 ft) north of Josephine Street on the west side of Avenue B (see Figures 3a and 4). The core reached a maximum depth of 4.27 m below surface. The upper 43 cm of the core consisted of fill. The core was divided into five horizons, beginning with an A horizon (43–86 cmbs) of very dark gray (10YR 3/1) very slightly sandy, silty clay. The second level was an ABca to B1ca horizon (86–183 cmbs) consisting of dark gray (10YR 4/1) changing to dark grayish brown (10YR 4/2) very slightly sandy, silty clay to slightly silty clay. This was followed by a B2cca horizon (183–300 cmbs) of grayish brown (10YR5/2) sandy, silty clay. Calcareous concretions were noted in the B horizon; these concretions increased with depth. The core terminated at a C1cca horizon (300–397 cmbs) of gray to light brownish gray (10YR 6/1 to 10YR 6/2) slightly silty, sandy clay. A clear boundary separates the C2 horizon (397–427 cmbs) of gray (10YR 6/1) slightly, sandy clay matrix with medium to coarse gravels. No cultural material was observed in the core.

### **Core 3A**

Core 3A was located on Avenue B approximately 50 m (164 ft) south of Mill Race Road on the west side of Avenue B (see Figures 3a and 4). The core reached a maximum depth of 3.78 m below surface. The upper 41 cm of the core consisted of fill. The core was divided into four horizons, beginning with an A1ca horizon (41–152 cmbs) of black to very dark gray (10YR 2/1 to 10YR 3/1) silty clay. This was followed an A2ca horizon (152–201 cmbs) of very dark gray to dark gray (10YR 3/1 to 10YR 4/1) clay. A few chert gravels were noted in this horizon, in addition to a few calcareous concretions. This horizon showed evidence that the core may have intersected with a previous boring. The Bcca horizon (201–292 cmbs) followed; it consisted of dark grayish brown to grayish brown (10YR 4/2 to 10YR 5/2) sandy, silty clay. The core terminated at the Cox horizon (292–378 cmbs) a very pale brown (10YR 8/3 to 10YR 8/4) sandy, silty clay. One chert flake was observed in the core at estimated depth of 275 cmbs.

### **Core 4A**

Core 4A was located on Avenue B approximately 95 m (311 ft) north of Mill Race Road on the west side of Avenue B (see Figures 3a and 4). The core reached a maximum depth of 2.74 m below surface. The upper 30 cm of the core consisted of fill. The core was divided into five horizons, beginning with an A horizon (30–75 cmbs) of very dark gray (10YR 3/1) clay. This was followed a B1ca horizon (75–137 cmbs) of dark grayish brown (10YR 4/2) sandy, silty clay. A few calcareous concretions were noted in this level. This was followed by a B2ca horizon (137–198 cmbs) of brown to yellowish brown (10YR 5/3 to 10YR 5/4) sandy, clay, and the B3ca horizon (198–244), a pale brown (10YR 6/3) slightly sandy clay. The B3ca horizon whitened noticeably with large calcareous concretions. In addition, several lenses of chert gravels were observed within this horizon. The core terminated at the Cca horizon (244–274 cmbs), a very pale brown (10YR 8/2 to 10YR 8/3) silty clay transitioning to a clayey silt. Medium to large rounded chert gravels were observed in the upper portion of the Cca horizon. Reddened chert gravels (possibly heat-treated) were observed in the B3ca horizon.

### **Core 5A**

Core 5A was located on Avenue B approximately 248 m (813 ft) north of Mill Race Road on the west side of Avenue B (see Figures 3a and 4). The core reached a maximum depth of 2.82 m below surface. The upper 38 cm of the core consisted of fill. The core was divided into three horizons, beginning with an A horizon (38–109 cmbs) of very dark gray (10YR 3/1) clay, slightly silty, followed by a Bca (109–201 cmbs) horizon consisting of brown (10YR 5/3) slightly sandy, silty clay. Calcareous concretions were noted in the B horizon; these concretions increased with depth. The core terminated at the Ccca horizon (201–282 cmbs) of very pale brown to light gray (10YR 7/3 to 10YR 7/1 to 10YR 7/2) sandy, silty clay. One red chert flake (at approximately 121 cmbs) and another reddened chert fragment (at approximately 140 cmbs) were observed within the core sample.

### **Core 6A**

Core 6A was located on the southern boundary of the Lion's Field Adult Center (see Figures 3a and 4). The core reached a maximum depth of 2.82 m below surface. The upper 79 cm of the core consisted of fill. The core was divided into four horizons, beginning with an A horizon (79–180 cmbs) of black to very brown to very dark gray (10YR 2/1 to 10YR 2/2 to 10YR 3/1) clay. This was followed a Bca horizon (180–201 cmbs) of dark grayish brown to grayish brown (10YR 4/2 to 10YR 5/2) clay. Dense chert gravels decreased with depth in this horizon; conversely, calcareous concretions increased with depth. This was followed by a Cc horizon (201–262 cmbs) of a light brownish gray to very pale brown (10YR 6/2 to 10YR 7/3) slightly sandy clay. The core terminated at the 2C horizon (262–282 cmbs), a light gray to very pale brown (10YR 7/2 to 10YR 7/3) gravel, sandy, silty clay matrix. No cultural material was observed in the core.

### **Core 7A**

Core 7A was located 70 m (229 ft) south of the Lion's Field Adult Center headquarters (see Figures 3a and 4). The core reached a maximum depth of 4.57 m below surface. The upper 10 cm of the core consisted of fill. The core was divided into six horizons, beginning with an A1 horizon (10–122 cmbs) of black to very dark gray (10YR 2/1 to 10YR 3/1) clay; followed an A2

horizon (122–183 cmbs) of black to very dark gray (10YR 2/1 to 10YR 3/1) clay. This was followed by a C1 horizon (183–206 cmbs) of light gray to very pale brown (10YR 7/2 to 10YR 7/3) slightly silty, sandy gravel matrix; followed by a C2 horizon (206–315 cmbs) of very pale brown (10YR 7/3 to 10YR 7/4) clayey, silty sand with common chert gravels. A clear boundary separated this horizon from the underlying C3gca light gray (5Y 7/1) mottled silty clay. The core terminated at the C4ca horizon (366–457 cmbs) composed of very pale brown (10YR 7/4) clayey silt. No cultural material was observed in the core.

### **Core 8A**

Core 8A was located 50 m (164 ft) east of the Lion's Field Adult Center headquarters adjacent to Broadway Street (see Figures 3a, 3b, and 4). The core reached a maximum depth of 4.72 m below surface. The core sample was damaged during the extraction, resulting in a minimal study size. The upper 91 cm of the core consisted of fill. The core was divided into three horizons, beginning with an Aca horizon (91–193 cmbs) of very dark gray to black (10YE 3/1 to 10YR 2/1) clay. This was followed a Bca horizon (193–457 cmbs) of light brownish gray to gray (10YR 6/2 to 10YR 5/1) slightly sandy, silty clay. Abundant large calcareous concretions and fine gravels were observed within the horizon. The core terminated at the Bg horizon (457–472 cmbs) composed of light olive brown (2.5Y 5/4) clay with abundant angular chert gravels. No cultural material was observed in the core. A few reddened chert gravels (possibly heat-treated) were observed in the Aca horizon.

### **Core 9A**

Core 9A was located in the northeast portion of the Lion's Field Adult Center approximately 30 m (98 ft) south of E. Mulberry Avenue (see Figures 3a, 3b, and 4). The core reached a maximum depth of 4.57 m below surface. This core sample was also damaged during extraction, resulting in a minimal study size. The upper 91 cm of the core consisted of fill. The core was divided into two horizons, beginning with an A horizon (183–245 cmbs) of black to very dark gray (10YR 2/1 to 10YR 3/1) clay. The core terminated at the B horizon a dark gray to gray (10YR 4/1 to 10YR 5/1) slightly sandy clay with few fine rounded gravels. The remaining core sample (245–457 cmbs) was not analyzed due to its poor condition. No cultural material was observed in the core.

### Core 12A

Core 12A was located approximately 102 m (334 ft) north of Mulberry Avenue on the east side of Avenue B (see Figures 3b and 4). The core reached a maximum depth of 3.66 m below surface. The upper 25 cm of the core consisted of fill. The core was divided into five horizons, beginning with an A horizon (25–86 cmbs) of very dark brown to dark grayish brown (10YR 2/2 to 10YR 3/2) silty clay. This was followed an AB to B1ca horizon (86–152 cmbs) of dark brown to dark grayish brown (10YR 3/3 to 10YR 4/2) silty clay. This was followed by a B2ca horizon (152–183 cmbs) dark grayish brown to dark brown (10YR 4/2 to 10YR 4/3) sandy, silty clay with common calcareous concretions. A clear boundary separated this horizon from the underlying B3k horizon, a brown (10YR 5/3) clay with large calcareous concretions in approximately 60–70 percent of the level. The core terminated at the Ck horizon yellowish brown (10YR 5/4?) clay, with large calcareous concretions in approximately 60–70 percent of the level. The remaining core sample (305–366 cmbs) was not analyzed due to its poor condition. No cultural material was observed in the core.

### Core 13A

Core 13A was located approximately 260 m (853 ft) north of Mulberry Avenue on the east side of Avenue B (see Figures 3b and 4). The core reached a maximum depth of 4.57 m below surface. The upper 65 cm of the core consisted of fill. The core was divided into five recognizable horizons, beginning with an B1ca horizon (65–86 cmbs) of dark grayish brown to dark brown (10YR 4/2 to 10YR 4/3) slightly sandy clay with common calcareous concretions. This was followed a B2ca horizon (86–117 cmbs) of pale brown (10YR 6/3) slightly, sandy clay. A gradual boundary separated this level from the underlying C1cca horizon (117–269 cmbs), a light yellowish brown to brownish yellow (10YR 6/4 to 10YR 6/6) slight sandy, silty clay with common to abundant calcareous concretions. This was followed by a C2cca horizon (269–330+ cmbs) of light gray to very pale brown (10YR 7/2 to 10YR 7/3) slightly, sandy, silty clay with calcareous concretions in the bottom portion. The zone between 330–390 cmbs was not analyzed due to its poor condition. This zone was followed by a C3gca horizon (390–432+ cmbs) of light gray to white (2.5Y 7/1 to 2.5Y 8/1) of sandy, silty clay with abundant calcareous concretions. The remaining core sample (432–457 cmbs) was not analyzed due to its poor condition. No cultural material was observed in the core.

### **Core 14A**

Core 14A was located at the intersection of Avenue B and Parfum Way (see Figures 3b and 4). The core reached a maximum depth of 3.96 m below surface. The upper 35 cm of the core consisted of fill. The core was divided into three horizons, beginning with an Aca horizon (35–147 cmbs) of very dark grayish brown to dark brown (10YR 3/2 to 10YR 3/3) slightly sandy, silty, clay with few calcareous concretions in the lower portion. This was followed a Bkca horizon (147–168 cmbs) of dark brown (10YR 4/3) silty clay with abundant calcareous concretions. This Bkca horizon was followed by a Ckca horizon (168–193 cmbs) light yellowish brown to brownish yellow (10YR 6/4 to 10YR 6/6) silty clay with texture obscured by calcareous cement. The remaining core sample (193–396 cmbs) was not analyzed due to its poor condition. No cultural material was observed in the core.

### **Core 15A**

Core 15A was located approximately 120 m (393 ft) north of the intersection of Avenue B and Parfum Way (see Figures 3b and 4). The core reached a maximum depth of 4.57 m below surface. The upper 30 cm of the core consisted of fill. The core was divided into five horizons, beginning with a Bca horizon (30–86 cmbs) of dark brown (10YR 4/3) slightly sandy, silty clay. This was followed a C1ca horizon (86–274 cmbs) of light yellowish brown to brownish yellow (10YR 6/4 to 10YR 6/6) slightly sandy, silty clay with common calcareous concretions. This C1ca horizon was followed by a C2cca horizon (274–335 cmbs) of light gray (10YR 7/1 to 10YR 7/2) silty clay with common calcareous concretions. A gradual boundary separates this horizon from the underlying C3gcca horizon (335–396 cmbs), a light gray (2.5YR 7/2) silty clay. In the C3gcca horizon, calcareous concretions were very common to abundant and reached a maximum at 365 cmbs and decreased below that depth. The core terminated at the C4gcca horizon (396–457 cmbs), a white (2.5 Y 8/1) silty clay with common calcareous concretions in approximately 25 percent of the level.

### **Core 16A**

Core 16A was located approximately 276 m (905 ft) north of the intersection of Avenue B and Parfun Way (see Figures 3b and 4). The core reached a maximum depth of 4.27 m below surface. The core was divided into six horizons, beginning with an A horizon (0–38 cmbs) of very dark gray (10YR 3/1) very slightly silty clay with few calcareous concretions. This was followed a Bca horizon (38–122 cmbs) of brown to yellowish brown (10YR 5/3 to 10YR 5/4) slightly silty clay with few calcareous concretions increasing to common with depth. The Bca horizon was followed a C1cca horizon (122–203 cmbs) of light yellowish brown to brownish yellow (10YR 6/4 to 10YR 6/6) silty clay with common calcareous concretions. This horizon was followed by a C2cca horizon (203–325 cmbs) very pale brown (10YR 7/2) slightly silty clay with common calcareous concretions. A gradual boundary separates this horizon from the underlying C3cca horizon (325–386 cmbs), a light gray to white (10YR 7/2 to 10YR8/2) very slightly sandy, silty clay with common calcareous concretions in approximately 25–40 percent of the level. The core terminated at the C4cca horizon (386–427 cmbs), a white (10YR 8/2) clayey silt with few calcareous concretions.

### **Core 17A**

Core Sample 17A was located approximately 10 m (32 ft) south of the intersection of Avenue B and Tuleta Drive (see Figures 3b and 4). The core reached a maximum depth of 4.57 m below surface. The upper 371 cm of the core consisted of fill. The core was divided into two horizons, beginning with a B1 horizon (371–399 cmbs) of brown to yellowish brown (10YR 6/3 to 10YR 5/4) slightly silty clay. This core terminated at the B2ca horizon (399–457 cmbs) of dark brown (10YR 4/3) slightly sandy clay with few calcareous concretions.

## **INTRODUCTION TO BACKHOE TRENCHING**

Lone Star 811 (ticket # 521074208) was contacted on November 27, 2012, to locate utilities within the proposed targeted backhoe project area. A meeting with SAWS representative Avelino Vela occurred on December 3, 2012, to discuss trenching locations and potential conflicts with any SAWS infrastructure. Mr. Vela cleared the proposed locations along Avenue B, but stated

that a water line was located west of the Catalpa-Pershing storm drainage; in addition, he identified the location and direction of the water line that runs to the west on the side street between Avenue B and Lion's Field (identified in topographic maps as the previous entrance to Brackenridge Park). Mr. Vela also identified the location and direction of the sewer line in the Lion's Field portion of the project area. On the morning of December 4, 2012, CPS Energy representative Charles Hinders met with the field archeologist and cleared all proposed backhoe trench locations. San Antonio Parks and Recreation representative Bill Penner was consulted in regard to any irrigation lines in the Lion's Field portion of the project area. Safety concerns and other issues limited or eliminated the excavation of two proposed backhoe locations. The proposed backhoe trench immediately north of the Mill Race Road and Avenue B intersection was eliminated because of recent construction to the hike and bike trail as well as the presence of underground utilities. In addition, the location of the proposed backhoe trench at the intersection of Avenue B and the former park entrance was eliminated due to the presence of water lines.

Thus, in total, six trenches (Backhoe Trenches [BHTs] 1–6) were excavated. Figure 5 shows the locations of the proposed and excavated backhoe trenches: two trenches along Avenue B (Figure 6) and four trenches in the Lion's Field portion of the target area (Figure 7). Backhoe trenching took place on December 4–5, 2012. The following discussion focuses on the backhoe investigation within the target area of the greater APE.

### **Backhoe Trench 1**

Backhoe Trench 1 was located on Avenue B approximately 113 m (370 ft) north of the intersection of Mill Race Road and Avenue B north of Core 4A (see Figure 5). The backhoe trench was 20 m long, 1.5 m wide, and reached a maximum depth of 2.30 m below surface. The upper 80 cm consisted of fill, followed by an A horizon (80–160 cm below surface [cmbs]) of very dark grayish brown (10YR 3/2) slightly silty clay (Figure 8). A piece of debitage was observed in the backfill from this level. A few broken red chert gravels were also observed in the backfill from this zone or immediately below the zone. This horizon was followed by an ABca horizon (160–195 cmbs) consisting of dark grayish brown to dark brown (10YR 4/2 to 10YR 4/3) silty clay terminating in a Bca horizon (195–230 cmbs) of dark gray (10YR 4/3) silty

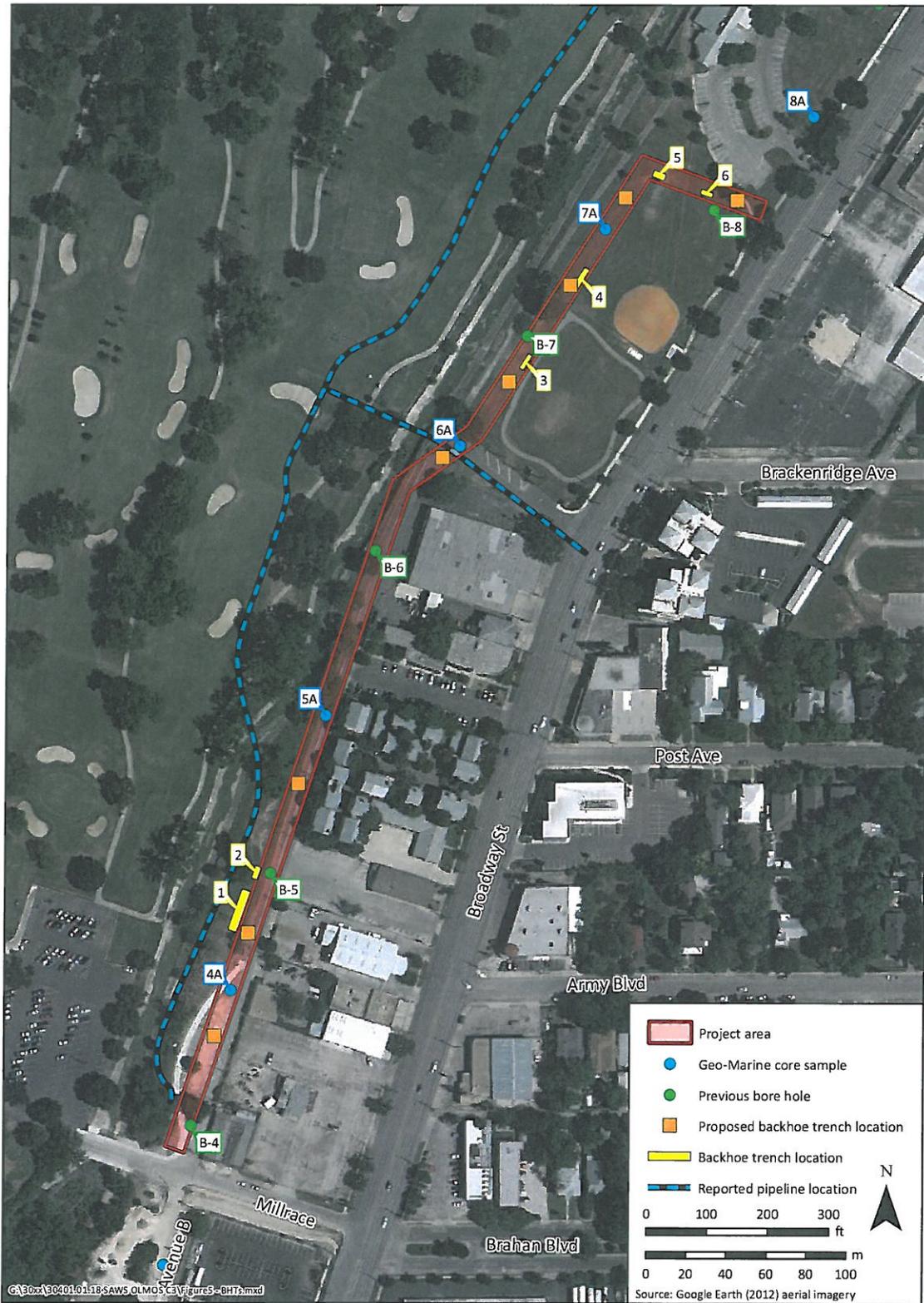


Figure 5. Location of backhoe trenches and borings along the SAWS Olmos C-3 project area.



Figure 6. View north of the targeted backhoe area from BHT 1; Avenue B is on the right.

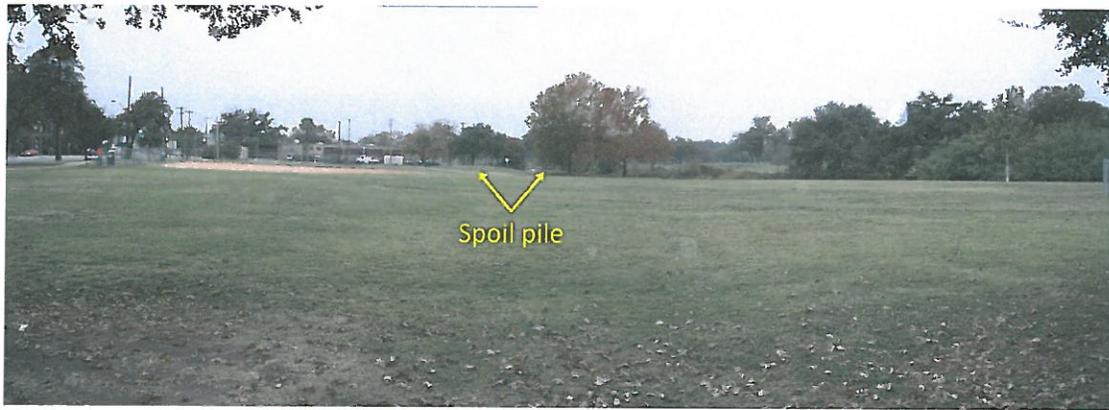


Figure 7. View southwest toward Lion's Field targeted backhoe area.

clay with fine to large calcareous concretions. A piece of debitage and possible fire-cracked rock were observed in the back fill. No additional cultural material was observed in the walls or floor of BHT 1.

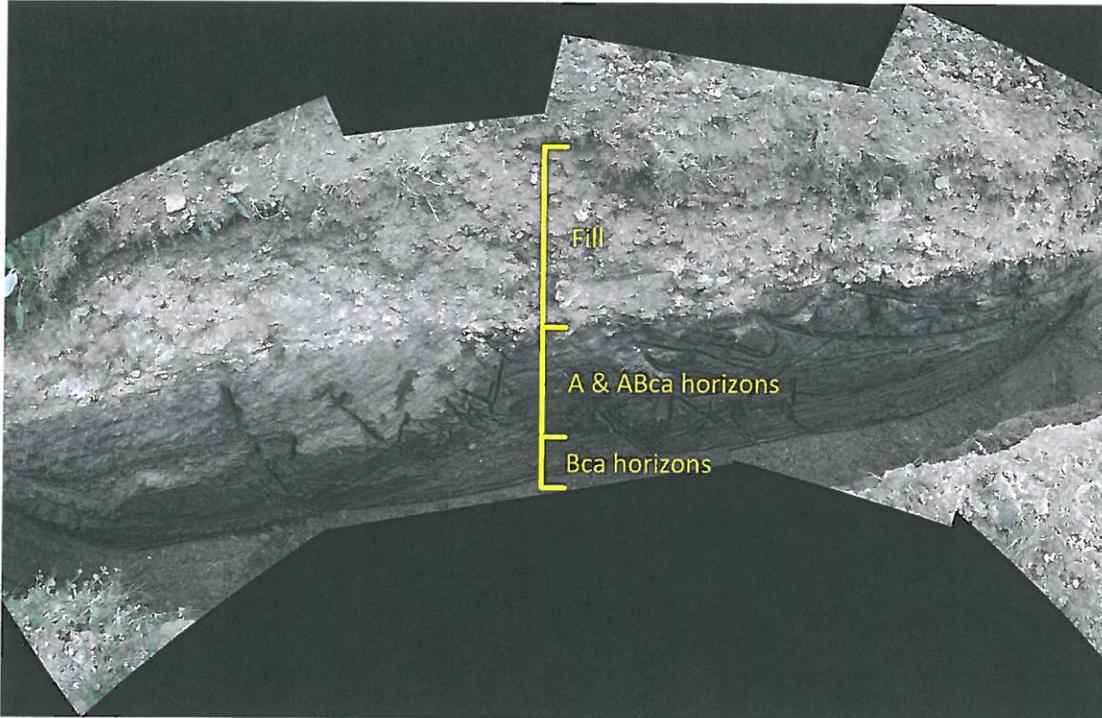


Figure 8. Photograph showing the west wall of BHT 1.

### **Backhoe Trench 2**

Backhoe Trench 2 was located along Avenue B approximately 30 m north of BHT 1 between Cores 4A and 5A (see Figure 5). The backhoe trench was 5 m long, 1.5 m wide, and reached a maximum depth of 1.0 m . Although the location had been cleared by SAWS and the city, a previously unknown 16-inch SAWS water line was encountered at 100 cmbs and the trench was terminated (Figure 9). SAWS was notified of the discovery; Mr. Vela inspected the pipe, after which the trench was backfilled with his permission. Given that the pipe runs north along Avenue B and crosses the Catalpa-Pershing storm drainage at an unknown location and the corridor between Avenue B and the Catalpa-Pershing becomes very constricted, additional trenching on Avenue B was eliminated.



Figure 9. Photograph of the west wall of BHT 2 with the unrecorded water line.

### Backhoe Trench 3

Backhoe Trench 3 was placed in the extreme southern portion of Lion's Field between Cores 6A and 7A (see Figure 5), and two mounds identified as possible spoil piles from the Catalpa-Pershing storm drainage construction (see Figure 7). The backhoe trench was 7 m long, 1.5 wide, and reached a maximum depth of depth of 1.2 m. Fill was encountered to a depth of 60 to 80 cmbs (Figure 10). A historic artifact was found in the backfill associated with the fill level. The artifact is a stamped, decorated brass clip or hinge (Figure 11). In addition, a 2-inch galvanized water line (not active per consultation with Penner) was encountered at 30 cmbs within the east wall of the trench. The A horizon (60/80–100 cmbs) consisted of very dark grayish brown (10YR 3/2) slightly silty clay with abundant chert and limestone gravels with white calcareous patina. The presence of angular chunks of light brown clay within this matrix may indicate that this horizon was impacted by construction of the nearby storm drainage. The trench was terminated at 120 cmbs due to the increased density of large, round chert gravels. No other cultural material was noted in the backfill or within the trench walls or floor.

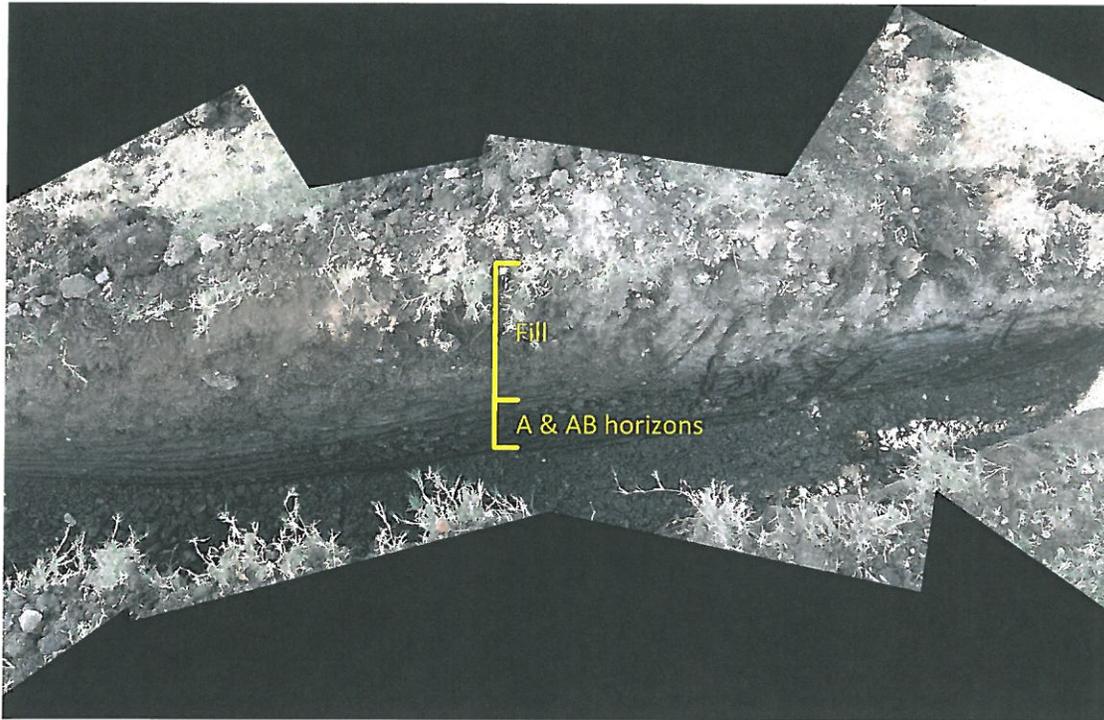


Figure 10. Photograph showing the west wall of BHT 3.

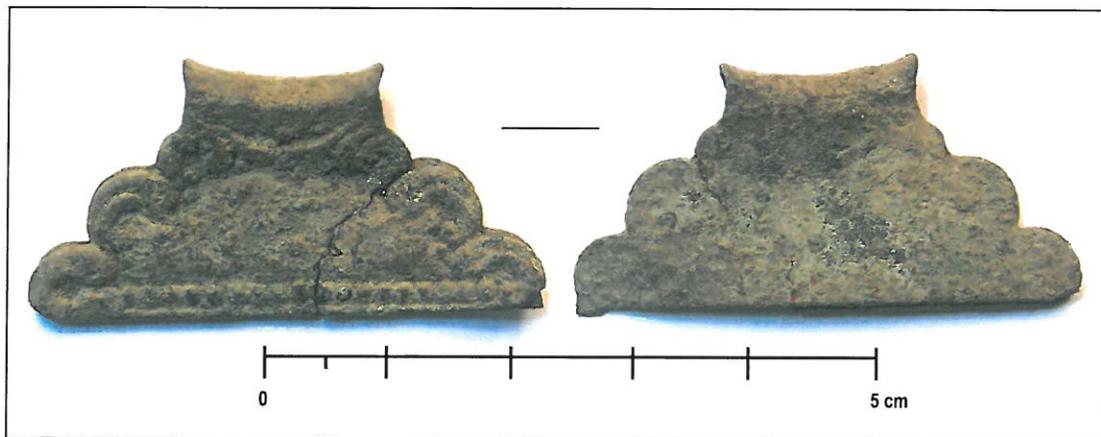


Figure 11. The stamped brass clip or hinge recovered from BHT 3.

#### **Backhoe Trench 4**

Backhoe Trench 4 was 43 m north of BHT 3 and south of Core 7A (see Figure 5). The backhoe trench was 10 m long, 1.5 m wide, and reached a maximum depth of 1.1 m. Fill was noted to a depth of 36 cmbs (Figure 12). Although the location had been cleared by SAWS and the city, an

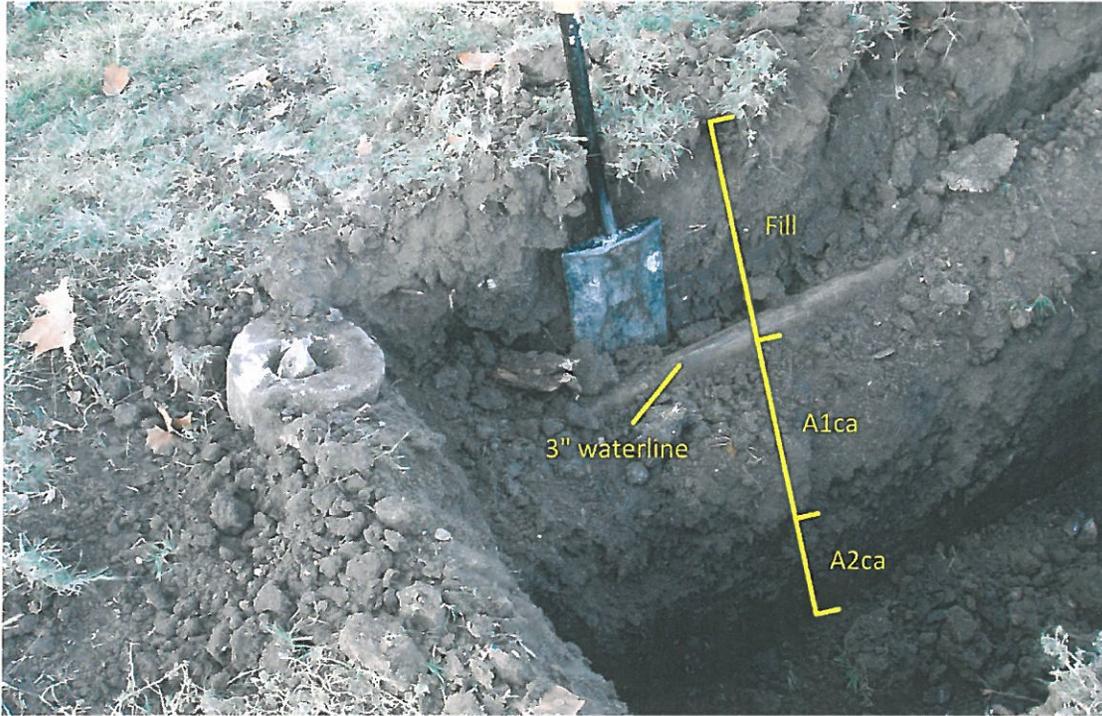


Figure 12. Photograph of BHT 4 showing the unrecorded water line, view west.

unrecorded 3-inch galvanized water line was encountered at 36 cmbs in the west wall of the trench. A concrete casing enclosing a water valve was observed below the surface on the southern portion of the trench and connected to the water line. The A1ca horizon (36–70 cmbs) consisted of very dark grayish brown (10YR 3/2) clay with abundant chert gravels with white calcareous patina. The A2ca horizon consisted of black to very dark gray (10YR 2/1 to 10YR 3/1) clay. The trench was terminated at 110 cmbs due to the increasing density of large, round gravels. No cultural material was noted in the back fill, the walls, or floor of the backhoe trench.

### **Backhoe Trench 5**

Backhoe Trench 5 was located 45 m north of BHT 5 and was orientated east to west as the project line shifts to the east (see Figure 5). The backhoe trench was 5 m long, 1.5 to 2 m wide, and terminated at a depth of 2.0 m. Fill was encountered to a depth of 30 cmbs (Figure 13). The A1 horizon (30–90/100 cmbs) consisted of very dark gray to very dark grayish brown (10YR 3/1 to

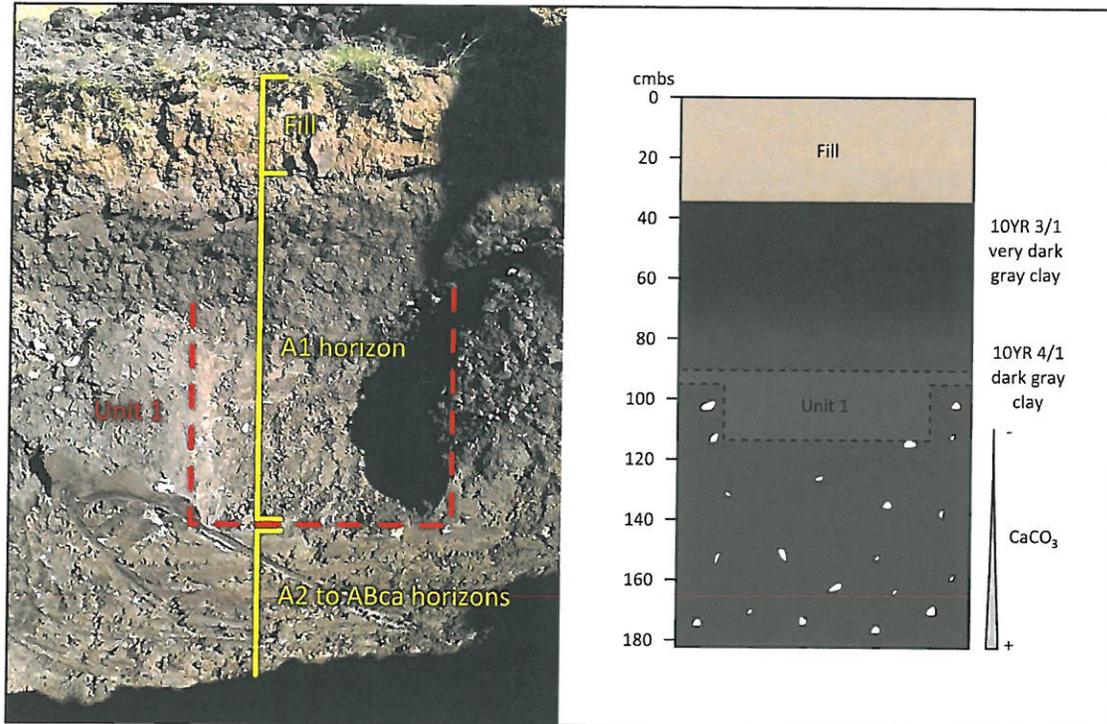


Figure 13. Photograph and schematic of north wall of BHT 5, showing location of Unit 1.

10YR 3/2) slightly sandy, silty clay with constant and abundant calcareous deposits noted throughout the level, in addition to a few chert gravels. A krotovina was observed in the north wall beginning approximately at 80 cmbs and extending into the next level. The A2 to ABca horizon (90/100–200 cmbs) consisted of very dark gray to dark gray (10YR 3/1 to 10YR 4/1) very slightly sandy, silty, clay with calcium carbonates increasing with depth. The krotovina noted in the previous level ran vertically for 30–40 cm, then turned, and continued in a horizontal direction. Rounded, chert gravels with calcareous patina were observed in bands and/or in distinct layers of the profile. Numerous pieces of chert debitage and fire-cracked rock were noted in the backfill. Due to the presence of cultural materials in the backfill, as well as the occurrence of layers of chert gravels observed in the trench profile, a test unit was placed within the ABca horizon. The trench was widened and stepped to allow safe entrance and excavation within the trench. The test unit was approximately 100 cm in length and 50 cm in width, begun at approximately 90 cmbs. Soil matrix was a very dark gray (10YR 3/1) hard and dense silty clay. The unit was terminated at 110 cmbs due to the increased difficulty of excavation as well as the paucity of cultural materials. Trenching continued with slow and deliberate removal of sediments in order to discern any cultural features.

Thirty-three lithics were recovered from BHT 5: three possibly edge-modified flakes (the modification could be from natural causes rather than manmade on two specimens); 22 pieces of debitage (five biface thinning flakes, six core flakes, one small blade, and four indeterminate distal flake fragments; as well as six pieces of shatter); two possible exhausted core fragments; and six pieces of fire-cracked rock. Approximately half of the material (n=14: one edge-modified flake, one core, nine pieces of debitage, and three fire-cracked rock) came from the upper 20 cm of Unit 1 (90–110 cmbs). The remaining material came from backfill: 12 specimens (including two of the possible edge-modified flakes) and seven specimens came from backfill from the bottom horizon of the trench. Many of these artifacts had rounded, smooth edges and were thought to be water-worn. Figure 14 shows selected artifacts from the excavation of BHT 5 and Unit 1. No cultural feature was observed in the walls or floor of the trench.

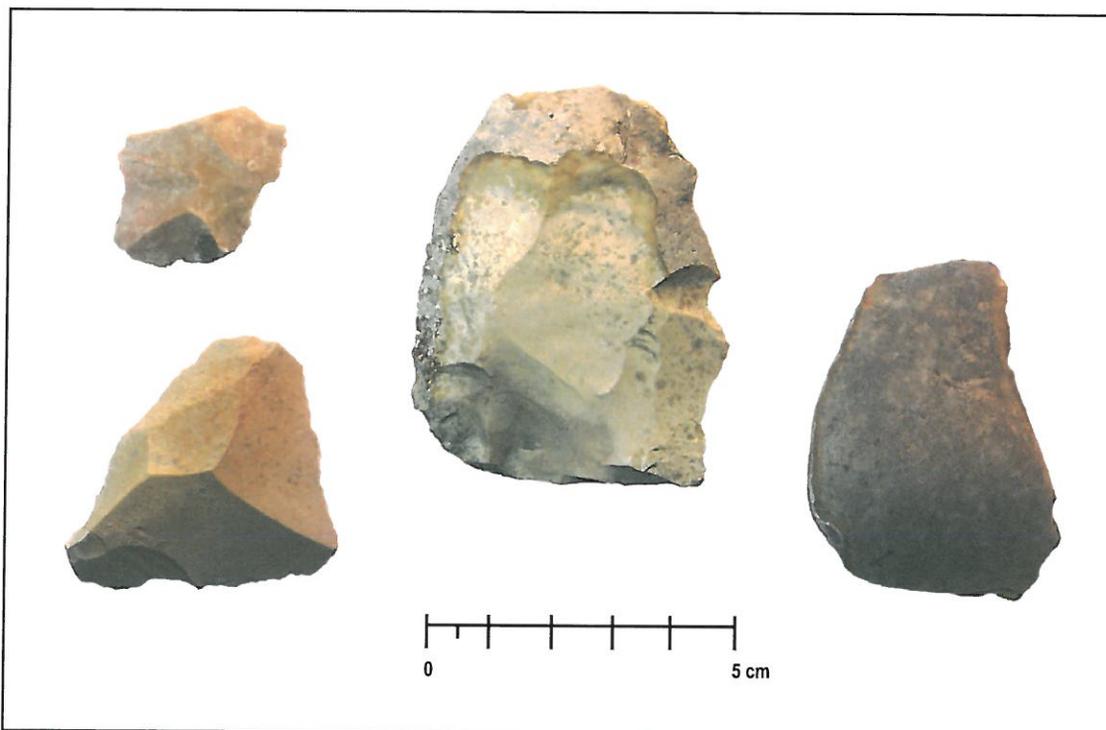
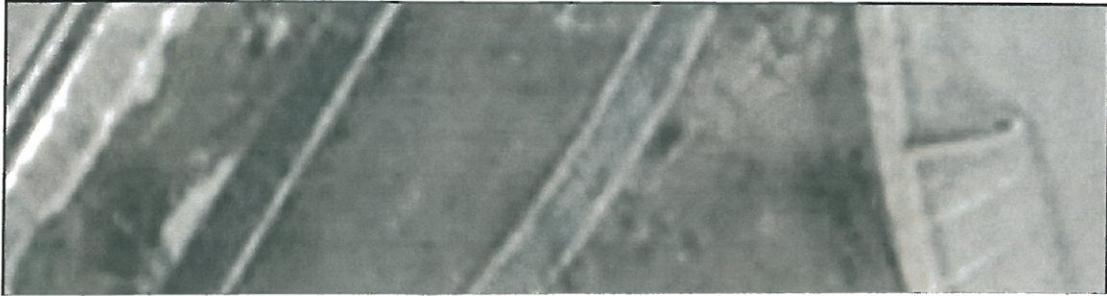


Figure 14. Selected artifacts from BHT 5 and Unit 1.

Based upon Geo-Marine's site criteria, the area encompassed by the trench fulfills the definition of an archeological site due to the diversity of manufacturing debris associated with stone tools and was assigned a site number, 41BX1953 (Figure 15). However, the geoarcheological analysis of site 41BX1953 suggests that it is not an intact cultural deposit, but the result of deposition due to alluvial processes, such as a major flood event, where the material collected on the edge of a toe slope. In addition, site 41BX1953 lacks context (i.e., no temporal diagnostics, features, or datable <sup>14</sup>C samples were encountered). The portion of the site within the right-of-way is considered to have little research potential based on poor contextual integrity (both geomorphic and temporal), and the lack of archeological features. However, the site may extend outside the extent of the trench and those portions remain unevaluated. Therefore, the site as a whole is recommended to be of unknown eligibility for NRHP inclusion, but the portion of 41BX1953 within the current right-of-way is recommended not eligible for inclusion in the NHRP or for designation as an SAL and no further work is required in this investigated area.

#### **Backhoe Trench 6**

Backhoe Trench 6 was located northeast of Core 7A and 45 m east of BHT 5, between an existing sanitary line and electrical utilities running along Broadway Street (see Figure 5). The backhoe trench was 5 m long, 1.5 m wide, and terminated at a depth of 1.1 m. Fill (0–60 cmbs) was observed in the first level of excavation. Fill and a disturbed horizon of dark grayish brown to dark brown (10YR 3/2 to 10YR 3/3) slightly sandy, silty clay were found in the next horizon. A wire nail and a ceramic floor tile fragment were found in the backfill from this top 60-cm level. The AB horizon (80–110 cmbs) consisted of dark gray silty clay with abundant pieces of decaying limestone and chert gravels. The trench was terminated at 110 cmbs due to the increasing density of gravels (Figure 16). No other cultural material was noted in the back fill, the walls, or floor of the backhoe trench.



# IMAGE REDACTED



Figure 15. Plan map of site 41BX1953 within BHT 5.



Figure 16. Photograph of BHT 6 with dense gravels in trench bottom, view east.