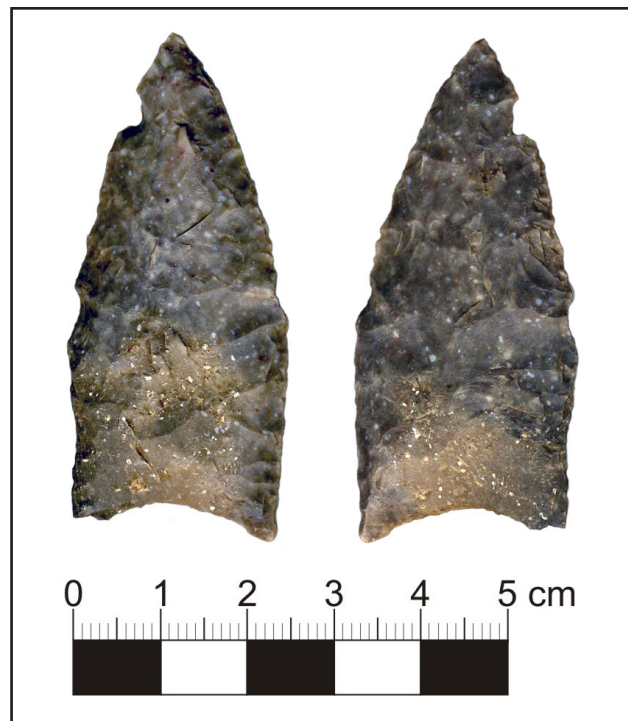


Archaeological Monitoring of the Installation of a Storm Water Outflow and Water Line Along Cheatham Street, San Marcos, Hays County, Texas



by David M. Yelacic and Carole A. Leezer

Principal Investigator: Carole A. Leezer

Technical Report No. 49

CENTER FOR ARCHAEOLOGICAL STUDIES
Texas State University-San Marcos
2012

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Texas Antiquities Permit No. 5943

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CENTER FOR ARCHAEOLOGICAL STUDIES
TEXAS STATE UNIVERSITY-SAN MARCOS

2012

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Texas State University-San Marcos
601 University Drive
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Cover photograph: Barber point recovered from surface of 41HY261.

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MANAGEMENT SUMMARY

Project Title: Emergency Cheatham Street Monitoring

Project Description: Monitoring of trench excavations

Local Sponsor: City of San Marcos

Institution: Center for Archaeological Studies, Texas State University-San Marcos

Principal Investigator: Carole Leezer

Project Archaeologist: David Yelacic

Crew Members: Jacob Hooge, Veronica Suarez, and John Campbell

Texas Antiquities Permit: 5943

Dates of Work: May 5 to December 15, 2011

Total Volume of Monitored Excavated Sediment: 3,800 m³

Purpose of Work: Emergency monitoring investigations of trench excavations.

Number of Sites: 1 (41HY261)

Curation: Center for Archaeological Studies, Texas State University-San Marcos

Comments: Investigations confirmed the presence of a deeply stratified prehistoric component of archaeological site 41HY261. This site is recommended as eligible for listing on the NRHP and for SAL status. Mitigation to offset the loss of important information resulting from the infrastructure project is also recommended.

ABSTRACT

From May to September, 2011, the Center for Archaeological Studies (CAS) at Texas State University-San Marcos conducted archaeological monitoring of trench excavations associated with the upgrade of infrastructure for the Rio Vista Neighborhood in central San Marcos, Hays County, Texas. Work was conducted on behalf of the City of San Marcos (City). The location of construction traversed site 41HY261, which is eligible for the National Register of Historic Places (NRHP), and as a result has been adversely impacted. Site 41HY261 contains a historic mill race and associated engineered structures and machinery, in addition to prehistoric archaeological deposits. To date, only the prehistoric component of the site has been disturbed. This construction project, being City-sponsored, currently falls under the purview of the Antiquities Code of Texas, and archaeological monitoring was conducted under Texas Antiquities Permit 5943, an emergency permit assigned to Carole Leezer by the Texas Historical Commission.

Auger test excavations were conducted northeasterly along Cheatham Street to delineate the extent of 41HY261. As a result of auger test excavations, the boundary of the site was extended to the intersection of Cheatham and Sycamore Streets. All subsequent trenching that took place within 41HY261's boundary was monitored by CAS archaeologists. Hundreds of prehistoric and historic artifacts were encountered in the approximately 3800 m³ of mechanically excavated sediment. Of these artifacts, six were temporally diagnostic projectile points, indicating human occupation of the site during the Late Paleoindian, late Middle Archaic, and Late Archaic cultural periods. Data gleaned from the current project compliment previous investigations of the site, and reinforce prior conclusions that the site has the potential to contain intact cultural deposits of prehistoric age. In consideration of current and previous datasets and conclusions, CAS recommends that this site be considered eligible for NRHP and State Archeological Landmark nomination and be afforded the legal protection of these statuses. Due to the negative impacts to the site resulting from the current and previous infrastructure projects, CAS also recommends that these disturbances be offset, or mitigated, through an archaeological data recovery plan.

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Introduction

The City of San Marcos (City) began the installation of a storm water outflow line beneath Cheatham Street in May of 2011 as a component of its Rio Vista Terrace Neighborhood Infrastructure Project. This portion of the project is located on the east bank of the San Marcos River, between Rio Vista Falls Park to the north and Crook's Park to the south (Figure 1). It was determined during the excavation of the trench for this portion of the storm water outflow line that the City had inadvertently cut into a section of previously recorded archaeological site 41HY261. This site has been previously recommended as eligible for listing on the National Register of Historic Places (NRHP). Construction temporarily ceased while the Texas Historical Commission (THC) was consulted concerning the appropriate procedures required for moving forward with the infrastructure project.

As a result, the Center for Archaeological Studies (CAS) at Texas State University-San Marcos was issued an emergency Texas Antiquities Permit (No. 5943; Carole A. Leezer,

Principal Investigator). Under this permit, CAS conducted emergency archaeological monitoring investigations of impacts within and adjacent to 41HY261 that are associated with the City's Rio Vista Terrace Neighborhood Infrastructure Project. Investigations were preceded by augur excavations conducted along the proposed route of the Cheatham Street trench to identify possibly intact, significant cultural deposits in this location in advance of planned trench excavations. This was followed by the archaeological monitoring of trench excavations along Cheatham Street, Riverside Drive, and along alleyways located between Riverside Drive and Sycamore Street and Riverside Drive and Field Street. Results of these investigations are presented below.

The City's standing as a political entity within the State means that this proposed development is subject to provisions of the Antiquities Code of Texas (ACT). The ACT requires that these and similar developments be preceded by archaeological assessments to determine the presence and potential nature of cultural resources that would be impacted by proposed developments. Because the project



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Figure 1. Project location.

area extends through a recorded archaeological site, there exists a high likelihood that significant archaeological deposits will be negatively impacted by this undertaking. CAS conducted archaeological monitoring and auger investigations on behalf of the City to assist them with their regulatory compliance obligations. Work was conducted under a Texas Antiquities Permit and in accordance with the guidelines set forth by Council of Texas Archeologists (CTA) and adopted by the THC.

Project Setting

The project area is centrally located within the City of San Marcos, in south-central Hays County, Texas. The San Marcos River lies adjacent to the project area, and is an integral component of the overall project. The San Marcos River issues forth from the base of the Balcones Escarpment, approximately 800 m upstream from the project area. The Balcones Escarpment was created by uplift during the Miocene and now marks a transition between the Blackland Prairie environment to the east and the Edwards Plateau, or Hill Country, environment to the west. These environmental transitions are known as ecotones, and they are typically high-energy settings capable of supporting richly diverse plants and animals (Crumley 1994). Because of its abundance of stones for tool making and fresh water, as well as a wealth of plants and animals, this particular region was and is an attractive locale for human occupation.

Geology and Soils

Bedrock geology of the region is complex because of the Balcones Fault Zone, but the project area, however, is small and situated within Quaternary Alluvium (Qal), as mapped by the Bureau of Economic Geology (Barnes 1974). Qal consists of recent flood deposits. In proximity to

the project area, Qal abuts middle Cretaceous limestones, Del Rio Clay and Georgetown Formation undivided (Kdg), and Eagle Ford Group and Buda Limestone undivided (Keb), as well as late Pleistocene Fluvial terrace deposits (Qt).

Soils of the project area are also the result of flood deposits. The project area is situated on Oakalla soils, frequently flooded (Ok). As described by Batte (1984), Oakalla series soils are typically deep, well drained, calcareous loams that are situated on near-level floodplains. These soils have an A-(B)-C profile, with the A horizon being brown to grayish brown, B horizon (where present) appearing grayish brown to light yellowish brown, and the C horizon being brown to light yellowish brown. As these soils are formed in accumulations of alluvium, they do have the potential to contain stratified cultural deposits.

Climate and Weather

The following weather statistics are based on a 30-year record (1951–1980). Mean maximum temperatures of summers approach 97° F, and winters have mean minimum temperatures of approximately 50° F in Hays County (Bomar 1983). December and January are the only two months on record that have not had temperatures above 90° F, whereas freezing temperatures have been recorded from October through April. The mean annual precipitation recorded for Hays County is 33.75 inches (86 centimeters [cm]). Precipitation in the county is bimodal, with most precipitation occurring in the late spring and in the early fall (Dixon 2000). Weather in this region is dynamic and often marked by severe events. Hazardous weather comes in the form of extraordinary downpours and droughts. With thin soils and high-relief bedrock topography, the Hill Country is notorious for flash flooding. As moisture-rich maritime air approaches the

Balcones Escarpment (a prominent topographic feature), the air is lifted, moisture condensed, and then quickly unloaded (Caran and Baker 1986; Slade 1986). As a result, the affected drainage basins rapidly fill their waterways. Drought can also be an expected feature of Central Texas weather; there is not a decade in the twentieth century that did not include drought (Bomar 1983:153). At a greater temporal scale, the region's climate can be described as moist with mild winters, wet all seasons to dry summers (east to west), and with long hot summers (Köppen Climatic Classification: Cfa-Csa, east to west), but evidence indicates that climates are variable as well (Maulden et al. 2010).

Flora and Fauna

Floral and faunal characteristics of both adjoining environmental regions (Edwards Plateau and Blackland Prairie) mingle along the Balcones Escarpment. Blair (1950), calling this ecotone the Balconian Province, noted that it contained wildlife from every other region in the state, and also that it contained endemic species. Typical modern fauna found in the region includes armadillo, badger, beaver, black rat, coyote, crayfish, domestic dog, eastern cottontail, eastern gray squirrel, eastern wood rat, horse, muskrat, common opossum, pig, raccoon, red fox, turkey, western diamondback rattlesnake, white-tailed deer, and white-tailed jackrabbit, in addition to bountiful other mammals, birds, reptiles, amphibians, and fish. In prehistory, many of the same animals were present, as were bison and antelope.

The region's natural vegetation is generally a grassland-woodland-shrubland mosaic, where grasslands separate patches of woody vegetation (Ellis et al. 1995). Along the escarpment, mesquite, post oak, and blackjack oaks interrupt patches of bluestems, gramas, and many other types of grass in the Blackland Prairie. These

species are also found with the Edwards Plateau's live oak, shinnery oak, junipers, and mesquite (Gould 1962).

The project area is situated adjacent to the banks of the San Marcos River, where the natural vegetation has been modified considerably in order to accommodate various infrastructure constructions and general improvements through the years. Wildlife has changed accordingly and is now well suited for picnickers' curious contributions. Despite changes to the banks, the river remains home to a variety of fish as well as rare or endemic and endangered salamanders, prawn, and wildrice (Kutac and Caran 1994).

Central Texas Cultural Chronology

The cultural chronologies for Central and South Texas are not well understood or agreed upon. However, archaeological deposits indicate rich cultural development spanning several millennia. Black (1995), Hester (1995, 2004), and Collins (1995, 2004) have recently synthesized available archaeological evidence from the region. All dates are in the radiocarbon time scale and given as years before present (BP; i.e., before 1950). Human presence is divided into three periods: Prehistoric, Protohistoric, and Historic.

Prehistoric

The Prehistoric period is divided into three major temporal stages: the Paleoindian, Archaic and Late Prehistoric. The Paleoindian stage begins with the earliest known human occupation of North America and extends to approximately 8800 BP. The Archaic stage follows, extending from ca. 8800 BP to 1250 BP. The Late Prehistoric stage begins ca. 1250 BP and is characterized by the development of bow and arrow and ceramic technologies.

Paleoindian

Collins (1995:381–385, 2004) dated the Paleoindian period in Central Texas to 11,500–8800 BP. The Paleoindian period is further divided into Early (ca. 11,500–10,200 BP) and Late (ca. 10,200–8800 BP) phases. Early Paleoindian artifacts are associated with the Clovis and Folsom cultures and diagnostic items include fluted, lanceolate projectile points. The Clovis culture is also characterized by well-made prismatic blades (Collins 1995; Green 1964). The Early Paleoindian stage is generally characterized by nomadic cultures that relied heavily on hunting large game animals (Black 1989). However, recent research has suggested that early Paleoindian subsistence patterns were considerably more diverse than previously thought and included reliance on local fauna, including turtles (Black 1989; Bousman et al. 2004; Collins and Brown 2000; Hester 1983; Lemke and Timperley 2008). Folsom cultures are considered to be specialized bison hunters, as inferred from the geographic location and artifactual composition of sites (Collins 1995).

The Late Paleoindian substage occurred from ca. 10,200 to 8800 BP. Reliable evidence for these dates was recovered from the Wilson-Leonard site north of Austin (Bousman et al. 2004; Collins 1998). At Wilson-Leonard, archaeologists excavated an occupation known as Wilson, named for the unique corner-notched projectile point. The dense occupation also included a human burial (Bousman et al. 2004; Collins 1998). In addition to the Wilson occupation, Golondrina-Barber and St. Mary's Hall components, dating between 9500 and 8800 BP, were excavated. Collins (1995) suggested the Wilson, Golondrina-Barber, and St. Mary's Hall components represent a transitional period between the Paleoindian and Archaic Periods due to the subtle presence of notched projectile points and burned rock cooking features.

Archaic

Collins (1995, 2004) has contended that the Archaic stage in Central Texas lasted approximately 7500 years, from 8800 to 1200/1300 BP, and has divided the stage into Early, Middle, and Late Archaic based on Weir's (1976) chronology. The Archaic stage marks several transitions: a shift in hunting focus from Pleistocene megafauna to smaller animals; the increased use of plant food resources and use of ground stones in food processing; increased implementation of stone cooking technology; increased use of organic materials for tool manufacturing and an increase in the number and variety of lithic tools for woodworking; the predominance of corner- and side-notched projectile points; greater population stability and less residential mobility; and systematic burial of the dead. What appears as a new emphasis on organic materials in tool technologies and diet is more likely a reflection of preservation bias.

Early Archaic

Although Collins (1995:383, 2004) argued that the Early Archaic spanned the period from 8800 to 6000 BP based on three divisions of projectile point types, the current project considers the Early Archaic to have extended from 8800 BP to 5800 BP, based on Collins (1995) and modified by Prewitt (1981, 1985). This cultural period is distinguished from previous periods by significant changes in lithic technology, such as notched projectile points, specialized tools (e.g., Clear Fork and Guadalupe bifaces), and dietary adjustment evidenced by the increased number of ground stone artifacts and burned rock midden cooking features (Collins 1995; Turner and Hester 1993:246–256). Shifts in subsistence were the result of a variable climate and concomitant variation in game resources (i.e., bison, Dillehay 1974). Collins (1995) suggested that Early Archaic peoples occupied

the wetter portions of the Edwards Plateau. Early Archaic sites are thinly dispersed and are seen across a wide area of Texas and northern Mexico (Weir 1976). However, Collins (1995:383) noted a concentration of Early Archaic components along the southeastern margins of the Edwards Plateau, close to major spring localities such as in San Marcos.

Middle Archaic

The Middle Archaic, defined by Collins (1995, 2004) as 6000–4000 BP (5800–4000 BP for the current project), is approximately marked by the onset of the Altithermal. The climate fluctuated from arid to mesic, then back to arid in Central Texas during the Altithermal. Vegetation and wildlife regimes all fluctuated in response to these environmental oscillations, with human groups responding accordingly. Collins (1995) divided the Middle Archaic period by projectile point style intervals: Bell-Andice-Calf Creek, Taylor, and Nolan and Travis. The Bell-Andice-Calf Creek interval occurred during a mesic period when grasslands, attractive to bison herds, expanded southward into Central and South Texas. Bell-Andice-Calf Creek peoples, as evidenced by hunting-based lithic technology, were specialized bison hunters who followed the herds southward (Johnson and Goode 1994). As the period shifted from mesic to arid, both bison and bison hunters retreated northward. During this transitional period, Taylor bifaces were manufactured. Later in the Middle Archaic, Taylor bifaces were replaced by Nolan and Travis points (Collins 1995, 2004). The Nolan-Travis interval was a period when temperature and aridity were at their highest levels. Prehistoric inhabitants acclimated themselves to peak aridity as seen through increased utilization of xerophytes such as sotol (Johnson and Goode 1994). These plants, typically baked in earthen ovens, also reflect the development of burned rock middens. During more arid episodes, the aquifer-fed streams and

resource-rich environments of Central Texas were extensively utilized (Story 1985:40; Weir 1976:125, 128).

Late Archaic

The Central Texas Late Archaic spanned the period of ca. 4000–1250 BP (Collins 1995:384, 2004). For finer resolution, the current project divides the Late Archaic period by Johnson and Goode's (1994) subperiods: Late Archaic I, 4000–2200 BP; and Late Archaic II, 2200–1250 BP. Sites with ideal stratigraphic separation may reveal three discernable subperiods for the Late Archaic (e.g., Prewitt 1981, 1985). Late Archaic I, according to Johnson and Goode (1994), is marked by two significant cultural traits: 1) the billet thinning of bifacial knives and projectile points leapt forward in artistry and technology; and 2) the human population appeared to have increased. Although these patterns vary considerably through time and from one subregion to another, they strongly shape the archaeological record of the Late Archaic. Overall, evidence suggests an increasingly mesic climate through the Late Archaic (Collins 1995; Johnson and Goode 1994; Mauldin et al. 2010). Mauldin et al. (2010) suggested that climatic variation resulted in a general decrease in grassland bison range. Some archaeologists have noted the presence of cemeteries at sites such as Ernest Witte (Hall 1981) and Olmos Dam (Lukowski 1988) as evidence that populations indeed increased in size and that groups were becoming territorial (Story 1985:44–45). However, other archaeologists have challenged the interpretation of a growing population by citing a decrease in burned rock middens (Prewitt 1981:80–81).

Late Prehistoric

Collins (1995, 2004) dated the Late Prehistoric in Central Texas at 1,300/1,200–260 BP and followed Kelley (1947) in dividing it into Austin and Toyah phases. The current project

delimits the Austin phase to 1250–750 BP and the Toyah phase to 750–300 BP. The most distinctive changes in relation to previous eras include a technological shift away from the dart and atlatl to the bow and arrow, and the more or less concurrent appearance of pottery (Black 1989:32; Story 1985:45–47).

Austin Phase

The Austin phase is characterized primarily by the appearance of arrow points, including Scallorn and Edwards types. Evidence for increased social strife, and perhaps overall population density, has been seen in numerous Central Texas burials dated to this period, which have revealed incidents of arrow-wound deaths, suggesting that population growth may have resulted in disputes over limited resource availability (Black 1989; Meissner 1991; Prewitt 1974). Burned rock middens are occasionally found with these types of points (Houk and Lohse 1993), and ground and pecked stone tools, used for plant food processing, become increasingly common in the Austin phase.

Toyah Phase

The beginning of the Toyah phase (750 BP) in Central Texas is characterized by contracting stem points with flaring, barbed shoulders (a style known as Perdiz); by the common occurrence of blade technology that is considered to be part of a specialized Toyah bison hunting and processing toolkit (Black and McGraw 1985; Huebner 1991; Ricklis 1994); and by the appearance of bone-tempered pottery in Central Texas (Johnson 1994:241–281). The wide variety of ceramic styles and influences seen throughout Toyah phase ceramic assemblages provide information about the social composition of these cultural groups (Arnn 2005). Toyah phase ceramic assemblages display Caddo, Texas Gulf Coast, and Jornada Mogollon influences (Arnn 2005).

In addition to shifts in material technology, Mauldin et al. (2010) suggested that bison herds foraged across increasingly widespread ranges, at least partly in response to the climatic patterns described above. They (Mauldin et al. 2010) concluded that this change in bison herd behavior is partly responsible for a change in Toyah hunting strategy, involving increasingly logistically organized hunting forays in pursuit of spatially dispersed herds. Based on the ratio of zooarchaeological to archaeobotanical data associated with types of sites (e.g., bulk plant processing, bulk meat processing, residential), Dering (2008) provided further evidence of Toyah phase logistically oriented subsistence strategies and broad diet breadths. Included with logistical subsistence strategies was what appears to be either trade for horticultural products not produced in Central Texas or of limited localized horticultural practices. Both scenarios involve maize, which is exceedingly uncommon in Toyah-period archaeological contexts in Central Texas, but which has been reported from at least three locales, the Kyle Rockshelter (41HI1) in Hill County (Jelks 1961), Bear Branch (41CA13) in Callahan County (Adams 2002), and the Timmeron Rockshelter (41HY95) in Hays County (Harris 1985).

Protohistoric (Spanish Entrada Period)

In Texas, the Protohistoric period, also known as the Spanish Entrada period, was marked by Spanish entradas, the formal expeditions from established forts and missions in Northern Mexico into Central, Coastal, and East Texas in the late seventeenth and early eighteenth centuries. These encounters began with the venture into Texas by the Spanish explorer Cabeza de Vaca and the Narvaez expedition in 1528. The period is generally dated between AD 1500 and 1700 (or 1528, the date of the Cabeza de Vaca/Narvaez

expedition, to the establishment of Mission San Antonio de Valero in 1718).

With Alonso de León's expedition of 1680, El Camino Real (the King's Road) was established from Villa Santiago de la Monclova in Mexico to East Texas. This roadway followed established Native American trade routes and trails and became a vital link between Mission San Juan Bautista in Northern Mexico and the Spanish settlement of Los Adaes in East Texas (McGraw et al. 1991). Spanish priests accompanying entradas provided the most complete information of indigenous cultures of early Texas. Those documented during the early entradas include the Cantona, Muruam, Payaya, Sana, and Yojuane, who were settled around the springs at San Marcos and described as semi-nomadic bands. Other tribes encountered at San Marcos included mobile hunting parties from villages in South and West Texas, including Catequeza, Cayanaaya, Chalome, Cibolo, and Jumano, who were heading toward bison hunting grounds in the Blackland Prairies (Foster 1995:265–289; Johnson and Campbell 1992; Newcomb 1993). Later groups who migrated into the region and displaced the earlier groups or tribes included the Tonkawa from Oklahoma and Lipan and Comanche from the Plains (Campbell and Campbell 1985; Dunn 1911; Newcomb 1961, 1993).

Archaeological sites dated to this period often contain a mix of both European imported goods, such as metal objects and glass beads, and traditional Native American artifacts, such as manufactured stone tools.

Historic

Spanish settlement in Central Texas first occurred in San Antonio with the establishment of Mission San Antonio de Valero (the Alamo) in 1718, and the later founding of San Antonio de

Béxar (Bolton 1970; de la Teja 1995; Habig 1977). Some researchers have demarcated the transition in Texas between the Entrada (Protohistoric) and Historic periods by the construction of the first Spanish missions in Texas. Most knowledge of this period has been gained through the written records of the early Spanish missionaries. Besides the mission town of San Antonio, the only other Spanish settlement in the region was San Marcos de Neve, established in 1808, four miles south of present-day San Marcos. San Marcos de Neve was abandoned in 1812 as a result of constant raids by local tribes (Dobie 1932). During this time, massive depopulation occurred among the Native Americans, mostly due to European diseases to which the indigenous people had little resistance. Those few indigenous people remaining were nearly all displaced to reservations by the mid-1850s (Fisher 1998).

European presence in the region increased as settlers received land grants from the Mexican government until 1835. Settlement was difficult, however, due to continuation of hostilities with and raids by Native American tribes. The Texas Rangers provided protection from these conflicts after Texas secured independence from Mexico in 1836. Settlement in the region increased until 1845, when Texas gained admission to the United States, resulting in the formation of Hays County three years later (Bousman and Nickels 2003).

Previous Archaeological Investigations

Previous archaeological investigations in areas adjacent to the San Marcos River have demonstrated that historic and stratified, subsurface prehistoric resources exist. Archaeological site 41HY261 was originally recorded by McCulloch and Voellinger in 1994 as a multicomponent site: 41HY261A, the historic

component, and 41HY261B, the prehistoric component (McCulloch and Voellinger 1996).

41HY261A consists of a historic dam (Rio Vista Dam, recently modified into Rio Vista Falls), mill, and millrace. According to McCulloch and Voellinger (1996) the original operation and use of the dam and millrace is unclear, but remains of a concrete walled wheel pit for an undershot water wheel, as well as machinery parts (possibly related to the mill), were observed in the area. Much of this machinery is still present on site. The McCulloch and Voellinger report states that the dam and millrace were built about 1880. One informant stated there was no mill here, only a dam and pump house for crop irrigation, while another stated that the facility built here in 1880 generated electricity (McCulloch and Voellinger 1996). By the early 1900s, the dam area was used for swimming following the purchase and development of the western bank by A. B. Rogers in 1912 into “the first swimming attraction in Texas” (Buckner 1962; Leezer et al. 2007; Wyatt and Compton 1956). The mill area and millrace remained unused and eventually became part of Crook’s Park. The dam and millrace, called the Malone Dam and Millrace, is reported to be one of five nineteenth-century dams built on the San Marcos River within the city limits.

The prehistoric component, 41HY261B, was described by McCulloch and Voellinger as the remains of a prehistoric campsite that extends along the upper terrace in the eastern portion of the site (McCulloch and Voellinger 1996). A scatter of lithic material was noted on the surface of the site, and intact prehistoric deposits consisting of additional lithic materials and faunal remains were uncovered in shovel test units excavated to a depth of 60 cmbs.

The most intensive investigation of the prehistoric component at 41HY261 was

conducted by the Center for Archaeological Research (CAR) of The University of Texas at San Antonio in 1996 (Cargill and Brown 1997). This investigation included the excavation of 23 shovel tests and two 1 x 1-m test units. Additional investigations included recording the profiles of an open backhoe trench excavated by the City (Cargill and Brown 1997). All of these investigative activities were conducted in Crooks Park, at the southwest corner of the Cheatham Street/Riverside Drive intersection.

Additional subsurface investigations of 41HY261 were conducted by CAS in 2002. CAS conducted auger excavations along the then-northern boundary of 41HY261 in Crooks Park as part of archaeological investigations associated with a proposed 24-inch wastewater interceptor installation. Investigations were conducted in this area to characterize deeply buried deposits and to delineate the extent of the site within the project area (Jones and Oksanen 2006). In this area, augers were excavated to maximum depths of 18–26 feet (ft), or 4.5–8 meters (m), below surface. Cultural material was observed at a maximum depth of 20 ft (6 m), with the majority of artifacts observed in the upper 8 ft (2.5 m). Despite their small diameters (16 inches, or 40 cm), the two augers excavated in proximity to 41HY261 contained a relative abundance of artifacts (Jones and Oksanen 2006). These results further supported the characterization of 41HY261 as a deeply stratified, intact prehistoric site that has the potential to contribute significantly to the prehistory of the region.

Methods

CAS conducted archaeological monitoring of auger and trench excavations associated with the installation of a storm water outflow line along Cheatham Street and Riverside Drive

East, as well as along a section to be installed in an alley running parallel to Riverside Drive. When significant archaeological deposits were encountered during monitoring of the trench excavations, all excavations in the immediate area ceased so that a more thorough assessment could be made. All monitoring work was conducted under Texas Antiquities Permit No. 5943 in accordance with the guidelines set forth by the CTA and adopted by the THC.

Auger Investigations

A series of auger excavations was conducted. Auger excavation locations were situated along the proposed storm water outflow line route, extending from the intersection of Cheatham Street and Riverside Drive, northeastward along Cheatham Street and southeastward

along Riverside Drive until it fronts with Leal's Riverside Tire Service (Figure 2). Auger tests were excavated prior to proposed trench excavations in these locations to determine the northern boundary of archaeological site 41HY261, and also to assess the probability that additional trenching northeastward along Cheatham Street would encounter buried, intact, and/or significant cultural resources.

The excavation of two sets of auger cores was monitored by archaeologists from CAS. In the first set, auger tests were spaced approximately 50 ft (15 m) apart, extending in a northeasterly direction along Cheatham Street from the intersection of Cheatham Street and Riverside Drive. These tests were approximately 20 inches (50 cm) in diameter and were excavated in controlled, 2-ft (0.5 m) levels to a depth of

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Figure 2. Auger locations.

approximately 25 ft (7.5 m) below surface. This set was extended along Cheatham Street in this fashion until at least two tests that did not contain cultural material were encountered. A second set of auger tests was excavated along Riverside Drive from the intersection of Cheatham Street and Riverside Drive, in a southeasterly direction, fronting Leal's Riverside Tire Service. These auger tests were placed approximately 30 ft (9 m) apart and extended from the intersection to the front of Leal's Riverside Tire Service. These tests were also approximately 20 inches (50 cm) in diameter and were excavated in controlled, 2-ft (0.5 m) levels to a depth of approximately 25 ft (7.6 m) below surface.

Sediments were removed from the auger tests in 2-ft (0.5 m) levels and were opportunistically (i.e., non-systematically) screened through ¼-inch mesh for artifact recovery. All encountered

artifacts were retained and subject to preliminary analysis. The location of all augers were recorded with a Trimble GeoXT hand-held GPS system with submeter accuracy and integrated into the San Marcos River Valley database of cultural resources that is being developed at CAS.

Trench Monitoring

As part of the Rio Vista Terrace Neighborhood Infrastructure Project, the City's design called for a 72-inch-diameter line to be installed in a trench beneath Cheatham Street that will range in depth from approximately 20 ft (6 m) at the intersection of Cheatham Street and Riverside Drive to approximately 8 ft (2.5 m) deep just prior to where Cheatham Street crosses the San Marcos River. The trench was approximately 15 ft (4.5 m) in width (Figure 3). The installation of the storm water outflow line will extend beyond

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Figure 3. Location of the Cheatham Street trench.

the intersection of Cheatham and Riverside, continuing northeastward along Cheatham Street to just beyond the intersection of Cheatham and McKinnon Street; approximately 450 m.

A second trench was excavated along Riverside Drive East, southeastward from the intersection of Cheatham Street and Riverside Drive (Figure 4). This excavation, for the installation of a water utility line, was also monitored. The depth of this trench was approximately 6 ft (1.8 m) below surface, and the trench was approximately 10 ft (3 m) wide.

Monitoring of trench excavations in these locations was necessary as the proposed trenches runs either through the multicomponent (historic and prehistoric) archaeological site 41HY261 or along its northern boundary. During the monitoring of trench excavations, trench profiles

were recorded on field forms, and digital photographs of exposed profiles were taken. Any notable deposits, contents, or features that were exposed were documented. An opportunistic, non-systematic sampling of excavated soils was subject to screening through ¼ -inch mesh. Representative samples of artifacts were collected for preliminary analysis and description. The location of all trenches were recorded with a Trimble GeoXT hand-held GPS system with submeter accuracy and integrated into the San Marcos River Valley database of cultural resources that is being developed at CAS. All artifacts collected were prepared for curation and curated at CAS.

Alleyway Trench Monitoring

An additional component of the City's overall infrastructure improvement project involved the

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Figure 4. Location of the Riverside Drive trench.

installation of wastewater lines in side alleys that parallel Riverside Drive. One length of line was installed in an alley that runs northeast between Riverside Drive and Field Street, terminating at lot 311/919 (Figure 5). Another length of line runs east-southeast in an alley between Riverside Drive and Sycamore Street (Figure 6). This section will bend around and terminate at Roberts Street. The depth of this line will begin at 11 ft (3 m) below surface and end at 5 ft (1.5 m) below surface at Roberts Street. A number of utilities have been installed in both alleys, and CAS anticipated that these previous installations have seriously disturbed much of the sediment column that will be impacted during this work. CAS therefore conducted archaeological monitoring of the installation of this wastewater line as it

extended to between 11 (3 m) and 8 ft (2.5 m) in depth. Only spot monitoring was conducted on installation above 8 ft (2.5 m) in depth.

During monitoring, trench profiles were recorded on field forms, and digital photographs of exposed profiles were taken. Notable deposits, contents, or features that were exposed were documented. A grab sample of artifacts was collected for preliminary analysis and description. The location of all trenches were recorded with a Trimble GeoXT hand-held GPS system with submeter accuracy and integrated into the San Marcos River Valley database of cultural resources that is being developed at CAS. All artifacts collected were prepared for curation and curated at CAS.

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Figure 5. Riverside Drive alley trench location.

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Figure 6. Cheatham Street to Roberts Street alley trench location

Results

Results from the various components of archaeological monitoring near the intersection of Riverside Drive and Cheatham Street are presented below, by phase of construction. All of the archaeological monitoring in the vicinity of 41HY261 was performed between May and September of 2011, and the varying components of monitoring were performed on the construction schedule (i.e., not necessarily in the order presented below).

Cheatham Street and Riverside Drive Auger Monitoring

Seven auger excavations were used to delineate the extent of archaeological material associated with 41HY261 within the area of the proposed storm water line trench. Six auger tests

were excavated along Cheatham Street to the northeast of its intersection with Riverside Drive. An additional auger excavation was conducted on Riverside Drive approximately 20 m southeast of the intersection with Cheatham Street (see Figure 2). Cultural material was encountered in a majority of the test excavations, and 41HY261's boundary was modified accordingly (Table 1).

As all of the augers were excavated through the middle of an existing road, the top 2 ft (0.5 m) of each test consisted of asphalt and construction base. Beneath the road and base, however, sediments appeared to be intact. Sediments and soils encountered during auger excavations were clayey and typically ranged from black and dark brown at the top of the undisturbed profile to yellow and very pale brown at the bottom of each excavation. The water table was encountered at

Table 1. Augers and associated artifacts by depth.

Level	Depth (ft)	Cheatham Street					Riverside Drive	
		Auger 1	Auger 2	Auger 3	Auger 4	Auger 6	Auger 7	Auger 5
1	0–2						1 F	
2	2–4		2 CF, 1 CCH		3 F			
3	4–6		1 CF	3 CF ²				1 F, 1 BF
4	6–8							1 F
5	8–10					1 CCH ³		
6	10–12	1 CF, 1						
7	12–14	CCH ¹						
8	14–16							
9	16–18							
10	18–20							

Key: C=chert, F=flake, CH=chunk, BF=bone fragment
 Notes: ¹Found at 11–13 ft. ²Found at 3–5 ft. ³Not distinctly cultural.

approximately 15 ft (4.5 m) below surface in each probe. Slightly above and then into the water table, redoximorphic features (i.e., mottling) were observed. Additionally, auger excavations near the intersection of Cheatham Street and Riverside Drive (Augers 1, 2, and 5) emitted an odor of gasoline or oil.

Augers 1–4 all contained cultural material. The artifacts encountered in each of these excavations consisted of lithic debitage. Auger 1 yielded a single chert flake fragment at 11–13 ft (3.3–4 m) below surface. Nine flake fragments were recovered from the upper 6 ft (1.8 m) of excavations in Augers 2–4. Existing infrastructure beneath the surface at the intersection of Cheatham and Sycamore Streets did not permit the continuation of regularly spaced excavations. Augers 6 and 7 on the northeast side of the intersection did not reveal any distinctly cultural material.

Auger 5 was excavated along Riverside Drive, yielding cultural material at a depth of 4–8

ft (1.2–2.4 m) below surface. No further auger testing was conducted along Riverside Drive, due to the limits of the area of potential effect. Nonetheless, this artifact-bearing excavation, in addition to previous coring (Jones and Oksanen 2006), indicates that the site extends beneath Riverside Drive to at least its terminus at Interstate Highway (IH) 35.

Overall, these auger tests revealed that archaeological deposits associated with 41HY261 extend northeast at least as far as the intersection of Sycamore and Cheatham Streets (between Augers 4 and 6) and southeast at least as far as IH 35.

Cheatham Street Trench Monitoring

Archaeological monitoring focused on relatively deep trenching through the center of Cheatham Street (see Figure 3). Excavation of the trench in this location was conducted to install a 72-inch-diameter storm water drainage line, which will provide service to the Rio Vista

Neighborhood. Though the trench extends from the San Marcos River to near Hopkins Street, archaeological monitoring was only performed within the boundary of 41HY261, as delineated by auger tests and explained above. The line's connection with the river has yet to be established, but it will likely include existing historical infrastructure, an early twentieth-century mill run.

The trench dimensions required to install this drainage line were approximately 3 m wide and 3–7 m deep. Depth of the trench was dependent on topography as well as the angle required to provide sufficient hydraulic head to move the storm water from the neighborhood to the river. Trenching and installation were performed in approximately 10-m sections, backfilling the trench as the work progressed towards Hopkins Street. Each section was excavated rapidly, but samples of the excavated sediment were set aside for screening. Given the dimensions, shoring was required for contractors to work within the trench, and this shoring severely obscured profile exposures.

Despite the obstruction that shoring presented, stratigraphy was noted as it was encountered prior to shoring box installation, and an expedient record of one profile section was made while strictly adhering to trench safety protocol (i.e., within confines of shoring box, three points of contact on ladder and/or shoring box). Sediments encountered appeared to be typical of alluvial terrace deposits. The floodplain was not trenched into, and at this location, it has been compromised by historic and modern developments. Near the southwestern end of the Cheatham Street trench, a historic mill race, which was constructed circa 1904 and clearly intrudes into natural stratigraphy, still diverts a portion of the San Marcos River (Eisenhower 2011). It is into this mill race that the proposed

storm water line will drain. The remainder of the floodplain in proximity to the project area has been modified for public park space (Rio Vista and Crooks Parks). Trenching through Cheatham Street then began about halfway up the rise from the floodplain to the first terrace. Profile exposures at the southwestern end of the trench showed more stratigraphic layers relative to exposures at the northeastern end.

The top 30 cm along the entire length of the trench was composed of asphalt and associated, underlying construction base. On the rise between terraces, sediment beneath the modern road exhibited distinct soil horizons. Directly beneath the construction base, a historic A horizon was encountered and contained glass and metal artifacts. This historic topsoil had very abrupt upper and lower boundaries, possibly suggesting that it was used as road base at some point in time. Underlying this unit was a buried 2AB-2Bt-2Btk-2C soil profile (Figure 7). At the top of this buried soil, lithic artifacts were observed to a depth of 2.5 m (i.e., 2AB-2Bt). The floor of the trench was beneath the water table at more than 4 m in depth, and soil at this level exhibited features (e.g., redoximorphic mottles) that are typical of fluctuating moisture and oxygen content. These redoximorphic features were the same as those observed in the auger-excavated sediment. Towards the intersection of Cheatham Street and Riverside Drive, at the top of the rise between floodplain and terrace, the historic topsoil pinches out and the buried soil is expressed at the top of the natural profile. At the end of the archaeologically monitored trench excavation, just northeast of the intersection of Cheatham and Sycamore Streets, the profile exposure contains only one developed soil beneath the modern road. The top approximately 2.5 m of the profile contained cultural material, which was confined in the A-AB horizons. Because of excavation methods, artifacts could not be correlated with



Figure 7. Trench profile exposure, west of Cheatham Street.

precise depth measurements, but historic and prehistoric materials appeared to be properly superpositioned.

Artifacts associated with this portion of the project included glass, metal, wood, lithic debitage, stone tools, burned rock, and animal remains. Horizontally, artifact concentrations were densest at and just east of the intersection of Cheatham Street and Riverside Drive.

Information resulting from the documentation of lithic material during monitoring investigations is biased by 1) unsystematic sampling of lithic debitage from the outset, and 2) unequal amounts

of excavated sediment per day. It should be noted, however, that lithic debitage was observed in the first three sections of trench excavation, and while the amount of sediment excavated was not equivalent day-to-day, excavation and installation progressed at an approximate rate of 1.5–2 sections per day.

There were, however, five projectile points, complete and fragmentary, that contribute to chronology of the site. Projectile points were classified by Dr. C. Britt Bousman, Department of Anthropology, Texas State University-San Marcos. Projectile points were recovered from excavated sediment, and so their lack of high-resolution provenience does not lend itself to making inferences of site occupation intensity (i.e., frequency of lithic debitage), but they do indicate, at a minimum, periods of occupation. Recovered points

include Angostura, St. Mary's Hall, Travis, and two Bulverde, one of which was not confidently identified (Figure 8).

These projectile points indicate occupation of 41HY261 during Late Paleoindian times (ca. 10,200–8800 BP), late Middle Archaic times (ca. 5000–4000 BP), and early Late Archaic times (ca. 4000–2800 BP). Depths from which these artifacts were recovered were approximated by characteristics of associated sediment, and it appeared that these artifacts were also properly superpositioned. Late Paleoindian points were associated with sediment that came from



Figure 8. Projectile points recovered during Cheatham Street trench monitoring: (from upper left to lower right) Travis, St. Mary's Hall, Angostura, Bulverde, and possible Bulverde.

approximately 1–2 m in depth, and later projectile points were recovered from sediment ranging from 0.5 to 1.5 m in depth. Unfortunately, this was the best resolution possible.

Alleyway Trench Monitoring

In order to update wastewater service infrastructure for homes and businesses along Riverside Drive and Sycamore Street, east of Cheatham Street, backhoe trenching was conducted through the alley lying between the two roadways (see Figure 6). Trenching began at the intersection of the alley and Cheatham Street, where the new wastewater line ties into an existing wastewater line, and extended to the intersection of the alley and Roberts Street. An additional section of trenching was conducted between Riverside Drive and Roberts Street. This portion

of the wastewater line renovation is described below in a separate section. Dimensions of the alleyway trench excavation were 70–80 cm wide and as deep as approximately 2.75 m, though the trench became shallower as it progressed down the alleyway towards Roberts Street.

This portion of the project was one of renovation: the new PVC line was laid in place of the old ceramic line, and therefore much of the newly excavated sediment had been disturbed when the old line was installed. There were also other utility lines running perpendicular to the wastewater line, and each of these additional lines was surrounded by disturbed sediment. At least 50 percent of the sediment excavated had been previously disturbed, but intact sediment was encountered nonetheless. Intact sediment, where it could be distinguished, did contain

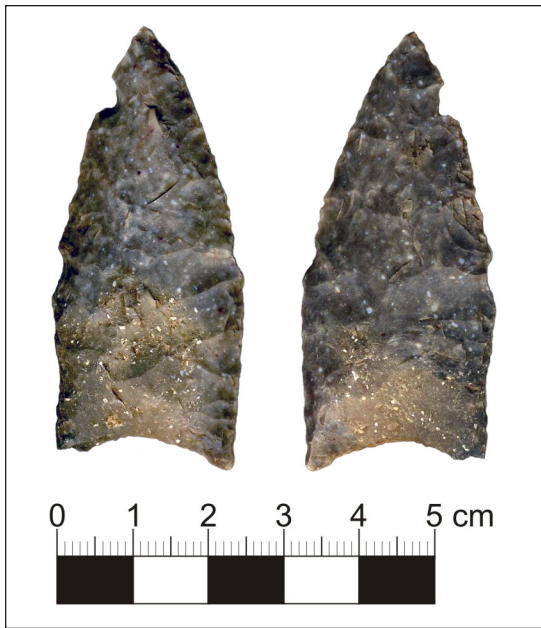


Figure 8. Barber point recovered from surface adjacent to alley trench excavation.

lithic debitage. However, no diagnostic artifacts were observed in situ in undisturbed sediment. Lithic debitage and historic materials, including oxidized metal, glass, and ceramics, were observed in the previously disturbed sediment.

Exposed at the surface and adjacent to the newly excavated trench, a Late Paleoindian point was collected and subsequently identified by Dr. C. Britt Bousman as a Barber point (Figure 9). The presence of this point complements previously recovered in situ projectile points, indicating Late Paleoindian-period occupation of the site.

Riverside Drive Trench Monitoring

Backhoe trenching from Roberts Street to Riverside Drive, approximately 50 m west of IH 35, served to reroute a wastewater line that drains adjacent businesses (e.g., a used car dealership and an auto mechanic) (see Figure 5). The total length of the line was approximately 75 m, and the cross-sectional dimensions were 60 cm wide by 60 cm deep, except where the new line

connects with the existing line beneath Riverside Drive at approximately 1 m below surface.

Sediment encountered in the excavation consisted of modern gravelly fill overlying presumably intact soil. The modern fill, which was approximately 20–35 cm thick, contained more than 50 percent gravels in a yellowish-brown, clayey matrix. Modern materials, including oxidized metal, bottle caps, and plastic/rubber, were observed in this upper stratum. Below the modern deposit, the upper portion (i.e., A horizon) of a developed soil was excavated through. Approximately 20–30 cm in thickness, the in situ deposit was composed of very dark brown loamy clay with less than five percent coarse fragments. No cultural materials of any kind were observed in association with this deposit, and no indication of age was present.

Backhoe trenching from Cheatham Street to IH 35 along the north side of Riverside Drive served to renovate a water line, replacing steel pipe with PVC (see Figure 4). The trench at the surface was approximately 250 cm wide and extended to a depth of 70 cm. At 70 cmbs, the trench was stepped off, continuing to a total depth of 200 cm below surface at a width of 85 cm. For the first 30 m towards IH 35 from the Cheatham and Riverside intersection, the old water line was visible on the northern step of trench at 70 cm below surface; however, for the rest of the length of the trench to IH 35, the old water line was not visible. The trench was backfilled at various intervals dependent largely on minimizing the loss of access to businesses along the north side of Riverside Drive. At different times the length of open trench varied from 30 to 100 ft.

Although the old water line would indicate the sediments on the northern side of the trench were disturbed to a depth of at least 70 cm, the southern side of the trench appeared to be undisturbed

at approximately 40 cm below surface, where pavement and road fill ceased and a developed soil became visible. At approximately 60 cm the sediment changed from a dark clay loam to red clay, and at 190 cm the red clay began to show an increase in calcium carbonate development. Other than a small amount of glass and oxidized metal in the topmost sediments and road fill, no cultural material was visible until very near IH 35. At approximately 30 m west of the IH 35 access road, a softball-sized fragment of burned rock became visible in the northern profile of the trench at a depth of 150 cm. Approximately 2 m east of the burned rock, several fragments of reddish chert were visible in the southern profile. Although no screening was conducted, a brief survey of the back dirt from the approximate area of the burned rock yielded a dozen pieces of lithic debitage and several large pieces of charcoal. No diagnostic materials were observed.

Discussion and Recommendations

Though limited in scope, archaeological monitoring during the current project yielded some meaningful information, especially when combined with what was previously known about 41HY261. As a result of current monitoring and auger investigations, the boundaries of 41HY261 have been extended (Appendix A, Figure A-1). From the types of projectile points recovered during CAS's investigations at 41HY261, it can be understood that the site was occupied from the Early Archaic through the Late Prehistoric periods (ca. 8800–260 BP).

The current archaeological monitoring and auger investigations provided further information characterizing the cultural deposits located within 41HY261. First, projectile points recovered over the course of the current project

support evidence of Middle and Late Archaic occupation of the site, and they provide additional evidence of occupation during even earlier times. Three projectile points, Angostura, St. Mary's Hall, and Barber, all indicate indigenous presence at 41HY261 during the Late Paleoindian cultural period (10,200–8800 BP). Additional information concerning the depth of cultural deposits at the site was also gained through the current monitoring investigations. The majority of the artifacts observed and collected during monitoring are loosely associated with the top 8 ft (2.5 m) of sediment in the area. While artifacts were observed in association with deeper sediments in auger excavations, these artifacts are thought to have come from higher in the profile due to the methods and biases involved with auger excavations (i.e., as the auger bit is pulled up out of the ground, it can easily scrape and pick up artifacts higher in the profile). However, this does not discount the deeper deposits in this location; closer to the San Marcos River channel, younger deposits occur deeper, having been buried by flooding.

With all that is known about 41HY261, it can be understood that this location above the San Marcos River was important for people during much of prehistory and also during historic times. Additionally, the geomorphic setting (i.e., alluvial terrace) has the inherent potential to bury and subsequently preserve discrete components of an archaeological site. Therefore, sites like these, which have a deep record of occupation and ideal preservation setting, have great potential to contribute to what is known about prehistory and history in Texas. Despite previous construction efforts (i.e., Crooks and Rio Vista Park development), it appears that a good portion of this site remains intact.

Based on the results of the current monitoring/augering investigations and previous

investigations of 41HY261, CAS recommends that the site is eligible for listing on the NRHP and for designation as a State Archeological Landmark (SAL). CAS contends that archaeological site 41HY261 is eligible for SAL status under Criteria 1 (the site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information) and 2 (the site's archaeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interests of the site). Current and previous investigations have demonstrated that data sets generated from further investigations of 41HY261 have a high potential for providing important information that would aid in a better understanding of prehistoric occupation of the San Marcos River Valley, information that is currently lacking. Additionally, investigations have demonstrated that the site possesses intact and well-preserved deposits that further support the research potential and/or preservation interests of the site. Previous investigations have also documented vandalism and relic collecting at the site. Investigations by McCulloch and Voellner (1996) state that there was a considerable amount of unauthorized and unsupervised excavation (looting) occurring at this location prior to its designation as a site and investigation by professional archaeologists. The site's prime location in Crook's Park, adjacent to Rio Vista Falls, results in heavy use of the area and greater potential for additional vandalism. Therefore, CAS further recommends the site as eligible for SAL status under Criterion 5: the high likelihood that vandalism and relic collection has

occurred or could occur, and official SAL status is needed to insure maximum legal protection or alternatively, further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected.

The current and previous investigations have clearly demonstrated that 41HY261 contains deep, intact, stratified subsurface cultural deposits that could potentially support occupation of the site from the Paleoindian period (11,500–8800 BP) through to the Late Prehistoric period (1200–260 BP). As the site has the potential to contribute significantly to the prehistory of the region, CAS recommends that 41HY261 is also eligible for listing on the NRHP under Criterion D (ability to provide information important to prehistory or history). Archaeological site 41HY261 has a strong potential to provide data sets that will address important research questions concerning the prehistoric occupation of the San Marcos River Valley area.

Based on the above recommendations for archaeological site 41HY261, CAS further advocates that the cumulative disturbance of the site by City-sponsored construction efforts be offset, or mitigated, through the implementation of a data recovery program. CAS feels that a data recovery program will mitigate the impacts that have occurred as a result of the current infrastructure project and previous disturbances to the site resulting from City-sponsored infrastructure development in addition to previous vandalism and looting.

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APPENDIX A

*Sensitive Material
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Figure A-1. Revised 41HY261 site boundary.



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