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Intensive Cultural Resources Survey for the Proposed TAMU-CC Momentum Campus Expansion, Nueces County, Texas

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INTENSIVE CULTURAL RESOURCES SURVEY FOR THE PROPOSED TAMU-CC MOMENTUM CAMPUS EXPANSION, NUECES COUNTY, TEXAS

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MANAGEMENT SUMMARY

In January 2014, HDR Engineering, Inc. (HDR), under contract to Lockwood, Andrews, and Newnam, Inc., for Texas A&M University Corpus Christi (TAMU-CC), conducted an intensive cultural resources survey in advance of the proposed TAMU-CC Momentum Campus expansion in the City of Corpus Christi, Nueces County, Texas. The proposed Area of Potential Effects (APE) is bisected by Nile Drive and bounded by Ennis Joslin Road to the north and east, Oso Creek to the north and west, and residential neighborhoods along Sahara Drive and Pharaoh Drive to the south. The APE, measuring approximately 95 acres, will be the site of new student housing, an athletics complex, a convocation center, a hotel and conference center, and several additional complexes. Primary impacts associated with the expansion will occur in the upper 3 ft, but deeper impacts are anticipated to occur at the locations of new building construction. The archaeological field investigation conducted by HDR involved a pedestrian survey with shovel testing throughout the project area and backhoe trenching at proposed new building locations. In total, 41 shovel tests and five backhoe trenches were excavated within the project area. Construction fill and disturbed soil was consistently encountered in the upper portion of the excavation units and was underlain by deep, sterile clay deposits. No cultural materials or buried living surfaces (paleosols) were encountered during the survey. In accordance with 36 *Code of Federal Regulations* (CFR) 800 and 13 *Texas Administrative Code* [TAC] 26, no further archaeological investigations are recommended for the presently defined project area and construction of the proposed Momentum Campus expansion may proceed. However, in the event that any archaeological deposits are encountered during construction, work should cease, and the Texas Historical Commission (THC) should be notified. All records and materials generated by this project will be permanently curated at the Center for Archaeological Studies at Texas State University in San Marcos, Texas.

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Abbreviations and Acronyms

APE	Area of Potential Effects
Atlas	Texas Archeological Sites Atlas
CAR	Coastal Archaeological Research, Inc.
CEI	Coastal Environments, Inc.
cmbs	centimeters below the surface
CFR	*Code of Federal Regulations*
cm	centimeter(s)
ENV	Environmental Affairs Division
EPA	Environmental Protection Agency
F	Fahrenheit
FCC	Federal Communications Commissions
FHWA	Federal Highway Administration
ft	foot/feet
GPS	Global Positioning System
HDR	HDR Engineering, Inc.
in	inch/inches
inbs	inches below the surface
km	kilometer(s)
m	meter(s)
mi	mile(s)
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
SAL	State Antiquities Landmark
SWCA	SWCA Environmental Consultants
TAC	Texas Administrative Code
TAMU-CC	Texas A&M University Corpus Christi
TARL	Texas Archeological Research Laboratory
THC	Texas Historical Commission
TxDOT	Texas Department of Transportation

1. INTRODUCTION

In January 2014, HDR Engineering, Inc. (HDR), under contract to Lockwood, Andrews, and Newnam, Inc., for Texas A&M University Corpus Christi (TAMU-CC), conducted an intensive cultural resources survey in advance of the proposed TAMU-CC Momentum Campus expansion in the City of Corpus Christi, Nueces County, Texas (Figure 1-1). The proposed Area of Potential Effects (APE) is bisected by Nile Drive and bounded by Ennis Joslin Road to the north and east, Oso Creek to the north and west, and residential neighborhoods along Sahara Drive and Pharaoh Drive to the south. The APE, measuring approximately 95 acres, will be the site of new student housing, an athletics complex, a convocation center, a hotel and conference center, and several additional complexes. Of these 95 acres, approximately 25 acres consist of previously surveyed area, and 22 acres consist of previously developed area (e.g., track stadium, paved areas, artificial embankment, and drainage ditch). Therefore, the remaining 48 acres represented the project area subjected to intensive survey.

The purpose of the cultural resources investigation in the project area was to determine the presence/absence of archaeological resources (36 *Code of Federal Regulations* [CFR] 800.4) and to evaluate identified resources for their eligibility for inclusion on the National Register of Historic Places (NRHP), as per Section 106 (36 CFR 800) of the National Historic Preservation Act of 1966, as amended, or as a designated State Antiquities Landmark (SAL) under the Antiquities Code of Texas (13 *Texas Administrative* Code [TAC] 26.12). Field investigations took place between January 29–30, 2014. HDR project personnel consisted of crew members Megan Koszarek, Mark Buie, Michael Maddox, Elizabeth Dalton, and Principal Investigator Ben Fullerton.

All records and materials generated by this project will be permanently curated at the Center for Archaeological Studies at Texas State University in San Marcos, Texas.

The remainder of the report is organized in the following manner: Chapter 2 presents the environmental setting of the region, Chapter 3 presents the cultural context for the cultural resources survey, Chapter 4 details the methods employed during the survey, Chapter 5 details the results of the survey, and Chapter 6 is a summation and presentation of recommendations.

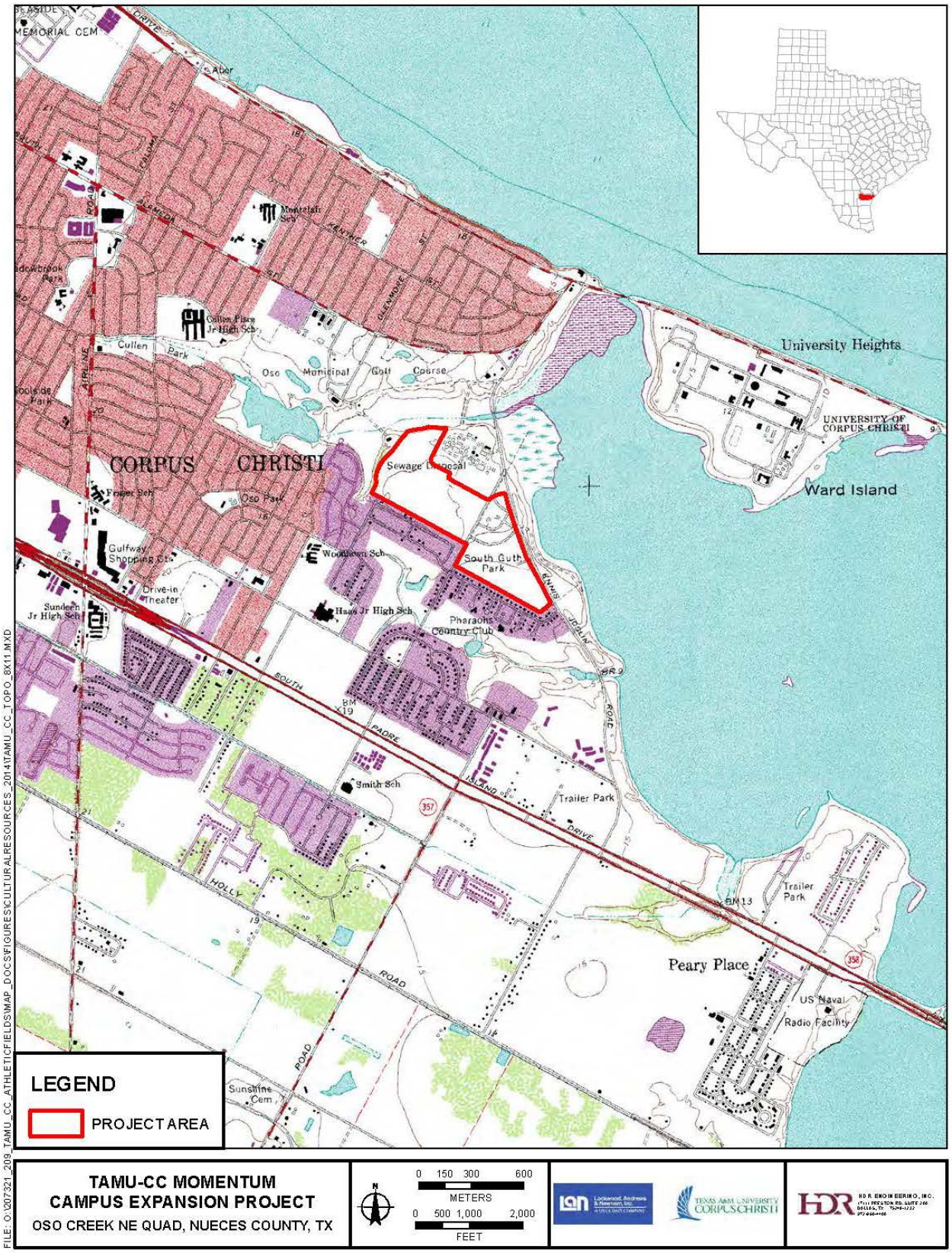

FIGURE 1-1. TOPOGRAPHIC MAP OF THE PROJECT AREA.

2. BACKGROUND

2.1. Climate

The climate in the area consists of humid subtropical areas to the northeast along the coast with a semiarid region to the west and southwest (Franki et al. 1965). The maximum temperatures range from the 80s to high in the 90s, and temperatures below 32º Fahrenheit (F) are infrequent (Franki et al. 1965). The average rainfall ranges from approximately 64 centimeters (cm) (25 inches [in]) in the southwestern part of Nueces County to approximately 71 cm (28 in) near the coast.

2.2. Geology and Soils

The underlying geology within the project area consists of the Beaumont Formation of Late Pleistocene age and Holocene Alluvium along the unnamed tributary at the western edge of the project area (Bureau of Economic Geology 1975). According to data from the Natural Resources Conservation Service (NRCS), the project area contains two soil map units: Victoria clay, 0 to 1 percent slopes and Victoria clay, 1 to 3 percent slopes. Victoria soils are nearly level to very gently sloping soils located on the South Texas coastal plain, and consist of very deep, well drained, very slowly permeable soils that formed in clayey deltaic and marine sediments in the Beaumont Formation (Soil Survey Staff 2013). A typical profile of Victoria soils consists of a thin, very dark gray clay Ap-horizon between 0 and 15 cm below the surface (cmbs) (0 and 6 in below the surface [inbs]), underlain by a series of very dark gray clay Bss-horizons with slickensides and calcium carbonate increasing with depth between 15 and 91 cmbs (6 and 36 inbs). These horizons are then underlain by a pale brown clay Bnss-horizon between 91 and 127 cmbs (36 and 50 inbs) and a series of pale yellow clay Bkny-horizons with calcium carbonate masses and gypsum crystals between 127 and 228 cmbs (50 and 90 inbs) (Soil Survey Staff 2013).

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3. CULTURAL HISTORY

Based on early taxonomic divisions within coastal archaeology (Ambler 1967; Aten 1981; Campbell 1960), the Texas Gulf Coast has been divided into three basic zones: upper, central, and lower coasts. This review of prehistory and history will only include the central Texas coast that is most commonly discussed as extending from the Colorado River south to the northern reaches of Baffin Bay (Ricklis 2004). This area includes the barrier islands and coastal fringes and continues inland for approximately 25 miles (mi) (40 kilometers [km]). The central Texas coast has survived as a useful geographical unit because its geomorphology, namely its five estuarine bay systems, has produced rather unique and bounded assemblages from at least the Late Archaic period (1150 B.C–1000 A.D.).

Thomas N. Campbell (1960) was the first to fully synthesize the archaeology of the Texas central and lower coasts. Using information from many of his own excavations within Copano Bay and Laguna Madre, along with other existing yet sparse information, Campbell created a basic two- part chronology: the pre-ceramic Archaic Aransas focus, followed by the Late Prehistoric Rockport focus. These taxonomic designations were created using artifact typologies and apparent stratigraphic relationships without the assistance of radiocarbon dating techniques.

Since Campbell's (1960) synthesis, there has been a tremendous increase in the number and complexity of archaeological research projects along the central Texas coast. The vast majority of this research in recent decades has been carried out as cultural resources management projects. Many attempts have been made to organize the large amount of archaeological data from this region into a cultural chronology that is both generally accepted and integrates well with adjacent areas. As part of a review of south Texas archaeology, including the coast, Stephen L. Black (1989) created a taxonomic cultural sequence for the central coast. Black's elaborate system of "phases" is a significant expansion of Campbell's simplistic two-part chronology. In Black's system, there are eight phases from just the Late Archaic to Historic periods. Richard Weinstein (1992) further expanded Black's work, but cultural chronologies for the central Texas coast are still the focus of much debate and little agreement (cf. Ricklis 2004).

In order to avoid debates of taxonomy, the current review will use a simple chronological framework when discussing the indigenous archaeology of the central Texas coast (Table 3-1). This chronology includes the Paleoindian (ca. 9200–5500 B.C.), Early Archaic (ca. 5500–2200 B.C.), Middle Archaic (ca. 2200–1100 B.C.), Late Archaic (ca. 1100 B.C.–A.D. 1000), Late Prehistoric (A.D. 1000–1700), and Historic (A.D. 1700–1950) periods.

TABLE 3-1. CULTURAL CHRONOLOGY OF THE CENTRAL TEXAS COAST

Period	Age (B.C./A.D.)
Paleoindian	9200–5500 B.C.
Early Archaic	5500–2200 B.C.
Middle Archaic	2200–1100 B.C.
Late Archaic	1100 B.C–A.D. 1000
Late Prehistoric	A.D. 1000–1700
Historic	A.D. 1700–1950

3.1.1. Paleoindian (9200–5500 B.C.)

The Texas coastal region underwent dramatic changes in geomorphology throughout the late Pleistocene and early Holocene. By the peak of glaciation within the Pleistocene (ca. 20000 B.C.), sea levels were at least 100 m (328 ft) below current levels. Global warming trends ca. 18,000 years ago triggered sea level increases, which by 9,000 years ago allowed for the initial formation of the modern bay systems of the central Texas coast (Brown et al. 1976; McGowan et al. 1976). Sea levels continued rising throughout the early Holocene and did not approximate modern levels until ca. 1050 B.C. (Anderson et al. 1992; Brown et al. 1976; McGowan et al. 1976; Paine 1991). The shallow water estuary/barrier island chain systems characteristic of the central Texas coast began to approximate their modern forms during the end of the Middle Archaic Period ca. 3,000 years ago (Paine 1991).

Due to the dynamic nature of the Texas coast during the early Holocene, evidence of Paleoindian archaeology is sparse on the central Texas coast and primarily consists of isolated, scattered finds. Site 41VT112 is the only stratified site with Paleoindian components near the project area. Although some Paleoindian projectile points (Golondrina, Angostura, and Plainview) were recovered from the Morhiss Mound (41VT1) excavations of the 1930s, they were from mixed contexts and provide little more data than the stray finds typified by site 41VT85 along the Guadalupe River (Campbell 1976:84–85).

3.1.2. Early Archaic (5500–2200 B.C.)

For the first two millennia of the Early Archaic, sea levels continued to slowly rise, and the active channels of the Nueces, San Antonio, and Guadalupe rivers were still below their current depths (Pearson et al. 1986). Phytolith data indicate that throughout the Early Archaic period the environment underwent a gradual transition to drier conditions (Robinson 1979). Given the amount of general geomorphological and climatic change occurring throughout the Early Archaic, it has been difficult for archaeologists to locate occupations dating to this period. However, shoreline occupation during the early portion of this period is well established, specifically in the Nueces Bay area on the basis of radiocarbon dates on discrete stratigraphic components at several sites including 41SP136, 41SP153, 41NU266, and 41NU281 (Ricklis 2012). Very little is known during this interval of the Early Archaic other than the fact that estuarine shellfish were exploited. The few lithics that have been documented during excavations have included a scant amount of chert debitage and a chert core from 41SP153 and a few utilized flakes recovered from 41NU266 (Ricklis 2012). Faunal remains are almost entirely absent for this period and likely due to the complete decay of bone (Ricklis 2012).

Coastal sites are considerably more numerous during the latter half of the Early Archaic period. All components of this period are more or less thin (5 to 25 cm thick) shell deposits; however, some sites have produced occasional lithic artifacts as well as fish otoliths (Ricklis 2012). There is some variability in the thickness of deposits and the density of artifacts present at occupation sites along the central coast (Ricklis 2012). Gower, Andice, and Bell points, as well as a variety of other dart points, have been recovered from several sites including 41NU184, 41SP156, 41NU267, 41NU266, and 41AS16 (Ricklis 1993; Prewitt and Paine 1988; Prewitt et al. 1987). There is limited data pertaining to subsistence practices, but the presence of dart points suggests that hunting was carried out even though there is a lack in faunal remains. Fish otoliths have been recovered from several site components, and although estuarine fish were not abundant at any site in the area, it is likely that procuring them was a part of the subsistence activities during this period (Ricklis 2012).

3.1.3. Middle Archaic (2200–1100 B.C.)

Sites with Middle Archaic components are slightly more numerous than previous periods. It has been suggested that by this time, the San Antonio estuary system would have extended farther north than in previous periods (Prewitt and Paine 1988; Weinstein 1992). Dated oyster reef deposits collected three

miles north of Green Lake indicate that by the end of the Middle Archaic, productive estuary resource systems were well established for the lower Guadalupe River valley (Weinstein 1992).

3.1.4. Late Archaic (1100 B.C.–A.D. 1000)

The number of archaeological sites attributed to the Late Archaic period on the central Texas coast is substantially greater than for previous periods. The reasons for the dramatic increase in number of known sites for this time period are still uncertain. However, it has been suggested the combination of sea level stabilization, increase in river sediments, and the gradual formation of barrier islands would have acted to reduce salinity of the Central Texas Coast bay systems, thereby increasing the productivity of oysters and other estuarine resources (Nelson and Bray 1970; Pearson et al. 1986) and leading to an increase in the population of people. Concomitantly, evidence of Late Archaic subsistence is dominated by fish species—black drum, redfish, spotted sea trout, and Atlantic croaker—whose yearly cycle is tied to estuary bay systems (Ricklis 2004). Some evidence suggests that shoreline fishing camps such as 41SP120 and Mustang Lake were occupied during the fall and into early spring as part of a settlement pattern involving shoreline occupation during cooler weather and riverine hunting camps during the warmer months (Ricklis 2012).

In addition to the increased reliance upon estuarine resources, the archaeology of the Late Archaic reveals a diverse shell tool industry and evidence of basketry (Campbell 1947, 1952; Ricklis 1990, 2004). Although perforated oyster shell and edge-flaked clamshell scrapers are known from the Early Archaic and continue to be found in later periods, the use of conch shell for tools appears to begin only in the Late Archaic (Campbell 1952; Ricklis 1990, 2004). Additionally, the number of bone artifacts (e.g., awls, socketed points) increases dramatically in the archaeological record of the Late Archaic. Clear evidence for the use of basketry was recovered from the Tucker site (41NU46) near Corpus Christi from a stratum that contained hearth charcoal dated to ca. 3000 B.P. (Ricklis 2012).

During the Late Archaic, cemeteries are present for the first time in the region. The emergence of cemeteries is likely due to the increase in population density and, as a systemic response to growing population, the development of well-defined territories (Ricklis 2012). The cemeteries in the coastal region range in size from a cluster of a few individuals to large cemeteries containing hundreds of interments.

3.1.5. Late Prehistoric (A.D. 1000–1700)

Using a socio-cultural evolutionary taxonomic system, the end of the Late Archaic period on the central Texas coast, like the remainder of the state, is signaled by the widespread adoption of the bow and arrow and ceramics (Hester 1975, 1981; Suhm and Krieger 1954). Based on changes in artifact types and suspected shifts in subsistence practices, the Late Prehistoric period for the central Texas coast is divided into Initial Late Prehistoric (ca. A.D. 1000–1250/1300) and Final Late Prehistoric (ca. A.D. 1250/1300–1700) phases (Ricklis 2012).

The Initial Late Prehistoric phase along the central Texas coast is characterized by Scallorn and Fresno arrow points along with plain, sandy paste ceramics similar to Goose Creek of the upper Texas coast (Ricklis 2012; Weinstein 1992). By the Final Late Prehistoric phase, Perdiz arrow points predominate along with a prismatic blade technology, thin bifacial knives, and Rockport sandy paste ceramics (Fritz 1975; Ricklis 1996). Rockport ceramics are quite distinctive because many have asphaltum decorations and were produced in a variety of shapes (e.g., bowls, jars, and ollas) (Ricklis 1996).

Fishing continued to be a major focus of subsistence in the Late Prehistoric period and was possibly of even greater importance than in the Late Archaic (Ricklis 1990, 1996; Weinstein 1992). At several sites (e.g., 41CL2) along the central Texas coast, Late Prehistoric fish-rich middens are stratigraphically above

Late Archaic shell middens, suggesting a possible shift in resource selection (Weinstein 1992). Additionally, by A.D. 1250/1300, bison became a significant resource for the region as numerous upland hunting camps, such as 41RF21, have been dated to this period (Ricklis 1989, 1990, 1996).

The abundance of subsistence data gathered from Late Prehistoric sites has made it possible to address issues of seasonality and group migration. Analysis of fish otolith data from large shoreline sites has shown that the most important species (black drum and redfish) were collected during the fall through early spring periods (Ricklis 1988, 1990, 1996). Additional data from *Rangia cuneata* shells in river margin sites have revealed late spring through summer occupations (Aten 1981; Carlson 1988; Ricklis 2012). Collectively, these data along with site size information suggest large aggregations of groups occurred during the fall and winter months along the coast, followed by a late spring and summer dispersal of smaller groups into upland river margin settings. Ricklis (1990, 1992, 1996), using archival sources, has suggested similar seasonality patterns existed within the early historic period Karankawa along the central Texas coast.

Settlement patterns appear to have changed by the Late Prehistoric, whereby the larger sites upstream along the river margin such as Buckeye Knoll and Morhiss Mound were largely abandoned as large aggregation sites along the coastal edge, such as Guadalupe Bay, became prevalent. At the same time that upland sites such as Morhiss Mound were falling out of use, many more were being created upstream along the river margin as short-term hunting/fishing camps. In some cases, sites that were active in earlier periods such as Linn Lake appear to be the focus of hunting and possible trade activities well into the historic period (Hester 1985; Weinstein 1992).

3.1.6. Historic Context (A.D. 1700–1950)

Corpus Christi Bay remained unexplored until 1747, when Joaquín Prudencio de Orobio y Basterra, captain of the presidio at La Bahia, led an expedition down the Nueces River to its mouth (Long 2013). Several initial attempts to establish a colony at the mouth of the Nueces River failed due to drought and insufficient provisions. It was not until 1766 that the first settlement, Santa Petronila, was established by Blas Maria de la Garza Falcon, captain of Camargo. In 1787, Manuel de Escandon, proposed another settlement at the mouth of the Nueces, but the project never advanced beyond the planning stages. In the late 1780s and early 1790s, Spanish authorities also considered moving Nuestra Señora del Refugio Mission to the mouth of the Nueces, but abandoned the idea because of continuing friction with the Lipan Apaches.

At the end of the eighteenth century, ranchers from the Rio Grande valley began applying for and receiving land grants in the lower Nueces valley (Long 2013). By 1794, a large ranch belonging to Juan Barrera and known as Rancho de Santa Gertrudis was in operation on the north side of Corpus Christi Bay. Between 1800 and the end of Spanish dominion, much of what is now Nueces County was granted to ranching families, most of whom were related by marriage (Long 2013). In 1812, after a Native American uprising, the colonists abandoned the area and sought refuge in the Rio Grande valley. The colonists returned, but repeated skirmishes with the Native Americans continued until about 1824, when peace was made with the Comanches and Lipans. After Mexican independence, the region became part of Tamaulipas. During the period from 1829 to 1836, most of the land in the lower Nueces valley that had not been granted under Spanish rule was deeded to individuals by the Tamaulipan government.

Nueces County, including the entire area south of Bexar County west to the Rio Grande and east to the Gulf of Mexico, was formed from San Patricio County in 1846 and organized the same year (Long 2013). Corpus Christi, which was incorporated in 1846, became the county seat. Although large numbers of fortune-seekers passed through Corpus Christi to join wagon trains heading west during the California gold rush of 1849, few settlers put down roots. Continuous Native American attacks and the relative isolation of the region kept most would-be settlers away. The first census of the county in 1850 showed a

population of 689. Between 1850 and 1861, the Nueces County area was further divided to form several new counties (Long 2013).

During the 1920s, agricultural mechanization began in the county, and tractors and other machines appeared in increasing numbers. The onset of the Great Depression, falling cotton prices, and the arrival of the boll weevil brought new hardships for county farmers, forcing many to move to the cities (Long 2013). The total number of farms in the county fell from a high of 1,969 in 1930 to 1,306 in 1950. Cotton production, which had peaked during the mid-1920s at more than 100,000 bales a year, fell markedly during the 1930s and early 1940s. In 1945, only 46,000 bales were ginned (Long 2013). Cotton farming rebounded in the late 1940s, and in 1949 production once again topped the 100,000-bale mark. Since that time, cotton production has declined, though it remains a significant part of the county's agricultural receipts.

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4. METHODS

4.1. Previous Investigations near the Project Area

Prior to conducting fieldwork, a review of the Texas Historical Commission's (THC) Texas Archeological Sites Atlas (Atlas) indicated that there are seven archaeological sites within one mile (1.6 km) of the project area: 41NU2, 41NU13, 41NU14, 41NU15, 41NU85, 41NU265, and 41NU296 (Table 4-1). Site 41NU2 is considered eligible for inclusion on the NRHP; sites 41NU13, 41NU14, 41NU15, and 41NU296 are considered to have an unknown NRHP eligibility status; and sites 41NU85 and 41NU265 are considered not eligible due to destruction of the sites. Of the seven sites, only 41NU14 is a designated SAL. Five additional archaeological sites fall outside of the search radius and are not discussed in detail: 41NU16, 41NU81, 41NU82, 41NU83, and 41NU84.

TABLE 4-1. TAMU-CC MOMENTUM CAMPUS EXPANSION SITE FILE SEARCH SUMMARY

Identifier	Affiliation	Features/Function	NRHP Eligibility	Comments/Recommendations
41NU2	Prehistoric-Archaic	Cemetery/campsite	Eligible	Numerous human burials recovered; monitoring required for all construction activities at the site
41NU13	Unknown	Unknown	Unknown	Unknown
41NU14	Prehistoric	Shell midden	Unknown	SAL designated in 2011
41NU15	Prehistoric	Shell midden and occupation site	Unknown	Previously recorded as a Prehistoric shell midden; however, was not relocated in 2005. Research potential is considered low
41NU85	Prehistoric	Open campsite	Not Eligible	Site recorded as destroyed during 1991 revisit
41NU265	Prehistoric	Shell midden	Not Eligible	Recommended for testing in 1991; testing determined to be unwarranted in 1995 due to disturbances
41NU296	Prehistoric	Shell scatter in backfill	Unknown	Research potential is considered low

4.1.1. Archaeological Sites within One Mile of Project Area

The Cayo del Oso site (41NU2) is a prehistoric cemetery/campsite that has been known since at least the last quarter of the nineteenth century (Meissner et al. 2009). A detailed history of what is known about the excavations by various amateur and professional archaeologists in the 1920s to the 1960s is referenced in The Cayo del Oso Site (41NU2), Volume I: A Historical Summary of Explorations of a Prehistoric

Cemetery on the Coast of False Oso Bay, Nueces County, Texas (Jackson et al. 2004). Of the estimated 110 individual burials excavated prior to 1970, 105 resulted from excavations led by A.T. Jackson during the summer of 1933. It is known that the site has been subject to many years of excavation by both amateur and professional archaeologists prior to the 1933 excavations and that additional burials may have been excavated at the site (Jackson et al. 2004). In 1996, TxDOT contracted with Coastal Archaeological Research, Inc. (CAR) to develop a testing plan across the site to determine how likely it was that future development would encounter additional burials. The testing encountered one human burial at the southern end of the site as well as numerous undisturbed areas containing cultural materials in sealed strata (Ricklis 1997). The findings of this survey required that all future construction within the site boundaries be monitored by professional archaeologists. TxDOT then contracted with CAR to provide the monitoring service.

Between 2000 and 2005, numerous stages of construction monitoring were conducted at 41NU2. During monitoring, the discovery of an abundance of cultural features within distinct occupation zones indicated that the site represented an intensively used campsite. In addition to features associated with the campsite, six human burials were also discovered during monitoring. One burial was intact, three burials consisted of disarticulated remains found in trench fill, and two non-contemporaneous burials were found in a partially disturbed context (Mahoney and Shafer 2003). Additional monitoring conducted by SWCA Environmental Consultants (SWCA) in 2006 encountered three additional features consisting of concentrations of shells, animal bone, and charcoal (Miller et al. 2006).

Site 41NU14 (Oso Lake Midden Site), was designated as a SAL in 2011 and is located approximately 750 m to the southwest of 41NU2. The site was previously recorded as a prehistoric shell midden located on the modern property of the Oso Beach Municipal Golf Course. This site was revisited in 2005 by J. Turpin and was recorded as measuring 200 x 130 m (656 x 427 ft). Shovel testing encountered a 20 cm (0.7 in) thick buried shell lens within gray clay loam. During a preliminary archaeological assessment conducted by Coastal Environments, Inc., in 2009, 41NU14 could not be relocated due to the presence of heavy vegetation. However, an eroded shell midden deposit was observed approximately 75 to 100 m (246 x 328 ft) west of where 41NU14 is recorded. The NRHP eligibility of 41NU14 is considered unknown, and further field investigations are recommended to determine the exact location of the site.

Site 41NU15 was initially recorded on the Atlas in 1985 in response to the Corpus Christi Parks and Recreation Department's survey of the property for the development of South Guth Park and the more recent nature trail preserve component (Hans and Pat Suter Park) on the eastern side of Ennis Joslin Road (Kelly and Guevin 2009). 41NU15 was previously recorded as a prehistoric shell midden and occupation site; however, the site was not relocated during a 2005 revisit by B. Saner, Jr. due to the presence of thick vegetation. Due to the heavily disturbed nature of 41NU15 from modern impacts, the site is considered to have low potential for yielding deposits that may be eligible for inclusion in the NRHP.

According to the Atlas, site 41NU85 was originally recorded in the 1930s by J.E. Pearce as an open prehistoric campsite with scattered marine shells present. The site was deemed destroyed during the revisit by Jim Warren in 1991; therefore, it is considered not eligible for inclusion in the NRHP.

Site 41NU265 was recorded in 1991 by Jim Warren for campus expansion and shoreline stabilization efforts. The site consists of an intact shell lense at 80–100 cmbs (32–39 inbs). Artifacts associated with the shell midden included various marine shells, chert debitage, and one Young projectile point. The site was determined to have been disturbed by erosion and earth-moving activities during World War II; however, it was recommended that the site be tested for significance if any future construction would encroach. In 1995, as part of the Spur 3, Ocean Drive: from Alameda/Ocean Drive Intersection to the West Entrance of the TAMU-CC project, TxDOT in association with the Federal Highway Administration (FHWA) performed a cultural resources survey in an area measuring 762 x 32 m (2500 x 105 ft). During this investigation, shovel tests revealed cultural materials from site 41NU265; however,

the buried materials were in a disturbed context. It was determined that the entire testable portion of the site had been disturbed; thus, no further testing at the site was conducted. No further information on the site post-1995 was available via the Atlas.

Site 41NU296 was recorded in 2005 and consists of cultural materials (marine shell fragments) found in the backfill of a trench that was excavated during the previous year to possibly place an underground storm drain or sewer line. The site measures approximately 40 x 4 m (131 x 13 ft) with buried (undetermined) prehistoric deposits at an unknown depth; however, the site boundary is not rigidly defined at this time (Kelly and Guevin 2009). Due to severe disturbance from modern impacts, site 41NU296 is considered to have low potential for yielding deposits that may be eligible for inclusion in the NRHP.

No detailed information regarding site 41NU13 was available via the Atlas.

4.1.2. Cultural Resources Surveys within One Mile of Project Area

Several archaeological surveys (in addition to those discussed above) have been conducted within one mile (1.6 km) of the project area. Several surveys were conducted for the Corps of Engineers in 1984 and 1985, but no further information was available regarding the nature of the surveys. Jim Warren conducted subsurface testing for cultural resources in South Guth Park for the City of Corpus Christi in 1985, and ACI Consulting conducted a survey on behalf of the Environmental Protection Agency (EPA) in 2005; however, no further information was available regarding the findings of these surveys.

In 2008, Abasolo Archaeological Consultants performed a cultural resources survey for the Federal Communications Commissions (FCC). Jeff Turpin with TAS, Inc., under contract with the City of Corpus Christi, conducted a cultural resources survey in 2005 near site 41NU14. Again, no further information was available regarding the findings of these surveys.

SWCA was contracted by TxDOT through the Environmental Affairs Division to conduct archaeological monitoring during 2005 and 2006 as part of the construction and utility improvements along Spur 3 (Peyton 2010). Two non-significant features (Features 2 and 3) were identified during trenching. Feature 2 contained shell deposits and fragments of faunal remains from 30 to 35 cmbs (12 and 14 inbs), and Feature 3 contained shell deposits at 45 cmbs (18 inbs) along with deer bone fragments at 20 cmbs (8 inbs) (Peyton 2010). The features were documented, no artifacts were collected, and construction continued. No further archaeological monitoring was recommended within the locations of the three conduit trenches and 48 light poles associated with the Spur 3 project (Peyton 2010).

Coastal Environments, Inc. (CEI) was contracted by Halff Associates, Inc., in 2009 to conduct a Phase I cultural resources survey for a proposed 12.1-acre tennis court facility expansion project for TAMU-CC. The project area is located along the west side of Nile Road within the current APE, and is bound to the north by Oso Wastewater Treatment Plant and by Pharaoh Road to the south (Kelly and Guevin 2009). No cultural materials were identified during the course of the survey.

Lastly, HDR conducted a survey in 2013 for TAMU-CC's proposed relocation of athletic fields from Ward Island to the Momentum Campus property (Fullerton and Vandagriff 2013). The 9-acre project area, located east of Nile Drive within the current APE, was subjected to pedestrian survey and the excavation of 18 shovel tests. No archaeological materials were identified during the survey.

4.2. Survey Methods

HDR conducted an intensive survey with shovel testing and backhoe trenching within the approximate 95-acre project APE. Of this total, approximately 25 acres consist of previously surveyed area (Kelly and Guevin 2009; Fullerton and Vandagriff 2013), and 22 acres consist of previously developed area (e.g., track stadium, paved areas, artificial embankment, and drainage ditch). As a result, the remaining 48 acres represented the project area subjected to archaeological survey. A total of 41 shovel tests were excavated within the project area. This number exceeds the THC minimum survey standards of one shovel test every two acres for project areas 11–100 acres in size. Shovel test and transect intervals ranged between 50 and 100 m (164 and 328 ft) and were distributed relatively evenly across the project area. Each shovel test was approximately 30 cm (12 in) in diameter and was excavated in 20 cm (8 in) arbitrary levels to a depth of 80 cmbs (32 inbs), until sterile subsoil was encountered, or until impenetrable soil was encountered. The soil removed was screened through 0.635-cm (0.25-in) mesh screen and soil descriptions followed the guidelines and terminology established by the National Soil Survey Center (Schoeneberger et al. 2002). Soil colors were recorded using a Munsell Soil Color Chart. All excavated shovel tests were recorded on shovel test forms which note depth, soil matrix descriptions, and cultural materials recovered.

In areas where construction may have an impact greater than maximum shovel test depth (approximately 3 feet), backhoe trenches (n=5) were excavated to determine the presence of deeply buried cultural resources. Due to the presence of several archaeological sites adjacent to the project area and potential (albeit low) for human burials, backhoe shovel scrapes were conducted at thin intervals (approximately 10 cm [4 in]) to minimize disturbance in case cultural materials were encountered. During excavation, the trench walls and soil removed were closely inspected for the presence of cultural materials. Upon completion of trench excavations, the trench walls were inspected from the surface, photographed, and approximate depths of stratigraphic zones were recorded. On average, backhoe trenches dimensions at the surface were approximately 2 m (7 ft) in width and 5 m (16 ft) in length and were excavated until sterile subsoil was encountered. Termination depths ranged between 1.55 and 2.5 m (5.1 and 8.2 ft) below the surface. Trenches were backfilled immediately following recording procedures.

Digital photographs were used to document the survey conditions, disturbances, and any cultural features observed, and details of each photograph were recorded on standardized forms. All shovel test and backhoe trench locations were recorded using a Global Positioning System (GPS) unit.

4.2.1. Site Designation

The THC differentiates between archaeological sites and isolated finds. Sites are evaluated and recommended eligible or ineligible for inclusion in the NRHP. Isolated finds are ineligible for inclusion in the NRHP as they do not meet the requirements to be designated as a site. The HDR standards for defining archaeological sites and isolated finds involves the cultural affiliation and number of artifacts present within an area of pre-determined size. A prehistoric site designation is applied when five or more prehistoric artifacts are present within a 20 m² area. A historic site designation is applied when 10 or more artifacts of two or more artifacts classes are present within a 20 m² area. Isolated finds are defined as the presence of four artifacts or less within a 20 m² area. Site boundaries are defined by the presence of surficial materials and by shovel tests yielding cultural materials. Where possible, all radial shovel tests are excavated at 10 m intervals until two sterile units are encountered in all cardinal directions. As part of the identification and documentation of sites, sites are recorded on a State of Texas Archeological Data Site Form. This form records a variety of data including location, setting, artifactual materials recovered, and other information. All sites are sketch-mapped, recorded using a GPS, and photo-documented. Once completed, the form is submitted to Texas Archeological Research Laboratory (TARL) for official trinomial designation. If human remains or evidence of human burials are encountered, all work will cease and THC will be immediately notified by HDR staff.

5. RESULTS

The Momentum Campus Expansion project area consists of a primarily undeveloped lot to the east of Nile Drive (Figure 5-1) and a primarily developed lot to the west of Nile Drive (Figure 5-2). The total project area is approximately 95 acres in size. Of these 95 acres, approximately 25 acres consist of previously surveyed area, and 22 acres consist of previously developed area (e.g., track stadium, paved areas, artificial embankment, and drainage ditch). Therefore, the remaining 48 acres represented the project area subjected to intensive survey.

The triangular lot east of Nile Drive consists of the previous location of South Guth Park which contains remnants of numerous baseball fields as well as a playground/picnic area (see Figure 5-2). South Guth Park is no longer open to the public, and all playground and baseball field equipment has been removed from the park. According to a sequence of aerial photographs, 2006 appears to have been the last year the park was active. Since that time, the park grounds have been minimally maintained, and evidence of the park's previous modern activities has become increasingly diminished (see Figure 5-1). Several athletic fields have been recently constructed within the previously surveyed area (Fullerton and Vandagriff 2013) at the southern portion of the lot.

FIGURE 5-1. VIEW TO THE SOUTHEAST, SHOWING OVERVIEW OF PROJECT AREA EAST OF NILE DRIVE.

The area to the west of Nile Drive consists of a tennis court facility, a recently developed track stadium (Figure 5-3), a drainage ditch along the southern project area boundary (Figure 5-4), and an artificial embankment immediately south of the Oso Wastewater Treatment Facility (Figure 5-5; see Figure 5-2). The remainder of the lot consists of two small parcels of vacant, grassed pasture: one to the south of the embankment (see Figure 5-5) and one to the north of the track stadium (Figure 5-6). These two locations were the only areas west of Nile Drive to be subjected to intensive survey.

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FIGURE 5-2. AERIAL PHOTOGRAPHIC MAP OF THE PROJECT AREA.

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FIGURE 5-3. VIEW TO THE SOUTHWEST, SHOWING THE TRACK STADIUM WEST OF NILE DRIVE.

FIGURE 5-4. VIEW TO THE NORTHWEST, SHOWING THE DRAINAGE DITCH AND UTILITIES WEST OF NILE DRIVE.

FIGURE 5-5. VIEW TO THE EAST, SHOWING EMBANKMENT AND SHOVEL TEST AREA (PHOTO RIGHT).

FIGURE 5-6. VIEW TO THE WEST, SHOWING SHOVEL TEST AREA NORTH OF THE TRACK STADIUM.

The entire 48-acre project area was traversed at approximately 30 m (98 ft) intervals to inspect the ground surface for cultural materials, and a total of 41 shovel tests were excavated. Since no surficial cultural materials were identified during the walkover and because low ground surface visibility (approximately 10–20 percent) was common throughout the area, shovel test excavations were spread relatively evenly within the project area and were typically spaced between 50 and 100 m (164 and 328 ft) apart (see Figure 5-2). The majority of the shovel tests exhibited very similar soil profiles with thin layers of various disturbed soil (e.g., mottled soil, asphalt, gravel, and concrete) in the upper portions of the profiles (ranging between 0 and 35 cmbs [0 and 14 inbs]) underlain by very dark gray (10YR 3/1) to black (10YR 2/1 and 7.5YR 2/1) compact clay (Figure 5-7). This lower profile typically extended to termination depth of approximately 80 cmbs (32 inbs). In several cases, shovel tests were terminated prior to 80 cmbs (32 inbs) due to contact with dense calcium carbonate or due to very compact clay. A modern pink plastic bead and a small piece of purple plastic were present in two shovel tests between 0 and 10 cmbs (0 and 4 inbs) and 50 and 60 cmbs (20 and 24 inbs), respectively. Oyster shell fragments were recovered between 34 and 44 cmbs (13 and 17 inbs) within the same shovel test yielding the purple plastic. As a result, the oyster shells were considered to have been naturally deposited or imported as modern construction fill. No historic-age cultural materials were found during surface inspection or shovel testing. Overall, the shovel testing results indicate that the upper 80 cm (32 inbs) of soil within the project area consists of highly disturbed ground surfaces underlain by deep clay deposits with a low probability of containing intact archaeological deposits.

FIGURE 5-7. PHOTOGRAPH SHOWING REPRESENTATIVE SHOVEL TEST PROFILE.

A total of five backhoe trenches (Trenches 1–5) were excavated within the "deep impact zone" at locations proposed for new building construction (see Figure 5-2). In several cases, trench locations within the deep impact zone were also dictated by the presence of the three previously recorded sites

(41NU14, 41NU15, and 41NU296) immediately adjacent to the project area. Trenches at these locations (Trenches 1,4, and 5) were excavated as close as possible to the site boundaries while maintaining a safe distance from buried utilities present along roadways and the wastewater treatment facility. This strategy maximized the ability to determine if previously recorded site deposits extend into intact deposits (i.e., not disturbed from previous utility installations) within the current project area. Aside from slight differences in depths of soil horizons, the results of backhoe excavations were consistent in each of the five trenches. Overall, below the thin layers of construction fill and disturbed ground surfaces, the trench profiles (Figure 5-8) matched very closely to a typical profile of Victoria series soils (see the Geology and Soils section). Specifically, the upper layers (ranging between 0 and 30 cmbs [0 and 12 inbs]) typically consisted of various disturbed deposits due to previous land use activities. Below disturbed depths, excavations consistently encountered a very compact, sticky, and plastic black (10YR 2/1) clay A horizon to approximately 30 cmbs (inbs), a dark grayish brown (10YR 4/2) clay B horizon with slickensides and numerous earthworm castings to approximately 100 cmbs (39 inbs), and a dark gray (10YR 4/1) clay B horizon with slickensides and few masses of calcium carbonate to approximately 135 cmbs (53 inbs). Between this depth and about 160 cmbs (63 inbs), each trench excavation encountered sterile subsoil consisting of a grayish brown (2.5Y 5/2) to light yellowish brown (2.5Y 6/4) friable clay B horizon with abundant masses of calcium carbonate. Lastly, the basal horizon encountered below 160 cmbs (63 inbs) consisted of a light yellowish brown (2.5Y 6/4) clay B horizon mottled with grayish brown (2.5Y 6/2) clay and containing few calcium carbonate masses and abundant gypsum crystals. No cultural materials or paleosols were found during trenching.

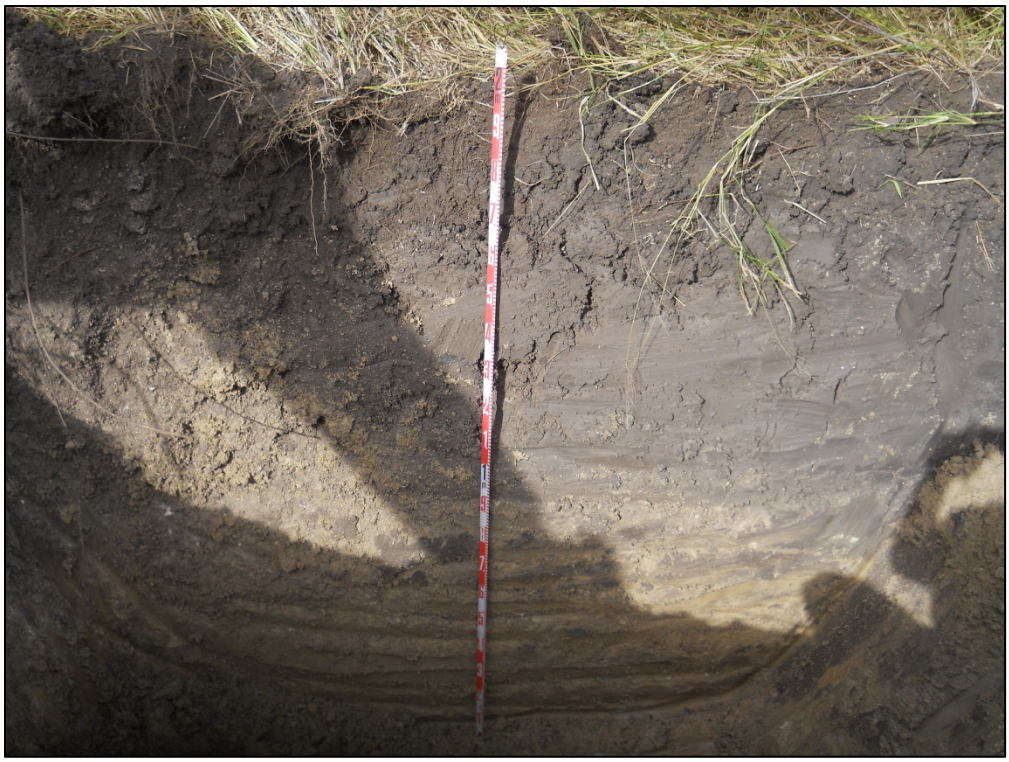

FIGURE 5-8. VIEW TO THE NORTH, SHOWING REPRESENTATIVE BACKHOE TRENCH PROFILE.

6. SUMMARY AND RECOMMENDATIONS

6.1. National Register Eligibility

6.1.1. Criteria for Evaluation of Eligibility

As part of the Section 106 review process, cultural resources investigations are undertaken with the purpose of identifying resources that are listed in, or eligible for listing in, the NRHP. The assessment of significance of cultural resources is based on federal guidelines and regulations. Any cultural resource that is listed in or eligible for inclusion in the NRHP is known as a "historic property," and the term "eligible for inclusion in the NRHP" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP-listing criteria (36 CFR 800.2). The criteria for evaluating properties for inclusion in the NRHP (36 CFR 60.4 [a–d]) are codified under the authority of the National Historic Preservation Act of 1966, as amended, and the Advisory Council on Historic Preservation has set forth guidelines to use in determining site eligibility. Subsequent to the identification of relevant historical themes and related research questions, these four criteria for eligibility are applied:

The quality of significance in American history, architecture, archaeology, 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*. Note that the application of Criterion D presupposes that the information imparted by the site is significant in history or prehistory [36 CFR 60.4, emphasis added].

The physical characteristics and historic significance of the overall property are examined when conducting NRHP evaluations. Although a property in its entirety may be considered eligible based on Criteria A, B, C, and/or D, specific data are also required for individual components therein based on date, function, history, physical characteristics, and other information. Resources that do not relate in a significant way to the overall property may contribute if they independently meet the NRHP criteria.

For a historic resource, district, or landscape to be determined eligible for the NRHP, it must retain enough of its historic integrity to convey its significance. For the NRHP, there are seven aspects of integrity:

1. Location
2. Design
3. Setting
4. Materials
5. Workmanship
6. Feeling
7. Association

Occasionally, certain resources fall into categories in which they must be evaluated further using one or more of the following Criterion Considerations. If a resource identified during the reconnaissance-level survey falls into one of these categories, the following Criterion Considerations will be applied in conjunction with one or more of the four National Register criteria:

A. A religious property deriving primary significance from architectural or artistic distinction or historical importance, or

B. A building or structure removed from its original location but which is significant primarily for architectural value or which is the surviving structure most importantly associated with a historic person or event, or

C. A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life, or

D. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

E. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

F. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or

G. A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR 60.4).

The scientific value of archaeological sites is assessed under Criterion D. With regard specifically to this criterion, the goal of prehistoric archaeological research and management is to fill gaps in the knowledge about specific research domains. Scientific importance is driven, in part, by the research paradigms of the time and in part by the amount of information available about a particular research topic in a specific geographic area. The most robust forms of scientific importance should honor diverse and occasionally competing schools of research interests and their attendant approaches. In order to fulfill Criterion D, a site must possess certain attributes (e.g., intact buried cultural strata with functionally and temporally diagnostic materials, datable cultural features), such that further intensive research at the site could be expected to add additional information to relevant research questions.

The research domains are addressed through testing and excavation programs; over time, data required for addressing specific questions are collected, analyzed, and compiled. Eventually, the potential importance, or significance, of sites that contain only the types of data already collected may diminish. This suggests the identification criteria of important historic properties are tied to both a specific geographic area reflecting a cultural adaptation or cultural region and a state of accumulated knowledge about a research domain topic. The criteria and priorities of important sites are apt to shift as accepted research paradigms change or as data accumulations approach redundancy. Archaeological sites that retain contextual integrity and contain artifacts and features capable of contributing information toward addressing relevant research issues are significant and should therefore be considered eligible for inclusion in the NRHP.

6.1.2. State Antiquities Landmark

At the state level, archaeological 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 archaeological site is situated on lands owned or controlled by the State of Texas or one of its political subdivisions; or

2. The archaeological site is situated on private land which has 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 archaeological 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 cultural 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].

Buildings, structures, cultural landscapes, and non-archaeological sites, objects, and districts may be designated as an SAL, provided that the following conditions are met:

1. The property fits within at least one of the following criteria:

   A. The property is associated with events that have made a significant contribution to the broad patterns of our history, including importance to a particular cultural or ethnic group;

   B. The property is associated with the lives of persons significant in our past;

   C. The property embodies the distinctive characteristics of a type, period, or method of construction, represents the work of a master, possesses high artistic values, or represents a significant and distinguishable entity whose components may lack individual distinction;

   D. The property has yielded, or may be likely to yield, information important in Texas culture or history;

2. The property retains integrity at the time of the nomination, as determined by the executive director of the commission; and

3. For buildings and structures only, the property must be listed in the NRHP, either individually, or as a contributing property within a historic district. Contributing status may be determined by the Keeper of the National Register of the executive director of the commission.

6.2. Conclusion and Recommendation Summary

The intensive archaeological survey conducted by HDR within the 48 acres not previously surveyed or developed involved a pedestrian survey with shovel testing throughout the project area and backhoe trenching at proposed new building locations. In total, 41 shovel tests and five backhoe trenches were excavated within the project area. Construction fill and disturbed soil was consistently encountered in the upper portion of the excavation units and was underlain by deep, sterile clay deposits. No cultural materials or paleosols were encountered during the survey. In accordance with 36 *Code of Federal Regulations* (CFR) 800 and 13 *Texas Administrative Code* [TAC] 26, no further archaeological

investigations are recommended for the presently defined project area and construction of the proposed Momentum Campus expansion may proceed. However, in the event that any archaeological deposits are encountered during construction, work should cease and the Texas Historical Commission (THC) should be notified.

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