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Cultural Resources Survey for the Proposed Knight Road Expansion, Fort Bend County, Texas

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Texas Antiquities Code Permit Number 8189

Lead Agency:
United States Army Corps of Engineers (USACE), Galveston District

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February 27, 2018

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Project No. 17-72324.001

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ABSTRACT

In October 2017, Gray & Pape, Inc., of Houston, Texas, conducted an intensive pedestrian cultural resources survey on property subsuming a total of approximately 8.3 hectares (20.4 acres) proposed for the extension and expansion of Knight Road in Fort Bend County, Texas. This area is defined as the Area of Potential Effects. Because the project involves the City of Missouri City, a political subdivision of the State of Texas, the project was assigned Antiquities Code Permit number 8189 by the Texas Historical Commission on October 5, 2017. The United States Army Corps of Engineers, Galveston District has been identified as the Lead Agency for this project.

The goals of the survey were to establish whether previously unidentified buried archaeological resources were located within or immediately adjacent to the project's Area of Potential Effects and if so to provide management recommendations for such resources. The survey was undertaken in accordance with requirements set forth by Section 106 of the National Historic Preservation Act, specifically requirements set forth by 36 CFR 800. The procedures to be followed by the United States Army Corps of Engineers to fulfill the requirements set forth in the National Historic Preservation Act, other applicable historic preservation laws, and Presidential directives as they relate to the regulatory program of the United States Army Corps of Engineers (33 CFR Parts 320-334) are articulated in the Regulatory Program of the United States Army Corps of Engineers, Part 325 - Processing of Department of the Army Permits, Appendix C - Procedures for the Protection of Historic Properties. All fieldwork and reporting activities were completed with reference to State laws and guidelines (the Antiquities Code of Texas). Survey and site identification followed Texas Antiquities Code standards. All records for this project are curated at the Center for Archaeological Studies at Texas State University in San Marcos, Texas.

Fieldwork took place between October 6 and 10, 2017, and required 48 person hours to complete. Field investigation consisted of intensive pedestrian surface inspection, subsurface shovel testing, photographic documentation, and mapping. A total of 28 shovel tests were excavated, none of which were positive for buried cultural materials. Another nine attempted shovel tests were unexcavated due to inundation, buried utilities, and disturbances such as drainage ditches. Overall, the project largely exhibited either disturbance by existing development and the channelization of Oyster Creek, or inundation due to the low and wet landscape of the area.

Two surface finds of cultural materials were identified as a result of survey, these being a pile of discarded modern brick and mortar and a scatter of corrugated metal siding. These finds may have resulted from the previous use of the property as farmstead or ranch or from previous road and culvert construction. Due to the modern nature of the materials, a trinomial was not requested for the finds. Other isolated modern materials were also identified within and near the project likely as a result of localized flooding and trash dumping because of the secluded nature of the location.

Based on the results of the survey, Gray & Pape, Inc. recommends that no further cultural resources work be required and that the project be cleared to proceed as currently planned.

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1.0 INTRODUCTION

In September 2017, BIO-WEST, Inc. (BIO-WEST) of Rosenberg, Texas, contracted with Gray & Pape, Inc. (Gray & Pape), of Houston, Texas, to perform an intensive pedestrian cultural resources survey of property proposed for the extension and expansion of Knight Road in Fort Bend County, Texas. Because the project involves the City of Missouri City, a political subdivision of the State of Texas, the project was assigned Antiquities Code Permit number 8189 by the Texas Historical Commission (THC) on October 5, 2017. The United States Army Corps of Engineers (USACE), Galveston District has been identified as the Lead Agency for this project. The goals of the survey were to establish whether previously unidentified buried archaeological resources were located within the project's Area of Potential Effects (APE) and whether the project would affect such resources as defined by Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR 800). All fieldwork and reporting activities were completed with reference to state (the Antiquities Code of Texas) and federal (NHPA) guidelines.

1.1 Project Overview

The project area can be located on the Missouri City, Texas, United States Geological Survey (USGS) 7.5-minute topographic quadrangle map (Figure 1-1). The project is located just outside the northern limits of the Sienna Plantation master planned community and subsumes approximately 8.3 hectares (20.4 acres), defined as the APE. The width of the APE measures 30.6 meters (100.4 feet) along sections of existing road but is wider, between 38 and 52 meters (125 and 170 feet), in sections where no existing or improved road exists.

The project area begins at the intersection of the Fort Bend Parkway Toll Road and Knight Road and extends south for approximately 2.4 kilometers (1.5 miles), terminating at McKeever Road. Along that path the APE overlays about 1.2 kilometers (0.7 miles) of existing paved sections of Knight Road. Within these sections of proposed work, the existing road will be re-built to be above the 100-year Federal Emergency Management Agency (FEMA) mapped floodplain elevation, widened for safety, and re-striped. Road side storm water drainage features currently exist but will also be improved in order to effectively remove water from the roadway during rainfall events. These drainage features are currently open cut earthen ditches and will remain as such but with improvements which will include widening and deepening in order to maintain proper flow volume and direction. Just prior to reaching the project's terminus at McKeever Road, the project will include an expansion of an existing bridge crossing of the Briscoe Canal, a man-made a Gulf Coast Water Authority maintained commercial water canal. The proposed new bridge section will not impact the canal.

The remaining portions of APE consist of the roadway extension portion of the project, situated between the two existing sections of Knight Road and measuring approximately 1.4 kilometers (0.86 miles) in length. This portion of the project is currently comprised of unimproved road or fields and a man-made bypass canal of Oyster Creek. The construction of this extension is proposed to consist of a 9-meter (30-foot) wide new asphalt roadway with road side drainage features as well as a bridge over the Oyster Creek Bypass canal. Impacts to the canal will be minimal and consist of only concrete support pilings for the bridge. Impacts to adjacent areas will involve depths of (20 to 30 feet) or possibly more for the installation of bridge pilings.

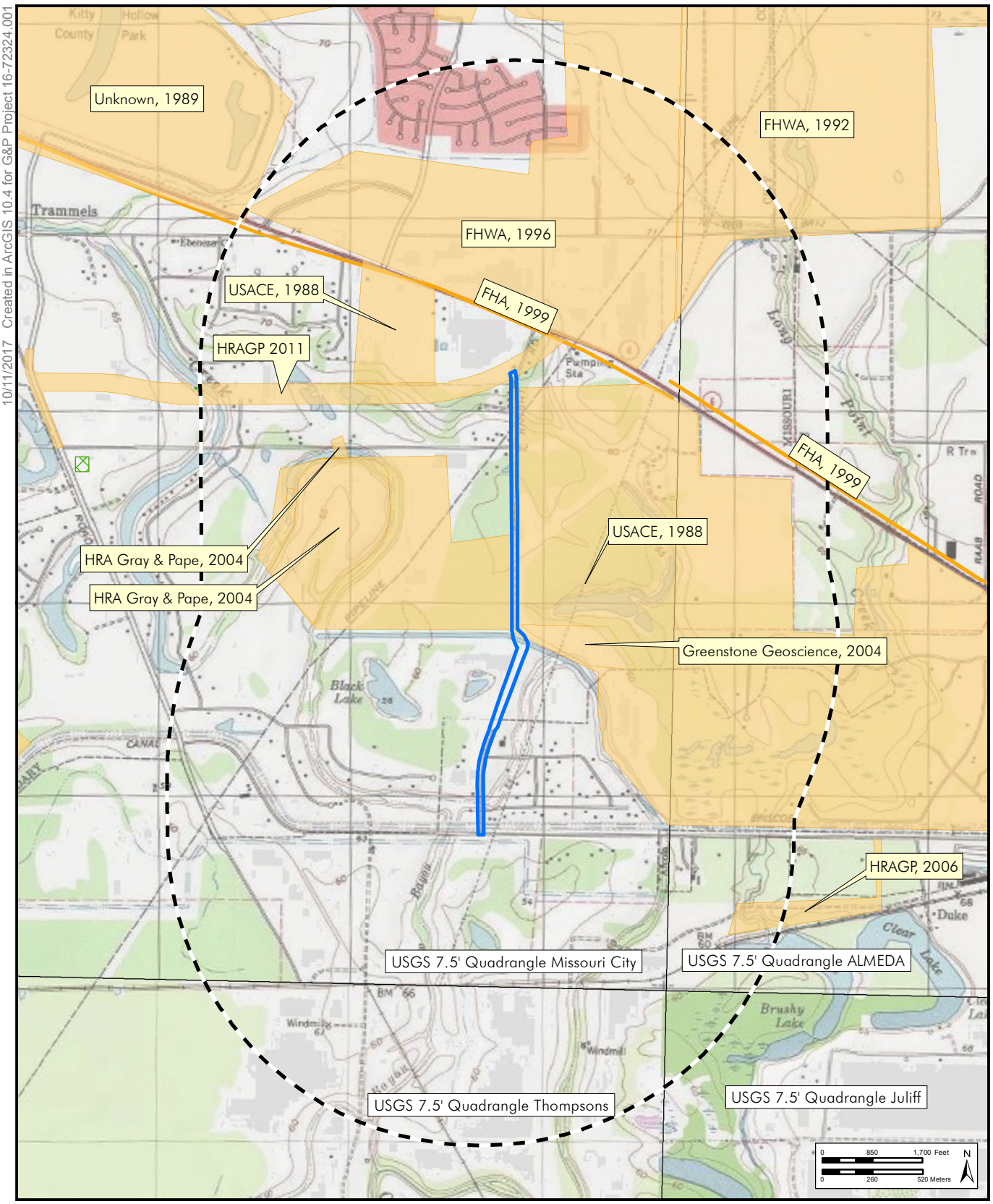

Figure 1-1
Project area location in Fort Bend County, Texas.

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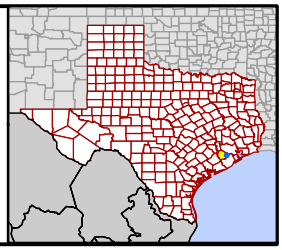
- Project Area
- Study Radius (1.6-km/1-mi.)
- Previously Recorded Area Survey
- Previously Recorded Linear Survey
- USGS Quadrangle Boundary



1.2 Report Organization

This report is organized into seven numbered chapters and one lettered appendix. Chapter 1.0 provides an overview of the project. Chapter 2.0 presents an overview of the environmental setting and geomorphology. Chapter 3.0 presents a discussion of the cultural context associated with the project area. Chapter 4.0 presents the methods developed for this investigation. The results of this investigation are presented in Chapter 5.0. Chapter 6.0 presents the investigation summary and provides recommendations based on the results of field survey. A list of literary references cited in the body of the report is provided in Chapter 7.0. A log of all conducted shovel tests is located in Appendix A.

1.3 Acknowledgements

Site file research was conducted by Senior Principal Investigator Tony Scott prior to fieldwork mobilization. Fieldwork was conducted between October 4 and 6, 2017 by Crew Chief Jacob Hilton and Field Technician Danielle Blut. Fieldwork required approximately 48 person hours to complete. Mr. Hilton and Mr. Scott prepared the report. Mr. Scott and Duncan Hughey produced report graphics and the report was edited and produced by Jessica Bludau.

2.0 ENVIRONMENTAL CONTEXT

2.1 Physiography and Geomorphology

The Texas Coastal Plain makes up part of the larger Gulf Coastal Plain. The Gulf Coastal Plain is a level to gently sloping region extending from Florida to Mexico. The Texas Coastal Plain reaches as far north as the Ouachita uplift in Oklahoma and as far west as the Balcones escarpment in central Texas (Barnes 1992; Aronow 1992; University of Texas, Bureau of Economic Geology (UT-BEG) 1992, 1996). The basic geomorphic characteristics of the Texas coast and associated inland areas, which includes Fort Bend County, resulted from depositional conditions influenced by the combined action of sea level changes from glacial advance in the northern portions of the continent and subsequent downcutting and variations in the sediment load capacity of the region's rivers. Locally, Fort Bend County is underlain by relatively recent sedimentary rocks and unconsolidated sediments ranging in age from the Miocene to Holocene (Abbott 2001; Van Siclen 1991).

2.2 Surface Geology

Although older geologic units have been identified in the region (Abbott 2001; Barnes 1992; Van Siclen 1991), units relevant to the study of long-term human occupation in modern-day Fort Bend County include the Beaumont Formation, and younger late Pleistocene and Holocene units such as the so-called "Deweyville" terraces, positioned stratigraphically between the Beaumont and Recent deposits (Barnes 1982). The date of deposition for the Deweyville Terraces is not known. Abbott (2001:16), among others, believes the north-south oriented terraces aggraded during the Late Pleistocene from overbank deposition of rivers and streams including the ancient Brazos River prior to the beginning of the Holocene. Abbott suggests that aggradation ended by approximately 20,000 Before Present (BP) (Abbott 2001:106). However, meanders of rivers, including the Brazos, cut valleys through these terraces regularly during the Holocene and then abandoned them. This process leaves large, flat, open, and well drained areas favored for campsites. While all depositional facies other than channels have the potential to preserve archaeological sites, behaviorally, human activity favors well drained, sandy channel-proximal localities over flood basin mud (Abbott 2001:126). Other Recent or Holocene deposits on the Gulf Plain, such as Quaternary Alluvium, typically result from overbank flooding of extant streams, eolian transport including dune formation, and infilling of marshes.

2.3 Soils

A variety of soils were mapped within the proposed project area. Each soil series is described in the table below according to parent material, topographic position, soil profile, and general characteristics such as permeability and drainage (Table 2-1).

2.4 Natural Environment.

2.4.1 Flora and Fauna

The Gulf Coast Prairies and Marshes are inhabited by a high diversity of species due to the ecoregion's large number of habitats, temperate climate and relative abundance of rainfall. It is characterized by inland tallgrass prairies, riverine woodlands and coastal sedges, rushes and salt grass marshes. The region is home to many resident and migratory

Table 2-1. Soils Recorded within the Project APE.

Soil Series	Parent Material	Landform	Typical Profile in Centimeters	Percent of APE
Lake Charles Clay, 0 to 1 percent slopes	Clayey fluviomarine deposits derived from igneous, metamorphic, and sedimentary rock	Backswamps	A - 0 to 28: clay Bss - 28 to 135: clay Bkss1 - 135 to 175: clay Bkss2 - 175 to 203: clay	0.4
Lake Charles Clay, 3 to 8 percent slopes	Clayey fluviomarine deposits derived from igneous, metamorphic, and sedimentary rock	Backswamps	A - 0 to 10: clay Bss - 10 to 61: clay Bkss1 - 61 to 155: clay Bkss2 - 155 to 203: clay	6.2
Brazoria clay, 0 to 1 percent slopes, rarely flooded	Clayey alluvium derived from igneous, metamorphic, and sedimentary rock	Floodplains	A - 0 to 15: clay Bss1 - 15 to 89: clay Bss2 - 89 to 145: clay Bkss - 145 to 203: clay	30.9
Clemville silty clay loam, 0 to 1 percent slopes, occasionally flooded	Loamy alluvium of holocene age	Floodplains	A - 0 to 30: silty clay loam Bw - 30 to 76: silt loam Ab - 76 to 127: silty clay Bb - 127 to 203 inches: silty clay	2.2
Norwood loam, 0 to 1 percent slopes, rarely flooded	Loamy alluvium derived from igneous, metamorphic, and sedimentary rock over clayey alluvium derived from igneous, metamorphic, and sedimentary rock over loamy alluvium derived from igneous and metamorphic rock	Natural levees	Ap - 0 to 25: loam Bw1 – 25 to 71: silt loam Bw2 - 71 to 112: silt loam BC - 112 to 124: silty clay loam Ab - 124 to 135: clay Bwb - 135 to 203: very fine sandy loam	43.7
Churnabog clay, 0 to 1 percent slopes, frequently flooded, occasonally ponded	Clayey alluvium	Oxbows on flood plains	A - 0 to 36: clay Bss - 36 to 104: clay BC - 104 to 203: silty clay	13.7

birds and several species of furbearers and reptiles (Texas Parks and Wildlife 2017). Common birds include black skimmers, piping plovers, and roseate spoonbills. Notable mammals include Gulf Coast kangaroo rats, marsh rice rats, and river otters. Notable reptiles and amphibians include American alligators, diamond back terrapins, and Gulf Coast toads (Hagerty and Meuth 2016).

2.4.2 Climate

The project area belongs to the humid subtropical climate zone characterized by hot summers and mild to cool winters without any regular dry season. On average, annual precipitation for the closest major city, Sugar Land, is 13.59 centimeters (50.35 inches) distributed relatively evenly throughout the year. The average annual temperature is 21.8° Celsius (71.3 °Fahrenheit) with an annual maximum temperature of 27.4° Celsius (81.3 °Fahrenheit) and an annual minimum temperature of 16.3° Celsius (61.4 °Fahrenheit). Summer peaks average at 94.4 °F and winter troughs average at 34.7° Celsius (45.6 °Fahrenheit) (National Oceanic and Atmospheric Administration [NOAA] 2017).

2.5 Land Use

Today, much of the Gulf Coast Prairies and Marshes have been converted to use by industry, agriculture, and urbanization. Such land uses have resulted in fragmentation and massive habitat loss to many native plants and animals and the preservation status of the ecoregion is considered threatened or endangered (World Wildlife Fund 2017). The project APE is partially developed where it includes existing roadway. The remainder of the APE is wooded or pasture. Two pipelines cross the northern portion of the APE. An additional buried utility crosses the southern portion as well as an overhead powerline utility.

3.0 CULTURAL CONTEXT

The Southeastern Texas archaeological region includes the Upper Texas Coast from the Sabine River to the Brazos River delta and the adjacent inland prairies and marshes. The coastal zone extending inland from the Gulf Coast approximately 30 to 40 kilometers (19 to 25 miles) is better understood than the inland prairie due to a greater continuity in research goals and perspectives and more isolable temporal components. A general outline of the inland area cultural chronology, however, is still possible. Prehistoric Native American settlement in Southeast Texas is generally divided into three broad chronological categories: the Paleoindian period, the Archaic period, and the Late Prehistoric period.

3.1 Prehistoric Context

3.1.1 Paleoindian Period

In Southeast Texas, the Paleoindian period began with the first appearance of human occupation around 11,500 BP and ended approximately 8,000 BP roughly with the introduction of stemmed projectile points. No Paleoindian sites have yet been excavated within the region though temporally diagnostic artifacts have been found. Some of these materials were recovered from mixed buried assemblages including artifacts from the later Archaic, while many others have been collected from the surface. The early Paleoindian period is represented in the region by Clovis and Folsom projectile points; the later Paleoindian period, by San Patrice, Scottsbluff, Plainview and Angostura points (Turner and Hester 2011). Most of these tools were reduced from high quality lithic materials that were sourced from very limited or non-local quarries suggesting high population mobility (Ricklis 2004). Throughout North America, early Paleoindian sites tend to be concentrated along major rivers and tributaries. In the Upper Texas Coast, early Paleoindian projectile points have been found at McFaddin Beach, which would have been a tributary stream drainage during the late Pleistocene. In the same region, isolated late Paleoindian projectile points have been found along major streams (Ricklis 2004). The transitional period between Paleoindian and Archaic begins about 9,000 B.P. and ends around 7,500 B.P. (Aten 1983; Story 1990). This stage is poorly represented in the archaeological work in the area; however, recent data recovery efforts at the Dimond Knoll Site (41HR796) have contributed to the knowledge of the Paleoindian and early Archaic occupation in the area of Harris County in particular (Barrett and Weinstein 2013).

3.1.2 Archaic Period

The Archaic period of the inland Southeast Texas archaeological region began around 8,000 BP and ended with the introduction of ceramics roughly 1,500 BP. Along the coast, the Archaic period began around 5,000 BP and ended around 2,200 BP. Many inland Archaic period sites have been found and are often mixed with Late Prehistoric materials. As with the Paleoindian period, Archaic period sites tend to be concentrated around major streams (Ricklis 2004). The Early Archaic is represented by expanded stem type points including Keithville, Neches River, and Trinity. The Middle Archaic is represented by Yarbrough, Bulverde, and Travis points. The Late Archaic is represented by Kent and Gary points (Turner and Hester 2011). The overall technological trend is a transition to lower quality lithic materials sourced from more local quarries suggesting decreased mobility and increased territoriality (Ricklis 2004). Little faunal and microbotanical data are available for inferring locally adaptive subsistence strategies beyond generalized hunting and gathering. Several Middle to Late Archaic cemeteries have been located along the

Brazos River floodplain. The distribution of grave goods among later burials suggests low power distances and equal access to resources among individuals. The long-term use and prominence of cemeteries by the end of the Archaic period suggests increased territoriality in the context of growing and expanding populations (Ricklis 2004).

3.1.3 Late Prehistoric Period

The Late Prehistoric period of the inland Southeast Texas archaeological region began with the appearance of the bow and arrow approximately AD 700 and ended around AD 1500 with the initial contact by seafaring Europeans in pursuit of wealth, power, and other imperial opportunities. The Initial Late Prehistoric period is represented technologically by Scallorn points and a variety of ceramic bowls and jars such as Goose Creek plain and Goose Creek incised for food storage and processing. By AD 1250/1300, Perdiz points, unifacial end scrapers, thin bifacial knives and expanded-base drills/perforators predominate and appear together with numerous bison bones. This artifact assemblage comprises the toolkit of the Toyah phase or horizon which marks a widespread adaptation to bison procurement and processing strategies (Ricklis 2004). An interpretive framework for the settlement pattern of the region involves seasonal aggregates and dispersals and consists of large residential base camps occupied by maximal bands, smaller residential camps occupied by minimal bands and task specific extraction sites occupied briefly for procurement and processing of specific resources. Most sites are situated within and around riverine woodlands suggesting a preference over upland prairies

3.2 Historical Context

3.2.1 Protohistoric Period

The Upper Texas Coast was first documented in the Joint Report coauthored by three of the four survivors of the failed Narvaez Expedition that set sail from Castillo, Spain in 1527 (Vaca, A. N., Adorno, R., and Pautz, P. C.) (Vaca et al. 2003). Starting with five ships and about 600 passengers, the Narvaez Expedition was sponsored by the Spanish Crown in order to explore, conquer, and claim land between the Rio de las Palmas in modern-day Mexico and the Florida peninsula. After a series of calamitous events of severe weather and violent encounters with natives, many of the passengers were killed and the ships were destroyed. Drifting along the Gulf Coast from Florida to Texas on make-shift rafts, the shipwrecked survivors landed on Malhado Island in the Galveston Bay area in November 1528. Here, they encountered the Karankawa Indians, a group of hunter fisher foragers living along the central Texas coast. The Relacion, authored by Alvar Nunez Cabeza de Vaca and published after the Joint Report in 1542, was addressed to King Charles V to request an imperial sponsorship for a return expedition that was never granted.

Spain did not resume interest in the Texas coast until 1686 when Denis Thomas, a defecting French passenger originally aboard the *La Belle*, confessed in Veracruz, Spain, that the French planned to establish a fortress and mine silver west of the Mississippi River (Bruseth 2005). Soon after, the Jumanos and Cibolas, native hunters and traders of the south Texas plains, informed Spaniards living in missions in the La Junta region of Big Bend, that the French had been trading with the Caddo. New Spain set out to find the French settlement, and on April 4, 1687, the *La Belle* was found shipwrecked in Matagorda Bay. Two years later in the spring of 1689, a Spanish party under the leadership of Alonso de Leon, guided by a captured French deserter, located the French settlement, Fort Saint Louis, on the bank of Garcitas Creek. By then, the fort had been abandoned and left in ruins after a Karankawan attack the previous year in the fall of 1688. Satisfied that the French were no longer an immediate threat, Spain was slow to mobilize efforts to establish permanent settlement of the region until nearly

a century later when it was discovered that the French were again conducting commerce with local Amerindians, namely the Bidai and Orcoquiza. The French were arrested, and a Spanish mission system and presidio complex, El Orcoquisac, was established in 1756 near the mouth of the Trinity River until it was abandoned in 1771 after a series of hurricanes, relocations, and a recognition that the site was of little strategic significance.

3.2.2 Historic Period

In 1821, Mexico ceded from Spain following the Mexican War of Independence. Fourteen years later in April 1836, Texas gained its independence from Mexico after the decisive Battle of San Jacinto fought in modern-day Harris County. Settlement of the Fort Bend area began in 1822 when a landed group of men from Louisiana established a fort on a high steep bank overlooking a great bend of the Brazos River – the county's namesake (Ott 2017). On December 29, 1837, the Congress of the Republic of Texas founded Fort Bend County and named Richmond the county seat. From antebellum plantations to small capital farms, agriculture and pastoralism have played an integral role in the economy and society of Fort Bend County.

Missouri City was founded in 1894 on 32 hectares (80 acres) of land purchased the previous year by W. R. McElroy (Cox 2017). The city was named after Missouri state to appeal to a market in which nearby land was already being advertised. In 1890, R. M. Cash and L. E. Luckle had purchased 10 square kilometers (4 square miles) of land in the same vicinity and had advertised their properties in St. Louis, Missouri and other nearby towns. In 1902, a train depot was built in Missouri City for the Buffalo Bayou, Brazos and Colorado Railway that had already been laid in the area by 1853. The Sugar Land Railroad was built later, and together both rails opened the markets for cotton, cattle, sugar, and other goods and services between Missouri City and nearby towns. In 1919, oil was found in the neighboring Blue Ridge area and natural gas was discovered six years later. The city was incorporated into Fort Bend County in 1956 after which the population grew rapidly from about 100 people in 1960 to 67,358 in 2010 (Cox 2017).

4.0 FIELD METHODOLOGY

This cultural resources investigation was designed to identify and assess new and already recorded cultural resources that may be impacted by the proposed project. Desktop assessment and modeling were performed prior to initiating field investigations in order to better understand cultural, environmental, and geological settings. Results of the desktop assessment then were used to develop the field methodology.

4.1 Site File and Literature Review

Site file and literature research was conducted prior to fieldwork mobilization. The background literature search included a review of previously conducted cultural resource surveys in the vicinity of the proposed project area, and of any historic document pertaining to the history of the area. Site file research was performed in order to identify all previously recorded archaeological sites within a 1.6-kilometer (1-mile) study radius of the project area (Figure 1-1), and any recorded historic structures eligible for the National Register of Historic Places (NRHP) listing located adjacent to the project area. Site file research was done by reviewing records maintained by the Texas Archeological Research Laboratory (TARL) in Austin, Texas, and by consulting on-line research archives maintained by the THC, as well as an online database of the NRHP (2017). Historic maps maintained by the Texas General Land Office (TxGLO) (2017) were also consulted.

Historic topographic and aerial maps were reviewed in order to identify any historic structures that might be located close to or within the project area. Topographic maps were downloaded from the Perry Castañeda online library collection, and aerial imagery was provided by National Environmental Title Research (NETR). Historic maps of Texas and Texas counties were reviewed in order to better understand the history of the region and to identify any potential historic trails and important historic sites located or crossing the project area.

While no archaeological deep testing was conducted for the project, Raba-Kistner Consultants, Inc. (Raba-Kistner) performed a series of test borings along the APE as part of a geotechnical engineering study (Raba-Kistner 2017). The results of study were reviewed as part of the research undertaken for this report and incorporated in the results and recommendations for further work.

4.2 Field Methods

4.2.1 Intensive Pedestrian Survey

Gray & Pape field personnel completed the intensive pedestrian survey through pedestrian reconnaissance and shovel testing. In order to satisfy the minimum survey standards of 1 shovel test for every 0.81 hectares (2 acres) established by the THC for an area approximately 8 hectares (20 acres) in size, a total of 37 shovel tests were attempted. Shovel testing was conducted along two parallel transects approximately 2.4 kilometers (1.5 miles) long, 3 meters (9 feet) wide and 30 meters (98 feet) apart at staggered 90-meter (295-foot) intervals across most of the project area and at 60-meter (197-foot) and 30-meter (98-foot) intervals in areas of higher probability.

Shovel tests measured approximately 30 centimeters (12 inches) in diameter and were excavated to a maxiumum depth of 100 centimeters (39 inches) below ground surface and no less than 50 centimeters (20 inches) below ground surface or 10 centimeters (4 inches) into B-horizon subsoils. Vertical control of each shovel test was maintained by excavating in arbitrary 10-centimeter (4-inch) levels with reference to the parent soil stratum.

The profile of each shovel test was inspected for color and texture change potentially associated with the presence of cultural features. Descriptions of soil texture and color followed standard terminology and soil color charts (Munsell 2005). Additional information such as mottling, evidence of disturbance, and moisture level was also recorded. Field personnel screened excavated soils through 0.64-centimeter (0.25-inch) hardware cloth, while soils with high clay content were hand sorted. All shovel test data were recorded on standardized forms for analysis.

The locations of all shovel tests excavated during the survey were recorded with a sub-meter accurate global positioning system (GPS) data collector and recorded on field maps. Digital photography aided documentation of the existing conditions of the project area and fieldwork methods, with photograph locations recorded on field maps and logged with a GPS unit.

4.3 Curation

Because the Knight Road Expansion Survey was conducted under a Texas Antiquities Permit, Gray & Pape was required to prepare and submit records or collections to a certified curational facility in order to close out the permit after completion of fieldwork and finalization of the report. All pertinent project records including field forms, maps, photographs, agency correspondence and the final report are curated at the Center for Archaeological Studies at Texas State University in San Marcos, Texas.

5.0 RESULTS OF INVESTIGATIONS

5.1 Results of Site File and Literature Review

Site file and literature review resulted in the identification of 16 previously recorded area and linear surveys (Table 5-1), 13 previously recorded archaeological sites (Table 5-2), and one cemetery located within 1.6 kilometers (1 mile) of the proposed project area.

5.1.1 Previously Recorded Surveys

Of the 16 previously recorded archaeological projects located within the 1.6-kilometer (1-mile) study radius, two were recorded within the project area (Figure 1-1). Between 1987 and 1988, a large area survey evidently undertaken by Espey, Huston, & Associates, Inc. (EH&A) and sponsored by USACE, Galveston resulted in the identification and recordation of ten archaeological sites. This survey subsumed approximately 3.2 hectares (7.9 acres) of the northern half of the APE. In this same general area, HRA Gray & Pape, LLC. (HRA Gray & Pape) performed an area survey for Berg-Oliver Associates, Inc. in 2011 that subsumed approximately 0.08 hectares (0.2 acres) of the of the current project area (Nash et al. 2011). Over the course of that survey, 100 shovel tests were excavated within a project area measuring approximately 29 hectares (72 acres). No new cultural resources were identified as a result of that investigation.

Table 5-1. Previously Recorded Area and Linear Surveys within 1.6 Kilometers (1 Mile) of the Proposed Project Area, Fort Bend County, Texas.

Project Type	Investigating Firm/ Agency	Field Work Date	TAC Permit Number	Report Author	Sponsoring Agency	Report at THC
Area Survey	N/A	N/A	N/A	N/A	N/A	N/A
Area Survey	N/A	N/A	N/A	N/A	N/A	N/A
*Area Survey	Espy, Huston & Associates, Inc.	11/1987	N/A	N/A	USACE	N/A
Area Survey	N/A	08/1988	N/A	N/A	USACE	N/A
Area Survey	N/A	03/1989	761	N/A	N/A	N/A
Area Survey	N/A	10/1992	N/A	N/A	Federal Highway Administration (FHA)	N/A
Area Survey	N/A	10/1996	N/A	N/A	FHA	N/A
Linear Survey	N/A	10/1999	N/A	N/A	FHA	N/A
Linear Survey	N/A	10/1999	N/A	N/A	FHA	N/A

Project Type	Investigating Firm/ Agency	Field Work Date	TAC Permit Number	Report Author	Sponsoring Agency	Report at THC
Area Survey	Greenstone Geoscience	06/2004	3421	Hubbard, Nicola	City of Vicksburg	N/A
Area Survey	HRA Gray & Pape	02/2004	N/A	Baird et al.	USACE – Galveston District	04/2004
Area Survey	HRA Gray & Pape	07/2006	N/A	Scott et al.	USACE – Galveston District	10/2006
Area Survey	HRA Gray & Pape	2006	N/A	Turner	USACE – Galveston District	11/2006
Area Survey	HRA Gray & Pape	2009	5228	Nash et al.	Texas Department of Transportation	07/2015
*Area Survey	HRA Gray & Pape	2011	5342	Nash et al.	USACE – Galveston District/Fort Bend County Tollway	07/2011
Area Survey	HRA Gray & Pape	2013	N/A	Valenti, Vince	USACE – Galveston District	03/2014

*Overlaps current project area.

5.1.2 Previously Recorded Archaeological Sites

Thirteen previously recorded archaeological sites are located inside the 1.6-kilometer (1-mile) study radius, but all of them are located outside the project area (Table 5-2). Most of them are single-component historic sites classified as houses, farmsteads, or industrial sites. Two sites, 41FB273 and 41FB274, are mapped on the Sites Atlas but lack additional information. Only one site, 41FB155, was determined eligible for the NRHP. Site 41FB155 is a multicomponent site including a scatter of materials associated with a historic house and an earlier deposit of materials related to a prehistoric campsite (THC 2017).

Table 5-2. Previously Recorded Archaeological Sites within 1.6 Kilometers 1 (Mile) of the Proposed Project Area, Fort Bend County, Texas.

Trinomial	Temporal Affiliation	Site Type	Size (meters)	Material Recorded	Depth of Deposit (centimeters)	NRHP Status/ Recommendations
41FB143	Historic	House	60 x 60	Glass and Ceramics	25	Not Eligible
41FB144	Historic	House	75 x 75	Bricks, Glass and Ceramics	10	Not Eligible
41FB145	Historic	House	40 x 40	Nails, Bricks, Glass and Ceramics	25	Not Eligible
41FB146	Historic	Possible House	50 x 50	Bricks	Surface	Not Eligible
41FB147	Historic	Possible House	25 x 30	Bricks	Surface	Not Eligible
41FB151	Historic	Industrial	12 x 12	Concrete Blocks with Rebar	Surface	Not Eligible
41FB152	Historic	Industrial	50 x 50	Bricks, Coal and Quartzite	30	Not Eligible

Trinomial	Temporal Affiliation	Site Type	Size (meters)	Material Recorded	Depth of Deposit (centimeters)	NRHP Status/ Recommendations
41FB153	Historic	House	25 x 25	Standing Structure	Surface	Not Eligible
41FB155	Historic	House	75 x 75	Nails, Bricks, Glass, Ceramics, Shell Buttons and Various Metals	50	Eligible
41FB156	Multicomponent	Historic House and Prehistoric Campsite	N/A	Farm Tools, Bricks, Nails, Glass, Ceramics, Lithic Debitage and Shell	50	Not Eligible
41FB273	N/A	N/A	N/A	N/A	N/A	N/A
41FB274	N/A	N/A	N/A	N/A	N/A	N/A
41FB292	Historic	Farmstead	N/A	Nails, Bricks, Glass and Bone	30	Not Eligible

5.1.1 Historic Maps and Aerials

A review of historic maps (USGS 1957, 1973, 1980, 1991) and aerial photographs (Google Inc. 2017; NETR 2017) showed evidence of at least one historic-age building or structure located within the APE. In 1957, one building or structure was mapped within 100 meters (328 feet) from the northern cut bank of Oyster Creek. This same feature is visible in aerial images photographed in 1953, 1968 and 1969. By 1971, it had been razed or removed and was absent from all subsequent topographic maps and aerial photographs.

5.1.2 Cemeteries

The Watts Cemetery is located roughly 650 meters (0.4 miles) west of Knight Road and 50 meters (164 feet) south of Fort Bend Parkway Toll Road within the 1.6-kilometer (1-mile) study radius. The Watts Cemetery, also called the Hayes Cemetery or the Watts Plantation Cemetery, includes 66 burials with dates of interment ranging from 1862 to 2003. According to the Fort Bend County website (2017), the cemetery is not affiliated with any organizations and the ethnicity is primarily Afro-American. A majority of the burials appear to be unmarked.

5.2 Results of Field Investigations

Gray & Pape conducted an intensive pedestrian cultural resources survey of property subsuming a total of approximately 8 hectares (20 acres) (Figure 5-1). For ease of survey and reporting purposes, the project area was divided into Areas 1 and 2 respectively located north and south of an artificial drainage that runs about midway through the APE. A total of 28 shovel tests were excavated, 37 were attempted, and the results from the survey are discussed below. No historic or prehistoric artifacts or cultural features were encountered during the survey. No new archaeological sites were identified but two surface scatters of modern materials were recorded.

The crew began surface inspection and shovel testing at the northern end of Area 2 located south of the channelized drainage and continued southwest along two staggered parallel transects towards McKeever Road. This portion of the survey area measured roughly 3.73 hectares (9.22 acres). A total of 18 shovel tests were excavated here and 21 were attempted (see Appendix A for a list of all conducted shovel tests and their observed

HRA Gray & Pape, 2011

D. Area 1 Knight Road facing Fort Bend Parkway Toll Road. View is to the north.

C. Area 1 gravel road near modern brick and mortar pile. View is to the south.

USACE, 1988

Area 1

Brick and Mortar Pile

Corrugated Metal Siding

Area 2

A. Area 2 fenced enclosure. View is to the southwest.

B. Area 2 neighborhood. View is to the north.

Fort Bend Parkway Toll Rd
TX-6 Highway Six
Knight Rd
Chesterdale Dr
Pine Siding Dr
Creek Point Ln
Black Creek Ct
Ellison Rd
Casey Rd
Max Rd
Michael Wayne Rd
McKeever Rd

0 230 460 Feet
0 60 120 Meters
N

Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Project area with field survey results and representative photos

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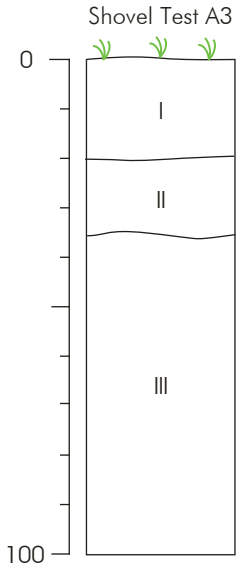
Figure 5-1

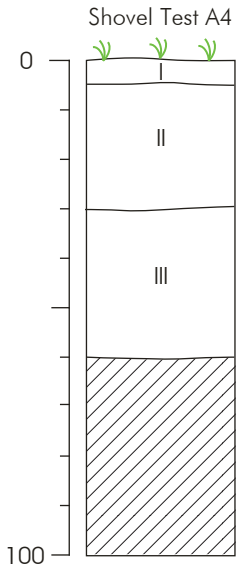
- Project Area
- Negative Shovel Test
- Unexcavated Shovel Test
- Surface Find
- Previously Recorded Area Survey
- Photo Location and Camera Direction



I (0-20 cmbs)
Brown (7.5YR 4/2) dry blocky clay;

II (20-35 cmbs)
Brown (7.5YR 4/4) dry weak granular silt loam;

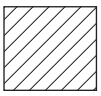
III (35-100 cmbs)
Strong brown (7.5YR 4/6) dry weak granular loamy sand;



I (0-5 cmbs)
Brown (7.5YR 4/2) dry blocky clay,

II (5-30 cmbs)
Reddish brown (5YR 4/3) dry moderate angular blocky clay;

III (30-60 cmbs)
Reddish brown (5YR 4/4) dry moderate angular blocky clay;



Unexcavated

Soil profiles for Shovel Tests A3 (Area 2) and A4 (Area 1)

GRAY & PAPE
HERITAGE MANAGEMENT

Figure 5-2

profiles). Survey efforts were concentrated in the northern half of Area 2 with shovel tests excavated at 30-meter (98-feet) intervals to locate possible remnants of a historic-age building or structure that was mapped on the 1957 USGS topographic quadrangle map (Figure 5-1A). This portion of Area 2 featured a linear enclosure defined by two parallel fences extending from the artificial drainage at the north to a gate facing Knight Road at the south. Groups of planted oak trees lined the fences. A sheet of corrugated steel siding was observed on the surface under a dense growth of tall grasses. This was probably part of a small modern structure that was constructed between 2002 and 2004 and razed or removed by 2010. Asphalt and gravel were encountered in Shovel Test A14 at a depth of 5 centimeters (2 inches), though no other subsurface cultural materials were identified. The soils encountered here were similar to the Norwood Series mapped for the area though the top soils appeared to be disturbed from light vehicular traffic. A representative soil profile from Shovel Test A3 included three strata. The first stratum from 0 to 20 centimeters (0 to 8 inches) was brown (7.5YR 4/2) dry blocky clay. The second stratum from 20 to 35 centimeters (8 to 14 inches) was brown (7.5YR 4/4) dry weak granular silt loam. The third stratum from 35 to 100 centimeters (14 to 39 inches) was strong brown (7.5YR 4/6) dry weak granular loamy sand (Figure 5-2).

South of the gated entrance to the northern half of Area 2, survey continued along both sides of Knight Road within a neighborhood (Figure 5-1B). Intervals between shovel tests were lengthened to 90 meters (295 feet). Of the 18 shovel tests excavated in Area 2, five were located in the southern half. Two additional shovel tests were attempted but left unexcavated due to disturbances. Much of the APE had been disturbed from residential development including drainage ditches on both sides of the road, buried and overhead utilities crossing the APE, and the channelized drainage between Lower Oyster Creek and McKeever Road. Two shovel tests excavated north and south of this artificial drainage revealed heavily disturbed soils that were mixed, mottled and contained concrete and gravel.

In Area 1, surface inspection and shovel testing began at the intersection of the private gravel road and the artificial channelized drainage (Figure 5-1C). The landscape was generally flat with a mixture of woodland, marsh and pasture. A few houses were located along the west side of Knight Road. Intervals between shovel tests started at 30 meters (98 feet) and progressed to 60 meters (197 feet) and 90 meters (295 feet) as the survey continued north toward Fort Bend Parkway Toll Road (Figure 5-1D). A total of 10 shovel tests were excavated here and 16 were attempted. The remainder were unexcavated due to flooding in low lying areas. Three different soil profiles were recorded in Area 1 that corresponded roughly to the Brazoria, Churnabog, and Lake Charles Series mapped for the area. Most of the soils resembled the Brazoria Series represented by Shovel Test A4 which contained three strata. Stratum I from 0 to 5 centimeters (0 to 2 inches) was very dark gray (5YR 3/1) dry moderate subangular blocky clay. Stratum II from 5 to 30 centimeters (2 to 12 inches) was reddish brown (5YR 4/3) dry moderate angular blocky clay. Stratum III from 30 to 60 centimeters (12 to 24 inches) was reddish brown (5YR 4/4) dry moderate angular blocky clay. A small pile of modern brick and mortar were observed on the surface near Shovel Test A1 which was terminated at 5 centimeters (2 inches) due to impenetrable gravels. These may have been laid down as a continuation of the gravel road turning east towards a previously identified multicomponent Site 41FB155 which was recorded approximately 230 meters (755 feet) outside of the APE. A modern trash dump was observed a few meters west of the gravel road approximately 10 meters (33 feet) outside of the project area. No other cultural materials were identified above or below ground.

In addition to the shovel testing undertaken by Gray & Pape, the results of test borings taken by Raba-Kistner along the length of the project were reviewed and compared to shovel testing results to get a better overall perspective on the soil conditions within the APE. Bore data and shovel test data were in agreement for near surface soils. Test borings alongside existing paved areas generally showed evidence of shallow disturbances before encountering the clay soils mapped for the area. Tests located adjacent to both canals encountered the water table. Water in those tests rose to depths of 1.8 to 2.7 meters (7 to 9 feet) within minutes of encountering it (Raba-Kistner 2017). The results of bore tests located adjacent to the Briscoe Canal showed the presence of disturbance as evidenced by a sandy clay mix of material. Bore test results at the Oyster Creek Bypass canal showed no obvious signs of disturbance but may include spoil from the adjacent canal.

6.0 CONCLUSIONS AND RECOMMENDATIONS

In October 2017, Gray & Pape, Inc. of Houston, Texas, conducted an intensive pedestrian cultural resources survey on property subsuming a total of approximately 8.3 hectares (20.4 acres) proposed for the extension and expansion of Knight Road in Fort Bend County, Texas. The USACE, Galveston District has been identified as the Lead Agency for this project, thus the survey was undertaken in accordance with requirements set forth by Section 106 of the NHPA, specifically requirements set forth by 36 CFR 800.

Fieldwork was performed under Antiquities Code Permit number 8189 between October 6 and 10, 2017, and required 48 person hours to complete. Field investigation consisted of intensive pedestrian surface inspection, subsurface shovel testing, photographic documentation, and mapping. A total of 28 shovel tests were excavated, none of which were positive for buried cultural materials. Another nine attempted shovel tests were unexcavated due to inundation, buried utilities, and disturbances such as drainage ditches. Overall the project largely exhibited either disturbance by existing development and the channelization of Oyster Creek, or inundation due to the low and wet landscape of the area.

Two surface finds of cultural materials were identified as a result of survey, these being a pile of discarded modern brick and mortar and a scatter of corrugated metal siding. These finds may have resulted from the previous use of the property as farmstead or ranch or from previous road and culvert construction. Due to the modern nature of the materials, a trinomial was not requested for the finds. Other isolated modern materials were also identified within and near the project likely as a result of localized flooding and trash dumping because of the secluded nature of the location.

While deep impacts are anticipated at the project's two proposed bridge locations at the Briscoe Canal and Oyster Creek Bypass, these two crossings are over man-made canals that do not correspond to a natural watercourse. The water table is somewhat shallow at these locations and an existing bridge at the Briscoe Canal has impacted the APE at that location. Other portions of the project that will cross the natural or the former watercourse of Oyster Creek are already occupied by existing stretches of roadway, and thus are highly disturbed.

Based on the results of the survey, Gray & Pape, Inc. recommends that no further cultural resources work be required and that the project be cleared to proceed as currently planned.

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APPENDIX A

SHOVEL TEST LOG

Area	Shovel Test	Depth	Soil Characteristics	Artifacts Recovered
1	A1	0-5 cmbs	Buried gravel road	N
1	A2	Unexcavated	Inundated	N
1	A3	0-30 cmbs	5YR 4/6 sandy clay	N
		30-50 cmbs	5YR 4/3, 5YR 3/2 clay loam	
1	A4	0-5 cmbs	5YR 3/1 dry moderate subangular blocky clay	N
		5-30 cmbs	5YR 4/3 dry moderate angular blocky clay	
		30-60 cmbs	5YR 4/4 dry moderate angular blocky clay	
1	A5	Unexcavated	Inundated	N
1	A6	Unexcavated	Inundated	N
1	A7	0-5 cmbs	5YR 4/3 sandy clay	N
		5-25 cmbs	5YR 4/4 clay	
		25-50 cmbs	5YR 4/6 clay	
1	A8	0-5 cmbs	5YR 3/1 dry moderate angular blocky clay	N
		5-30 cmbs	5YR 4/3 dry moderate angular blocky clay	
		30-60 cmbs	5YR 4/4 dry moderate angular blocky clay	
1	A9	Unexcavated	Inundated	N
1	A10	0-10 cmbs	7.5YR 3/2 dry moderate angular blocky clay	N
		10-60 cmbs	5YR 4/3 dry moderate angular blocky clay	
1	A11	Unexcavated	Inundated	N
1	A12	0-5 cmbs	7.5YR 3/2 damp moderate granular silty clay	N
		5-50 cmbs	7.5YR 4/3 wet moderate granular clay	
1	A13	0-5 cmbs	5YR 4/2 sandy clay	N
		5-30 cmbs	5YR 4/3 clay loam	
		30-50 cmbs	5YR 4/4 clay loam	
1	A14	0-20 cmbs	10YR 3/1 damp moderate granular clay	N
		20-60 cmbs	10YR 4/2 damp moderate granular clay	
1	A15	0-10 cmbs	5YR 3/1 clay with common coarse gravel	N
		10-50 cmbs	5YR 3/1 clay	
1	A16	0-30 cmbs	5YR 2.5/1, 5YR 4/3 extremely compact mixed and mottled	N

Area	Shovel Test	Depth	Soil Characteristics	Artifacts Recovered
			clay with common coarse gravel	
2	A1	0-15 cmbs	7.5YR 4/2, 7.5YR 5/3 dry mottled massive silty clay	N
		15-35 cmbs	7.5YR 4/4, 7.5YR 4/3 dry mottled weak granular silt loam	
		35-100 cmbs	7.5YR 4/6 dry weak granular loamy sand	
2	A2	0-5 cmbs	7.5YR 4/2, 7.5YR 5/3 dry massive silty clay	N
		5-35 cmbs	7.5YR 4/4, 7.5YR 4/3 dry mottled weak granular silt loam	
		35-100 cmbs	7.5YR 4/6 dry weak granular loamy sand	
2	A3	0-20 cmbs	7.5YR 4/2 dry blocky clay	N
		20-35 cmbs	7.5YR 4/4 dry weak granular silt loam	
		35-100 cmbs	7.5YR 4/6 dry weak granular loamy sand	
2	A4	0-20 cmbs	5YR 4/2 dry blocky clay	N
		20-35 cmbs	7.5YR 4/4 dry weak granular silt loam	
		35-100 cmbs	7.5YR 4/6 dry weak granular loamy sand	
2	A5	0-20 cmbs	5YR 4/2 dry blocky clay	N
		20-35 cmbs	7.5YR 4/4 dry weak granular silt loam	
		35-75 cmbs	7.5YR 4/6 dry weak granular loamy sand	
2	A6	0-5 cmbs	7.5YR 3/3 weak granular dry loam	N
		5-15 cmbs	7.5YR 4/4 moderate granular dry silt loam	
		15-60 cmbs	7.5YR 4/6 moderate granular loamy sand	
2	A7	0-10 cmbs	7.5YR 3/3 dry granular loam	N
		10-40 cmbs	7.5YR 4/4 dry moderate granular silt loam	
		40-70 cmbs	7.5YR 4/6 dry moderate granular loamy sand	
2	A8	0-10 cmbs	7.5YR 3/3 dry granular silt loam	N
		10-90 cmbs	7.5YR 4/4 dry moderate granular loamy fine sand	
		90-100 cmbs	7.5YR 4/6 dry massive silty clay	
2	A9	0-10 cmbs	7.5YR 4/2 dry blocky clay loam	N
		10-60 cmbs	7.5YR 4/4 dry weak granular silt loam	
2	A10	0-10 cmbs	7.5YR 4/2 dry blocky clay loam	N
		10-60 cmbs	7.5YR 4/4 dry weak granular silt loam	
2	A11	0-10 cmbs	7.5YR 4/2 dry blocky clay	N
		10-75 cmbs	7.5YR 4/4 dry weak granular silt loam	
2	A12	0-5 cmbs	10YR 3/2 dry blocky clay	N
		5-80 cmbs	7.5YR 4/4 dry weak granular silt loam	
2	A13	0-10 cmbs	7.5YR 4/2 dry blocky clay	N

Area	Shovel Test	Depth	Soil Characteristics	Artifacts Recovered
		10-60 cmbs	7.5YR 4/4 dry weak granular silt loam	
2	A14	0-5 cmbs	Buried gravel and asphalt	N
2	A15	0-15 cmbs	5YR 4/3 dry moderate granular silt loam	N
		15-60 cmbs	5YR 4/4 dry moderate granular silty clay loam	
2	A16	Unexcavated	Disturbed – Buried utility	N
2	A17	0-10 cmbs	7.5YR 4/3, 7.5YR 5/4 dry mottled moderate granular silt loam	N
		10-45 cmbs	7.5YR 4/4 damp moderate granular silty clay loam	
		45-75 cmbs	7.5YR 4/6 dry massive silty clay	
2	A18	Unexcavated	Disturbed – Drainage ditch	N
2	A19	0-10 cmbs	7.5YR 4/3, 7.5YR 5/4 dry moderate granular weak loamy fine sand	N
		10-60 cmbs	7.5YR 4/6 damp weak granular silt loam	
		60-80 cmbs	7.5YR 5/6 damp weak granular loamy fine sand	
2	A20	0-10 cmbs	7.5YR 4/2, 7.5YR 5/4 dry compact disturbed clay loam	N
		10-55 cmbs	7.5YR 5/6, 7.5YR 5/4, 7.5YR 4/4 dry compact disturbed sandy clay loam	
		55-90 cmbs	7.5YR 4/6 dry fine sandy clay loam	
2	A21	0-20 cmbs	7.5YR 3/2, 7.5YR 4/4, 7.5YR 5/6 mixed mottled and disturbed clay with common asphalt and course gravel	N

*cmbs – centimeters below surface