



INDEX OF TEXAS ARCHAEOLOGY

Open Access Gray Literature from the Lone Star State

Volume 2016

Article 150

2016

Archaeological Survey of the Proposed Tomball Tollway Project, Montgomery County, Texas

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Archaeological Survey of the Proposed Tomball Tollway Project, Montgomery County, Texas

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**Archaeological Survey of the
Proposed Tomball Tollway Project,
Montgomery County, Texas**

TAC Permit No. 7505

Prepared for

Halff Associates, Inc.

**Montgomery County Toll Road Authority
(MCTRA)**

**U.S. Army Corps of Engineers – Galveston
District**

Prepared by

SWCA Environmental Consultants

SWCA Project No. 32611

March 7, 2016

**ARCHAEOLOGICAL SURVEY OF THE PROPOSED TOMBALL
TOLLWAY PROJECT, MONTGOMERY COUNTY, TEXAS**

TAC PERMIT NO. 7505

Prepared for

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March 7, 2016

ABSTRACT

On behalf of Halff Associates, Inc., and the Montgomery County Toll Road Authority (MCTRA), SWCA Environmental Consultants (SWCA) conducted an investigation of the proposed Tomball Tollway project located in Montgomery County, Texas. The proposed project area follows the existing Tomball Tollway (State Highway [SH] 249) northward approximately 3.3 miles from Spring Creek to the FM 1774 junction in Pinehurst. The proposed project involves the widening of SH 249 between existing feeders, as well as the construction of on-ramps. The project also involves the construction of three detention basins totaling approximately 22 acres utilizing a combination of floodplain fill mitigation and detention. The investigations included an archaeological background literature and records review and an intensive pedestrian survey augmented by subsurface shovel and auger testing to systematically identify, record, delineate, and, if possible, determine the significance of any cultural resources located within the project area. All work was conducted under Texas Antiquities Code permit number 7505 in compliance with the Antiquities Code of Texas. Archaeological investigations were conducted as part of the sponsor's compliance with application requirements for a U.S. Army Corps of Engineers (USACE) Galveston District, Section 404 permit in accordance with 33 Code of Federal Regulations (CFR) Part 325, Appendix C (Processing Department of Army Permits: Procedures for the Protection of Historic Properties; Final Rule 1990; with current Interim Guidance Documents dated April 25, 2005 and January 31, 2007), and Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations (36 CFR 800). All investigations were conducted in accordance with the standards and guidelines of the NHPA, the Texas Historical Commission's (THC) standards for such projects, and the Council of Texas Archeologists Guidelines for Performance, Curation, and Reports.

The goal of the work was to locate all prehistoric and historic archaeological sites in the project area, establish vertical and horizontal site boundaries as appropriate, and evaluate the significance and eligibility of any site recorded for listing in the National Register of Historic Places (NRHP). Overall, investigations in the proposed project corridor encountered ground disturbances resulting from prior road and transmission line construction and maintenance activities.

As a result of the current investigation, one multicomponent site (41MQ326) was discovered and delineated using THC standards. Due to the paucity of artifacts, SWCA believes it is unlikely that significant archaeological materials exist within the investigated portions of 41MQ326; however, due to the depth of deposits and possibility of deeply buried features not visible through augering, NRHP eligibility for 41MQ326 is UNDETERMINED for listing in the National Register of Historic Places (NRHP) (36 CFR 60.4 [a-d]) or as a State Archaeological Landmark (SAL), and further research is needed to fully assess the site. As such, SWCA advises that archaeological monitoring take place during construction of the southern detention basin in areas within 30 m of the site in order to further evaluate this portion of the site and to ensure that no significant archaeological deposits are disturbed.

In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify historic properties within the proposed Tomball Tollway project area. Based on the results of the current effort and proposed monitoring, SWCA recommends a determination of NO ADVERSE EFFECT to historic properties within the investigated project area.

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MANAGEMENT SUMMARY

Project Title. Archaeological Survey of the Proposed Tomball Tollway Project, Montgomery County, Texas

SWCA Project Number. 32611

Project Description. On behalf of Halff Associates, Inc., and the Montgomery County Toll Road Authority (MCTRA), SWCA Environmental Consultants (SWCA) conducted a Phase I cultural resources survey of the proposed project area in Montgomery County. The investigation included an archaeological background literature and records review and an intensive pedestrian survey augmented by shovel testing and auguring.

Location. The proposed project area is located in Montgomery County, and is depicted on the Rose Hill and Magnolia East U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps.

Number of Acres Surveyed. The project area follows the existing Tomball Tollway (SH 249) highway northward approximately 3.3 miles, with a 500-foot-wide construction corridor totaling 200 acres of linear road survey. This area was investigated via desktop survey, due to previous field survey along SH 249. Additionally, three detention basins surveyed total 22.62 acres of survey, which were investigated by pedestrian survey, shovel testing, and auguring. The total surveyed area is approximately 222.62 acres.

Principal Investigator. Matthew Helmer

Purpose of Work. Archaeological investigations were conducted in support of Halff Associates Inc. and MCTRA's application requirements for a U.S. Army Corps of Engineers (USACE) Galveston District, Section 404 permit in accordance with 33 Code of Federal Regulations (CFR) Part 325, Appendix C (Processing Department of Army Permits: Procedures for the Protection of Historic Properties; Final Rule 1990; with current Interim Guidance Documents dated April 25, 2005 and January 31, 2007) and Section 106 of the NHPA (16 United States Code [USC] 470) and its implementing regulations (36 CFR 800). All work was conducted under Texas Antiquities Code permit number 7505 in compliance with the Antiquities Code of Texas.

Number of Sites. One multicomponent site (site 41MQ326) was identified as a result of the survey.

Eligibility. Survey at site 41MQ326 yielded sparse artifact assemblages; however, due to the depth of those deposits extending in upwards of 2 meters, the site may contain intact features which were not identified during the survey. Therefore, 41MQ326 is recommended as UNDETERMINED for listing in the National Register of Historic Places (NRHP) (36 CFR 60.4 [a-d]) or as a State Archaeological Landmark (SAL).

Curation. SWCA conducted a non-collection survey. Original survey documentation will be curated with the Texas Archaeological Research Laboratory.

Comments In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify historic properties within the proposed Tomball Tollway project area. Based on the results of the current effort and proposed monitoring, SWCA recommends a determination of NO ADVERSE EFFECT to historic properties within the investigated project area.

CHAPTER 1. INTRODUCTION

On behalf of Halff Associates, Inc., and the Montgomery County Toll Road Authority (MCTRA), SWCA Environmental Consultants (SWCA) conducted a Phase I cultural resources survey of the proposed project area in Montgomery County. Archaeological investigations were conducted in support of project sponsors' application requirements for a U.S. Army Corps of Engineers (USACE) Galveston District, Section 404 permit in accordance with 33 Code of Federal Regulations (CFR) Part 325, Appendix C (Processing Department of Army Permits: Procedures for the Protection of Historic Properties; Final Rule 1990; with current Interim Guidance Documents dated April 25, 2005 and January 31, 2007) and Section 106 of the National Historic Preservation Act (NHPA) (16 United States Code [USC] 470) and its implementing regulations (36 CFR 800). All work was conducted under Texas Antiquities Code permit number 7505 in compliance with the Antiquities Code of Texas.

The subject investigations began with a background literature and records review of previously conducted archaeological investigations and recorded cultural resources. The fieldwork consisted of an intensive pedestrian survey augmented by shovel testing. The goal of the work was to locate all prehistoric and historic archaeological sites in the investigated project area, establish vertical and horizontal site boundaries, as appropriate, and evaluate the significance and eligibility of any site recorded for the National Register of Historic Places (NRHP) or as a State Archaeological Landmark (SAL).

All investigations were conducted in accordance with the standards and guidelines of the NHPA, the Texas Historical Commission's (THC) standards for such projects, and the Council of Texas Archeologists Guidelines for Performance, Curation, and Reports. Matthew Helmer served as Principal Investigator. C. Wesley Mattox and Steven Cummins conducted fieldwork on December 4 through December 10, 2015, and January 5, 2016. Geographic information system (GIS) support was provided and report graphics were prepared by Colleen Kennedy and Jeffery Stein. The report was edited by Joy Hengst.

Project Description

The proposed project area follows the existing Tomball Tollway (SH 249) highway northward approximately 3.3 miles from Spring Creek to the FM 1774 junction in Pinehurst. The proposed project involves the widening of SH 249 between existing feeders, as well as the construction of on-ramps and a bridge across Spring Creek. The proposed project area includes a 500-foot-wide construction corridor, and three detention basins located on the eastern and western margins of the highway (Figure 1). The detention basins total approximately 22 acres and will comprise a combination of floodplain fill mitigation and detention. The southern detention basin measures 3.62 acres, and is located along the northern margin of Spring Creek; the center detention basin, measuring 0.25 acre, is located along Decker Branch, and the northern detention basin, which measures 18.75 acres, is located at the juncture of Missouri Pacific Railroad and SH 249.

Report Organization

The results of the Phase I cultural resources survey of the proposed Tomball Parkway project are presented herein. Chapter 2 presents a brief overview of the environmental setting of the project area. Chapter 3 details the cultural history of the area. Chapter 4 summarizes the previously conducted archaeological investigations and identified cultural resources within a 1-mile radius of the proposed project area. Archaeological field methods utilized during the survey are outlined in Chapter 5, Chapter 6

presents the results of these investigations, and Chapter 7 summarizes the investigation and offers recommendations for the treatment of sites identified during the survey.

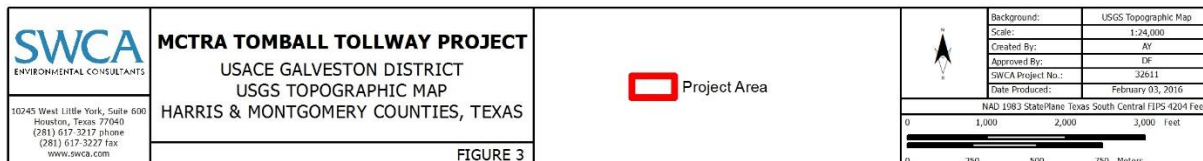
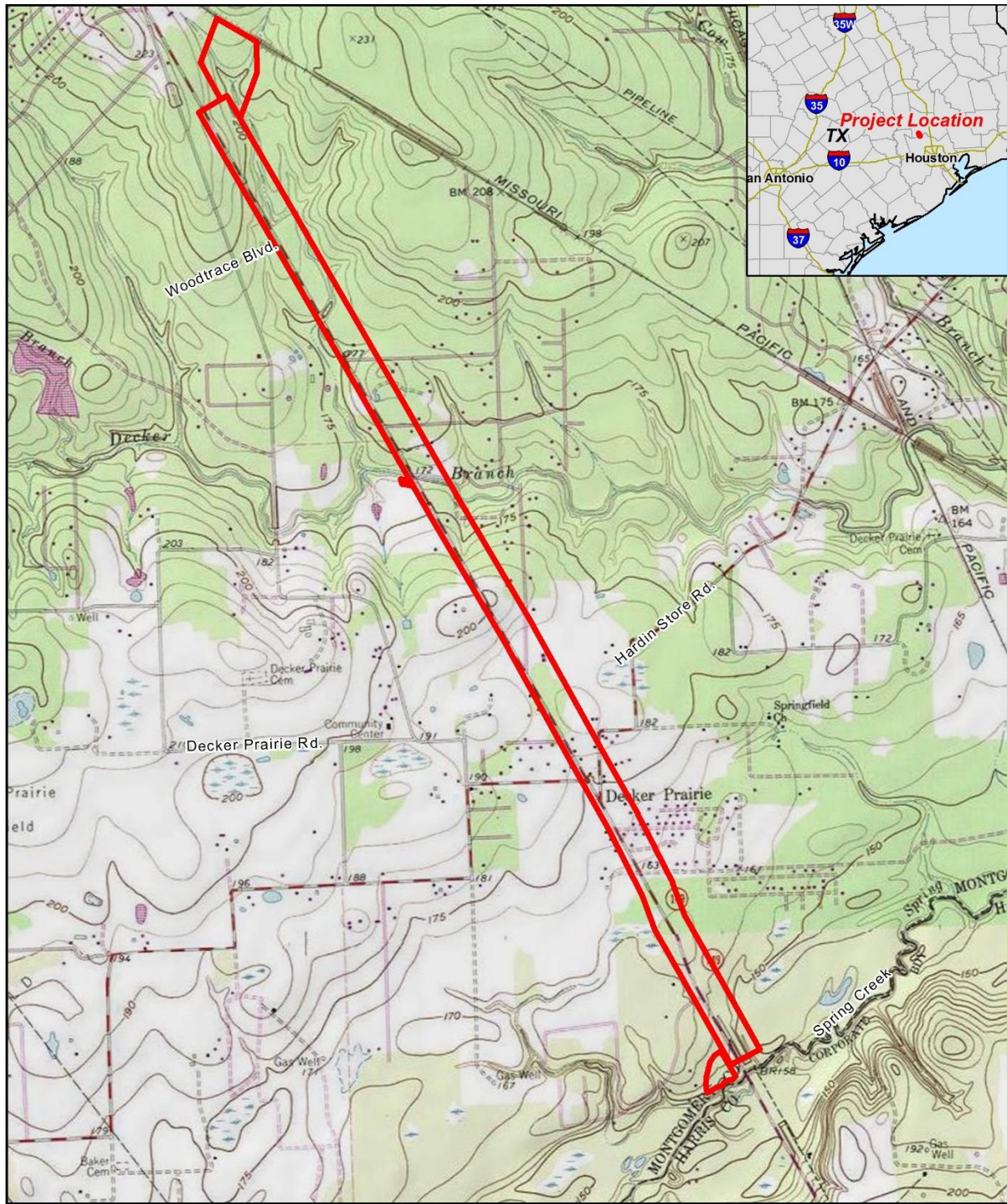


FIGURE 3

Figure 1. General location of the project area.

CHAPTER 2. ENVIRONMENTAL SETTING

The proposed Tomball Tollway project is primarily situated in the forested/shrub uplands in southeast Texas. This chapter provides a brief description of the ecoregions, geology, soils, and vegetation within the vicinity of the proposed project area.

Montgomery County is in the Southern Tertiary Uplands of the South Central Plains ecoregion (Griffith et al. 2007), also referred to as the “Piney Woods.” The Piney Woods is an area of mostly irregular plains representing the western edge of the southern coniferous forest belt. The region contains pine and pine-hardwood forests with scattered areas of cropland and pastures. Once blanketed by a mix of pine and hardwood forests, much of the region is now in loblolly and shortleaf pine plantations. Farms and ranches are relatively small in size compared to the state average. Lumber, pulpwood, oil and gas, and cattle production are important industries.

Harris County is within the Gulf Prairies and Marshes Physiographic Region. This is a relatively flat strip of land generally 50 to 90 miles wide, adjacent to the Gulf of Mexico. The principal distinguishing characteristics of the area are its relatively flat topography and mainly grassland potential natural vegetation. A high percentage of the region is in cropland and rice, grain sorghum, cotton, and soybeans are the principal crops. Urban and industrial land uses are expanding and oil and gas production is common (Griffith et al. 2007).

Geology

According to the Geological Atlas of Texas (Barnes 1992), the proposed road extension and detention basin areas are located within the Middle Pleistocene-aged Lissie Formation, and Pliocene-aged Willis Formation. The Lissie Formation contains mixed clay, silt, and sand, with very minor amounts of small-pebble gravel. Surfaces are flat and generally featureless, with the exception of pimple mounds and small depressions. Soils are fluvial and slightly sloping.

The Willis Formation, also known as the pre-Lissie Formation, is slightly older, and contains clay, silt, sand, and minor-pebble size gravels, including petrified wood and coarser sand than younger formations. The Willis Formation contains numerous iron oxide concretions, is considerably weathered, and has gently sloping, fluvial soils.

Soils

Soil survey data obtained from the Natural Resources Conservation Service (NRCS) for Montgomery County were used to compile a list of soils within the project area (Table 1). Soil series identified within the project area consist of a majority of low geoarchaeological potential soils found in fluvial, coastal plains, and forested conditions. A lone exception is the Hatliff-Pluck-Kian complex of high geoarchaeological potential soils found on natural levees, point bars, and stream channels. A small pocket of Hatliff-Pluck-Kian soils is located within the southern extent of the project area along Spring Creek and within the proposed southern detention basin area.

Table 1. Soils within the project area, from south to north project extent (NRCS 2015; Abbott 2001).

Soil Series	Texture	Location	Description	Geoarchaeological Potential (per Abbott 2001)
Alaga	Loamy sand	Uplands and non-flooding stream and marine terraces	Very deep, well drained soils formed in sandy marine or fluvial sediments	N/A
Landman	Fine sand	Level to gently sloping soils on old terraces	Deep, moderately well drained soils formed from sandy and loamy sediments.	N/A
Hatliff	Fine sandy loam-woodland	Gently sloping soils on natural levees and point bars	Very deep, well drained soils formed in loamy alluvial deposits from the Holocene	High
Pluck	Fine sandy loam	Gently sloping soils from meandering channels of streams.	Very deep, poorly drained soils formed in loamy alluvial deposits from the Holocene	High
Kian	Fine sandy loam	Gently sloping, soils from meandering channels of streams	Very deep, poorly drained soils formed in loamy alluvial deposits from the Holocene	High
Simelake	Silty clay	Bottomland hardwood forest	Very deep, somewhat poorly drained soils that formed in clayey alluvial deposits from the Holocene	N/A
Cow marsh	Mucky clay	Oxbows and relict channels of rivers	Very deep, very poorly drained soils formed in clayey alluvial deposits from the Holocene	N/A
Bissonnet	Loam	Nearly level fluviomarine soils	Very deep, poorly drained soils formed in loamy fluviomarine deposits of the Pleistocene.	Low
Hockley	Fine sandy loam	Nearly level, interfluvial of coastal plains	Very deep, well drained soil formed in loamy sediments of the Willis Formation.	Low
Katy	Fine loam	Nearly level, coastal prairies	Very deep, moderately well drained soils formed in loamy sediments from the Lissie Formation	Low
Aris	Silt loam	Nearly level, coastal plains	Very deep, poorly drained soils formed in loamy fluviomarine deposits from the Beaumont Formation.	N/A
Splendora	Fine sandy loam	Nearly level, forested areas	Very deep, moderately well to somewhat poorly drained soils that formed in loamy fluviomarine deposits from the Pleistocene.	Low
Waller	Silt loam	Nearly level, forested areas	Very deep, poorly drained soils formed in loamy fluviomarine deposits of the Lissie Formation	Low -moderate
Boy	Loamy fine sand,	Nearly level, forested areas	Very deep, moderately well drained soils formed in unconsolidated sandy and loamy materials derived from alluvium.	Low
Conroe	Gravelly loamy fine sand	Level to gently sloping, forested areas	Deep, moderately well drained soils on uplands.	Low

Vegetation

Historical vegetation in the project area was likely a mixture of coastal prairie communities of tall grass with a few clusters of oaks, and a coniferous forest community dominated by pine. Dominant vegetative species in the prairies included little bluestem (*Schizachyrium scoparium*), yellow Indiangrass (*Sorghastrum nutans*), brownseed paspalum (*Paspalum plicatulum*), gulf muhly (*Muhlenbergia capillaris*), and switchgrass (*Panicum virgatum*). The piney community was composed of longleaf pine (*Pinus palustris*) with an understory of sweetbay (*Magnolia virginiana*), wax myrtle (*Morella* spp.), and holly (*Ilex* spp.) (Griffith et al. 2007).

The project area is presently dominated by wetland and various upland plant communities that include woodrush flatsedge (*Cyperus entrerianus*), lamp rush (*Juncus effusus*), white grass (*Leersia virginica*), torpedo grass (*Panicum repens*), and swamp smartweed (*Persicaria hydropiperoides*). Sweetgum (*Liquidambar styraciflua*), American sycamore (*Platanus occidentalis*), black willow (*Salix nigra*), loblolly pine (*Pinus taeda*), water oak (*Quercus nigra*), American elm (*Ulmus americana*), and cedar elm (*Ulmus crassifolia*) form the tree canopy (Vicenik 2015).

CHAPTER 3. CULTURAL HISTORY

The project area is located within the Southeast Texas archaeological region (Perttula 2004a). Southeast Texas is identified to include the upper Texas coast, from the Sabine River southwestward to the Brazos River delta, and including the adjacent inland coastal plain (Ricklis 2004).

Prehistoric Cultural Setting

The prehistoric cultural setting is divided into three primary periods: Paleoindian, Archaic, and Ceramic. The Protohistoric period bridges the gap to the historic period, with the arrival of Europeans to Southeast Texas. The following general summary draws heavily from regional sources found in *The Prehistory of Texas* (Perttula 2004b) and a comprehensive regional summary provided by Story in *The Archaeology and Bioarchaeology of the Gulf Coastal Plain* (Story 1990).

Paleoindian Period

In Southeast Texas, the Paleoindian period (ca. 11,500-8000 years before present [B.P.]) is divided into Early (ca. 11,500-10,000 B.P.) and Late (10,000-8500 B.P.) sub-periods (Perttula 2004a:9). Fluted points are the most commonly known markers of the Paleoindian period. Early types include Clovis and Folsom points. Late Paleoindian occupation is generally represented by Dalton, San Patrice, and Scottsbluff, in addition to Plainview and Angostura points (Bousman et al. 2004; Ricklis 2004; Turner et al. 2011).

Few Paleoindian sites have been identified, and of those, none have been systematically excavated in Southeast Texas. Paleoindian projectile points have been primarily identified by surface collections in the region, and only about two dozen Paleoindian sites have been recorded in Harris County (Bousman et al. 2004:64). Paleoindian points have been found in excavated contexts, although these have generally been mixed with materials from later periods. Most have been identified along major stream drainages (Ricklis 2004). It is thought that one factor in the lack of intact Paleoindian sites is due to the submersion of coastal occupations by an increase in sea level and the lack of preservation across older upland areas (Aiuvalasit 2007; Aten 1983). Sea levels did not stabilize until the end of the Middle Archaic period, approximately 5000 B.P. (Aten 1983:157).

One of the largest local collections of Paleoindian artifacts comes from the McFaddin Beach site, located southeast of the project area in Jefferson County, Texas. Numerous Paleoindian points have been recovered, along with a significant amount of materials from later time periods. Research at the site, however, indicates that artifacts have been re-deposited inland from an unknown location offshore (Brown 2009). As no excavation has been conducted at the site proper, little is known about the lifeways of individuals who utilized these projectile points.

Because no discrete Paleoindian components have been found or investigated in Southeast Texas, there is no direct evidence for Paleoindian subsistence practices. In other parts of Texas and the Southeastern United States, early discoveries of Paleoindian artifacts in conjunction with now-extinct Pleistocene megafauna, such as mastodon and *Bison antiquus*, strongly biased early descriptions of Paleoindian subsistence towards exploitation of big game animals (Bousman et al. 2004:15; Williams and Stoltman 1965). Continued evidence from excavated Paleoindian components outside Southeast Texas suggests that Paleoindian subsistence was more widely varied, though exploitation of big game was certainly a part (Bousman et al. 2004:75).

One significant line of evidence for understanding Paleoindian lifeways comes from their diagnostic projectile points. Across North America, archaeologists have documented consistent Paleoindian use of

non-local raw materials for stone tool manufacture (Bousman et al. 2004). Most of the recovered points in southeast Texas are of a high grade lithic material that is scarce or absent in the region, suggesting a widespread movement of peoples and materials over long distances in a highly mobile lifestyle that likely depended on a diverse range of food resources (Ricklis 2004). Due to this high-mobility lifestyle, population densities were likely low and social structure is hypothesized as relatively small and egalitarian (Ricklis 2004).

Archaic Period

The Archaic period generally dates to the end of the Wisconsin glaciation and the concomitant extinction of Pleistocene megafauna. The period is often distinguished by the development of a broad subsistence base and evidence of a more intensive exploitation of regionally specific plant and animal resources. This change in subsistence is marked by an adaptation in tool production to conform to new hunting techniques, food preparation, and related activities.

The Archaic period in Texas is generally defined by pre- or non-horticultural adaptations and pre-ceramic and pre-bow-and-arrow hunting technologies (Story 1990). In Southeast Texas, the Archaic sequence is separate for inland groups (ca. 8000–1500 B.P.) and coastal groups (ca. 5000–2200 B.P.), due to the fact that the coastline was not stabilized until the middle of the Archaic period (Ricklis 2004). Numerous Archaic sites have been found along inland stream courses in Southeast Texas. The Archaic components at these sites are represented by various types of flaked stone dart points and other lithic tools. For coastal groups, the Archaic also includes stratified shell midden sites (Ricklis 2004).

For inland groups, a typological cluster of expanded-stem types dominates the Early Archaic (before ca. 6000 B.P.). Included in this group are early side-notched and early stemmed forms and corner-notched points of the Keithville, Neches River, and Trinity types. These are followed by massively barbed points of the Bell/Calf Creek series, as well as non-stemmed Tortugas points and stemmed Wells points (Ricklis 2004).

A variety of Middle Archaic tool types is reported from Southeast Texas, including Yarbrough, Bulverde, Travis, and Pedernales in the western sector. The predominant Late Archaic types are Kent and Gary, with Ensor and Godley points common in the western reaches of Southeast Texas (Ricklis 2004). A shift to the use of poorer quality and more local lithic resources in Late Archaic times suggests reduced group mobility and more tightly defined group territories (Story 1990). Several Middle to Late Archaic cemeteries have been reported from the coastal prairies of the western part of southeast Texas. By the Late Archaic, cemeteries were an integral part of cultural behavior along the inland margins of the coastal prairies zone, further tying groups to specific locations of shared mortuary practice (Ricklis 2004).

Ceramic Period

The Ceramic period in Southeast Texas begins ca. 2200 B.P., with the introduction of ceramics on the Texas Coast (Ricklis 2004; Aten 1983). Ceramics would not be found in inland southeast Texas for several centuries (Ricklis 2004). A later, important, technological innovation was the introduction of the bow and arrow (marked by the appearance of small, light straight and expanded-stem stone point types), around 1300 B.P. (Ricklis 2004; Story 1990). The Ceramic period of southeast Texas is further divided into Early and Late subperiods.

The Early Ceramic subperiod shows a continuation of Archaic period subsistence and settlement patterns (Ricklis 2004). Gary contracting stem points began to replace earlier Kent points. Tchefuncte and Mandeville ceramics began to be present in small amounts as one moves east towards the Louisiana border, but sandy Goose Creek ceramics spread throughout an area bounded by the Brazos River to the west and extend to the upper reaches of the Neches and Angelina Basins (Ricklis 2004; Story 1990:257).

This area has been called the Mossy Grove culture area, and appears to have been a distinct regional development that persisted through time until the Protohistoric period (Ricklis 2004:190).

On the central Texas coast, The Late Ceramic/Late Prehistoric subperiod saw an apparent division of Toyah phase groups in inland areas and the Rockport phase groups on the central Texas coast (Ricklis 2004). Small, light arrow point types, such as Scallorn, Alba, and Catahoula appear during this time (Ricklis 2004). Goose Creek ceramics continue along with the introduction of grog-tempered and some bone-tempered ceramics, and decoration becomes more elaborate, although grog-tempered ceramics are more common and decorations are less elaborate inland (Ricklis 2004; Story 1990). Additional characteristics of the Late subperiod include the appearance of bison bone along with a lithic technocomplex of Perdiz arrow points, unifacial end scrapers, blade-core lithic technology, thin bifacial knives (often alternately beveled), and expanded base drills/perforators made from flakes and prismatic blades (Ricklis 2004). The use of cemeteries continued through the Ceramic period, with the Harris County Boys School Site, including 29 burials on the western edge of Galveston Bay, and the Mitchell Ridge Site on Galveston Island, presenting notable examples (Story 1990:242; Ricklis 1994)

Protohistoric Period

While not necessarily a formal period, the Protohistoric is generally recognized as the period when contact with Europeans occurred, but not in sufficient amounts to significantly affect the economy or lifestyles of the prehistoric groups. Native groups in the Houston area, due to their proximity to the Gulf of Mexico, had some of the earliest contact with European explorers and colonists. In 1528, Spanish explorer Alvar Nuñez Cabeza de Vaca shipwrecked near Galveston Bay and began a nine-year odyssey through Texas and Mexico, documenting various native cultures at the initial point-of-contact with Europeans (Kleiner 2010). However, though documentation of Native American lifeways began with this contact, sustained interaction between Native Americans and Europeans did not begin until later in the period. During this period, European goods sometimes appear at sites, but there was essentially little change in subsistence and settlement from the Ceramic period. The Perdiz point continues with the addition of bulbar-stemmed, and non-stemmed round-based and lozenge-shaped arrow points (Ricklis 2004). In the Galveston Bay area, native ceramics persist at sites until approximately 1700 A.D., but then disappear almost completely except for Goose Creek Plain sherds (Story 1990:260).

Historic Cultural Setting

Early Contact/Colonial Era (1500-1836)

The Spanish Colonial period (1630–1821) can be characterized as the initial period of Aboriginal/European contact and European settlement in Texas. During this time, the region was inhabited by several aboriginal groups including the Coapite, Copane, Karankawa, and Orcoquizas (Kleiner 2010). Apart from the Cabeza de Vaca expedition noted above, other European explorers passed through the region; remnants of the Hernando de Soto expedition, led by Luis de Moscoso Alvarado, crossed through central Texas in 1542, but found the country “uninviting” (Hudson 1997). In February 1685, the French La Salle expedition entered Matagorda Bay and established Fort St. Louis along Garcitas Creek. Throughout the mid-1700s, the upper Texas coast continued to be an area of contention between France and Spain, until the 1763 Treaty of Paris clearly placed Louisiana within the Spanish realm. French trader Joseph Blancpain traveled through the lower Trinity River and Galveston Bay area in 1754. In response, the Spanish established Nuestra Señora de la Luz Mission in 1756, near the present day site of Wallisville. In the same year, a military presidio, Agustin de Ahumada Presidio, was established on the east bank of the Trinity River near the Liberty-Chambers County line. Most Spanish settlement in the area was abandoned by the early 1770s (Kleiner 2010).

By 1803, when the United States acquired Louisiana, the region was under Spanish control as a part of the Atascosito District (Kleiner 2010). Shortly thereafter, Mexico gained independence and assumed Spain's former territories in 1821. Anglo-American settlement began in earnest after 1824 when Stephen F. Austin received the first official colonization grant from the Mexican Government to bring 300 Anglo settlers into the area. Colonization proceeded rapidly and Harrisburg, Velasco, Brazoria, Columbia, Washington, and San Felipe became the principal settlements. However, the Mexican government's later efforts to curtail American immigration resulted in several disturbances, all leading up to the Texas Revolution and the final battle at San Jacinto, in which Texas won independence from Mexico.

Republic of Texas/Pre-Civil War (1836–1860)

During the Republic of Texas era, from 1836–1845, Harris (then Harrisburg) County was formed and organized in 1836 (Henson 2010). Houston was founded the same year, and Montgomery County was founded in 1837 shortly thereafter. At the time, the Brazos River, Oyster Creek, and Buffalo Bayou played an integral role in the economic life of the region. Plantations dotted their banks, growing rice, cotton, sugarcane, and other crops, while steamboats transported goods and people to and from the port at Galveston. The cattle industry was introduced at this time, as well, serving as another boost to a growing economy (Henson 2010; Kleiner 2010). With the region's dependence on slave labor, residents voted heavily in favor of secession and many citizens participated as Confederate soldiers (Kleiner 2010).

The Post–Civil War/Reconstruction Period (1865–1880)

Following the Civil War, recovery from the war was slow, with principal agricultural exports dropping to a fraction of their pre-war totals. After the war, many freedmen worked for their former masters or started small farms. By the late 1870s, the livestock, lumber, and shipping industries had recovered significantly, owing in part to railroad expansion and improvements, and utilization of the Houston Ship Channel (Henson 2010). However, significant agriculture did not develop again until after 1890 (Henson 2010; Kleiner 2010).

Late-Nineteenth/Early-Twentieth Century (1880–1940s)

After 1880, rail transportation in the region increased significantly, principally following the introduction of the Texas and New Orleans Railroad (now the Southern Pacific Transportation Company) in 1860, which linked Houston to Orange. This railroad was later linked to the Louisiana and Western Railroad with through service to the City of New Orleans in 1881 (Kleiner 2010). By 1890, Midwestern developers had purchased land along the new North Galveston, Houston, and Kansas City Railroad, which headed east from Houston along the southern side of Buffalo Bayou towards Morgan's Point. This was done to attract other out-of-state farmers to raise fruit, berries, and vegetables, or just to seek more a temperate climate (Henson 2010).

Oil exploration in the early-twentieth century generated a population explosion in the region, particularly in Humble with the oil boom at Moonshine Hill in 1905. Oil was also discovered at Goose Creek and Tabbs Bay, which led to the establishment of a temporary boomtown from 1915 to 1917. In 1919, Ross Sterling and the Humble Oil and Refining Company (now Exxon) built a refinery near the oilfield on the San Jacinto above the mouth of Goose Creek. The development of the area as an industrial hub really began in 1911, when the formation of the Houston Ship Channel Navigation District was approved. The 50-mile-long channel was deepened and eventually widened to allow oceangoing vessels. Petroleum and other refineries popped up all along Buffalo Bayou and the San Jacinto River (Henson 2010; Kleiner 2010). In modern times, the region's economy continues to center around the shipping, agricultural, and petroleum industries. Many residents of the region find employment in the Houston metropolitan area.

CHAPTER 4. PREVIOUS INVESTIGATIONS

Background Review

The background review consisted of a cultural resources and environmental literature review of the project area and its surroundings. An SWCA archaeologist reviewed the corresponding U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map on the Texas Archeological Sites Atlas (TASA), a restricted online database, for any previously recorded surveys and historic or prehistoric sites located in or near the project area. Site files, relevant maps, NRHP properties, and SAL listings, Registered Texas Historic Landmarks, cemeteries, and local neighborhood surveys were also examined. Listings on TASA are limited to projects under purview of the Antiquities Code of Texas or the NHPA of 1966. Therefore, all work conducted in the area may not be available. The Texas Historic Sites Overlay, aerial photographs, Bureau of Economic Geology maps, and the NRCS Web Soil Survey were also examined for historical and environmental information related to the project area.

Previously Conducted Cultural Resources Surveys

An SWCA archaeologist reviewed the corresponding Magnolia East and Rose Hill, Texas USGS 7.5-minute topographic quadrangle maps on the TASA for any previously recorded surveys and historic or prehistoric sites located in or near the proposed project area. Site files, relevant maps, NRHP properties, SAL listings, cemeteries, and local neighborhood surveys were also examined.

The results of the background review revealed that much, if not all, of the proposed highway extension corridor along SH 249 has already been surveyed for cultural resources (Figure 2). The review documented a total of five survey projects within a 1-mile radius of the proposed project area, two of which were conducted directly upon the highway property (Table 2).

Previously Documented Cultural Resources Sites

In addition to the surveys listed above, seven cultural resources sites have been documented within 1 mile of the proposed project area, including three archaeological sites, three historic structures, and one historic cemetery (Table 3). The archaeological sites are all prehistoric sites associated with Spring Creek. Although none of these sites are suggested as eligible for listing in the NRHP, 41MQ165, located 0.17 mile from the proposed southern detention basin, was designated as having a high research value. 41MQ165 is registered as a late prehistoric site with deep deposits that may extend to earlier time periods. The site was investigated by Moore Archaeological Consultants, Inc. after illegal land-clearing destroyed large portions of it. Three early twentieth century vernacular buildings registered in the project area include an early twentieth century farmhouse, Hardin Store Road, and Springfield Methodist Church. Decker Prairie Cemetery is located 0.7 mile from the project area.

Figure 2. REDACTED

Table 2. Previously conducted cultural resources surveys within 1 mile of the study area.

County	Year	Distance	Survey Type	Additional Information
Harris, Montgomery	1984	Intersects	Linear	No TAC permit no. available
Harris, Montgomery	1992	Intersects	Linear	Original survey of SH 249, no TAC permit no. or author information available.
Harris, Montgomery	1994	0.84 mile	Areal	No TAC Permit No. available
Harris	2013	0.40 mile	Areal	TAC Permit No. 6564; Investigating Agency: J.K. Wagner. Fence installation.
Harris	2013	0.50 mile	Areal	TAC Permit No. 6564; Investigating Agency: J.K. Wagner, Spring Creek Park Cemetery Survey

Table 3. Previously documented cultural resource sites within 1 mile of the study area.

Site/Resource Number	Distance	Site Type	Recorder	Additional Information	NRHP Status
41HR159	0.45 mile	Prehistoric	L.R. Chrisco	Artifact scatter: lithics, pottery, Ellis dart point.	Undetermined
41MQ56	0.93 mile	Prehistoric	Meg Cruse	Open campsite	Undetermined
41MQ165	0.17 mile	Prehistoric	MAC Inc.	Heavily destroyed. Deep deposit of various artifacts. Site was partially excavated by MAC in 2001 as a rescue operation.	Undetermined, Possibly high research value.
NRS79-12859	Intersects	Historic	Kathy London	Early twentieth-century vernacular structure—Hardin Store Road. No trace on aerial photographs, 1980 photograph included in Atlas data.	Undetermined
NRS79-12861	0.32 mile	Historic	Kathy London	Early twentieth-century vernacular church—Springfield Methodist Church.	Undetermined
MQ-C029	0.70 mile	Historic cemetery		1873-Present—Decker Prairie Cemetery	Undetermined
NRS79-12864	0.31 mile	Historic	Kathy London	Early twentieth-century farmhouse	Undetermined

Review of Historic Aerial Photography and Topographic Maps

A review of historic aerial photography and topographic maps revealed the history of land use in the proposed project area over the last half century. The review indicated that the southern boundary of the

proposed project area around Spring Creek was forested and the remainder of the project area was used primarily for agriculture until approximately 1989, when land began to be cleared and modified for commercial development. By 1995, the four-lane SH 249 with center median was in place, and all structures within the highway median had been cleared.

CHAPTER 5. FIELD METHODS

Archaeological investigations for the Tomball Tollway project were designed to be of sufficient intensity to determine the nature, extent, and, if possible, significance of any cultural resources located within a 500-foot-wide survey corridor/construction foot print of the 3.3-mile project area. Due to the level of previous survey and development within the road corridor, no field survey was conducted in this portion of the project area. However, the three detention basins totaling 22 acres were surveyed for cultural resources utilizing pedestrian survey, shovel testing, and augering. All investigations were conducted in accordance with the standards and guidelines set forth by Section 106 of the NHPA (as amended) and the THC guidelines for Phase I cultural resource surveys.

SWCA archaeologists conducted an intensive pedestrian survey augmented by shovel testing and augering within the three detention basin areas. During field survey, SWCA archaeologists examined the ground surface for cultural resources. This examination included pedestrian survey, augering, and shovel testing within each detention basin. The utilization of shovel tests was keyed to the level of disturbance within the area and the nature of the soils, geology, and topography. Shovel tests measured a minimum of 30 cm in diameter and were excavated in 20-cm arbitrary levels to culturally sterile deposits. The matrix was screened through ¼-inch hardware mesh. The location of each shovel test was plotted using a global positioning system (GPS) receiver, and each test was recorded on appropriate project field forms.

The background review revealed that the proposed project area had potential for deeply buried cultural materials in the southern detention basin area. Targeted backhoe trenching was originally planned in the detention basin areas; however, it was determined that the wooded nature of the property would make backhoe trenching problematic. As such, augering was conducted in lieu of backhoe trenching. The process consisted of augering the base of shovel tests after a maximum depth was achieved by the shovel and drilling to depths of approximately 200 cm below surface (cmbs).

Archaeological materials encountered during the investigation were explored as thoroughly as possible, with consideration to land access constraints. The identified site was assessed in regard to potential significance, and SWCA provided preliminary recommendations of eligibility for the NRHP along with recommendations for proper management of the site (avoidance, non-avoidance, or further work).

Additional shovel tests and augers were excavated per THC standards at the discovered site to define horizontal and vertical boundaries, with any exceptions fully documented. Where practical, site delineation tests were excavated at 5- to 10-m intervals in cardinal directions from the original positive shovel test within the project workspace. If excessive disturbances were encountered during the subsurface delineation of a site, shovel tests were excavated at an interval sufficient to provide a representative sample of the artifact assemblage and confirm the disturbed stratigraphic context. Appropriate State of Texas Site Record Forms were completed for each site during the investigations. A detailed plan map of each site was produced, site locations were plotted on USGS 7.5-minute topographic maps and relevant project maps, and the natural setting and disturbances associated with the site area were photographed.

Materials recovered from excavation were photographed and analyzed in the field, but were not collected during survey. As such, no curation or laboratory analysis was required during the course of this project.

CHAPTER 6. FIELD RESULTS

Field Survey

SWCA conducted five days of fieldwork between December 17, 2015, and January 5, 2016, within the three proposed detention basins of the Tomball Tollway project, totaling approximately 22 acres of field survey. SWCA archaeologists conducted an intensive pedestrian survey augmented by shovel testing and augering at a rate of at least one shovel/auger test per two acres of survey area within the entirety of the three proposed detention basin areas.

Southern Detention Basin Area and Site 41MQ326

REDACTED

Figure 3. REDACTED

Figure 4. REDACTED

(Figure 5. Image of site redacted.)

Central Detention Basin Area

The central detention basin area (DB2) measures approximately 0.25 acre, located in the Decker Prairie area immediately adjacent to the western limit of SH 249 (Figure 6). This survey area was also made up of thick hardwoods, coniferous trees, and secondary growth. Shovel tests extended to 40 cmbs, which were then augered to a maximum depth of 150 cmbs. A typical shovel test profile contained three strata: Stratum 1 (0-10 cmbs) contained sandy loams of 10YR 3/1; Stratum 2 (10-70 cmbs) contained 10YR 6/4 sandy clays, and Stratum 3 contained 10YR 5/8 clays mottled with 10YR 4/1. Two shovel/auger tests were conducted, neither of which yielded any cultural materials.



<p>SWCA ENVIRONMENTAL CONSULTANTS</p> <p>10245 West Little York, Suite 600 Houston, Texas 77040 (281) 617-3217 phone (281) 617-3227 fax www.swca.com</p>	<p>MCTRA TOMBALL TOLLWAY PROJECT</p> <p>USACE GALVESTON DISTRICT CULTURAL RESOURCES HARRIS & MONTGOMERY COUNTIES, TEXAS</p>	Detention Basin Boundary Negative Auger	Background: Bing Aerial Imagery
			Scale: 1:2,000 Created By: CAC Approved By: MH SWCA Project No.: 32611 Date Produced: February 02, 2016
SHEET 2 OF 3		NAD 1983 StatePlane Texas South Central FIPS 4204 Feet	

Figure 6. Aerial overview of central detention basin area.

Northern Detention Basin Area

The last proposed detention basin area investigated (DB3) is an 18.75-acre tract located on the northwest edge of the project area, adjacent to the western margins of SH 249 (Figures 7 and 8). As with the other proposed areas, this area is made up of thick hardwoods, coniferous trees, and secondary growth, with limited surface visibility. This area exhibited a much shallower water table than the others, with shallower basal clays as one moves further north of Spring Creek. A typical shovel test profile for the area contained two strata: Stratum 1 extended from 0-50 cmbs and contained 10YR 4/2 silty loams above Stratum 2 10YR 6/4 clay extending to approximately 1 m in depth. A total of 14 shovel / auger tests were excavated in the northern detention basin area, none of which yielded any cultural materials.



Figure 7. General photo of the northern detention basin area, including an intermittent creek, facing west.



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			NAD 1983 StatePlane Texas: South Central FIPS 4204 Feet
SHEET 1 OF 3			

Figure 8. Aerial overview of the northern detention basin area.

CHAPTER 7: SUMMARY AND RECOMMENDATIONS

On behalf of Halff Associates, Inc. and the MCTRA, SWCA conducted a Phase I cultural resources survey of the proposed Tomball Tollway Extension Project in Montgomery County, Texas. Investigations were performed in support of the sponsor's application requirements for a USACE Galveston District, Section 404 permit in accordance with 33 CFR Part 325, Appendix C (Processing Department of Army Permits: Procedures for the Protection of Historic Properties; Final Rule 1990; with current Interim Guidance Document dated April 25, 2005) and Section 106 of the NHPA (16 USC 470) and its implementing regulations (36 CFR 800). SWCA's investigations included an archaeological background literature and records review and intensive pedestrian survey augmented by shovel testing to systematically identify, record, delineate, and, if possible, determine the significance of any cultural resources located within the project area.

The proposed project area follows the existing Tomball Tollway (SH 249) highway northward approximately 3.3 miles from Spring Creek to the FM 1774 junction in Pinehurst. Due to previous survey and disturbances from road construction, survey was not conducted along the highway extension area. All work was conducted under Texas Antiquities Code permit number 7505 in compliance with the Antiquities Code of Texas. Intensive testing utilizing shovel testing and augering was conducted within three proposed detention basin areas along the margins of the extension. Collectively, the three detention basins measure approximately 22 acres. In accordance with THC regulations for projects measuring less than 100 acres, at least one shovel test was excavated for every 2 acres of survey area within the detention basins. Due to the potential for deeply buried deposits associated with Spring Creek, augering was conducted within each shovel test. As a result of the fieldwork, one archaeological site, 41MQ326, was documented within the southern detention basin area.

Site 41MQ326 is a multicomponent site containing both historic and prehistoric cultural materials, including glass, whiteware ceramics, bullet casings, and prehistoric tertiary lithic material. Historic material was concentrated in the upper 40 cm of excavations, while the prehistoric materials extended from 150-200 cmbs. Based on the paucity of materials and lack of identifiable intact features, SWCA finds it unlikely that the site contains any significant archaeological deposits. However, due to the depth of deposits within site 41MQ326, SWCA recommends site 41MQ326 UNDETERMINED for listing in the NRHP or as a SAL. As such, SWCA recommends construction monitoring by an archaeologist because of the potential for intact features which were not visible through augering of the site. SWCA recommends archaeological monitoring of all construction activities within 100 m of site 41MQ326 in order to ensure that no archaeological materials are disturbed.

In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify historic and prehistoric properties within the proposed Tomball Tollway Extension Project. Based on the results of the current effort, SWCA recommends a determination of NO HISTORIC PROPERTIES AFFECTED within the investigated project area, provided that monitoring is conducted over the course of construction within a 30-m radius of site 41MQ326. SWCA recommends no further archaeological investigations other than the aforementioned monitoring for the currently proposed alignment prior to construction, and that permitting be allowed to proceed.

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APPENDIX A

Shovel Test Log

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/17/15	DB1-AG1	1	0-20	N	10YR 5/8	sandy loam		Humic level/ Organics		NCM (No Cultural Material)
12/17/15	DB1-AG1	2	20-168	P	10YR 6/6	fine sand		Loose Intact Sand	Depth	1 Glass Shard at 32cm; 1 tertiary flake at 147cm
12/17/15	DB1-AG2	1	0-27	N	10YR 3/2	sandy loam		thick brush; organics on surface; thick roots.		NCM
12/17/15	DB1-AG2	2	27-126	N	10YR 5/6	fine sand		very fine loose sand		NCM
12/17/15	DB1-AG2	3	126-150	N	7.5YR 6/8	clay	Reddish brown subsoil mottling	soil starting to get sticky; note basal clay with redoximorphic mottling; intact subsoil	Depth	Modern Trash on Surface
12/17/15	DB1-AG3	1	0-14	N	10YR 3/2	sandy loam		Humic level/ Organics		NCM
12/17/15	DB1-AG3	2	14-168	N	10YR 5/6	fine sand		friable; Moisture content is light		NCM
12/17/15	DB1-AG4	1	0-15	N	10YR 3/2	sandy loam		organic level; thick roots; thick brush at surface		NCM
12/17/15	DB1-AG4	2	15-130	N	10YR 5/6	fine sand		very fine loose sand		NCM
12/17/15	DB1-AG4	3	130-170	N	10YR 5/8	fine sand		very fine loose sand		NCM
12/17/15	DB2-AG1	1	0-10	N	10YR 3/1	sandy loam		brush; thick organics		NCM
12/17/15	DB2-AG1	2	10-50	N	10YR 6/4	sandy loam		moisture increases with depth; 1% shell inclusions		NCM

Date	Shovel Test	Level	Depth (cmts)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/17/15	DB2-AG1	3	50-90	N	10YR 6/4	sandy clay		reddish brown mottling at 90cm		NCM
12/17/15	DB2-AG1	4	90-123	N	10YR 5/8 w/ 10YR 4/1	clay	5% calcium carbonate; 5% iron concretions	Redox at 123cm	Depth	NCM
12/17/15	DB2-AG2	1	0-13	N	10YR 4/1	coarse sand		Humic level/ Organics		NCM
12/17/15	DB2-AG2	2	13-103	N	10YR 6/4 w/ 5YR 5/8	silty loam		moisture increases with depth; 1% shell inclusions		NCM
12/17/15	DB2-AG2	3	103-150	N	10YR 6/3 w/ 5YR 5/8	mottled clay	5% calcium carbonate; 5% iron concretions	Mottling increases with depth; at 150cm small root burn	Depth	NCM
12/17/15	DB3-AG1	1	0-5cm	N	N/A	N/A	N/A	NCM	water table	NCM
12/17/15	DB3-AG2	1	0-45cm	N	10YR 4/2	silty loam		very mucky organics; thick roots; water table at 40-45cm	water table	NCM
12/17/15	DB3-AG3	1	0-53cm	N	10YR 4/2 w/ 10YR 6/8 mottling	saturated sandy clay loam		very mucky sandy clay mottling; water table at 53cm	water table	NCM
12/17/15	DB3-AG4	1	0-45cm	N	10YR 4/2	saturated sandy loam		saturated water table; redoximorphic clay; subsoil		NCM
12/17/15	DB3-AG4	2	45-55cm	N	10YR 6/8	mottled saturated clay		saturated water table; redoximorphic clay; subsoil	water table	NCM
12/18/15	DB3-AG5	1	0-75	N	10YR 4/4	silty loam		organics and silty loam; little moisture		NCM
12/18/15	DB3-AG5	2	75-90	N	10YR 4/1 w/ 7.5YR 6/8	mottled clay		less than 1% calcium carbonate and manganese; Basal mottled subsoil; sticky	basal clay	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/18/15	DB3-AG6	1	0-113	N	10YR 4/4	silty loam		organics on surface; at 40-45cm moisture increases; at 113cm hit redox		NCM
12/18/15	DB3-AG6	2	113-125	N	10YR 4/4 w/ 10YR 5/8	mottled clay		2% iron concretions	water table	NCM
12/18/15	DB3-AG7	1	0-55	N	10YR 6/4	saturated silty loam		very wet soils; pine forest		NCM
12/18/15	DB3-AG7	2	55-88	N	10YR 6/4 w/ 7.5YR 6/8	mottled clay		mottled wet subsoil with 5% gravels; 1% iron concretions	basal clay	NCM
12/18/15	DB3-AG8	1	0-33	N	10YR 6/4	silty loam		very wet soils; 5% iron concretions throughout		NCM
12/18/15	DB3-AG8	2	33-73	N	10YR 6/4 w/ 10YR 6/8	mottled clay		redox at 70cm	basal clay	NCM
12/18/15	DB3-AG9	1	0-17	N	10YR 4/3	silty loam		top 10cm organics		NCM
12/18/15	DB3-AG9	2	17-53	N	10YR 6/4	silty loam		moisture is increasing with depth; 5% iron and manganese concretions		NCM
12/18/15	DB3-AG9	3	53-97	N	10YR 6/4 w/ 7.5YR 6/8&2.5YR 4/8	mottled clay		10% manganese and iron concretions; mottled hard clay with water seeping out of the side walls.	basal clay	NCM
12/18/15	DB3-AG10	1	0-30	N	10YR 4/3	silty loam with organics		Moist Silty loam at 10m west from logging/ railroad access road.		NCM
12/18/15	DB3-AG10	2	30-90	N	10YR 6/4 w/ 7.5YR 6/8&2.5YR 4/8	mottled clay		Basal level; moisture content decreases with depth	basal clay	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/18/15	DB3-AG11	1	0-78	N	10YR 4/4	silty loam		Moist Silty loam; Moisture increases with depth		NCM
12/18/15	DB3-AG11	2	78-115	N	10YR 5/4 w/ 2.5YR 4/8	silty clay mottling		mottled subsoil; strong and sticky; 10% iron and manganese concretions	basal clay	NCM
12/18/15	DB3-AG12	1	0-23	N	10YR 3/3	silty loam		organics; thick on surface; clay content increases with depth; moist and sticky		NCM
12/18/15	DB3-AG12	2	23-45	N	10YR 3/3 w/ 10YR 4/6	silty clay loam		2% iron and manganese; mottled clay	basal clay	NCM
12/18/15	DB3-AG13	1	0-40	N	10YR 5/4 w/ 10YR 7/8	mottled clay		mucky clay; w ater table; basal clay present at 40cm	w ater table	NCM
12/18/15	DB3-AG14	1	0-90	N	10YR 4/6	silty loam		organics on surface; next to intermittent stream; moisture content increases with depth		NCM
12/18/15	DB3-AG14	2	90-105	N	10YR 5/6 w/ 10YR 4/4	silty clay loam		moisture increases; 40% iron concretions; water table at 105cm	w ater table	NCM
12/21/15	DB3-AG15	1	0-60	N	10YR 5/1	silty loam		silty topsoil; loam	basal clay	NCM
12/21/15	DB3-AG15	2	60-100	N	10YR 5/1 w/ 2.5YR 6/8	silty clay mottling		5% gravel; 5% manganese and iron concretions; very saturated soils; w ater table at 97cm; subsoil	basal clay	NCM
12/21/15	DB3-AG16	1	0-60	N	10YR 5/3	silty loam		topsoil; w et and sticky		NCM
12/21/15	DB3-AG16	2	60-80	N	10YR 5/3 w/ 10YR 5/6	clay		mottling w ith clay; very wet and sticky; 10% iron and manganese	basal clay	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/21/15	DB3-AG17	1	0-40	N	10YR 5/3	silty loam		moist silty loam; 5% iron and manganese; thick vegetation; 10% gravel		NCM
12/21/15	DB3-AG17	2	40-80	N	10YR 5/3 w/ 2.5YR 6/8	mottled clay		mucky subsoil; manganese and iron concretions increase with depth	basal clay	NCM
12/21/15	DB3-AG18	1	0-106	N	10YR 4/4 w/ 10YR 5/6	sandy loam to clay loam		topsoil; organics; very thick roots; next to intermittent stream; mottling throughout; clay content increases with depth	basal clay	NCM
12/21/15	DB1-AG1-DL1	1	0-167	N	10YR 6/8	sand		sandy loam; deep; friable; auger test started at 90cm	depth	NCM
12/21/15	DB1-AG1-DL2	1	0-40	P	10YR 3/3	friable sand		organic/ humic level with fine sand		0-10cm: 5 historic glass fragments; 10-20cm: 8 glass fragments; 20-30cm: 4 melted pieces of glass and 1 .33 caliber bullet casing; 30-40cm: 2 pieces of clear glass and 1 piece of whiteware
12/21/15	DB1-AG1-DL2	2	40-166	P	7.5YR 6/6	fine sand		deep and loose soils	depth	50-60cm: 2 glass fragments

Date	Shovel Test	Level	Depth (cmts)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/21/15	DB1-AG1-DL3	1	0-30	N	10YR 4/3	moist sand		10m North of DB1-AG1-DL2; 3 pieces of charcoal at 50-60cm; 2 pieces of charcoal at 80-90cm; Auger starts at 100cm		20-30cm: 1pc of w hiteware
12/21/15	DB1-AG1-DL3	2	30-167	P	10YR 6/8	loose sand		very loose soils	depth	40-50cm: 1pc of w hiteware
12/22/15	DB1-AG1-DL4	1	0-30	N	10YR 4/4	sandy loam		topsoil; organics; lots of roots; very soft sand		NCM
12/22/15	DB1-AG1-DL4	2	30-160	N	10YR 4/6	fine sand		very fine; roots; soft; loose; moisture content increases with depth	depth	NCM
12/22/15	DB1-AG1-DL5	1	0-22	N	10YR 5/6	sandy loam		heavily vegetated area; thick greenbriar; off set of 10m of thicket. Auger starts at 100cm; sand to 168cm		NCM
12/22/15	DB1-AG1-DL5	2	22-168	N	10YR 6/8	loose sand			depth	NCM
12/22/15	DB1-AG1-DL6	1	0-25	N	10YR 5/6	sandy loam		topsoil; organics with roots; thick greenbriar roots		NCM
12/22/15	DB1-AG1-DL6	2	25-165	N	10YR 6/8	loose sand		Nice loose sandy matrix	depth	NCM
12/22/15	DB1-AG1-DL7	1	0-15	N	10YR 3/2	sandy loam		topsoil; organics with roots; loose fine sand		NCM
12/22/15	DB1-AG1-DL7	2	15-160	N	10YR 4/6	sand		very fine; loose sand; roots; moist	depth	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/22/15	DB1-AG1-DL8	1	0-20	N	10YR 4/3	sandy loam		topsoil; organics w ith thick roots		NCM
12/22/15	DB1-AG1-DL8	2	20-166	N	10YR 5/8	sand		very fine loose sand	depth	NCM
12/22/15	DB1-AG1-DL9	1	0-21	N	10YR 5/3	sandy loam		organics w ith roots and leaf litter		NCM
12/22/15	DB1-AG1-DL9	2	21-165	N	10YR 7/8	sand		loose deep sand; thick Vegetation!	depth	NCM
12/22/15	DB1-AG1-DL10	1	0-28	N	10YR 5/3	sand loam		organic level; lots of roots and leaf litter		NCM
12/22/15	DB1-AG1-DL10	2	28-161	N	10YR 6/6	sand		moist sand; very thick vegetation	depth	NCM
12/22/15	DB1-AG1-DL11	1	0-100	N	10YR 5/8	sandy loam		topsoil; organic level; 0-15cm: 1 modern glass shard; 15-35cm: 2 machine cut modern glass shards		NCM
12/22/15	DB1-AG1-DL11	2	100-150	N	10YR 6/4	fine sand				NCM
12/22/15	DB1-AG1-DL11	3	150-168	N	10YR 6/4 w/ 10YR 6/8	fine sand		loose; soft; mottling starts at 155cm	depth	NCM
12/22/15	DB1-AG1-DL12	1	0-20	N	10YR 3/3	sandy loam		organic topsoil; soft sandy loam; thick roots		NCM
12/22/15	DB1-AG1-	2	20-150	N	10YR 5/8	fine sand		soft; loose; hit large root at 150cm	root impasse	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
	DL12									
12/22/15	DB1-AG1-DL13	1	0-12	N	10YR 5/3	sandy loam		topsoil; organic matter; thick roots		NCM
12/22/15	DB1-AG1-DL13	2	12-165	N	10YR 6/6	sand		loose sand to 165cm	depth	NCM
12/22/15	DB1-AG1-DL14	1	0-20	N	10YR 3/2	sandy loam		organic level on top; roots		NCM
12/22/15	DB1-AG1-DL14	2	20-163	N	10YR 6/8	fine sand		1% manganese; soft and fine sand	depth	NCM
12/22/15	DB1-AG1-DL15	1	0-17	N	10YR 3/3	silty loam		organic topsoil; offset at 10m West		NCM
12/22/15	DB1-AG1-DL15	2	17-150	N	10YR 6/6	sand		loose and moist sand		NCM
12/22/15	DB1-AG1-DL15	3	150-167	N	10YR 8/8	clay		subsoil; mottled basal clay	basal clay	NCM
12/22/15	DB1-AG1-DL16	1	0-6	N	10YR 5/8	sandy loam		topsoil; organics; very thick roots		NCM
12/22/15	DB1-AG1-DL16	2	6-68	N	10YR 6/4	sand		loose sand; big, thick root	root impasse	NCM
12/22/15	DB1-AG1-DL17	1	0-40	N	10YR 5/6 w/ 10YR 5/3	sandy loam		mottled topsoil; roots		NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
12/22/15	DB1-AG1-DL17	2	40-164	N	10YR 6/6	fine sand		loose; fine; soft; moist sand	depth	NCM
12/22/15	DB1-AG1-DL18	1	0-23	N	10YR 5/1	sandy loam		organic topsoil; roots at 0-10cm		NCM
12/22/15	DB1-AG1-DL18	2	23-153	N	10YR 7/8	sand		deep sandy soils	depth	NCM
12/22/15	DB1-AG1-DL19	1	0	N	N/A	N/A		Not excavated because of disturbed overburden	other	NCM
01/05/15	DB1-AG1-DL20	1	0-8	N	10YR 5/2	sandy loam		0-110 shoveltest; 110-200 4inch auger; holly; privet; scattered hardw oods; floodplain spring creek	depth	NCM
01/05/15	DB1-AG1-DL20	2	8-200	N	7.5YR 6/6	sandy loam		0-110 shoveltest; 110-200 4inch auger; holly; privet; scattered hardw oods; floodplain spring creek	depth	1 pc. Of modern glass, clear-30-40cm
01/05/15	DB1-AG1-DL21	1	0-10	N	10YR 4/2	sandy loam		greenbriar understory; 0% gsv; leaf litter; dead fall; Hardw oods; Humic level	depth	NCM
01/05/15	DB1-AG1-DL21	2	0-200	N	10YR 6/8	sandy loam		greenbriar understory; 0% gsv; leaf litter; dead fall; Hardw oods; sterile sand	depth	NCM
01/05/15	DB1-AG1-DL22	1	0-12	N	10YR 5/2	sandy loam		shoveltest 0-100cm; Auger 100-210cm; vegetation and landform is holly, hardw oods, and upland floodplain	depth	NCM

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
01/05/15	DB1-AG1-DL22	2	12-210	N	7.5YR 6/6	sandy loam		shoveltest 0-100cm; Auger 100-210cm; vegetation and landform is holly, hardw oods, and upland floodplain	depth	NCM
01/05/15	DB1-AG1-DL23	1	0-10	N	10YR 4/1	sandy loam		humic level; thick Roots	depth	NCM
01/05/15	DB1-AG1-DL23	2	10-200	N	10YR 6/8	sandy loam		Sand; sterile and deep	depth	NCM
01/05/15	DB1-AG1-DL24	1	0-20	N	10YR 6/2	sandy loam		shoveltest 0-110cm; Auger 110-200; vegetation and landform is holly, hardw oods, and upland floodplain	depth	NCM
01/05/15	DB1-AG1-DL24	2	20-170	P	7.5YR 6/6	sandy loam		shoveltest 0-110cm; Auger 110-200; vegetation and landform is holly, hardw oods, and upland floodplain	depth	20-30cm: 1 shard amber bottle glass; 30-40cm: 1 shard green bottle glass; 180-200cm: 2 biface thinning flakes, chert
01/05/15	DB1-AG1-DL24	3	170-200	P	7.5YR 7/4	sandy loam		shoveltest 0-110cm; Auger 110-200; vegetation and landform is holly, hardw oods, and upland floodplain	depth	
01/05/15	DB1-AG1-DL25	1	0-20	N	10YR 5/2	sandy loam		shoveltest: 0-100cm; Augertest: 100-210cm; vegetation and landform is holly, hardw oods, and upland floodplain	depth	2 pcs of modern glass at 10-20cm

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Artifacts Termination
01/05/15	DB1-AG1-DL25	2	20-150	N	7.5YR 6/6	sandy loam		shoveltest: 0-100cm; Augertest: 100-210cm; vegetation and landformis holly, hardw oods, and upland floodplain	depth
01/05/15	DB1-AG1-DL25	3	150-210	N	7.5YR 7/4 w/ 5% faint 7.5YR 5/6	sandy loam		shoveltest: 0-100cm; Augertest: 100-210cm; vegetation and landformis holly, hardw oods, and upland floodplain	depth
01/05/15	DB1-AG1-DL26	1	0-10	N	10YR 4/1	sandy loam		humic; thick roots	depth
01/05/15	DB1-AG1-DL26	2	10-170	N	10YR 6/8	sandy loam		intact sterile sand	depth
01/05/15	DB1-AG1-DL26	3	170-200	N	10YR 7/4	fine sand		fine sand; deep	depth
01/05/15	DB1-AG1-DL27	1	0-10	N	10YR 4/1	sandy loam		Humic level	depth
01/05/15	DB1-AG1-DL27	2	10-190	N	10YR 6/6	sand		intact sterile sand	depth
01/05/15	DB1-AG1-DL27	3	190-210	N	10YR 6/6 w/ 7.5YR 5/8	sand with loam mottling		mottling is 50/50 clay loam is starting	depth
01/05/15	DB1-AG1-DL28	1	0-18	N	10YR 5/2	sandy loam		holly, privet; scattered hardw oods; low; flat terrain; close to spring creek	depth
01/05/15	DB1-AG1-DL28	2	18-110	N	7.5YR 6/6	sandy loam		holly, privet; scattered hardw oods; low; flat terrain; close to spring creek	depth

Date	Shovel Test	Level	Depth (cmbs)	P/N	Munsell	Soil Texture	Inclusions	Comments	Reason for Termination	Artifacts
01/05/15	DB1- AG1- DL28	3	110- 200	N	7.5YR 7/4 w/5-15% 7.5YR 5/6	sandy loam		mottles increase with depth; moisture content increases with depth	depth	

APPENDIX B

Selected Artifact Photos from 41MQ326



Tertiary flakes from 41MQ326.



Historic glass fragments from 41MQ326.

APPENDIX C

Historic Chain of Title Report for Site 41MQ326

HISTORICAL OWNERSHIP REPORT

Legal Description:	See Attached
Subject Parcel Number:	R156613

Date	Document Type	Grantor	Grantee	Parcel/ Legal	Document Number
12/09/1997	Warranty Deed	Pat Drawhorn & wf. Leona Drawhorn	Mark Drawhorn & wf. Penny Drawhorn	Lots 7-9	9780732
07/13/1984	Warranty Deed	Otis N. Garner, Trustee	Pat Drawhorn	Lots 7-9	9417709
10/30/1959	Warranty Deed	H. F. Taylor, Trustee	Otis N. Garner, Trustee	77.75 acres	473/152 DR
10/30/1958	Warranty Deed	Otis N. Garner	H. F. Taylor, Trustee	77.75 acres	454/591 DR
01/31/1958	Warranty Deed	Luke Tinerella & wf. Catherine Tinerella	Otis N. Garner	103.6 acres	443/469 DR
03/15/1947	Warranty Deed	Roy F. Irvine	Luke Tinerella & wf. Catherine Tinerella	103.6 acres	265/410 DR
12/18/1917	Warranty Deed	G. W. Brautigam & Fred Brautigam, Jr.	Roy F. Irvine	103.6 acres	118/387 DR

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www.banksenvdata.com

CHAIN OF TITLE REPORT	
ES- 118735	January 22, 2016



Legal Description:	See Attached
Subject Parcel Number:	R156617

Date	Document Type	Grantor	Grantee	Parcel/ Legal	Document Number
01/28/2011	Warranty Deed	David Gibson & wf. Barbara Gibson	Scherry Grimm & Dava E. James	Lots 10-12	2011009703
02/11/1977	Warranty Deed	Otis N. Garner, Trustee	Barbara Jane Gibson	Lot 10	1051/730 DR
08/02/1971	Warranty Deed	Otis N. Garner, Trustee	Barbara Jane Gibson	Lots 11 & 12	760/758 DR
10/30/1959	Warranty Deed	H. F. Taylor, Trustee	Otis N. Garner, Trustee	77.75 acres	473/152 DR
10/30/1958	Warranty Deed	Otis N. Garner	H. F. Taylor, Trustee	77.75 acres	454/591 DR
01/31/1958	Warranty Deed	Luke Tinerella & wf. Catherine Tinerella	Otis N. Garner	103.6 acres	443/469 DR
03/15/1947	Warranty Deed	Roy F. Irvine	Luke Tinerella & wf. Catherine Tinerella	103.6 acres	265/410 DR
12/18/1917	Warranty Deed	G. W. Brautigam & Fred Brautigam, Jr.	Roy F. Irvine	103.6 acres	118/387 DR

CHAIN OF TITLE REPORT	
ES-118735	January 22, 2016



Legal Description:	See Attached
Subject Parcel Number:	R156619 & R264674

Date	Document Type	Grantor	Grantee	Parcel/ Legal	Document Number
02/27/2006	Warranty Deed	Estate of James Alfred Bohannon, Sr., dec'd.	Edwin Levoi Bohannon, James Alfred Bohannon, Jr. & Mary Lou Bohannon Niquette	0.915 acre out of Lot 13 R156619	2006019744
06/12/1996	Warranty Deed	James A. Bohannon	Montgomery County	Lot 13, less 0.915 acre R264674	9642369
04/01/1964	Warranty Deed	Otis N. Garner, Trustee	James A. Bohannon & wf. Romona Bohannon	Lot 13	563/28 DR
10/30/1959	Warranty Deed	H. F. Taylor, Trustee	Otis N. Garner, Trustee	77.75 acres	473/152 DR
10/30/1958	Warranty Deed	Otis N. Garner	H. F. Taylor, Trustee	77.75 acres	454/591 DR
01/31/1958	Warranty Deed	Luke Tinerella & wf. Catherine Tinerella	Otis N. Garner	103.6 acres	443/469 DR
03/15/1947	Warranty Deed	Roy F. Irvine	Luke Tinerella & wf. Catherine Tinerella	103.6 acres	265/410 DR
12/18/1917	Warranty Deed	G. W. Brautigam & Fred Brautigam, Jr.	Roy F. Irvine	103.6 acres	118/387 DR

CHAIN OF TITLE REPORT	
ES-118735	January 22, 2016



Legal Description:	See Attached
Subject Parcel Number:	R156620

Date	Document Type	Grantor	Grantee	Parcel/ Legal	Document Number
09/27/2005	Warranty Deed	Richard A. Myers	Poarch/Swinbank Limited Partnership	Lot 14	2005108558
01/22/1973	Warranty Deed	Administrator of Veterans' Affairs	Richard A. Myers	Lot 14	802/531 DR
10/26/1972	Warranty Deed	Security Savings & Loan Association	Administrator of Veterans' Affairs	Lot 14	792/602 DR
09/05/1972	Trustee's Deed	Jimmy Arland Minter & wf. LaVerne Minter, by Trustee	Security Savings & Loan Association	Lot 14	787/526 DR
08/27/1970	Warranty Deed	Richard S. Irwin & wf. JoAnn Irwin	Jimmy Arland Minter & wf. LaVerne Minter	Lot 14	718/424 DR
03/16/1967	Warranty Deed	Paul Stonesifer & wf. Agnes Estelle Stonesifer	Richard S. Irwin & wf. JoAnn Irwin	Lot 14	634/842 DR
10/13/1966	Warranty Deed	Otis N. Garner, Trustee	Paul Stonesifer & wf. Agnes Estelle Stonesifer	Lot 14	627/729 DR
10/30/1959	Warranty Deed	H. F. Taylor, Trustee	Otis N. Garner, Trustee	Lot 14	473/152 DR
10/30/1958	Warranty Deed	Otis N. Garner	H. F. Taylor, Trustee	77.75 acres	454/591 DR
01/31/1958	Warranty Deed	Luke Tinerella & wf. Catherine Tinerella	Otis N. Garner	103.6 acres	443/469 DR
03/15/1947	Warranty Deed	Roy F. Irvine	Luke Tinerella & wf. Catherine Tinerella	103.6 acres	265/410 DR
12/18/1917	Warranty Deed	G. W. Brautigam & Fred Brautigam, Jr.	Roy F. Irvine	103.6 acres	118/387 DR

CHAIN OF TITLE REPORT	
ES-118735	January 22, 2016



Legal Description:	See Attached
Subject Parcel Number:	R286986

Date	Document Type	Grantor	Grantee	Parcel/ Legal	Document Number
11/15/2000	Warranty Deed	Kenneth D. Rickett	Poarch/Swinback Limited Partnership	117.751 acres	2000097786
10/17/2000	Warranty Deed	Dr. Michael Edmond Lieppman, Trustee	Kenneth D. Rickett	123.783 acres	2000091186
05/31/1993	Warranty Deed	Estate of Jack E. Lieppman, dec'd.	Dr. Michael Edmond Lieppman, Trustee	77.75 acres & 43.84 acres	9357117
12/18/1961	Warranty Deed	Freda Rudel Johlke, et al	J. E. Lieppman	43.84 acres	515/288 DR
12/05/1959	Warranty Deed	Otis N. Garner, Trustee	J. E. Lieppman	77.75 acres	474/83 DR
11/04/1959	Warranty Deed	Estate of Otto Rudel, dec'd.	Freda Rudel Johlke, et al	50 acres	478/362 DR
10/30/1959	Warranty Deed	H. F. Taylor, Trustee	Otis N. Garner, Trustee	77.75 acres	473/152 DR
10/30/1958	Warranty Deed	Otis N. Garner	H. F. Taylor, Trustee	77.75 acres	454/591 DR
01/31/1958	Warranty Deed	Luke Tinerella & wf. Catherine Tinerella	Otis N. Garner	103.6 acres	443/469 DR
03/15/1947	Warranty Deed	Roy F. Irvine	Luke Tinerella & wf. Catherine Tinerella	103.6 acres	265/410 DR
12/18/1917	Warranty Deed	G. W. Brautigam & Fred Brautigam, Jr.	Roy F. Irvine	103.6 acres	118/387 DR
02/13/1909	Warranty Deed	Christian Rudel	Otto Rudel	50 acres	27/200 DR