



INDEX OF TEXAS ARCHAEOLOGY

Open Access Gray Literature from the Lone Star State

Volume 2016

Article 155

2016

Cultural Resources Surveys Conducted During February 2016 Central Eagle Ford Zone De Witt, Gonzales, Karnes, Lavaca, and Wilson Counties

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Cultural Resources Surveys Conducted During February 2016 Central Eagle Ford Zone De Witt, Gonzales, Karnes, Lavaca, and Wilson Counties

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**CULTURAL RESOURCES SURVEYS CONDUCTED DURING FEBRUARY 2016
CENTRAL EAGLE FORD ZONE
DE WITT, GONZALES, KARNES, LAVACA, AND WILSON COUNTIES**

Authors:

Phil Schoch, Reign Clark, and Ron Ralph

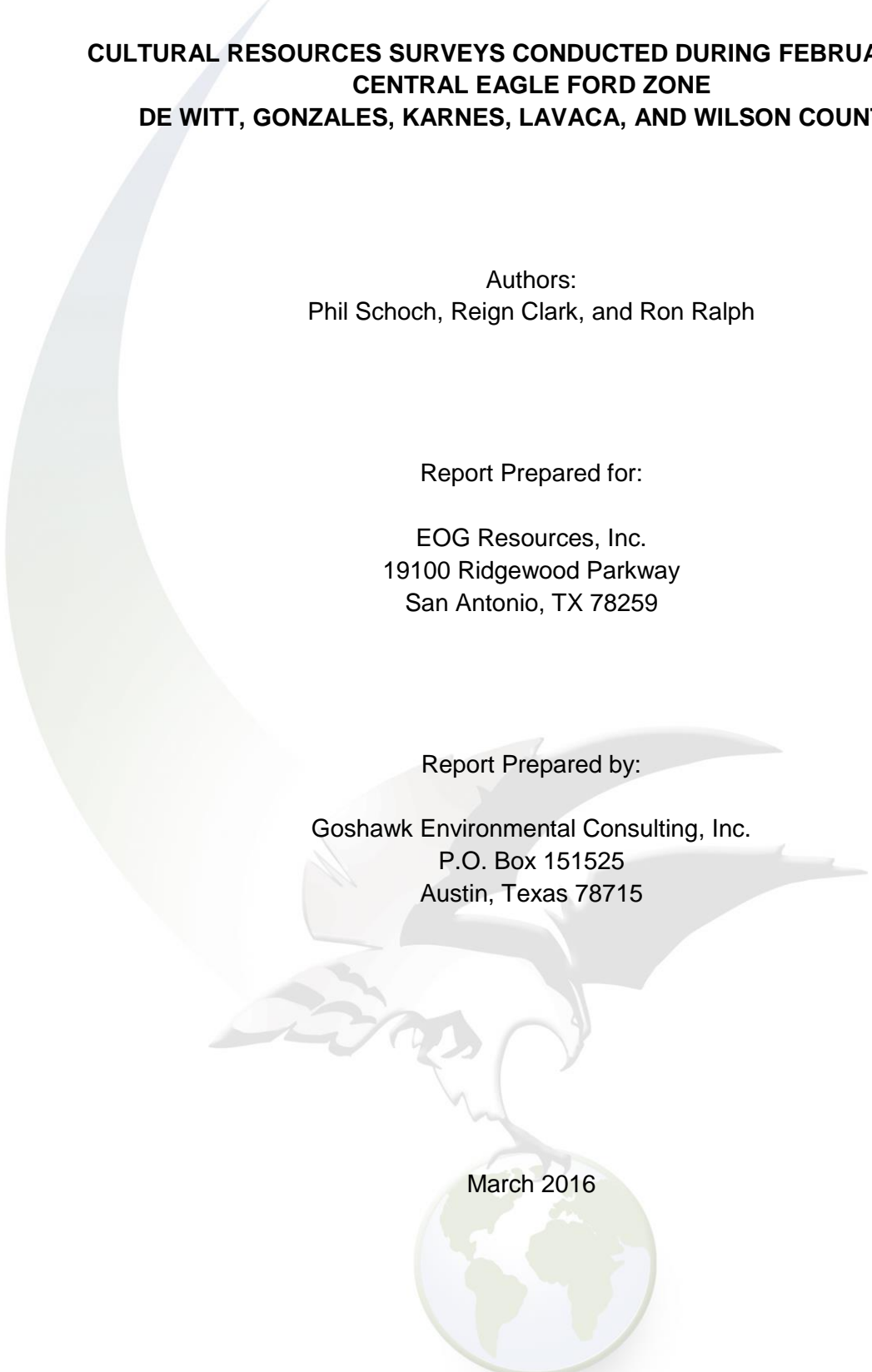
Report Prepared for:

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March 2016



MANAGEMENT SUMMARY

During February 2016, Goshawk Environmental Consulting, Inc. (Goshawk) conducted one cultural resources survey within the Eagle Ford Play, Central Eagle Ford Zone at the request of EOG Resources, Inc. (EOG). The project subjected to cultural resources investigation was the proposed Denali Unit #101H Access Road right-of-way (ROW). The Area of Potential Effect (APE) for the project was a 75-foot (23-meter [m]) wide ROW, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement. The investigation was conducted by Goshawk archeologist Phil Schoch with Bear Aspra. Phil Schoch served as primary author and Reign Clark and Ron Ralph served as contributing authors for this report of investigation.

The cultural resources survey was performed according to Council of Texas Archeologists survey standards; in compliance with the Texas Historical Commission's (THC) Rules of Practice and Procedure, Chapter 26, Section 27; and under the general guidelines of the Register of Professional Archaeologists. Site files on the THC's Archeological Sites Atlas website database were consulted prior to the commencement of the field effort for previously recorded site locations; references to previous archeological surveys undertaken; and place names of interest in the vicinity of the proposed projects.

Streams potentially under the United States Army Corps of Engineers (USACE) jurisdiction that cross the APE were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources survey. As per the established procedure of due diligence, any segment of an APE that falls within an area potentially under federal jurisdiction, or any portion of an APE that falls within a 328-foot (100-m) radius of a known cultural site, would be subjected to a cultural resources survey. Any segment of an APE to be surveyed under this protocol was labeled as a "review area".

Four shovel tests were placed within the established review area during the cultural resources survey. Shovel testing and surface survey did not identify any significant cultural deposits within the survey area. Based on these results, it is Goshawk's opinion that no cultural resources will be impacted by construction within the surveyed portion of the ROW. Goshawk recommends that the project be allowed to proceed as planned, with the caveat that construction be limited to the surveyed ROW. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the USACE and an archeologist should be notified.



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1.0 INTRODUCTION

During February 2016, Goshawk Environmental Consulting, Inc. (Goshawk) conducted one cultural resources survey within the Eagle Ford Play, Central Eagle Ford Zone at the request of EOG Resources, Inc. (EOG). The Central Eagle Ford Zone includes portions of Bee, De Witt, Goliad, Gonzales, Karnes, Lavaca, and Wilson Counties (Figure 1-1). The project subjected to cultural resources investigation was the proposed Denali Unit #101H Access Road right-of-way (ROW) (Figure 1-2). The Area of Potential Effect (APE) for this project was a 75-foot (23-meter [m]) wide ROW, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement.

2.0 ENVIRONMENTAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

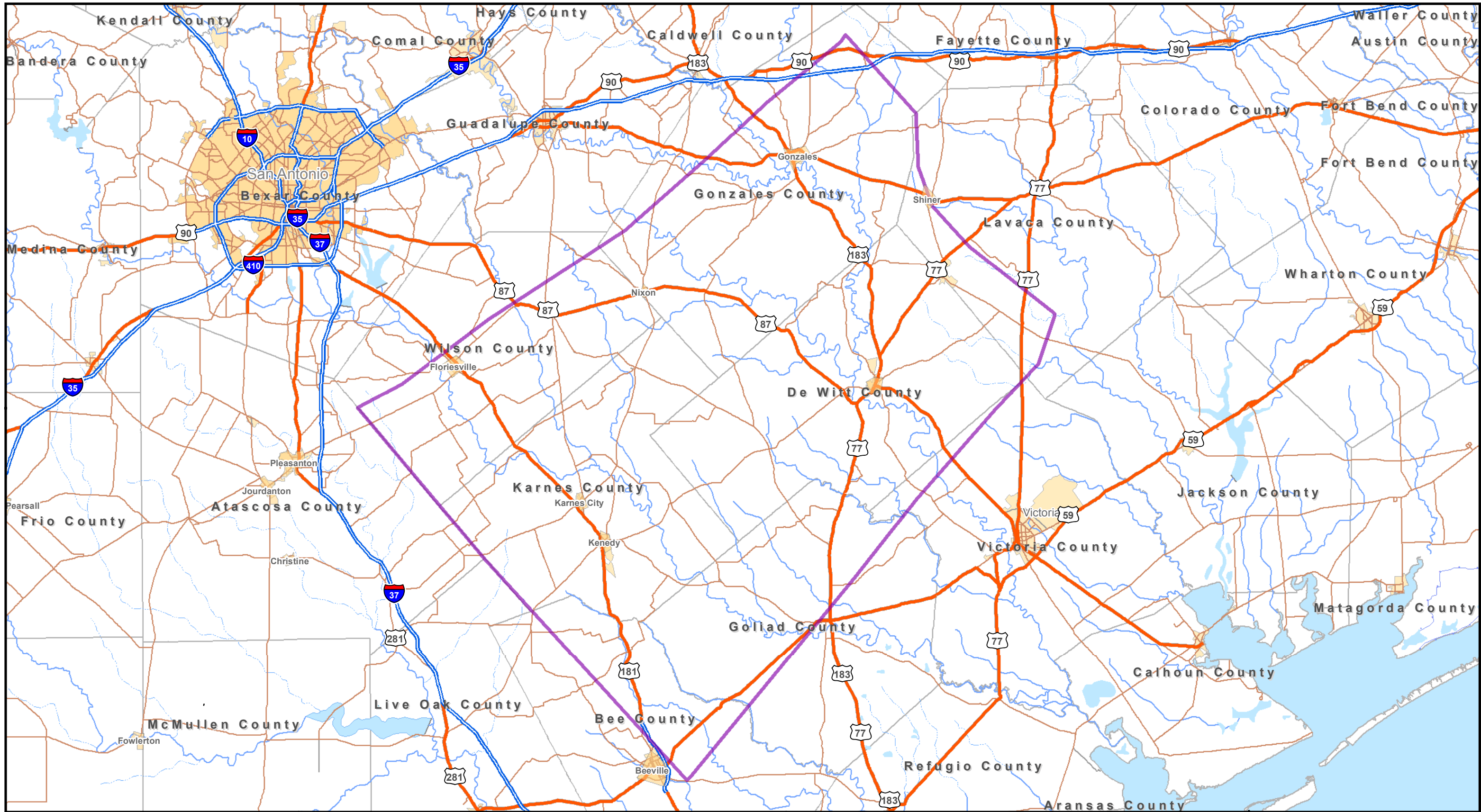
The Eagle Ford Shale Region covers a large portion of south and southeast Texas, totaling approximately 22,000 miles² (35,406 kilometers² [km²]). This region of Texas can be broken down into zones reflecting biologic, geologic, physiographic, and cultural diversity within the Eagle Ford Shale. The Central Eagle Ford Zone is an area characteristic of the Texan Biotic Province (Blair 1950); a transitional vegetative zone between northern hardwoods and the southern scrubland. The Texan Biotic Province is a broad ecotonal area between the forested regions of eastern Texas, and the grasslands of western and northern Texas. This region is characterized by a series of gently rolling uplands, and is dissected by few streams and minor tributaries. As such, riparian areas are somewhat common.

The Central Eagle Ford Zone extends south and southeast from San Antonio to the south Karnes County line. The zone extends northeastward to central Lavaca County and northwest to northern Gonzales County (See Figure 1-1). This area is crisscrossed by two major rivers: the San Antonio and the Atascosa. The San Antonio River crosses the Central Eagle Ford Zone on a west to east axis. Major creeks, including the Cibolo, Escondido, and Ecleto Creeks, flow in to the San Antonio River, which connects with the Guadalupe River before it empties into the Gulf of Mexico. The Atascosa River is fed by numerous named creeks and their tributaries, which are dry for most of the year. The Atascosa River traverses the zone on a roughly north to south axis, and joins with the Frio River north of Three Rivers, Texas. The Frio River then empties into the Nueces River south of town.

2.1 LAND USE

Currently, cattle ranching, crop cultivation, oil and gas field development, and lease hunting are the most common land practices within the Central Eagle Ford Zone. Many of the land practices lead to clearing omnipresent invasive thorn brush so development can proceed. The persistent problem of invading brush and cacti is often addressed by “chaining”, whereby a heavy chain is dragged across the landscape by bulldozers, uprooting unwanted brush. Additionally, large senderos are often cut to facilitate wildlife management and seismic surveys. Root plowing, using a large tracked bulldozer and a dragging blade, is also used to clear brush. All clearing methods are disruptive to archeological sites. Poor soil conservation practices have resulted in the depletion of top soil, exposing clay pans across some areas.





Source: ESRI, Maps & Data 10.2, 2013, EIA, 2011

Projection: NAD 1983 UTM 14N

0 5 10 20 30 Kilometers

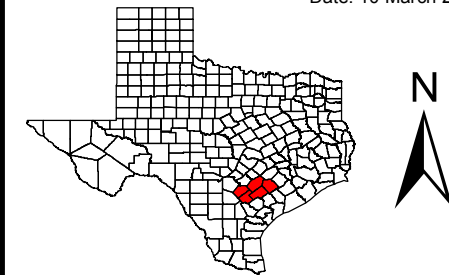
0 2.5 5 10 15 20 Miles

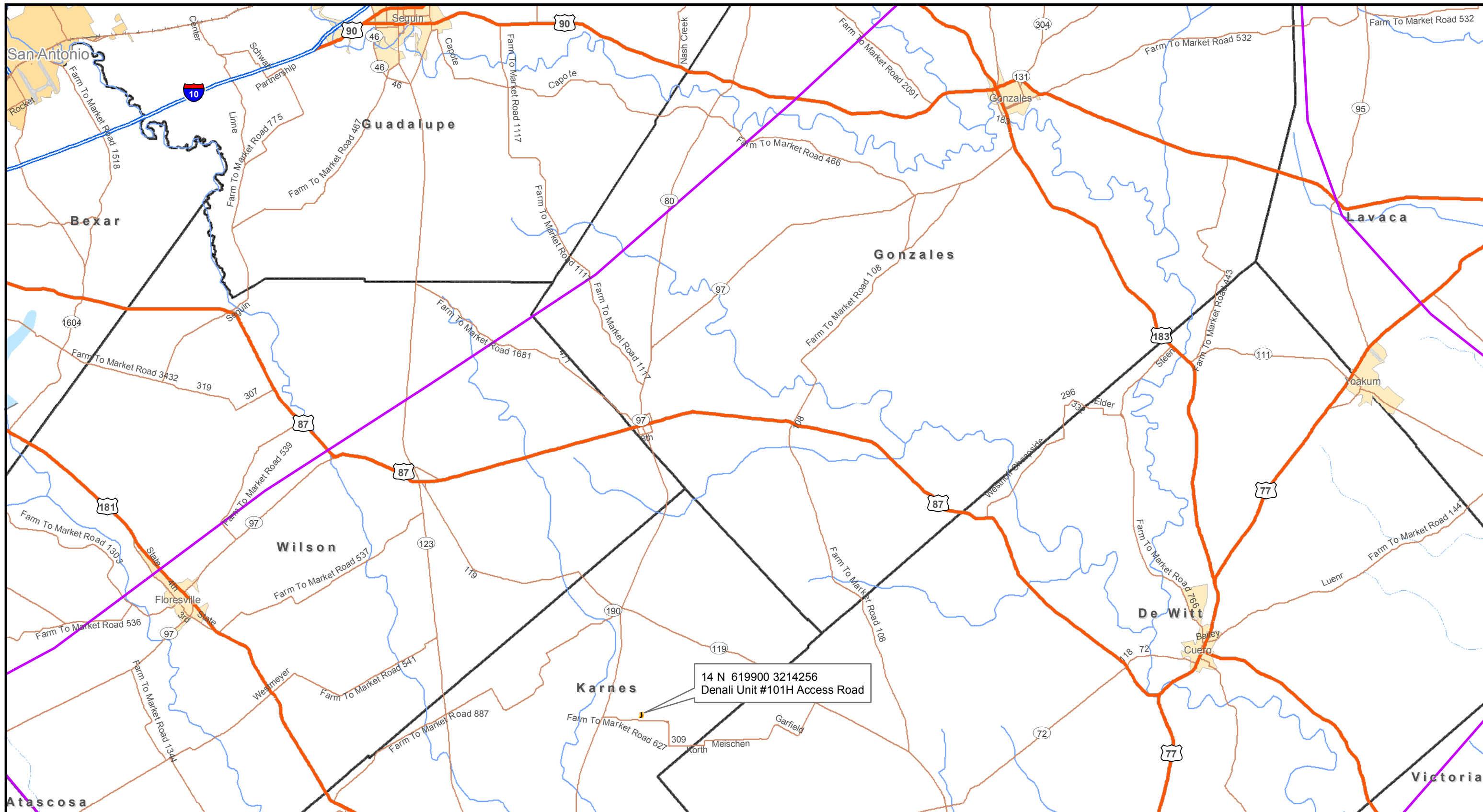
Figure 1-1
Vicinity Map

 Central Eagle Ford Zone Perimeter

Date: 10 March 2016

Central Eagle Ford Zone





Source: ESRI, Maps & Data 10.2, 2013
 Projection: NAD 1983 UTM 14N

0 2 4 8 Kilometers
 0 1.25 2.5 5 Miles

Figure 1-2
 Project Location
 Karnes County, Texas

Central Eagle Ford Zone

Central Eagle Ford Zone
 Proposed Access Road

Date: 10 March 2016

The number of higher-energy streams and increased rainfall totals, over the majority of south Texas, provides a greater opportunity for archeological sites to be capped by alluvial or colluvial processes. Many depositional soil types, present along the rivers and major creeks within the Texan Biotic Province, contain temporally stratified deposits and a higher probability for the presence of significant prehistoric sites. The top soils on upland terrain have been continually cleared of native vegetation. Many of the soils originally mapped in these areas by the Natural Resources Conservation Service (NRCS) possessed pronounced A-horizons. These soils no longer exhibit the characteristics of their pedogenic description. Robust chert gravel outcrop exposures are common across the uplands, while alluvium blankets many areas along creeks.

2.2 GEOLOGY AND PHYSIOGRAPHY

The Central Eagle Ford Zone is one of the most geologically diverse areas of Texas, containing at least 21 mapped geologic formations. Some of the major geologic formations, across the southern portion of the region, include the Catahoula Formation, Oakville Sandstone, and Willis Formation (Texas Water Development Board [TWDB] 1979).

The Catahoula Formation varies in elevation from 100 to 200 feet (30 to 61 m) above mean sea level (AMSL). Soils on the Catahoula Formation tend to be light-colored, with tuffaceous sands and bentonitic clays; however, some areas also have local concentrations of calcareous material. The Oakville Sandstone overlays the Catahoula Formation, and dates to the Miocene (TWDB 1979). This formation is a mixture of fine to medium grained sand and sandstone, with ashy, sandy, and bentonitic clays (Griffin 2006). In addition, the Oakville Sandstone contains gravel beds comprised of Austin Chalk and fossils, as well as gravels typically found on high ridges.

The Willis Formation dates to the Pliocene (Griffin 2006, TWDB 1979), and is expressed as relict, high-gravel deposits near major streams and along the edges of interfluves. Soils typically contain fluvial chert, sand, silt, and clay from the Edwards Group strata. The chert outcrops would have been of interest to native peoples as they offered easy access to lithic material.

Numerous geologic formations are banded close together, in a northeast to southwest orientation, across the northern portion of the Central Eagle Ford Zone. The major formations include the Cook Mountain Formation, Yegua Formation, Caddell Formation, and Manning Formation. The Catahoula and Oakville Formations extend into this area as well.

The Cook Mountain Formation consists of clay and sandstone. Marine fossils are common in the 200 to 230 foot (61 to 70 m) thick Eocene formation. The Yegua Formation is an Eocene age deposit of sandstone and clay that forms terraces. The sandstone is composed of mostly quartz with some chert, and is fine-grained and indurated to friable with a cross-bedded structure. It is calcareous with a thickness of 400 to 1,050 feet (122 to 320 m).

The Caddell Formation consists of siltstone, clay, and sandstone. The 50 to 100 foot (15 to 30 m) thick Eocene formation is locally fossiliferous. The Manning Formation consists of clay, sandstone, and Plum Bentonite. This chert-like material is indurated, waxy, and expresses conchoidal fractures. Fossil wood, clay beds, and lignite deposits are common in the 250 to 350 foot (76 to 107 m) thick



Eocene formation. Both the Manning Formation and the fossil wood surface gravels would have been of interest to prehistoric populations.

Lesser formations in the area include the Reklaw Formation, Weches Formation, Fleming Formation, Wellborn Formation, and Whitsett Formation. Three separate bands of sand formations are also present and include the Carrizo Sands, Sparta Sands, and Queen City Sands.

Fluviatile terrace deposits and fluvial sediments are mapped in the vicinity of larger creeks and rivers throughout the Central Eagle Ford Zone. The fluviatile terrace deposits of Pleistocene age are remnants of ancient floodplains. During the Pleistocene, streams flowed between 25 and 50 feet (8 and 15 m) higher than at the present time. These terraces are located above the Holocene-aged alluvial deposits. Later Holocene-aged fluvial sediments are deposited through alluvial deposition on floodplains, levees, and lower terraces within flood zones (Griffin 2006). Many of the major waterways in the region have fairly broad floodplains, and are indicative of greater water depths and volumes earlier in the Holocene. The Guadalupe River in particular has a floodplain between 2 and 5 miles (3.2 and 8 km) wide in places. Quaternary floodplain deposits consist of gravel, sand, clay, silt, and organic material. These recent gravel deposits sometimes provided raw material for prehistoric peoples in search of tool-making stone.

2.3 PROJECT AREA SOILS

The Web Soil Survey of the NRCS (NRCS 2016), the De Witt County Soil Survey (Miller 1978), the Gonzales County Soil Survey (Griffin 2006), the Karnes County Soil Survey (Molina 1999), and the Wilson County Soil Survey (Taylor 1977) were consulted for this project. Soils generally encountered within the review area consisted of clay, clay loam, and sandy loam along benches and terraces adjacent to smaller streams. Very deep sandy alluvium is sometimes found along the banks of the larger rivers crossing this zone. In situ clay soils are commonly found on the wider floodplains of named creeks. Occasionally, expansive outcrops of chert gravels and cobbles are found on eroded uplands and shoulder slopes; which, prehistoric native groups used as raw material quarries for tool-making. These outcrops are most common on high uplands along the Guadalupe River.

2.4 FLORA AND FAUNA

The native tree species, within the Central Eagle Ford Zone, include mesquite, huisache, pecan, live oak, Texas wild olive, and Texas persimmon. Common shrubs and succulents in the region include prickly pear, fiddlewood, desert yaupon, agave, yucca, and autumn sage. Native grass species include sideoats grama, slender grama, buffalo grass, inland sea-oats, plains lovegrass, and little bluestem (Gould 1978; Texas Parks and Wildlife Department [TPWD] 2016a). The rainfall totals in the Texan Biotic Province are barely in excess of water need (Blair 1950). Traditionally, clayey soils supported vast grasslands; however, recent land management practices have decimated native grass areas. Alluvial soils support trees such as hackberry, pecan, and a variety of oaks, among other hardwoods along major drainage ways.

There are at least 61 mammal species, 57 reptile species, and 22 amphibian species within the Central Eagle Ford Zone (Schmidly 2004). Common small mammals in the region include several species of rats, mice, and bats; the Texas pocket gopher; the eastern mole; the eastern cottontail



rabbit; and the Mexican ground squirrel (Blair 1950). Medium to large mammals include white-tailed deer, American hog-nosed skunk, and armadillo. The Mexican opossum is another mammalian species and the only marsupial located in the ecoregion. Rare or extinct mammalian species in the area include ocelot, jaguar, javelina, bison, and jaguarondi (TPWD 2016b).

Reptile species within the region include the western box turtle, Texas banded gecko, Texas spiny lizard, red racer, western diamondback rattlesnake, and diamond-backed water snake (Blair 1950, TPWD 2016a). Rare reptilian species include the Texas tortoise, indigo snake, and Texas horned lizard (TPWD 2016b). Despite the drier climate within the Tamaulipan province, the region is host to three species of urodeles (salamanders and newts) and 18 species of anurans (frogs and toads) (Blair 1950; Davis 1978). The dominant bird species near the APE include Raptors, songbirds, doves, gulls, and terns (Bryan et al. 2006). The rare Cactus Ferruginous pygmy-owl is also occasionally found within the ecoregion (TPWD 2016a, TPWD 2016b).

2.5 CLIMATE

The Central Eagle Ford Zone exhibits a subtropical, mild climate. Average temperatures range from a high of 96.8 degrees Fahrenheit in August; a low of 63.7 degrees Fahrenheit in January; and a yearly average of 81.9 degrees Fahrenheit. Temperatures can reach as high as 104 degrees Fahrenheit or drop as low as 15 degrees Fahrenheit. Average rainfall is approximately 29 inches (74 centimeters [cm]) per annum. The greatest amount of rainfall occurs during May, June, September, and October and averages 3.5 inches (8.9 cm) per month. The growing season ranges between 222 days and 351 days in duration.

3.0 CULTURAL CONTEXT OF THE CENTRAL EAGLE FORD ZONE

The Central Eagle Ford Zone is located in the South Texas Archeological Region where nomadic hunter-gatherer groups migrated seasonally, following resources and sharing cultural traits with other groups. This is evident in the dispersal of point types and ceramic styles across the region (Prewitt 1995). Open camps are the most common type of archeological site found in the South Texas Archeological Region. Open camps can be shallow or deeply buried; are often adjacent to streams; and usually contain clustered archeological material such as burned rocks, lithic debris, hearths, or middens. Bone and shell are less common in the assemblages, as organics rarely survive due to the alkaline nature of the soils.

Notable work in South Texas archeological research has been conducted by Fox, et al. (1974), Mallouf, et al. (1977), Mercado, et al. (1996), Hall, et al. (1986), Black (1989), and Hester (1980). However, the lack of intensive investigations, high rate of looting, and levels of erosion that occur throughout South Texas have left barriers to fully understanding and dating the periods of occupation in the area (Perttula 2004).

The following cultural background is divided into several periods in this portion of the state: Paleoindian (9500 to 6000 B.C.), Early Archaic (6000 to 2500 B.C.), Middle Archaic (2500 B.C. to A.D. 400), Late Archaic (A.D. 400 to 700), Late Prehistoric (A.D. 700 to 1750), and Historic (A.D. 1750 to present) (Aten 1983; Perttula 2004; Turner and Hester 1999). Some scholars include



another period, the Protohistoric; however, it will not be included in this survey due to the lack of a useful definition and contextual information available in this region.

3.1 PREHISTORY

3.1.1 *Paleoindian Period (ca. 9500 to 6000 B.C.)*

Recent archeological evidence indicates prehistoric people may have occupied this area prior to the Paleoindian Period. However, the controversial sites that show evidence of an earlier period of habitation have not yet been widely accepted by the archeological community. For this reason, the prehistoric period will begin with the Paleoindian Period.

Beginning around 9500 B.C., the Paleoindian spans over 3,000 years to about 6000 B.C., and is the earliest identified cultural period in the vicinity of the Central Eagle Ford Zone (Ensor and Ricklis 1998). According to some authors, the Paleoindian Period begins approximately 1,200 years earlier (10,700 B.C.) in the South Texas region. It has been postulated that this is most likely due to the earlier habitation of the Paleoindian Clovis peoples coming north from central Mexico (Perttula 2004).

The Paleoindian Period coincides with the decline of the Wisconsinan Glaciation, and is characterized by a relatively cool, moist climate that encouraged the development of now-extinct species of Pleistocene megafauna, such as bison. This period is sometimes called the Big Game Hunting Tradition (Willey 1966), due to a presumed heavy reliance on megafauna as a food source by Paleoindian peoples during the earlier portion of the period. Environmental changes that brought about the extinction or dislocation of megafauna precipitated a shift toward smaller game, creating the transition into the Archaic (Aten 1983:146-148; Willey and Phillips 1958:107).

Temporally diagnostic tool types attributed to this period include a variety of finely chipped, sometimes fluted, lanceolate projectile point styles, such as Clovis, Folsom, Plainview, and Scottsbluff (Meltzer and Bever 1995; Prikryl 1990; Willey 1966). The Paleoindian projectile point types show a transitional change between the earlier Paleoindian points and the Early Archaic. By the late Paleoindian Period, unfluted lanceolate projectile points such as Plainview, Golondrina, and Angostura were more common (Story, et al. 1990).

3.1.2 *Archaic Period (6000 B.C. to A.D. 400)*

Following the close of the Pleistocene, the South Texas region experienced a trend toward a warmer and drier climate. It has been postulated that this climate shift was at least partially responsible for the extinction of megafaunal species. The archeological record of this period exhibits evidence of a gradual diversification in subsistence patterns. This is the beginning of the Archaic, which is divided into three time periods: the Early Archaic (6050 to 2500 B.C.), the Middle Archaic (2500 B.C. to 1000 B.C.), and the Late Archaic (1000 B.C. to A.D. 400) (Perttula 2004; Turner and Hester 1999).

Few Archaic sites are recorded on the Upper Texas Coast (Aten 1983:153; Story 1985:28-29). Story (1985:31–34) suggests site density was low on the coastal plain during this period. Archaic sites, tested or excavated near the modern shoreline, generally consist of shell-bearing sites, with varying degrees of lithic tools and debitage, shell or bone tools, and the bones of fish, mammals, and reptiles (Ambler 1967, 1970, 1973; Aten 1979, 1983; Ensor 1998; Howard et al. 1991). Inland sites tend to



contain more lithic artifacts and debitage with terrestrial mammal bones comprising the bulk of the inland faunal assemblages. Archaic patterns in tool-making for the South Texas region are centered on corner-notching technology and triangular points, moving away from the basal-notching technology.

3.1.2.1 Early Archaic Period (6000 to 2500 B.C.)

Late Paleoindian unfluted, lanceolate projectile points such as Plainview, Golondrina, and Angostura were replaced by un-stemmed triangular points and basal or corner notched points in the Early Archaic (Story et al. 1990). The Early Archaic in the South Texas region is significantly shorter than in other regions due to the onset of specific regional cultural patterns occurring around 2500 B.C. These cultural patterns emphasized un-stemmed dart points and smaller bifacial and unifacial beveled tools (Perttula 2004). Additionally, the archeological record indicates the diet of the people in this area consisted of turtles, snails, and freshwater mussels. Land snails (*Rabdotus* sp.) are often present at prehistoric sites, but there is debate regarding whether the prehistoric peoples were consuming them or if the snails were merely “cleaning up” after the group moved out of the area.

3.1.2.2 Middle Archaic Period (2500 to 1000 B.C.)

The Middle Archaic is more thoroughly represented in the archeological record for the South Texas region than the Early Archaic. During this time period the triangular Tortugas and Abasolo points were developed. In addition, the archeological record shows the development of smaller, unifacial, distally beveled tools that show a high amount of reworking and re-sharpening. Evidence supports that these common tools were used in wood-working (Perttula 2004).

During this period, most open campsites were placed in flood-prone zones along low terraces; and while information concerning their diet is scant, numerous types of fuel materials have been identified including mesquite, acacia, oak, and hackberry (Perttula 2004). There is also significant data concerning treatment of the dead, especially later in the period (Patterson et al. 1998). Cemeteries were commonly used, and most contained grave goods such as points, flakes, cores, and sandstone pieces (Perttula 2004; Hall et al. 1986). One such cemetery, Loma Sandia, is dated to the late Middle Archaic and is located in Live Oak County (Taylor and Highley 1995). With its hundreds of burials and thousands of artifacts, it remains one of the most studied archeological sites in South Texas.

3.1.2.3 Late Archaic Period (1000 B.C. to A.D. 400)

In general, Late Archaic sites in the South Texas Region show a marked increase in site utilization, and a heavy dependence on seasonal base camps. Artifact assemblages suggest a more efficient exploitation of local resources with physical evidence of various maintenance, extractive, and processing tasks were used. Assemblages characterizing these technological activities include a variety of dart point styles, a suite of ground and polished stone tools, and the beginning use of ceramics.

3.1.3 Late Prehistoric Period (A.D. 400 to 1750)

The Late Prehistoric period in the South Texas Region saw a continuation of many of the same cultural and subsistence patterns in place during the Late Archaic (e.g. cemeteries and burned rock



features) with two very significant technological adaptations: a heavier reliance on ceramics by certain groups and the introduction of the bow and arrow (Ensor 1998).

3.2 HISTORIC PERIOD (A.D. 1750 TO PRESENT)

3.2.1 *Historic Native Groups in the Area*

Early Spanish expeditions in Texas afford the primary evidence of the relevant historic Indian tribes in the South Texas Region during the late sixteenth through early eighteenth-centuries. The initial exploration of the Gulf of Mexico and the American Southwest was accomplished by Spanish explorers Alonso Alvarez Piñeda (1519) and Alvar Nunez Cabeza de Vaca (1528). Following Piñeda's initial maritime effort to map the Gulf Coast, the earliest exploration of the South Texas Region was accomplished by de Vaca, who shipwrecked in the Gulf of Mexico in 1528 along with other members of an expedition led by Pánfilo de Narváez (Weddle 1985).

De Vaca's account served as the basis upon which subsequent explorations of the region were conducted by Hernando de Soto (1539) and Luis de Moscoso (1542). By 1561, Spain was facing increasing difficulties in maintaining its few colonies in Florida. The relatively poor economic prospects for these colonies and increasing competition from other colonial powers quelled the Spanish Crown's interest in colonizing their Florida territories, which included Texas. As a result, the Texas Gulf Coast remained relatively uninhabited by Europeans for the next two centuries until the threat of increased French exploration stimulated the Spanish government to establish more permanent settlements in the area (Weddle 1991). In 1685, René Robert Cavelier and Sieur de la Salle established Fort St. Louis along the Gulf Coast (Gilmore 1984, Tunnel and Ambler 1967). However, by late 1688 or early 1689, Fort St. Louis was no longer in use due to disease, starvation, and Indian attacks (Bruseth and Turner 2005).

Spanish expeditions to the South Texas Region include the 1689 expedition of Governor Alonso de León; the 1691 to 1692 expedition of Governor Domingo Terán de los Ríos; the Espinosa-Olivares-Aguirre expedition of 1709; Ramón's expedition of 1716; Alarcón's expedition of 1718; and Rivera's inspection tour of 1727 (Campbell 1983; Foster 1995). The Indians encountered during those journeys included indigenous Sanan speakers and displaced and migrating tribes from well outside the region. These include the Jumano of west Texas, the Wichita-speaking Yojuane of north central Oklahoma, and the Simaomo and Tusonibi of northeastern Mexico (Campbell 1979). According to Chapa, an early historian who documented the annihilation of over 160 groups during the 1600s, many other tribes were decimated by European disease in Coahuila and Nueva Leon (Foster 2008:108).

3.2.2 *Anglo Settlement*

After Spain recognized Mexico's independence in the early nineteenth century, the first land grants were issued by the Mexican government to encourage foreign settlement. Two empresario land grants went to Stephen F. Austin and Green C. DeWitt. It wasn't originally Stephen F. Austin's desire, but that of his father's, Moses Austin, to become an empresario in Spanish Texas. In 1820, Moses had been in negotiations with Governor Antonio María Martínez when he offered a proposal to bring 300 colonial families to Texas. His offer was flatly rejected, due to omissions reflecting little understanding of Spanish colonial law. Moses returned with the Baron de Bastrop, second alcalde



of Bexar, and a revised proposal (Moore 2014). With the Baron's help, Moses was granted permission to begin colonization of Texas, but died before a single colonist was brought to Texas from the east.

Moses' dream of colonization would come to fruition under his son, Stephen Fuller Austin. In December of 1821, Austin began bringing the first families to settle on the Austin land grants. For each married head of household, a grant comprised of one league (4,428 acres) and one labor (177 acres) of land would be issued. Unmarried males were eligible for a single land grant of one-third league (1,476 acres). While grant selection began in late 1821, actual titles were not issued by Mexican authority until mid-summer 1824. Austin would be awarded two additional large empresario grants, expanding his colony along the Brazos, Colorado, and Trinity Rivers.

DeWitt was confident a grant would be awarded, and appointed James Kerr to survey his colony and its capitol in January 1825. Kerr and his assistants built cabins near a creek that to this day is called Kerr's Creek. This group became the first Anglo community west of the Colorado River (Baumgartner and Vollentine 2014). In April 1825, empresario Green DeWitt was authorized by the Mexican government to settle 400 families between the Guadalupe and Lavaca Rivers. These pioneers began landing at the mouth of the Lavaca River, which became the site of the Old Station settlement (Roell 2014a) about 6 miles (9.7 km) from the mouth of the Lavaca River. However, the Mexican government refused their request to remain at Old Station and in late 1827, some settlers returned to the original Gonzales townsite surveyed by Kerr (Baumgartner and Vollentine 2014).

A treaty with the Karankawas was negotiated in 1827 and these local settlers enjoyed relative peace. Tonkawa raids were only occasional, and boundary disputes with De León's colony to the south were settled without bloodshed. The only towns in the area were Gonzales and Guadalupe Victoria to the south and Bexar (the seat of government) to the northwest (Roell 2014). Within three years more than 100 families, primarily from Tennessee, Kentucky, Missouri, and other southern states, had arrived to settle in DeWitt's colony (Baumgartner and Vollentine 2014).

Unfortunately, the Mexican government refused to recognize Kerr as the official surveyor, and Byrd Lockhart was appointed in 1831 to resurvey the Gonzales townsite. In 1831, Gonzales colonists (population of 532) convinced the Mexican government to send a canon for protection against Indian raids (Baumgartner and Vollentine 2014). The Mexican government complied by sending a small signal cannon to the settlers. This "fieldpiece" would later be at the center of the beginning of the war with Mexico for Texas Independence.

3.2.3 Texas Revolution and the Runaway Scrape

Mexico continued in the tradition of Spain with regard to the settlement of Texas. Although few Mexican colonies were established by the government, Mexico was increasingly more willing to grant land to Anglo-Americans. The change came as a strategic move to increase settlement in what was to be Texas. The first settlements were along the coastal plain area, where land was fertile and less prone to Indian attacks. Between 1832 and 1835, friction began to occur between the Anglo-American settlers and the Mexican government (Barker and Pohl 2014). To add to the growing tensions, Antonio López de Santa Anna was elected president in 1833 and declared a dictatorship



in 1834 (Callcott 2014). His military force and personal policies encouraged the displacement of the Anglo-American settlers through political action and veiled threats (Barker and Pohl 2014). Tension between Anglo settlers and the Mexican government remained high until 1835 when dissatisfaction with Mexican rule came to a head at Gonzales.

According to the historical monument on Highway 97 West, just south of Gonzales, the first shot of the Texas Revolution was fired on 2 October 1835 from the small cannon that Mexican forces were trying to take back from the colonists. After a short skirmish, Mexican troops withdrew in an attempt to prevent all-out war (Hardin 2014). However, distrust between the Mexican government and Anglo-American settlers in Texas had become so great that instead of preventing war, the Texas Revolution began (Barker and Pohl 2014).

After the Battle of Gonzales, Stephen F. Austin, James Bowie, and James W. Fannin, Jr. led a troop of volunteers toward San Antonio and set up a defensive position along the San Antonio River (Barker and Pohl 2014). Although the Texan army was quite successful at fending off Mexican advances, their lack of organization and discipline created major military problems. Several of the men split off from the main group, and fractured an already small army. It was not until 2 March 1836, at Washington-on-the-Brazos, that a convention voted for Texas independence and Sam Houston was appointed the major general of the Texas fighting force.

Between the Battle of Gonzales and the declaration of independence, Santa Anna decided to deal with the insurgents by treating them as pirates. By labeling the rebels as pirates, Santa Anna was allowed to handle them outside the rules of war and without mercy (Barker and Pohl 2014). Santa Anna began his march to San Antonio early in 1836, amassing an army of 8,000 men. Although Santa Anna met problems related to weather and food, he arrived in San Antonio on 23 February 1836. The Alamo fell after 13 days of siege. All of the defenders were killed with only 30 women, children, and enslaved black survivors left alive. Although the bloody way Santa Anna dealt with the defenders of the Alamo initially instilled fear in the Texans, the events in San Antonio would later become a rallying cry.

At the same time Santa Anna was busy with the Alamo, General José de Urrea was fighting his way toward where Fannin was stationed in Goliad (Barker and Pohl 2014). Although Fannin attempted to escape and move toward Sam Houston's location, his troops were overwhelmed by the Mexican army. After negotiating surrender terms, Fannin and his men were taken back to Goliad and imprisoned. Despite assurances by one of Santa Anna's officers that they would be treated as prisoners of war, Santa Anna felt they should be executed. The sentence was carried out on 27 March 1836, and 342 men, including Fannin, were killed (Davenport and Roell 2014). Because the Mexican army took the prisoners to a field near a tree line for execution, 28 men were able to escape. In addition, another 20 were spared due to their skills as physicians, orderlies, interpreters, or mechanics.

Houston arrived in Gonzales around the time of the Goliad Massacre (Barker and Pohl 2014). There he learned from Susanna Dickinson, a wife of an Alamo defender, of the fall of the Alamo and the advancement of the Mexican army towards Gonzales. He decided to retreat, burning the town to



the ground to prevent the Mexican army from being able to use anything. Houston also sank his cannons in the Guadalupe River since he lacked transport for them. In what was later known as the Runaway Scrape, he and numerous others began to make their escape toward the Colorado River with refugees from south-central Texas (Barker and Pohl 2014, Covington 2014). This flight took Houston and his army through Gonzales, Lavaca, Colorado, Austin, Waller, and Harris Counties (www.latinamericanstudies.org 2014).

Originally, Santa Anna believed that the Alamo and Goliad were proof that the war was over (Barker and Pohl 2014). It was only at the insistence of his officers that Santa Anna decided to pursue the Texan army. However, upon learning the President, David G. Burnet, and his cabinet had fled New Washington for Harrisburg, Santa Anna changed objectives and began pursuing the political party. By the time Santa Anna arrived in Harrisburg, Burnet and his group had fled. Unknown to Santa Anna, he and Houston were both heading toward Lynch's Ferry (near modern-day Lynchburg), where the two armies met in a brief clash on 20 April 1836. Santa Anna decided to pull back and wait for reinforcements despite the fact that his army numbered approximately 13,000 to Houston's 900. Houston launched a surprise attack on 21 April 1836. In a battle that lasted 18 minutes, Houston and his men managed to kill, scatter, and capture Santa Anna's entire army, while only losing nine men. The war was officially over with the two treaties of Velasco that were signed on 14 May 1836 (Barker and Pohl 2014, Barker 1901).

3.2.4 Post Revolution

After the Texas Revolutionary War, Texas remained an independent nation until its annexation into the United States in 1845 (Bauer 2014). Texas's annexation, attempts at purchasing northern California, and continued disputes with Mexico over the border between Texas and Mexico ultimately led to the Mexican-American War in 1846. After several political and subtle military attempts to secure the Rio Grande as the border, President Polk finally ordered General Zachary Taylor and his men to the Rio Grande. Mexico interpreted this as a declaration of war and attacked Taylor's army on 25 April 1846. Polk used the incident to secure a declaration of war from congress, which was given on 13 May 1846.

On 9 March 1847, the United States launched its first large-scale amphibious assaults at Veracruz, Mexico, under Commodore David Conner and General Winfield Scott (Bauer 2014). Scott began the march to Mexico City and received reinforcements in Puebla from Colonel John Coffee Hays, who led a contingency of Texas Rangers. Upon arriving in Mexico City, Scott began attacks on the city and outlying towns. The final assault began on 13 September and ended on 14 September 1847. Although Santa Anna escaped, the Mexican government essentially collapsed.

Due to the lack of government, it was not until February 1848 that a functioning governing body could be formed in Mexico and the Treaty of Guadalupe Hidalgo could be signed. With the end of the Mexican-American War, the United States gained California, Arizona, and New Mexico along with portions of Utah, Nevada, and Colorado. In addition, the Rio Grande was officially established as the Texas-Mexico boundary.



3.2.5 Karnes County

Karnes County was first settled by Europeans around April 1758, when the first land grant was issued to Andrés Hernández and Luis Antonio Menchaca (Long 2014). Fuerte de Santa Cruz del Cibolo was established around 1770, near the settlement to provide protection from attacks by native groups. However, by 1783, the fort had come under repeated Comanche attacks and much of the area was abandoned.

The area gradually grew in population throughout the early nineteenth-century (Long 2014). The first Anglo-American settlers began to arrive in the region, and by 1852, they had established a settlement at Helena, Texas. The town of Helena was founded by Thomas Ruckman and Lewis S. Owings, and was originally the site of a previously abandoned Mexican settlement known as Alamita. Helena's location was a great boon to the settlers as it was located on a bend of the San Antonio River, where the Chihuahua Trail and the wagon road from Gonzales to San Patricio met. The town's location increased the opportunities for trade and growth in the region, and led to Ruckman and Owings petitioning for the creation of a new county. On 4 February 1854, the Texas legislature recognized Karnes County, which was created from portions of Bexar, Gonzales, DeWitt, Goliad, and San Patricio Counties.

The residents of Karnes County focused mainly on livestock ranching before the Civil War (Long 2014). By 1858, tax assessment rolls indicated some 50,000 head of cattle and 2,000 head of horses were present within the county. In addition to livestock ranching, Polish immigrants focused on growing a wide variety of crops, including corn, melons, potatoes, cucumbers, and pumpkins. Agricultural practices changed in the mid-1880s with the arrival of railroads. Farmers and ranchers of the area suddenly had improved access to markets and the farming economy became more diversified. By the turn of the century, the principle crops of the area included cotton, sorghum, and potatoes.

In 1894, the county seat was moved to where the new railroad town of Karnes City was located, and remains the county seat of Karnes County to this day. Agricultural crops continued to change and vary through time. In the 1930s, boll weevils began to appear in the south, causing cotton production to drop. By 1990, approximately 80 percent of the income from Karnes County was from ranching. Agricultural crops increased in variety and included peanuts, peas, broom corn, onions, small grains, guar, and winter legumes.

3.2.5.1 Panna Maria

As previously mentioned, a large Polish population began settling in Texas during the mid-nineteenth-century. The oldest permanent Polish colony in America is located in Karnes County, Texas (Texas Historical Commission [THC] 2016a). Economic, ethnic, and national turmoil in Europe drove Polish immigrants to Texas, pursuing the promise of new beginnings in the United States. A Polish priest, named Father Leopold Moczygemba, ministered in the German community of New Braunfels and throughout central Texas (THC 2016a). There he saw the opportunities available to newly arrived German immigrants, giving him the idea to bring his fellow Polish countrymen to Texas to escape the chaos in Europe.



Over 100 European families journeyed to Texas in 1854 and landed in Galveston, Texas after nine weeks at sea. The families, including 800 women, men, and children, walked over 200 miles (321.9 km) to the present day location of Panna Maria. Today, Panna Maria is still a small community, but many of its residents are decedents of the original settlers. A pride in one's Polish heritage was first fostered among the original settlers and is still evident in the community today.

3.2.5.2 Gillett

The town of Gillett, Texas was first settled in 1869 by Carl Edward Riedel, who built a pioneer dam to power his sawmill, gristmill, and ginning operation (THC 2016b). The following year a steam gin, the first in Karnes County, was installed, as well as a series of barracks to house United States soldiers (THC 2016b). By 1873, a town had emerged and was named Riddleville in honor of its founding pioneer. The name of the town changed to its current name, Gillett, in 1905. Toward the end of the nineteenth-century, the town of Riddleville was one of the five principle population centers in Karnes County (THC 2016a).

3.3 CULTURAL RESOURCES OF THE CENTRAL EAGLE FORD ZONE

Gonzales County currently lists more than 250 recorded archeological sites. According to the THC's Archeological Sites Atlas (Atlas), five sites have been designated as State Antiquities Landmarks (SALs) including, the Leesville Schoolhouse, Fort Waul, Gonzales County Museum and Amphitheater, Gonzales County Jail, and Gonzales County Courthouse. All of the SAL-designated properties are also listed on the National Register of Historic Places (NRHP) with the exception of Fort Waul. There are a total of 9 NRHP-listed sites in Gonzales County. Over 1,200 historic structures, 65 historic cemeteries, and 128 historical markers have been added to the database for Gonzales County through neighborhood surveys (THC 2016b).

De Witt County currently lists more than 316 recorded archeological sites; many listings are the direct result of surveys initiated by the recent expansion of oil and gas exploration. According to the Atlas, only one site has been designated as a SAL, the De Witt County Courthouse in Cuero, Texas. The De Witt County Courthouse is one of 58 NRHP-listed sites in De Witt County. Neighborhood surveys have resulted in listing over 1,700 historic structures to the database, along with 60 recorded historic cemeteries and 95 historical markers (THC 2016b).

Karnes County currently lists more than 215 recorded archeological sites. The Karnes County Courthouse is the only listed SAL in the county and is also a NRHP-listed property. There are two other NRHP-listed properties in the county, the John Ruckman House and the Panna Maria National Register District (NRD). An additional 18 historic homes have been added to the THC database as a result of neighborhood surveys, as well as 24 historic cemeteries and 30 historical markers (THC 2016a).

Wilson County lists more than 125 recorded archeological sites. According to the Atlas, there are two properties that have been designated as SALs: the Wilson County Courthouse and Jail in Floresville, Texas and the Rancho de las Cabras State Historical site. Both sites are also listed on the NRHP, along with the Polley Mansion and the Mueller Bridge. The Wilson County Courthouse, designed by architect Alfred Giles, was completed in 1884 and was a two-story stucco brick structure



with Italianate architectural elements. There are 137 recorded historic cemeteries and 57 historical markers in the county (THC 2016a).

4.0 METHODOLOGY

The cultural resources survey was performed in compliance with the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470 et seq., P.L. 89-665, 80 Stat. 915), and the implementing regulations 36 CFR 800. The survey complied with the National Environmental Policy Act (NEPA) of 1969; the NEPA of 1974 (PL 81-190, 83 Stat. 915, 41 USC 4321, 1970); the Archeological and Historic Preservation Act of 1974 (PL 93-291); the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 Fed. Reg. 44716-42, Sept. 29, 1983); the National Register Bulletin Series of the National Park Service; and the Archeological Resources Protection Act of 1979. The survey conformed to the standards of the United States Department of the Interior (1977); the guidelines set forth by the Council of Texas Archeologists (1995); and the Register of Professional Archeologists (2016). The cultural resources investigation consisted of archival research, pedestrian survey, shovel testing, and preparation of a report suitable for review by the United States Army Corps of Engineers (USACE), the regulatory agency responsible for oversight in most situations.

Streams potentially under USACE jurisdiction that crossed the APE were assessed by an ecologist via desktop and field reviews prior to commencement of the cultural resources survey. As per the established procedure of due diligence, any segment of an APE that falls within an area potentially under federal jurisdiction, or any portion of an APE that falls within a 328-foot (100-m) radius of a known cultural site, would be subjected to a cultural resources survey. Any segment of an APE to be surveyed under this protocol was labeled as a "review area". Unless otherwise noted, the APE measured 75 feet (23 m) in width, consisting of a 50-foot (15-m) wide permanent easement and a 25-foot (8-m) wide temporary construction easement.

During the survey effort, the ground surface within the established review area was visually inspected on foot. Shovel tests were administered in the portion of the review area that harbored the greatest potential for temporally stratified soil deposits. Shovel tests, typically 12 inches (30 cm) in diameter, were excavated to sterile substratum. The shovel probe matrix was sifted through ¼-inch (0.6-cm) hardware cloth. If soils of high clay constituency were encountered, the matrix was hand sorted. Shovel test locations were recorded with hand-held Global Positioning System (GPS) units and transferred to topographic maps. If present, newly discovered or revisited sites were documented using standard State of Texas site recording forms and plotted by GPS coordinates for entry into the Atlas database.

Shovel testing was conducted to ascertain the horizontal and vertical limits of any cultural manifestation discovered within the review area. Hand-drawn sketch maps were produced for each cultural site recorded or revisited. The field effort reported herein was performed on private property and was funded by a private source. No artifacts were collected during the survey. If present, artifact assemblages were photographed in the field and left where found.



5.0 DENALI UNIT #101H ACCESS ROAD

Goshawk conducted a cultural resources survey of the proposed $\pm 1,685$ -foot (514-m) Denali Unit #101H Access Road ROW in Karnes County, Texas. One review area was identified within the proposed ROW, based upon the presence of one potentially regulated Waters of the US (WATERS). The cultural resources survey, including shovel testing and surface inspection, was conducted within the review area totaling approximately 1.7 acres (0.7 hectare [ha]). The review area was established at a crossing of a first-order tributary of Dry Ecleto Creek. The field investigation was conducted by Goshawk archeologist Phil Schoch with Bear Aspra on 18 February 2016.

The Denali Unit #101H Access Road ROW was located approximately 1 mile (1.6 km) west-northwest of the intersection of Farm-to-Market 627 and County Road 290 in the town of Ecleto, Texas. The ROW heads south-southeast from its northern terminus, and turns southwest crossing the first-order tributary (Review Area), before terminating on eastward sloping terrain. The proposed ROW traversed one stream, which was determined to be a potentially regulated WATERS. The ROW was located on the Ecleto, Texas, United States Geological Survey (USGS) topographic quadrangle (Figure 5-1). The dominant local land use was for rangeland and oil and gas development.

5.1 ARCHIVAL RESEARCH

According to the Atlas, there are no previously recorded archeological sites within the proposed Denali Unit #101H Access Road ROW. The nearest archeological site (41KA181) is located approximately 1.1 miles (1.8 km) north-northeast of the proposed ROW. This site is discussed in greater detail below. No NRHP-listed properties have been recorded within the proposed ROW. According to the Atlas, the nearest NRHP-listed property is the John Ruckman House, located near the town of Helena, Texas, approximately 7.7 miles (12.6 km) south-southwest of the proposed ROW. The ROW is located approximately 9.7 miles (15.9 km) northeast of the Panna Maria NRD. Designated in 1976, the Panna Maria NRD encompasses 24,000 acres (9,713 ha) of the town of Panna Maria. This NRD represents an historic Polish community (THC 2016b).

5.1.2 Site 41KA181

Site 41KA181 was recorded by Goshawk archeologists in 2012 as part of the Alton Crude Gathering Pipeline Project. The site was initially recorded as a historic farmstead and diffuse prehistoric campsite. The site was located on an upland terrace south of a caliche road and measured 207 feet (63.1 m) east to west by 223 feet (68 m) north to south. The historic site component included one historic building of unknown use and a chicken coop. The prehistoric artifacts included one flake, burned rock, and one tested cobble.

The historic artifact assemblage included sherds of coarse earthenware, stoneware, refined earthenware, and decorated and undecorated porcelain. The glass assemblage included, clear, amethyst, brown, aqua, blue, and milk shards. Other historic-aged materials included a Model A Ford, farm machinery, composite button, hinges, wires, part of a jack, part of a trowel or shovel blade, nails, and a harness buckle. The initial evaluation concluded that further investigation was needed to determine the site's eligibility for designation as a SAL or listing on the NRHP (THC 2016b).



5.2 SURVEY RESULTS

One review area was identified within the proposed Denali Unit #101H Access Road ROW. The proposed ROW crossed a tributary that was identified as a WATERS by ecological desktop review and physical inspection, prior to the commencement of the cultural resources survey. No other potentially jurisdictional streams were identified during the field effort.

5.2.1 Review Area

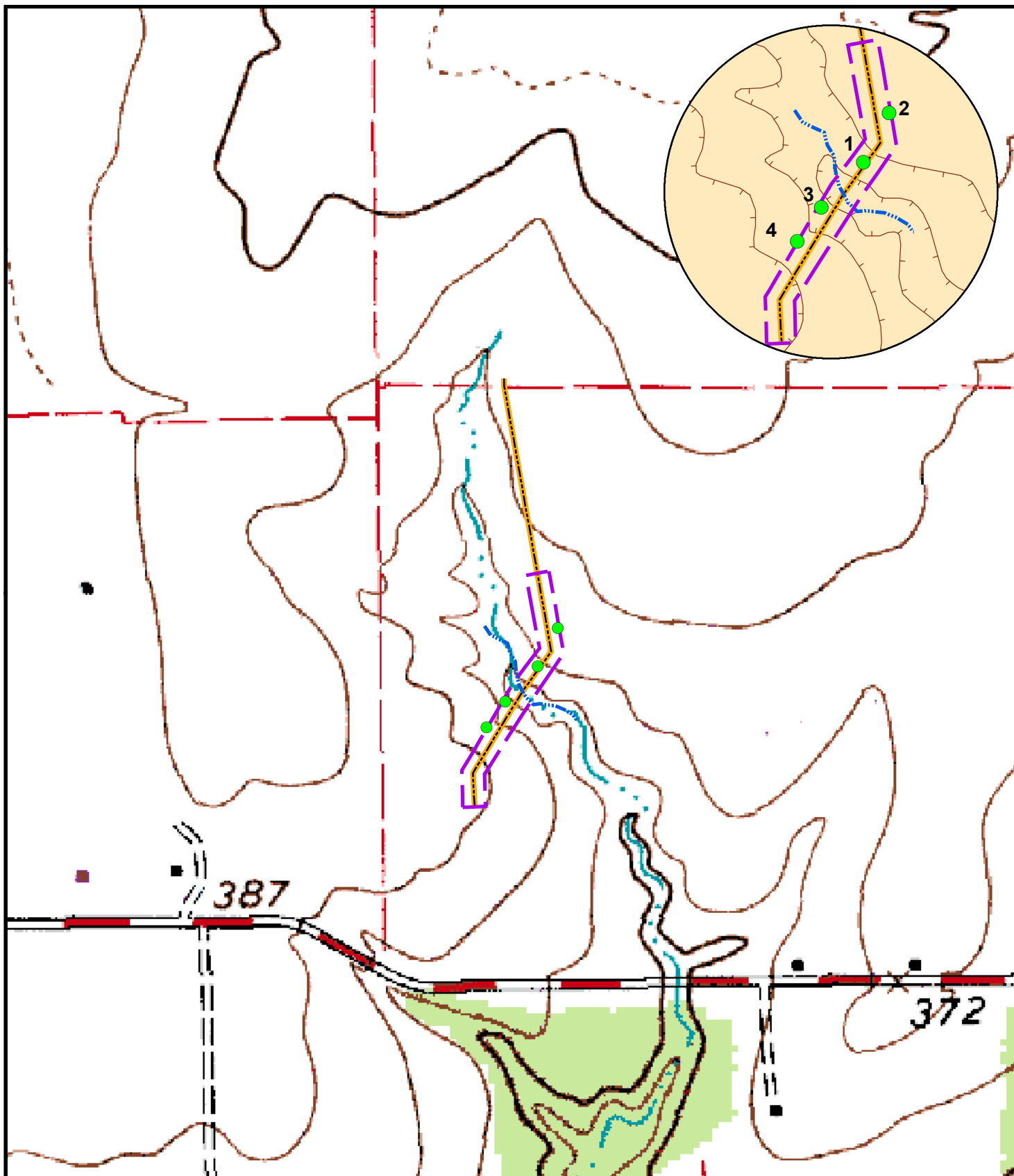
The cultural resources survey was conducted on 18 February 2016 within a single review area, along the proposed Denali Unit #101H Access Road ROW. This review area was established at a crossing of a first-order tributary of Dry Ecletto Creek. The tributary had a visible channel within the review area and a shallow bed (Photo 5-1). Vegetation within the review area consisted of small mesquite, live oak, hackberry, agarita, prickly pear cactus, green briar, and various grasses and forbs (Photo 5-2). Surface visibility north of the tributary was considered poor and averaged between 0 and 25 percent. Surface visibility south of the tributary, within the plowed agricultural field, was excellent and ranged from 95 and to 100 percent.

Four shovel tests were conducted within the review area and placed in locations most likely to contain intact, temporally stratified deposits (see Figure 5-1). Soils consisted entirely of shallow, dense, dark gray or black clay with argillic soils visible throughout the entire review area. Shovel tests were dug to depths between 4 and 14 inches (10 and 36 cm) below the surface (Table 5-1). All shovel tests administered within the review area yielded entirely negative results.

5.3 RECOMMENDATIONS

Goshawk conducted a cultural resources survey consisting of an intensive surface inspection and the excavation of four shovel tests within the proposed Denali Unit #101H Access Road. No cultural resources were observed on the surface and no artifacts were recovered from shovel testing. It is Goshawk's opinion that construction of the Denali Unit #101H Access Road, as proposed, will cause no impacts to significant cultural resources within the surveyed portion of the APE. Therefore, Goshawk recommends that construction be allowed to proceed as planned. In the unlikely event that cultural resources (including human remains) are discovered, all construction or maintenance activities should be halted immediately and the USACE and an archeologist should be notified.





Source: USGS, Ecleto, Texas Quadrangle.

Date: 10 March 2016

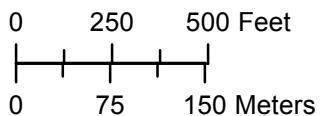






Figure 5-1
Shovel Test Locations
Karnes County, Texas

LEGEND

-  Proposed Access Road
-  Waters of the US
-  Negative Shovel Test
-  Review Area



Denali Unit #101H Access Road





Photo 5-1: Tributary within Review Area, Facing Northwest



Photo 5-2: Typical Vegetation within Review Area, Facing North-Northwest





Photo 5-3: Typical Surface Visibility, North of Tributary



Photo 5-4: Typical Surface Visibility in Agricultural Field, South of Tributary



Table 5-1: Denali Unit #101H Access Road ST (14 NAD 1983)

Report ST#	ST#	WP#	Easting	Northing	Depth (cm)	Soil Color	Soil Composition	Artifacts	Stream #	Review Area	Comments
1	PS1	441	619994	3214128	0-15	Black	Clay	N		1	Solid clay. No gravel. Dense
2	PS2	442	620017	3214171	0-15	Dark gray	Clay	N		1	Solid clay. No gravel. Dense
3	PS3	443	619957	3214088	0-10	Black	Clay	N		1	Solid clay. No gravel. Dense
4	PS4	444	619926	3214067	0-25	Dark gray	Clay	N		1	Some gravel on surface. Plowed agricultural field. Soil is more loose
					0-35	Black	Clay	N		1	Solid clay. Dense

*2.5 cm = 1 inch



6.0 DISCUSSION

The goal of the cultural resource survey was not only to locate and record sites, but to provide conclusions and site recommendations based on NRHP criteria of significance (36 CFR 60.4), and the requirements of Section 106 and 36 CFR 800. According to the NRHP “The quality of significance in American history, architecture, archaeology, engineering, and culture is present in district, sites, materials, workmanship, feeling, and association that:

- a. are associated with events that have made a significant contribution to the broad patterns of our history;
- b. are associated with the lives of persons significant in our past;
- c. embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, or represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. have yielded, or may be likely to yield, information important in prehistory or history.”

7.0 CONCLUSIONS AND RECOMMENDATIONS

During February 2016, Goshawk conducted one cultural resources survey within the Eagle Ford Play, Central Eagle Ford Zone. The project subjected to a cultural resources investigation was the Denali Unit #101H Access Road. During the survey, shovel tests were placed within the review area near the stream and upon the adjacent slopes. No significant cultural deposits were documented within the survey area as a result of the shovel testing and surface inspection.

Based on the results of the investigation, it is Goshawk’s opinion that no significant cultural resources will be impacted by construction within the surveyed ROW. Goshawk recommends that the project be allowed to proceed as planned with the caveat that construction be limited to the established surveyed ROW. In the unlikely event cultural resources (including human remains) are discovered, all construction or maintenance activities should be immediately halted and both the USACE and an archeologist should be notified.



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