

US EPA ARCHIVE DOCUMENT

**Proposed Guadalupe Generating Station
Expansion Project,
Marion, Guadalupe County, Texas**

Cultural Resources Review

Prepared for:



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ABSTRACT

Horizon Environmental Services, Inc. (Horizon), has been contracted to provide a cultural resources background review for the proposed expansion of the existing Guadalupe Generating Station (GGS) located at 5740 Weil Road, Marion, Texas, 78124, approximately 3.7 miles north of the city of Marion in Guadalupe County. Guadalupe Power Partners, LP (GPP), owns and operates the GGS, which currently consists of 4 natural-gas-fired, combined-cycle combustion turbine (CT) generator units capable of producing a nominal 1,000 megawatts (MW) of electricity. GPP is proposing to construct 2 new, natural-gas-fired, simple-cycle CTs within the existing GGS property. The Area of Potential Effect (APE) consists of an approximately 6.9-acre area located in the northern portion of the existing GGS facility where the 2 proposed CTs would be constructed.

As construction of the proposed facility would require a Prevention of Significant Deterioration (PSD) permit for Greenhouse Gas (GHG) emissions issued by the US Environmental Protection Agency (EPA), the undertaking falls under the regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, which is invoked when federal funds are utilized or when federal permitting is required for a proposed project. The NHPA states that the Advisory Council for Historic Preservation (ACHP) and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, must be afforded the opportunity to comment when any cultural resources potentially eligible for inclusion in the National Register of Historic Places (NRHP) are present in a project area affected by federal agency actions or covered under federal permits or funding.

In January 2013, Horizon conducted a cultural resources background review of the proposed 6.9-acre GGS expansion site. The background review examined an area extending 1.0 mile from the proposed boundaries of the project site. Based on this archival background research, no archeological sites, cemeteries, historic properties or districts listed on the National Register of Historic Places (NRHP) or designated as State Archeological Landmarks (SALs), historical markers, or other cultural resources have been previously recorded on or within a 1.0-mile radius of the proposed GGS expansion site.

Three prior cultural resources surveys have been conducted within the 1.0-mile archival background research radius. One of these 3 prior cultural resources surveys covered the

current project's proposed 6.9-acre APE in its entirety. This prior survey was conducted in 1998 by Archaeology Consultants, Inc. (ACI), for Panda Energy International, Inc., and was associated with the original construction of the GGS facility located immediately south of the proposed expansion site. This prior survey covered a larger, 134-acre proposed electric generating plant site and an associated 2.6-mile-long proposed gas pipeline, and the current project's proposed 6.9-acre expansion site falls within the previously surveyed 134-acre electric generating plant site. The 1998 survey consisted of pedestrian walkover with systematic shovel testing, and shovel testing revealed pre-Holocene clay sediments with minimal to no potential to contain intact cultural resources within the current project's APE. No cultural resources were observed within the current project's APE during this prior survey. The THC concurred with the findings of the prior survey on March 24, 1999, and cleared the proposed undertaking for construction. Copies of ACI's 1998 cultural resources survey report and the THC's concurrence are included in Appendix A.

Based on the negative results of the prior cultural resources survey that covered the current project's proposed 6.9-acre APE in its entirety; the physiographic setting of the project area away from extant water sources on an upland landform consisting of pre-Holocene clay sediments with minimal potential to contain intact archeological deposits; and the lack of previously recorded archeological sites, cemeteries, listed NRHP properties, or SALs on or in the immediate vicinity of the proposed project site, there is effectively no potential for intact cultural resources to be present within the APE that would be eligible for listing on the NRHP. No archeological or historic properties that are listed on, eligible for, or potentially eligible for inclusion in the NRHP would be adversely affected by the proposed undertaking. Furthermore, it is Horizon's opinion that the proposed project site does not need to be resurveyed for cultural resources at this time as it was recently surveyed for cultural resources in 1998, and no cultural resources were found within the current project's APE during the prior survey.

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1.0 INTRODUCTION

Horizon Environmental Services, Inc. (Horizon), has been contracted to provide a cultural resources background review for the proposed expansion of the existing Guadalupe Generating Station (GGS) located at 5740 Weil Road, Marion, Texas, 78124, approximately 3.7 miles north of the city of Marion in Guadalupe County (Figures 1 and 2). Guadalupe Power Partners, LP (GPP), owns and operates the GGS, which currently consists of 4 natural-gas-fired, combined-cycle combustion turbine (CT) generator units capable of producing a nominal 1,000 megawatts (MW) of electricity. GPP is proposing to construct 2 new, natural-gas-fired, simple-cycle CTs within the existing GGS property. The Area of Potential Effect (APE) consists of an approximately 6.9-acre area located in the northern portion of the existing GGS facility where the 2 proposed CTs would be constructed.

As construction of the proposed facility would require a Prevention of Significant Deterioration (PSD) permit for Greenhouse Gas (GHG) emissions issued by the US Environmental Protection Agency (EPA), the undertaking falls under the regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, which is invoked when federal funds are utilized or when federal permitting is required for a proposed project. The NHPA states that the Advisory Council for Historic Preservation (ACHP) and the Texas Historical Commission (THC), which serves as the State Historic Preservation Office (SHPO) for the state of Texas, must be afforded the opportunity to comment when any cultural resources potentially eligible for inclusion in the National Register of Historic Places (NRHP) are present in a project area affected by federal agency actions or covered under federal permits or funding.

In January 2013, Horizon conducted a cultural resources background review of the proposed 6.9-acre GGS expansion site. The background review examined an area extending 1.0 mile from the proposed boundaries of the project site. Based on this archival background research, no archeological sites, cemeteries, historic properties or districts listed on the National Register of Historic Places (NRHP) or designated as State Archeological Landmarks (SALs), historical markers, or other cultural resources have been previously recorded on or within a 1.0-mile radius of the proposed GGS expansion site.

Three prior cultural resources surveys have been conducted within the 1.0-mile archival background research radius. One of these 3 prior cultural resources surveys covered the current project's proposed 6.9-acre APE in its entirety. This prior survey was conducted in 1998

Proposed Guadalupe Generating Station
Expansion Project, Marion, Guadalupe County, Texas

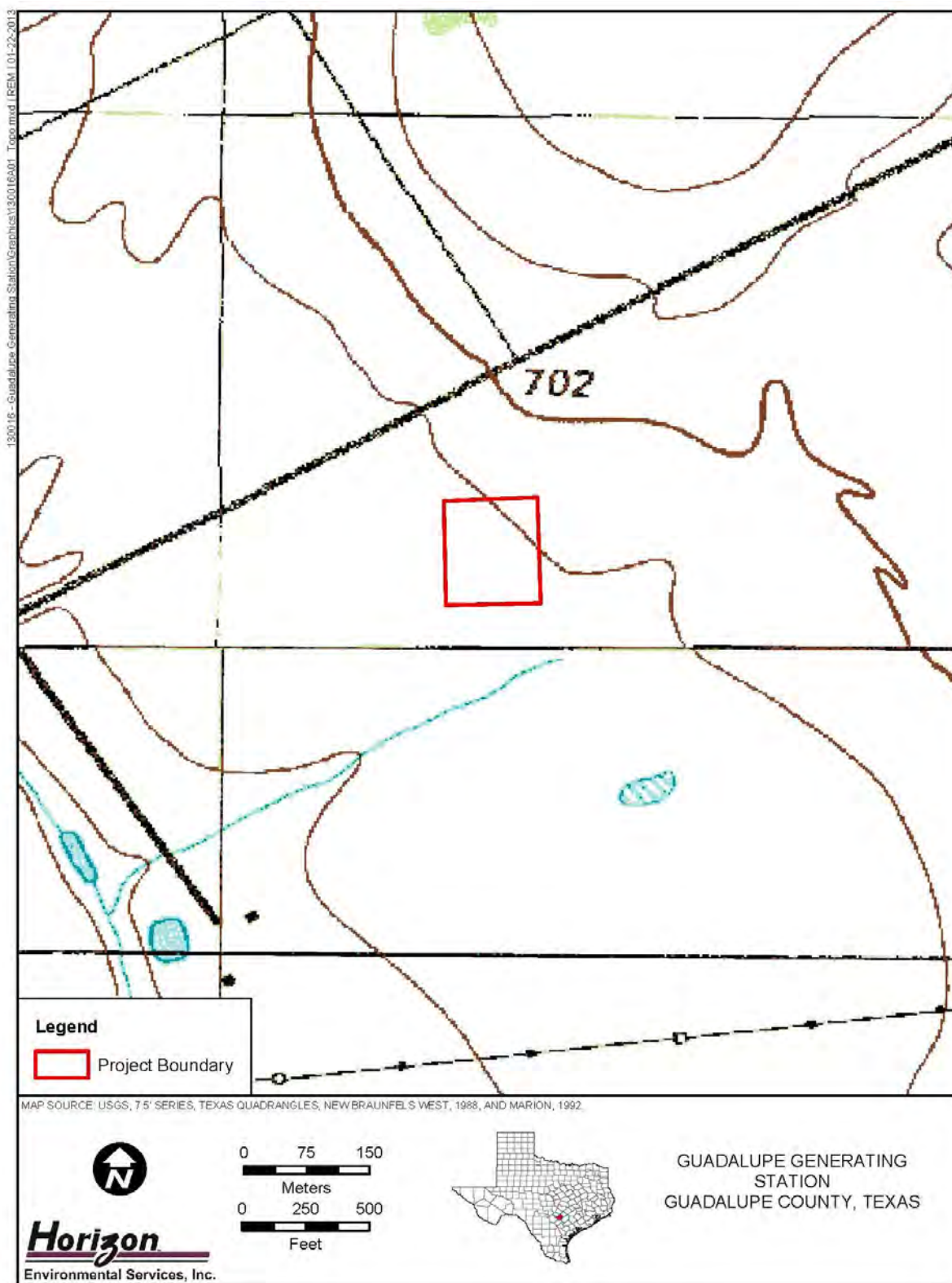


Figure 1. Location of Project Area on USGS Topographic Quadrangle Maps

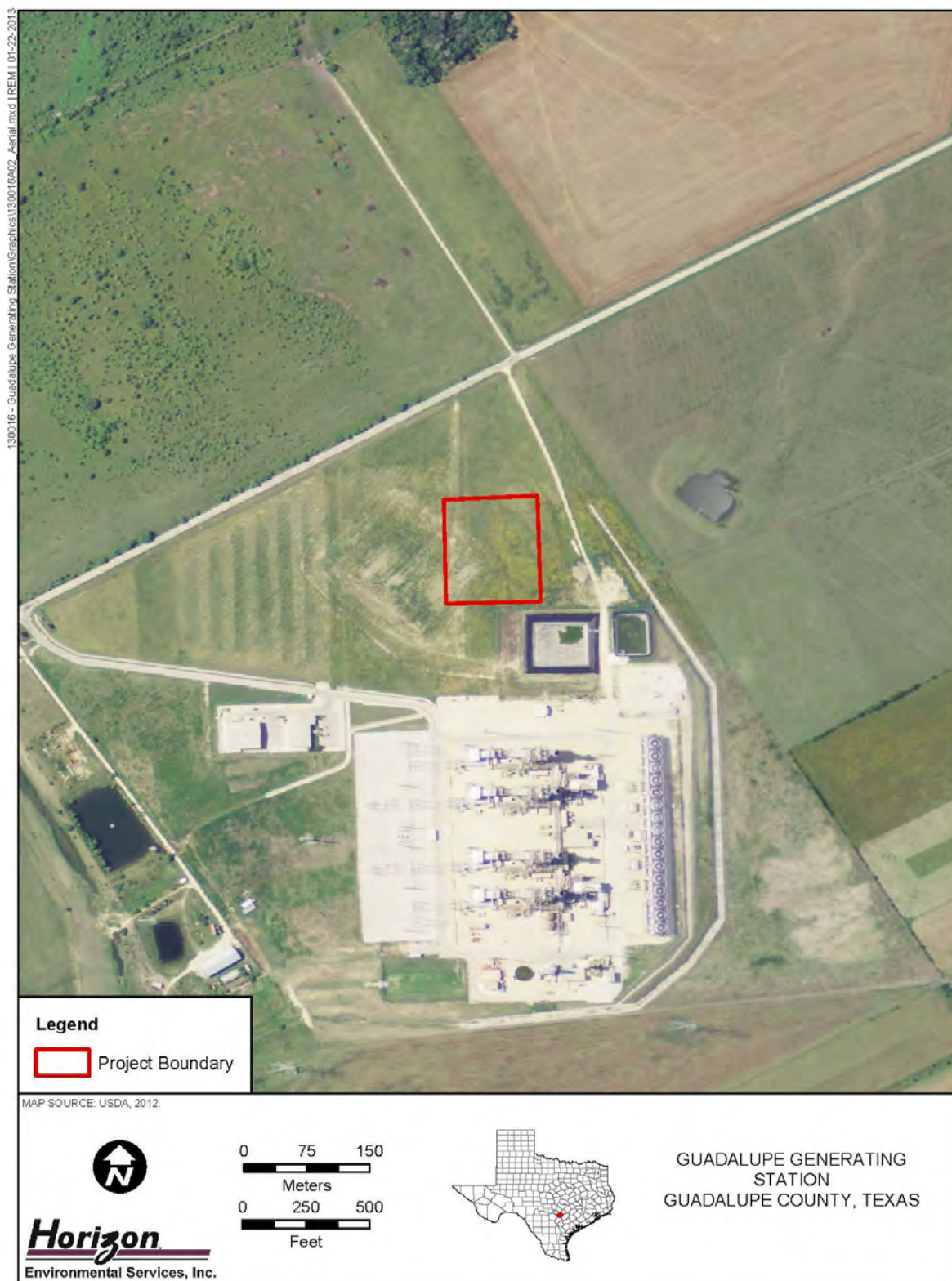


Figure 2. Location of Project Area on Aerial Photograph

by Archaeology Consultants, Inc. (ACI), for Panda Energy International, Inc., and was associated with the original construction of the GGS facility located immediately south of the proposed expansion site. This prior survey covered a larger, 134-acre proposed electric generating plant site and an associated 2.6-mile-long proposed gas pipeline, and the current project's proposed 6.9-acre expansion site falls within the previously surveyed 134-acre electric generating plant site. The 1998 survey consisted of pedestrian walkover with systematic shovel testing, and shovel testing revealed pre-Holocene clay sediments with minimal to no potential to contain intact cultural resources within the current project's APE. No cultural resources were observed within the current project's APE during this prior survey. The THC concurred with the findings of the prior survey on March 24, 1999, and cleared the proposed undertaking for construction.

Based on the negative results of the prior cultural resources survey that covered the current project's proposed 6.9-acre APE in its entirety; the physiographic setting of the project area away from extant water sources on an upland landform consisting of pre-Holocene clay sediments with minimal potential to contain intact archeological deposits; and the lack of previously recorded archeological sites, cemeteries, listed NRHP properties, or SALs on or in the immediate vicinity of the proposed project site, there is effectively no potential for intact cultural resources to be present within the APE that would be eligible for listing on the NRHP. No archeological or historic properties that are listed on, eligible for, or potentially eligible for inclusion in the NRHP would be adversely affected by the proposed undertaking. Furthermore, it is Horizon's opinion that the proposed project site does not need to be resurveyed for cultural resources at this time as it was recently surveyed for cultural resources in 1998, and no cultural resources were found within the current project's APE during the prior survey.

This document presents the results of Horizon's cultural resources background review of the proposed project site. Following this introductory chapter, Chapters 2.0 and 3.0 present the environmental and cultural backgrounds of the project area, respectively. Chapter 4.0 presents the results of the background review, and Chapter 5.0 summarizes the results of the background review and presents management recommendations for the proposed undertaking. Chapter 6.0 lists the references cited in the document. Appendix A contains a copy of ACI's 1998 cultural resources survey report and associated THC correspondence, and Appendix B includes the resume of Russ Brownlow, Horizon's Cultural Resources Director (CRD), who served as Principal Investigator for this project.

2.0 ENVIRONMENTAL SETTING

2.1 PHYSIOGRAPHY AND HYDROLOGY

The project area is located in an upland setting on the south-facing slopes of a broad upland knoll situated within the Blackland Prairie physiographic province near the boundary of the Edwards Plateau physiographic province. The Blackland Prairie is a narrow physiographic zone situated between the Edwards Plateau to the west and the Gulf Coastal Plain to the east. This area consists of low, rolling land that extends in a narrow band along the eastern edge of the Balcones fault zone from the Red River Valley in northeastern Texas to the southern edge of the Edwards Plateau. This is an area of low topographic relief and poor drainage; water often ponds after rainstorms and streams flow at very gentle gradients. The Edwards Plateau and Balcones Escarpment are associated with a great fault system that arcs across Texas to form a distinct boundary between uplands composed primarily of limestone bedrock and lower plains composed mostly of softer rocks. In places, this boundary is marked by an abrupt scarp (the Balcones Escarpment) and in others by a more gradational ramp, but the entire length of this transition zone is a major ecotone in terms of topography, bedrock, hydrology, soil, vegetation, and animal life.

Hydrologically, the project area is situated in the San Antonio River watershed. The headwaters of an unnamed tributary of Santa Creek arise approximately 0.3 miles southwest of the proposed project's APE. Santa Clara Creek flows generally southwards to discharge into Cibolo Creek, which in turn flows generally southwards, eventually flowing into the San Antonio River north of Karnes City in Karnes County, Texas. The San Antonio River flows generally southeastwards, ultimately conjoining with the Guadalupe River and discharging into the Gulf of Mexico at San Antonio Bay. No extant water bodies or stream channels are located within the project area.

2.2 GEOLOGY AND GEOMORPHOLOGY

The project area is underlain by a relatively thick sequence of Cretaceous-age, sedimentary rock strata. These strata are composed of 3 formations, including the Anachaco Limestone, Pecan Gap Chalk, and Austin Chalk formations (Fisher 1983). These formations range in depth from 100 to 500 feet and are composed of limestone and marl, chalk and chalky

marl, and chalk and marl, respectively. The project area is underlain by the Upper Cretaceous Pecan Gap Chalk Formation, which consists of 100 to 400 feet of chalk and chalky marl.

The project area is situated on Houston Black clay, 1 to 3% slopes (HoB), which consists of clayey residuum weathered from calcareous shale (NRCS 2013) (Figure 3). A typical profile consists of deep, undifferentiated deposits of pre-Holocene-age clay extending to depths in excess of 62 inches below surface.

2.3 CLIMATE

Evidence for climatic change from the Pleistocene to the present is most often obtained through studies of pollen and faunal sequences (Bryant and Holloway 1985; Collins 1995). Bryant and Holloway (1985) present a sequence of climatic change for nearby east-central Texas from the Wisconsin Full Glacial period (22,500 to 14,000 B.P.) through the Late Glacial period (14,000 to 10,000 B.P.) to the Post-Glacial period (10,000 B.P. to present). Evidence from the Wisconsin Full Glacial period suggests that the climate in east-central Texas was considerably cooler and more humid than at present. Pollen data indicate that the region was more heavily forested in deciduous woodlands than during later periods (Bryant and Holloway 1985). The Late Glacial period was characterized by slow climatic deterioration and a slow warming and/or drying trend (Collins 1995). In east-central Texas, the deciduous woodlands were gradually replaced by grasslands and post oak savannas (Bryant and Holloway 1985). During the Post-Glacial period, the east-central Texas environment appears to have been more stable. The deciduous forests had long since been replaced by prairies and post oak savannas. The drying and/or warming trend that began in the Late Glacial period continued into the mid-Holocene, at which point there appears to have been a brief amelioration to more mesic conditions lasting from roughly 6000 to 5000 B.P. Recent studies by Bryant and Holloway (1985) indicate that modern environmental conditions in east-central Texas were probably achieved by 1,500 years ago.

The modern climate is typically dry to subhumid with long, hot summers and short, mild winters. The climate is influenced primarily by tropical maritime air masses from the Gulf of Mexico, but it is modified by polar air masses. Tropical maritime air masses predominate throughout spring, summer, and fall. Modified polar air masses are dominant in winter and provide a continental climate characterized by considerable variations in temperature.

In winter, the average temperature is 52 degrees Fahrenheit (°F); however, during winter the temperature tends to fluctuate greatly as air masses move in and out of the area. These air masses can produce light rain and drizzle, and conditions can become cloudy. Spring is relatively dry, with some thunderstorms and cool spells. Summer temperatures are high, with the daily maximum temperature often reaching or exceeding 90°F. Fall is warm, dry, and pleasant, with increasing cold spells.

The average precipitation within the region is 33 inches. The majority of this precipitation occurs as rain that falls between April and September. The growing season is approximately 265 days long.

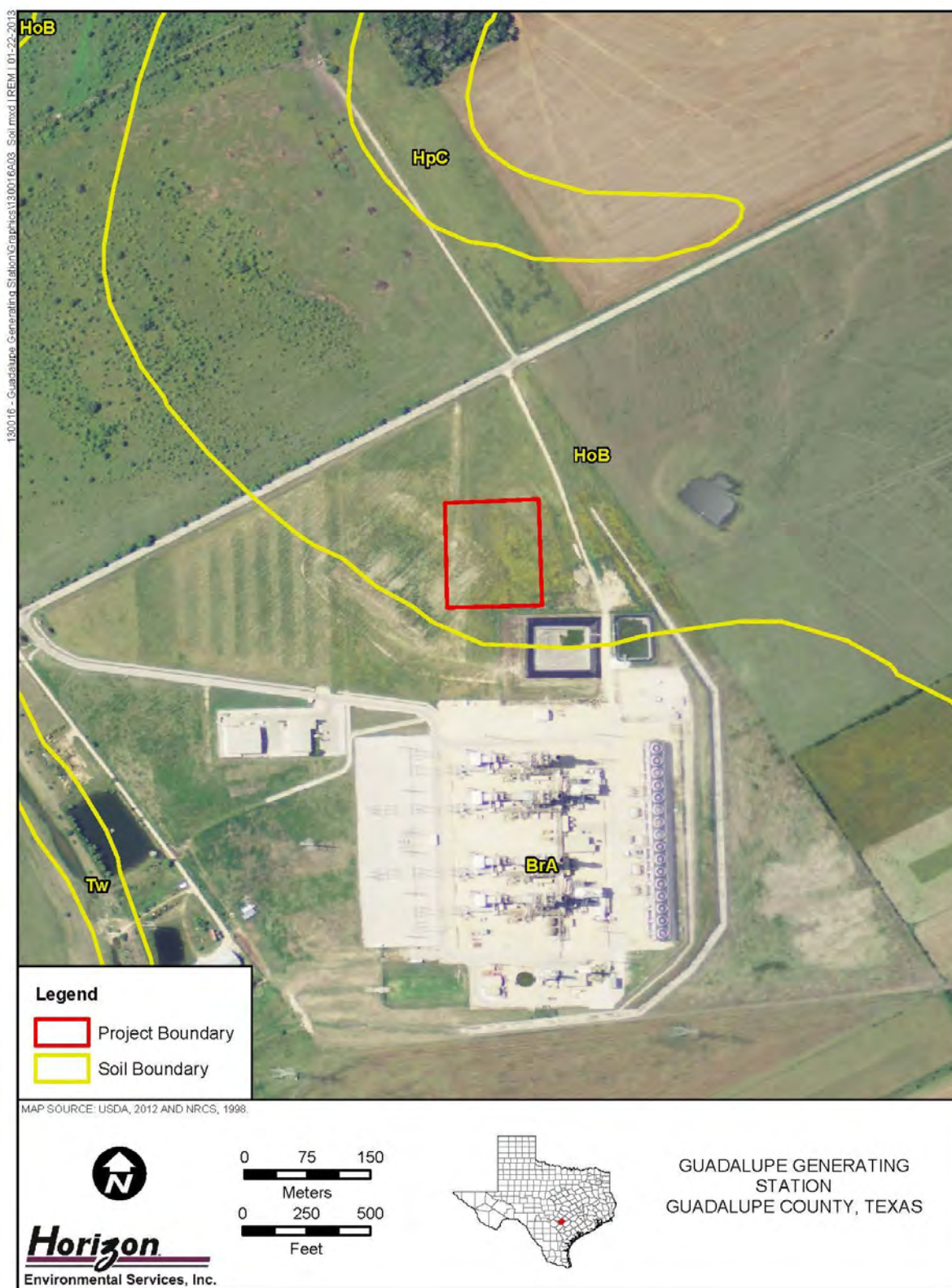


Figure 3. Distribution of Mapped Soils in Project Area

2.4 FLORA AND FAUNA

The project area is situated in the southwestern portion of the Texan biotic province (Blair 1950), an intermediate zone between the forests of the Austroriparian and Carolinian provinces and the grasslands of the Kansan, Balconian, and Tamaulipan provinces (Dice 1943). Some species reach the limits of their ecological range within the Texan province. Rainfall in the Texan province is barely in excess of water need, and the region is classified by Thornwaite (1948) as a C₂ (moist subhumid) climate with a moisture surplus index of from 0 to 20%.

Edaphic controls on vegetation types are important in the Texan biotic province, which is located near the border between moisture surplus and moisture deficiency. Sandy soils support oak-hickory forests dominated by post oak (*Quercus stellata*), blackjack oak (*Q. marilandica*), and hickory (*Carya buckleyi*). Clay soils originally supported a tall-grass prairie, but much of this soil type has been placed under cultivation. Dominant tall-grass prairie species include western wheatgrass (*Agropyron smithii*), silver beardgrass (*Andropogon saccharoides*), little bluestem (*Andropogon scoparius*), and Texas wintergrass (*Stipa leucotricha*). Major areas of oak-hickory forest include the Eastern and Western Cross Timbers, and major tall-grass prairie areas include the Blackland, Grand, and Coastal prairies. Some characteristic associations of the Austroriparian province occur locally in the Texan province, such as a mixed stand of loblolly pine (*Pinus taeda*) and blackjack and post oak in Bastrop County and a series of peat and bog marshes distributed in a line extending from Leon to Gonzales counties.

The fauna associated with this region are represented by a mixture of species from the Austroriparian, Tamaulipan, Chihuahuan, Kansan, Balconian, and Texan biotic provinces. At least 49 species of mammals occur in the Texan province, including Virginia opossum (*Didelphis virginiana*), eastern mole (*Scalopus aquaticus*), fox squirrel (*Sciurus niger*), desert pocket gopher (*Geomys breviceps*), fulvous harvest mouse (*Reithrodontomys fulvescens*), white-footed mouse (*Peromyscus leucopus*), hispid cotton rat (*Sigmodon hispidus*), eastern cottontail rabbit (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), white-footed mouse (*Peromyscus leucopus*), black-tailed jackrabbit (*Sylvilagus californicus*), ground squirrel (*Citellus tridecemlineatus*), white-tailed deer (*Odocoileus virginiana*), hispid pocket mouse (*Perognathus hispidus*), deer mouse (*Peromyscus maniculatus*), black-tailed jackrabbit (*Lepus californicus*), pygmy mouse (*Baiomys taylori*), 9-banded armadillo (*Dasypus novemcinctus*), and jaguar (*Felis onca*). Both species of *Terrapene* known from the Austroriparian province—eastern box turtle (*T. Carolina*) and desert box turtle (*T. ornata*)—occur in the Texan. Sixteen species of lizards, including 7 grassland and 9 forest species, are also found, including green anole (*Anolis carolinensis*), eastern fence lizard (*Sceloporus undulates*), common ground skink (*Leiopisma laterale*), and glass snake (*Ophiosaurus ventralis* [grassland species]), and collared lizard (*Crotaphytus collaris*), Texas spiny lizard (*Sceloporus olivaceous*), Texas horned lizard (*Phrynosoma cornutum*), and Great Plains skink (*Eumeces obsoletus* [forest species]). Only 5 species of urodele fauna are known from this area, including small-mouthed salamander (*Ambystoma texanum*), tiger salamander (*Ambystoma tigrinum*), and eastern lesser siren (*Siren intermedia*), and the Texan province acts as a barrier to urodele distribution between the endemic Balconian province fauna to the west and the Austroriparian fauna to the east. Anuran fauna is composed primarily of Austroriparian

or otherwise widely distributed species, including eastern spadefoot toad (*Scaphiopus holbrookii*), Gulf Coast toad (*Bufo valliceps*), Woodhouse's toad (*Bufo woodhousii*), southern cricket frog (*Acris gryllus*), southern chorus frog (*Pseudacris nigrita*), gray treefrog (*Hyla versicolor*), green treefrog (*Hyla cinerea*), North American bullfrog (*Rana catesbeiana*), northern leopard frog (*Rana pipiens*), and narrow-mouthed toad (*Microhyla carolinensis*). Additional anuran species that fail to cross from the Texan into the Austroriparian province include pacific tree frog (*Pseudacris clarkia*), Strecker's chorus frog (*Pseudacris streckeri*), and striped whipsnake (*Microhyla olivacea*). Other reptile and amphibian species common to this biotic zone include 6-lined racerunner (*Aspidozelis sexlineata*), rat snake (*Ptyas mucosus*), eastern hognose snake (*Heterodon platirhinos*), rough green snake (*Opheodrys aestivus*), copperhead (*Agkistrodon contortrix*), western diamondback rattlesnake (*Crotalus atrox*), Blanchard's cricket frog (*Acris crepitans*), diamondback water snake (*Nerodia rhombifer rhombifer*), and Houston toad (*Bufo houstonensis*). Common bird species include northern bobwhite (*Colinus virginianus*), eastern meadowlark (*Sturnella magna*), mourning dove (*Zenaida macroura*), killdeer (*Charadrius vociferus*), field sparrow (*Spizella pusilla*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), belted kingfisher (*Ceryle alcyon*), and mockingbird (*Mimus polyglottos*). Small herds of bison and antelope were common during the late prehistoric and early historic periods, but these species are no longer native to this region (Jurney et al. 1989:13-14).

3.0 CULTURAL BACKGROUND

The project area is located within Prewitt's (1981, 1985) Central Texas Archeological Region. The indigenous human inhabitants of Central Texas practiced a generally nomadic hunting and gathering lifestyle throughout all of prehistory, and, in contrast to much of the rest of North America, mobility and settlement patterns do not appear to have changed markedly through time in this region.

3.1 PALEOINDIAN PERIOD (CA. 12,000 TO 8500 B.P.)

The initial human occupations in the New World can now be confidently extended back before 12,000 B.P. (Dincauze 1984; Haynes et al. 1984; Kelly and Todd 1988; Lynch 1990; Meltzer 1989). Evidence from Meadowcroft Rockshelter in Pennsylvania suggests that humans were present in Eastern North America as early as 14,000 to 16,000 years ago (Adovasio et al. 1990), while more recent discoveries at Monte Verde in Chile provide unequivocal evidence for human occupation in South America by at least 12,500 years ago (Dillehay 1989, 1997; Meltzer et al. 1997). Most archeologists presently discount claims of much earlier human occupation during the Pleistocene glacial period (cf. Butzer 1988).

The earliest generalized evidence for human activities in Central Texas is represented by the PaleoIndian period (12,000 to 8500 B.P.) (Collins 1995). This stage coincided with ameliorating climatic conditions following the close of the Pleistocene epoch that witnessed the extinction of herds of mammoth, horse, camel, and bison. Cultures representing various periods within this stage are characterized by series of distinctive, relatively large, often fluted, lanceolate projectile points. These points are frequently associated with spurred end scrapers, graters, and bone foreshafts. PaleoIndian groups are often inferred to have been organized into egalitarian bands consisting of a few dozen individuals that practiced a fully nomadic subsistence and settlement pattern. Due to poor preservation of floral materials, subsistence patterns in Central Texas are known primarily through the study of faunal remains. Subsistence focused on the exploitation of plants, small animals, fish, and shellfish, even during the PaleoIndian period. There is little evidence in this region for hunting of extinct megafauna, as has been documented elsewhere in North America. Rather, a broad-based subsistence pattern appears to have been practiced throughout all prehistoric time periods. In Central Texas, the PaleoIndian stage is divided into 2 periods based on recognizable differences in projectile point styles. These include the Early PaleoIndian period, which is recognized based on large, fluted projectile points (i.e., Clovis, Folsom, Dalton, San Patrice, and Big Sandy), and the Late

PaleoIndian period, which is characterized by unfluted lanceolate points (i.e., Plainview, Scottsbluff, Meserve, and Angostura).

3.2 ARCHAIC PERIOD (CA. 8500 TO 1200 B.P.)

The onset of the Hypsithermal drying trend marks the beginning of the Archaic period (8500 to 1200 B.P.) (Collins 1995). This climatic trend marked the beginning of a significant reorientation of lifestyle throughout most of North America, but this change was far less pronounced in Central Texas. Elsewhere, the changing climatic conditions and corresponding decrease in the big game populations forced people to rely more heavily upon a diversified resource base composed of smaller game and wild plants. In Central Texas, however, this hunting and gathering pattern is characteristic of most of prehistory. The appearance of a more diversified tool kit, the development of an expanded groundstone assemblage, and a general decrease in the size of projectile points are hallmarks of this cultural stage. Material culture shows greater diversity during this broad cultural period, especially in the application of groundstone technology.

Traditionally, the Archaic period is subdivided into Early, Middle, and Late subperiods. Changes in projectile point morphology are often used as markers differentiating these 3 subperiods, though other changes in material culture occurred as well. Perhaps most markedly, burned rock middens appear during the Middle Archaic subperiod, continuing into the Late Archaic subperiod, and large cemeteries appear during the Late Archaic subperiod. In addition, the increasing density of prehistoric sites through time is often considered to constitute evidence of population growth, though differential preservation probably at least partially accounts for the lower numbers of older sites.

3.3 LATE PREHISTORIC PERIOD (CA. 1200 TO 350 B.P.)

The onset of the Late Prehistoric period (1200 to 350 B.P.) (Collins 1995) is defined by the appearance of the bow and arrow. In Central Texas, pottery also appears during the Late Prehistoric period (though ceramics appear earlier in Southeast Texas). Use of the atlatl (i.e., spearthrower) and spear was generally discontinued during the Late Prehistoric period, though they continued to be used in the inland subregion of Southeast Texas along with the bow and arrow through the Late Prehistoric period (Patterson 1980, 1995; Wheat 1953). In Texas, unifacial arrow points appear to be associated with a small prismatic blade technology. The Late Prehistoric period is generally divided into 2 phases, the Austin and Toyah phases. Austin phase sites occur earliest to the north, which has led some researchers (e.g., Prewitt 1985) to suggest that the Austin-phase populations of Central Texas were migrants from the north, and lack the ceramic industry of the later Toyah phase.

3.4 HISTORIC PERIOD (CA. 350 B.P. TO PRESENT)

The first European incursion into what is now known as Texas was in 1519, when Álvarez de Pineda explored the northern shores of the Gulf of Mexico. In 1528, Cabeza de Vaca crossed South Texas after being shipwrecked along the Texas Coast near Galveston Bay. However, European settlement did not seriously disrupt native ways of life until after 1700. The

first half of the 18th century was the period in which the fur trade and mission system, as well as the first effects of epidemic diseases, began to seriously disrupt the native culture and social systems. This process is clearly discernable at the Mitchell Ridge site, where burial data suggest population declines and group mergers (Ricklis 1994) as well as increased participation on the part of the Native American population in the fur trade. By the time that heavy settlement of Texas began in the early 1800s by Anglo-Americans, the indigenous Indian population was greatly diminished.

In the central Texas region, including Guadalupe County, Indian tribes in the area included the Karankawas, Tonkawas, Comanches, and Lipan Apaches.¹ Hostilities with Indians who camped along the Guadalupe River in the mid-1830s caused many of the early settlers to retreat from their land to Gonzales until more protection could be provided. After the Texas Revolution, the Tonkawas and the Lipan Apaches were friendly toward settlers and often traded with them, but the threat of raids by the Comanches remained until the 1843 council at Bird's Fort. After the Mexican War in 1848, federal troops established a line of forts extending from Fort Worth to Eagle Pass, effectively moving the frontier and the Indians well to the northwest of Guadalupe County. The last Indian raid into the area was made by the Kickapoos in 1855. The Spanish were probably the first Europeans to explore central Texas. Some sources suggest that Álvar Nuñez Cabeza de Vaca came through this part of central Texas in 1534, but others indicate that his route was farther south. Guadalupe County takes its name from the Guadalupe River, which Alonso de Leon named in 1689 in honor of the Lady of Guadalupe depicted on his standard. The Spanish government made one of the first land grants in the Guadalupe County area to José de la Baume in 1806 for land in the Capote Hills. He had to confirm his claim with the new government after Mexico won its independence from Spain and did not receive clear title until 1832. Between 1827 and 1835, 22 families came to the area as part of DeWitt's colony, and 14 received grants directly from the Mexican government. Most of the settlers during this early period came from the southern US. Many had land in the eastern part of the region along what came to be called Nash, Darst, and Mill creeks. These early settlers scarcely had time to form even the beginnings of communities before the combination of Indian raids and the Runaway Scrape forced them to retreat to Gonzales.

After the Texas Revolution, the new government sent volunteer troops to protect people in remote areas. Those settlers who had left because of the Indians and the Mexican army returned, and others joined them. Much of the land given to Texas veterans for their service during the revolution was located in what became Guadalupe County. A company of Texas Rangers commanded by Capt. John Coffee Hays set up camp at Walnut Springs near the Guadalupe River. In 1838, a group of former Texas Rangers and other settlers founded the community of Walnut Springs on the northeast bank of the Guadalupe; its name was changed to Seguin in 1839 to honor Juan N. Seguin. The presence of troops encouraged many incoming families to stay near Seguin until the area became more secure. As a result, Seguin developed earlier and more rapidly than other communities in the future county and became the region's center of social and economic life. It was the natural choice for county seat when Guadalupe

¹ The following historical summary was presented in TSHA (2013).

County was formed. The Republic of Texas organized Guadalupe County as a judicial county in 1842, but discontinued it later that year when the Texas Supreme Court declared judicial counties to be unconstitutional. In March 1846, after the annexation of Texas to the US, the legislature established the present county from parts of Bexar and Gonzales counties. Guadalupe County had an area of 862 square miles in 1846 but lost land in 1858 and 1874, when Blanco and Wilson counties were organized.

Early communities in Guadalupe County had little formal structure. They began as river crossings, mills, churches, or schools that served widely scattered populations. Because of its nearness to Gonzales, the Sycamore community between Nash and Darst creeks was one of the first rural areas to be settled. German immigrants settled in northern and western parts of the county in the mid-1840s as a result of the colonization efforts by Prince Carl of Solms-Braunfels at New Braunfels. Schumannsville and Clear Springs were established primarily by Germans. By the late 1840s and early 1850s, other settlers had established themselves along York, Mill, Elm, and Santa Clara creeks. The population of the county grew rapidly. The 1850 census reported a total of 1,171 white residents; by 1860, that number had risen to 3,689. Many who immigrated from other southern states brought slaves. The slave population rose from 335 in 1850 to 1,748 in 1860. Most of the slaveholders were small farmers. Of the 202 slaveholders in the county, 20% owned only 1 slave, 28% owned 2 to 4, 23% owned 5 to 9, and 27% owned between 10 and 40. Only 3 slave owners had more than 40 slaves. For those families who did not live in Seguin proper, the primary occupations were stock raising and farming. The 1860 census reported 395 farms in the county. The amount of improved acreage increased dramatically between 1850 and 1860, rising from 4,433 to 42,115. There were significant increases in harvests and livestock as well. Cotton production rose from 182 bales in 1850 to 3,424 bales in 1860 and corn from 80,330 bushels to 376,425. The number of cattle increased from nearly 11,000 head to over 67,000, horses from just over 1,200 to nearly 13,000, hogs from 4,400 to 18,500, and sheep from 2,100 to nearly 7,600. Wool production rose from 4,281 pounds to 43,672 pounds. On maps of the county, Seguin resembled the center of a bicycle wheel, with roads leading out in all directions like spokes. It was a major market place as well as a shipping point for the rest of the county. When a stage line began operating between New Braunfels and Gonzales in 1847, Seguin was a popular stop. Several Guadalupe County residents found the shipping business to be a profitable venture, although some became involved in the Cart War in 1854 and 1855. Stock raisers in the county began organizing cattle drives to California and New Orleans in the 1850s. As a whole, the county did very well economically before the Civil War. Between 1850 and 1860, the value of area farms and livestock increased nearly 600%.

The people who settled the county placed great value on education. Residents of Seguin worked to establish Guadalupe College in 1848 and organized the Guadalupe High School Association in 1849. When the association had financial difficulties in the 1850s, the women of the area held a craft sale and supper to raise money, and the men held a fair. Often churches in Seguin ran private schools, such as the Montgomery Institute. The Lutheran Church operated Seguin's public schools in the 1880s and established Texas Lutheran College at Seguin in 1912. Nearly every community in Guadalupe County either had its own school or was near a community that did. Schools such as Live Oak, Elm Creek, Tiemann, Cibolo Valley,

and Geronimo provided the basic educational structure of the county until the district system was established in 1901. The Methodists supposedly established the first church in the county at Seguin in 1841. Services were held at the county courthouse until the church building was completed in 1849. By 1853, Seguin had Baptist, Presbyterian, and Episcopal congregations, in addition to Methodist. The Lutheran Church was organized in 1869. Catholics in the area occasionally received sacraments from a visiting bishop, but more frequently traveled to San Fernando Cathedral in San Antonio. Most communities in outlying areas had a small church of some sort that doubled as a schoolhouse and served as the center of social life for those people who could not go all the way to Seguin. When cars came into general use, many of the small churches closed, and their congregations began attending services in Seguin.

Guadalupe County was staunchly Democratic before the Civil War. When the *Seguin Mercury*, the county's first newspaper, began publication in 1853, residents took great interest in state and national affairs. There was enough difference of opinion to encourage the publication of a second newspaper, the *Seguin Journal*, in 1856. The 1857 gubernatorial campaign provided lively copy; the *Journal* supported Sam Houston and French Smith for governor and lieutenant governor, and the *Mercury* supported the states' rights candidates Hardin R. Runnels and Francis R. Lubbock. The *Mercury* changed its name to the *Southern Confederacy* in February 1861, and the *Journal* became the *Union Democrat*. Support for the Confederacy proved to be the majority opinion, however. John Ireland and William P. Hardeman, 2 secessionists, represented the county at the Secession Convention held in Austin on January 28, 1861, and voters in Guadalupe County approved the secession ordinance by a 314 to 22 margin. In the spring of 1861, Nathaniel Benton organized the first Guadalupe County company to fight for the Confederacy. The men trained at Camp Clark before going to Virginia as Company D of the Fourth Regiment of Texas Volunteers of Hood's Texas Brigade. Benton, who was unable to go to Virginia with Company D, later organized a volunteer cavalry company, which became Company B of the Thirty-second Texas Cavalry Regiment under Peter Cavanaugh Woods. In the fall of 1861, John Ireland recruited a group that became Company K of the Eighth Texas Regiment, which served along the Texas coast and in Louisiana. The Guadalupe Rebels, an independent military company that was organized in July 1861, trained at Camp Beauregard near the site of present McQueeney, but later dispersed to merge with other troops. A group known as the Guadalupe Rangers, a volunteer cavalry company organized in September 1861 by John Preston White, became part of the Twenty-fifth Brigade of the Texas Militia. During the war, one of the major shipping routes to Mexico crossed the Guadalupe River near Seguin, giving Guadalupe County access to markets in spite of the Union blockade of Confederate ports, but manufactured goods, sugar, coffee, medicines, and cash remained in short supply. Because most men of military age had enlisted in the Confederate Army by the end of 1861, women, children, old men, and slaves were left to keep up family farms. Many acres lay idle for lack of enough people to work them.

Although the end of the war was welcome, many people had no desire to have their local government "reconstructed." Residents of Guadalupe County chose John Ireland as delegate to the state constitutional convention that met in Austin on February 7, 1866, and elected Nathaniel Benton chief justice in July 1866. Although these men received amnesty and were acceptable officeholders according to the presidential reconstruction plan, they and most of the

other new county officials were removed from their offices in November 1867. In spite of threatened violence and bitter feelings on the part of residents, however, Guadalupe saw little of the bitter strife that many other counties experienced during this period. A Freedmen's Bureau office opened in Seguin in 1866 and supervised work contracts between former slaves and area farmers until 1868. Some blacks stayed in Seguin; others became sharecroppers or tenant farmers; still others settled in the southeastern part of the county. The communities of Capote and Sweet Home were established by former slaves. As a percentage of the total population, the number of blacks in the county steadily declined, falling from a high of 34% in 1870 to 6% in 1980. In real numbers, the black population, which numbered 2,534 in 1870, peaked at 5,681 in 1910 and fell to 3,155 by 1980.

The county voted Democratic in presidential elections from the end of Reconstruction until 1892. By the turn of the century, bitter feelings had receded, perhaps tempered by those people who had arrived after the Civil War. In 1896, the county voted Republican, preferring William McKinley to William Jennings Bryan, and contrary to the usual voting trends in the state. Democratic presidential candidates carried the county only 5 times between 1896 and 1992—Woodrow Wilson in 1912, Al Smith in 1928, Franklin D. Roosevelt in 1932 and 1936, and Lyndon B. Johnson in 1964.

Guadalupe County suffered a severe economic decline immediately following the Civil War and throughout the Reconstruction period. In 1866, residents experienced a 69% loss in taxable property. About 35% of the lost property was in slaves; the rest came from declines in total farm acreage, farm value, and livestock value, each of which had fallen nearly 50% by the time of the 1870 census. The county received a much-needed economic boost in the mid-1870s when construction of the Galveston, Harrisburg, and San Antonio Railway began. The railroad reached Seguin in 1876 and was completed to San Antonio in 1877, giving residents of Guadalupe County easier access to markets. The towns of Kingsbury, Marion, McQueeney, Cibolo, and Schertz grew up along the railroad. Area farmers could sell livestock for good prices without the risks involved in extended cattle drives. Many farmers imported fencing supplies and heavy ginning machinery. Cotton became a major crop after the county recovered from the Civil War and Reconstruction. In 1880, farmers planted over 16,000 acres in cotton, 12% of the county's improved acreage; by 1900, cotton covered more than 100,000 acres, 59% of the improved land. Production peaked in 1900 at 38,960 bales. As farmers continued to devote more land to cotton, the soil became depleted, resulting in fewer bales per acre. By 1930, 118,300 acres yielded only 8,266 bales. The low yields, combined with the onset of the Great Depression, encouraged farmers to plant more corn or to devote more of their resources to livestock. The poultry industry, which had been growing steadily since the 1880s, took a sizable jump, from 171,000 in 1920 to 268,000 in 1930. Tenant farming and sharecropping, which had accounted for the operation of 25% of the county's farms in 1880, increased steadily, peaking at 64% in 1930. The depression forced some people, many of them tenants, to leave the county; farms lost nearly 50% of their value between 1930 and 1940. The population of the county fell by nearly 10% during this period. The tenant system declined as the economy improved in the 1940s. By 1950, only about a quarter of the farms were run by tenants; that figure had declined to 6% by 1982.

Between 1870 and 1910, the number of immigrants coming to Guadalupe County rose dramatically. People arrived from Russia, Poland, England, Wales, Ireland, France, Austria, and Switzerland. The greatest increase, however, was in arrivals from Mexico. In 1870, there were 130 native Mexicans, less than 2% of the county's total population; by 1910, there were 2,863, representing 11.5% of the population. Some of the new immigrants were able to buy land of their own. Others worked on cotton farms as laborers, sharecroppers, or tenants, partially filling the gap in the work force caused by the abolition of slavery. The German-Americans were the dominant influence in the shaping of the county's cultural identity. By the 1880s, more than 40% of the population was of German descent. The immigration rate from 1870 to 1900 was such that native Germans consistently represented about 10% of the population. As World War I began in Europe in 1914, many German-Americans in the county were sympathetic to the German cause. When the US entered the war 3 years later, the atmosphere became very emotionally charged. Things German were often viewed with suspicion and tended to be suppressed. The end of the war soothed strained relationships as well as relieving the worries of soldiers' families.

The Guadalupe River was developed in the late 1920s and early 1930s as a source of hydroelectric power. A series of privately owned dams channeled water through generating plants, providing electricity for the surrounding area. Lakes Dunlap and McQueeney, as well as several smaller lakes, were formed by the dams and have become popular recreational sites. Oil was discovered by H.H. Weinert in eastern Guadalupe County in the early 1920s (in the Darst Creek oilfield), and although the new industry in no way rivaled agriculture in its importance to the county's economy, it did provide some diversity. The Luling, Dunlap, Darst, and La Vernia fields were still active in the 1980s. In 1982, wells in the county produced 1,693,730 barrels of crude oil and 976,823 cubic feet of gas. Although no war supply contracts or facility projects were assigned to Guadalupe County in the 1940s, the area did take part in the economic prosperity generated by World War II. Manufacturing establishments in the county more than doubled the number of their employees between 1940 and 1947. The per capita wage doubled as well. The county's proximity to San Antonio encouraged many residents to commute. In agriculture, emphasis continued to shift from cotton to grains and livestock as a part of the war effort.

In the 1980s, as much as 80% of the land in Guadalupe County was used for farming and ranching. Among the primary crops were sorghum, hay, oats, wheat, and corn; watermelon and peaches were also popular, and the county's pecan production was sixth in the state. Over 70% of the county's agricultural receipts in 1982 came from livestock and livestock products, mainly cattle, hogs, poultry, and milk. Although agriculture continued to be an important aspect of the economy, farm receipts represented only 12% of the county's annual income in 1985. Professional and related services, manufacturing, and wholesale and retail trade involved nearly 60% of the work force in 1982. Mineral resources, including ceramic clay, industrial sand, oil, gas, and lignite coal, gave residents the opportunity to diversify their interests. In recent years, many people have moved to Guadalupe County from San Antonio, choosing to live in Guadalupe County and work in Bexar. In 1982, 46% of the work force was employed outside the county. Between 1960 and 1980, the population of Guadalupe County rose nearly 4%, from 29,017 to 46,708; in 1990 the population was 64,873.

4.0 ARCHIVAL RESEARCH

In January 2013, Horizon conducted a cultural resources background review of the proposed 6.9-acre GGS expansion site. The background review examined an area extending 1.0 mile from the proposed boundaries of the project site. Background archival research conducted via the Internet at the THC's online *Texas Archeological Sites Atlas* (Atlas) restricted-access database and the National Park Service's (NPS) NRHP Google Earth map layer indicated the presence of no previously recorded archeological sites, cemeteries, historic properties or districts listed on the NRHP or designated as SALs, historical markers, or other cultural resources on or within a 1.0-mile radius of the proposed GGS expansion site (THC 2013).

Prehistoric archeological sites are commonly found in upland areas and on alluvial terraces near stream and river channels. The proposed GGS project site is located on the south-facing slopes of a broad upland knoll situated within the Blackland Prairie physiographic province, and no extant water bodies or stream channels are present within or adjacent to the project area. Soils mapped within the proposed project site consist of clayey residuum that weathered in situ from calcareous shale, and no Holocene-age sediments occur within the project area that would have the potential to contain archeological deposits. Typically, cultural resources associated with Houston Black clay sediments, such as those mapped within the project area, are constrained to surficial contexts and lack integrity due to erosion, historic-age farming activities, residential and industrial development, and other sources of disturbance.

In regard to historic-era resources, the lack of visible structures in proximity to the project site on topographic and aerial maps of the project area suggests a low potential for historic-era architectural or archeological resources within the limits of the proposed project site.

Three prior cultural resources surveys have been conducted within the 1.0-mile archival background research radius (Table 1). While 2 of these 3 prior surveys did not cover any portion of the current project area, 1 of the prior cultural resources surveys covered the current project's proposed 6.9-acre APE in its entirety. This prior survey was conducted in 1998 by ACI for Panda Energy International, Inc., and was associated with the original construction of the GGS facility located immediately south of the proposed expansion site (Moore and Warren 1999). This prior survey covered a larger, 134-acre proposed electric generating plant site and an associated 2.6-mile-long proposed gas pipeline,

Table 1. Previous Cultural Resource Surveys Conducted within 1 Mile of Project Area

Survey Name	Acres Surveyed	Survey Date	No. Sites Recorded within 1 Mile of APE	Site Nos. Recorded within 1 Mile of APE	Reference
Panda Energy Pipeline and Plant Survey	144	1998	0	N/A	Moore and Warren 1999
Guadalupe Power Project Survey	26	1999	0	N/A	Drake 1999
Farm-to-Market 1044 Survey	28	2006	0	N/A	Feit and Stotts 2007

APE Area of Potential Effect (of current project)

NRHP National Register of Historic Places

USGS United States Geological Survey

and the survey covered a total of 144 acres. The current project's proposed 6.9-acre expansion site falls within the previously surveyed 134-acre electric generating plant site. The 1998 survey consisted of pedestrian walkover with systematic shovel testing, and shovel testing revealed surficial pre-Holocene clay sediments with minimal to no potential to contain intact cultural resources within the current project's APE. No cultural resources were observed within the current project's APE during this prior survey. ACI recommended that no further cultural resources investigations were warranted in connection with the project and that construction be cleared to proceed. The THC concurred with the findings of ACI's survey on March 24, 1999, and cleared the proposed undertaking for construction. Copies of ACI's 1998 cultural resources survey report and the THC's concurrence are included in Appendix A.

Based on the negative results of the prior cultural resources survey that covered the current project's proposed 6.9-acre APE in its entirety; the physiographic setting of the project area away from extant water sources on an upland landform consisting of pre-Holocene clay sediments with minimal potential to contain intact archeological deposits; and the lack of previously recorded archeological sites, cemeteries, listed NRHP properties, or SALs on or in the immediate vicinity of the proposed project site, there is effectively no potential for intact cultural resources to be present within the APE that would be eligible for listing on the NRHP. No archeological or historic properties that are listed on, eligible for, or potentially eligible for inclusion in the NRHP would be adversely affected by the proposed undertaking. Furthermore, it is Horizon's opinion that the proposed project site does not need to be resurveyed for cultural resources at this time as it was recently surveyed for cultural resources in 1998, and no cultural resources were found within the current project's APE during the prior survey.

5.0 SUMMARY AND RECOMMENDATIONS

5.1 ELIGIBILITY CRITERIA FOR INCLUSION IN THE NATIONAL REGISTER OF HISTORIC PLACES

Determinations of eligibility for inclusion in the NRHP are based on the criteria presented in the Code of Federal Regulations (CFR) in 36 CFR §60.4(a-d). The 4 criteria of eligibility are applied following the identification of relevant historical themes and related research questions:

The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

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

The first step in the evaluation process is to define the significance of the property by identifying the particular aspect of history or prehistory to be addressed and the reasons why information on that topic is important. The second step is to define the kinds of evidence or the data requirements that the property must exhibit to provide significant information. These data requirements in turn indicate the kind of integrity that the site must possess to be significant. This concept of integrity relates both to the contextual integrity of such entities as structures, districts, or archeological deposits and to the applicability of the potential database to pertinent research questions. Without such integrity, the significance of a resource is very limited.

For an archeological resource to be eligible for inclusion in the NRHP, it must meet legal standards of eligibility that are determined by 3 requirements: (1) properties must possess significance, (2) the significance must satisfy at least 1 of the 4 criteria for eligibility listed above, and (3) significance should be derived from an understanding of historic context. As discussed here, historic context refers to the organization of information concerning prehistory and history

according to various periods of development in various times and at various places. Thus, the significance of a property can best be understood through knowledge of historic development and the relationship of the resource to other, similar properties within a particular period of development. Most prehistoric sites are usually only eligible for inclusion in the NRHP under Criterion D, which considers their potential to contribute data important to an understanding of prehistory. All 4 criteria employed for determining NRHP eligibility potentially can be brought to bear for historic sites.

Criterion A—Events

To be considered for listing under Criterion A, a property must be associated with 1 or more events important in the defined historic context. Criterion A recognizes resources associated with single events, such as the founding of a town, or with a pattern of events, repeated activities, or historic trends, such as the gradual rise of a port city's prominence in trade and commerce. The event or trends, however, must clearly be important within the associated context of settlement, in the case of the town, or development of a maritime economy, in the case of the port city. Moreover, the property must have an important association with the event or historic trends, and it must retain historic integrity.

Criterion B—Persons

Criterion B applies to resources associated with individuals whose specific contributions to history can be identified and documented. Persons “significant in our past” refers to individuals whose activities are demonstrably important within a local, state, or national historic context. The criterion is generally restricted to those resources that illustrate (rather than commemorate) a person's important achievements.

Criterion C—Design or Construction

This criterion applies to resources significant for their physical design or construction, including such elements as architecture, landscape architecture, engineering, and artwork. To be eligible under this criterion, a property must meet *at least one* of the following requirements—embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D—Information Potential

Certain important research questions about human history can only be answered by the actual physical material of cultural resources. Criterion D encompasses the resources that have the potential to answer, in whole or in part, those types of research questions. The most common type of property nominated under this Criterion is the archeological site (or a district composed of archeological sites). Buildings, objects, and structures (or districts composed of these property types), however, can also be eligible for their information potential. Criterion D has 2 requirements, which must *both* be met for a property to qualify—the property must have, or have had, information to contribute to our understanding of human history or prehistory, and the information must be considered important.

5.2 SUMMARY AND RECOMMENDATIONS

In January 2013, Horizon conducted a cultural resources background review of the proposed 6.9-acre GGS expansion site. The background review examined an area extending 1.0 mile from the proposed boundaries of the project site. Based on this archival background research, no archeological sites, cemeteries, historic properties or districts listed on the NRHP or designated as SALs, historical markers, or other cultural resources have been previously recorded on or within a 1.0-mile radius of the proposed GGS expansion site.

Three prior cultural resources surveys have been conducted within the 1.0-mile archival background research radius. One of these 3 prior cultural resources surveys covered the current project's proposed 6.9-acre APE in its entirety (Moore and Warren 1999). This prior survey was conducted in 1998 by ACI for Panda Energy International, Inc., and was associated with the original construction of the GGS facility located immediately south of the proposed expansion site. This prior survey covered a larger, 134-acre proposed electric generating plant site and an associated 2.6-mile-long proposed gas pipeline, and the current project's proposed 6.9-acre expansion site falls within the previously surveyed 134-acre electric generating plant site. The 1998 survey consisted of pedestrian walkover with systematic shovel testing, and shovel testing revealed pre-Holocene clay sediments with minimal to no potential to contain intact cultural resources within the current project's APE. No cultural resources were observed within the current project's APE during this prior survey. The THC concurred with the findings of the prior survey on March 24, 1999, and cleared the proposed undertaking for construction. Copies of ACI's 1998 cultural resources survey report and the THC's concurrence are included in Appendix A.

Based on the negative results of the prior cultural resources survey that covered the current project's proposed 6.9-acre APE in its entirety; the physiographic setting of the project area away from extant water sources on an upland landform consisting of pre-Holocene clay sediments with minimal potential to contain intact archeological deposits; and the lack of previously recorded archeological sites, cemeteries, listed NRHP properties, or SALs on or in the immediate vicinity of the proposed project site, there is effectively no potential for intact cultural resources to be present within the APE that would be eligible for listing on the NRHP. No archeological or historic properties that are listed on, eligible for, or potentially eligible for inclusion in the NRHP would be adversely affected by the proposed undertaking. Furthermore, it is Horizon's opinion that the proposed project site does not need to be resurveyed for cultural resources at this time as it was recently surveyed for cultural resources in 1998, and no cultural resources were found within the current project's APE during the prior survey.

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APPENDIX A:

**1998 Cultural Resources Survey Report
Archeology Consultants, Inc.**

and

Texas Historical Commission Concurrence Documentation



Environmental Consulting & Technology, Inc.

February 10, 1999
ECT No. 98328-0100

RECEIVED

FEB 16 1999

TEXAS HISTORICAL COMMISSION

Mr. Bill Martin
Texas Historical Commission
108 West 16th Street
Austin, Texas 78711

Re: Panda Guadalupe Generating Station

Dear Mr. Martin:

Panda Energy International, Inc., is developing another power generation project in Texas very similar to the project near Paris, Texas, which you are familiar with. This new project is located in Guadalupe County, south of New Braunfels. As was done for the Paris project, a cultural resources survey has been completed for the new project; I have attached a copy for your review. The survey addressed the power plant site as well as the planned route of a natural gas pipeline, which will provide fuel to the plant. The conclusion of the survey was that the project should proceed, since no significant archaeological or historical resources were found or expected.

I would greatly appreciate your written concurrence that the proposed project can proceed to construction. Your response by fax or mail at the earliest possible opportunity would be greatly appreciated.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Jeffrey L. Meling, P.E.
Vice President

JLM/edd

Attachment

cc: Steve McAdams, Panda, w/o att

3701 Northwest
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A
Cultural Resources Survey
of the
Panda Energy Pipeline Project
in
Comal and Guadalupe Counties, Texas

Prepared for

ECT, Inc.
Gainesville, Florida

by

William E. Moore and James E. Warren

December 1998

Report No. 512

William E. Moore
Principal Investigator

Archaeology Consultants, Inc.
George West, Texas

ABSTRACT

A cultural resources survey along a proposed 2.6 mile gas pipeline and an electric generating plant site (134 acres) in Comal and Guadalupe Counties, Texas was performed by Archaeology Consultants, Inc. of George West, Texas on December 7-8, 1998. A 100% pedestrian survey and shovel testing failed to uncover evidence of any previously unrecorded prehistoric or historic sites in the project area. A few tested cobbles and flakes were observed on the surface 500 feet west of previously recorded site 41GU38. These are viewed as an adjunct to this site, and their presence is not considered significant enough to record as an archeological site. Six shovel tests excavated in this area revealed no subsurface cultural evidence. It is recommended that construction be allowed to proceed.

ACKNOWLEDGMENTS

The authors are grateful to the sponsor, ECT, Inc. of Gainesville, Florida for its cooperation throughout this project. Also acknowledged is Jeff Meling of ECT, Inc. for his assistance in the field. The field crew consisted of James E. Warren, William E. Moore, Bobby Jemison and Art Romine. Carolyn Spock, Head of Records, and her staff at the Texas Archaeological Research Laboratory are acknowledged for their assistance with the records check. Joyce Warren proof-read and helped edit the manuscript.

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INTRODUCTION

This report documents the results of a Phase 1 cultural resources survey of the proposed Panda Energy Pipeline Project in Comal and Guadalupe Counties, Texas. Specifically, the area examined consisted of 2.6 miles of proposed gas pipeline with a 30 foot permanent right-of-way and a 70 foot temporary laydown area and an electric generating plant site covering 134 acres (Fig. 1). Topographic coverage of the project area is provided by the U.S.G.S. 7.5' quadrangles, Marion and New Braunfels West, Texas (Figure 1).

The field work for the current project was conducted on December 7-8, 1998 by Archaeology Consultants, Inc. with William E. Moore as Principal Investigator and a field crew of James E. Warren, William E. Moore, Bobby Jemison and Art Romine.

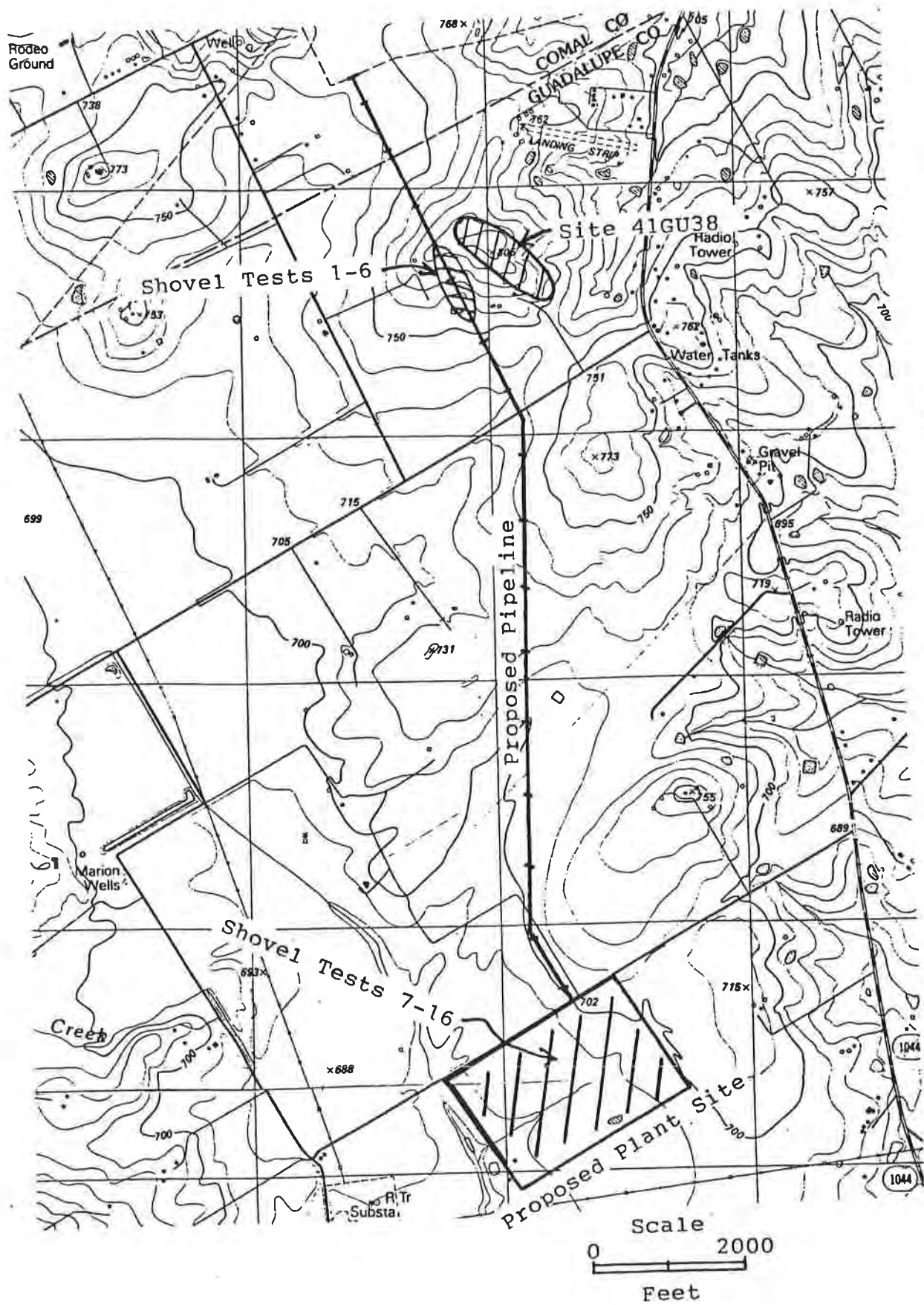
Comal and Guadalupe counties are located in Central Texas, an area containing numerous significant prehistoric and historic sites. For additional information regarding the archeological potential of this region the reader is advised to consult "Archeology in the Central and Southern Planning Region, Texas: A Planning Document", published by the Department of Antiquities Protection (now Division of Archeology), Texas Historical Commission (Mercado-Allinger, Kenmotsu and Perttula 1996).

METHODS

Prior to the field survey, Archaeology Consultants, Inc. contacted the Texas Archeological Research Laboratory (TARL) in Austin, Texas regarding previously recorded sites in the project area and vicinity. One previously recorded, multicomponent site (41GU38) was found to be approximately 500 feet east of the proposed route of the gas pipeline. This site was recorded by Espey, Huston & Associates, Inc. during a cultural resources survey of an overhead electric transmission line in 1995 (Taylor 1995). The site was described by Taylor on the site form as containing an "undetermined" prehistoric component and a "turn-of-century" historic component. The historic component was believed to be part of a farmstead based on the presence of a windmill and types of artifacts observed on the surface. The historic artifacts were found downslope from existing structures that were regarded by the survey crew as being associated. Additional investigation was not recommended based on the paucity of artifacts in an "extremely disturbed context". The location of this site is depicted on Figure 1.

The entire project area was surveyed on foot by Archaeology Consultants, Inc. with James E. Warren directing the fieldwork and William E. Moore the Principal

Figure 1. USGS Quads New Braunfels West and Marion, Tex., 7.5'.



Investigator. The survey crew walked the entire right-of-way looking for surface indications of prehistoric and/or historic sites. High probability areas, especially near previously recorded site 41GU38, were shovel tested in an attempt to determine the potential for buried cultural materials. All excavated fill from the shovel tests was screened using quarter-inch hardware cloth. The tests measured 30 x 50cm. in size and ranged from 50 to 90cm. deep.

Soil surveys for the two counties were reviewed. These volumes were checked for soil types in the project area. Aerial photographs provided by the client were examined for visual evidence of structures and other features. Soils in the shovel tested areas are Houston Black Gravelly clay (Ramsey and Bade, 1977).

RESULTS

Archival Research

A search of the Comal and Guadalupe Counties site files at TARL revealed that no previously recorded sites existed in the project area. One previously recorded site (41GU38) is located approximately 500 feet east of the gas pipeline in Guadalupe County (Figure 1). This site was considered by Espey, Huston & Associates, Inc. to be not significant, and no further work was recommended,

The Field Survey

The Gas Transmission Pipeline

This line began at a gas metering station and proceeded southward to the proposed Panda Electric Generating Plant Site. The distance is about 2.6 miles. The permanent right-of-way will be 30 feet wide, and a temporary lay-down area (70 feet wide) will parallel the proposed pipeline. Virtually all of this line is in cultivation and has been disturbed through agricultural activities. Only the gravel covered hilltops are considered likely to yield evidence of aboriginal lithic testing/procurement activities. The entire surface of the project was carefully examined for cultural materials, but only a sparse scatter of prehistoric and historic artifacts was observed about 500 feet west of previously recorded site 41GU38 along the proposed pipeline route. Six shovel tests were excavated in this area which failed to encounter any cultural evidence beneath the surface. The surface and subsurface in this area contained numerous natural chert cobbles, many of which had been altered by farming equipment. Most of the proposed pipeline route was in cultivated fields or grazed pastures where visibility was good. Therefore, no shovel tests were excavated in these areas.

The Electric Generating Plant Site

The entire plant site was surveyed. No cultural evidence was encountered on the surface or in any of the 10 shovel tests excavated in that portion of the plant site which will be disturbed by construction.

All of the shovel tests (along the pipeline and on the plant site) revealed similar profiles. The upper zone was black (10YR2/1) clay with large chert cobbles. The second zone was gray (10YR4/1) clay with large chert cobbles. The upper zone was 20-30 cm. thick, and the depth of the shovel tests ranged from 50 to 90cm.

RECOMMENDATIONS

It is recommended that the project should proceed as planned by the project sponsor. Should undisturbed cultural materials or features not discussed in this report be encountered during construction, work must cease until the situation can be evaluated by the Archeology Division, Texas Historical Commission.

REFERENCES CITED

- Mercado-Allinger, Patricia A., Nancy Adele Kenmotsu and Timothy K. Perttula
1993 *Archeology in the Central and Southern Planning Region, Texas: A Planning Document*. Department of Antiquities Protection, Texas Historical Commission, Cultural Resource Management Report 7. Austin.
- Ramsey, R. N., N.P. Bade
1977 *Soil Survey of Guadalupe County, Texas*. Soil Conservation Service, Texas Agricultural Experiment Station, Austin.
- Taylor, Rick
1995 *A Cultural Resources Survey of the Schumansville Transmission Line, Comal and Guadalupe Counties, Texas*. Espey, Huston & Associates, Inc. Document Number 95-1380.

Project Review Database
Texas Historical Commission

99-3-6361

☐ Do Not Scan If Checked

Project Name: Panda Energy Pipeline

Agency No.:

Description: survey along proposed gas pipeline/electric generating plant site

Lead Agency: Federal Energy Regulatory Commission

Jurisdiction: Federal

TAC Permit No.:

Received
3/15/99

Entered
3/16/99

Due
4/14/99

Counties: Comal
Guadalupe

Lead Reviewer:*
Bill Martin

Second Reviewer:
Third Reviewer:

Reviewer Responses:

Review Codes:

F2

F19

F31

Responded:

3/24/99

Eligible

Sites:

☒

Ineligible

Sites:

☒

Undetermined

Sites:

☒

Acres:

134

Eligible Structures:

☐

Ineligible Structures:

☐

Public Information Sent:

☐

Notes:

APPROVED

MAR 25 1999

Return to mailing

A
Cultural Resources Survey
of the
Panda Energy Pipeline Project
in
Comal and Guadalupe Counties, Texas

RECEIVED

MAR 15 1999

TEXAS HISTORICAL COMMISSION

Approved
3/11/99

Prepared for
ECT, Inc.
Gainesville, Florida

by
William E. Moore and James E. Warren

December 1998

NO EFFECT
On National Register-eligible/listed properties
or State Archeological Landmarks
PROJECT MAY PROCEED
by *William E. Moore*
for F. Lawrence Oaks
State Historic Preservation Officer
Date *3/24/99*

**DRAFT REPORT
ACCEPTABLE**
Please submit 20 final report copies
by *William E. Moore*
for F. Lawrence Oaks
State Historic Preservation Officer
Date *3/24/99*

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A cultural resources survey along a proposed 2.6 mile gas pipeline and an electric generating plant site (134 acres) in Comal and Guadalupe Counties, Texas was performed by Archaeology Consultants, Inc. of George West, Texas on December 7-8, 1998. A 100% pedestrian survey and shovel testing failed to uncover evidence of any previously unrecorded prehistoric or historic sites in the project area. A few tested cobbles and flakes were observed on the surface 500 feet west of previously recorded site 41GU38. These are viewed as an adjunct to this site, and their presence is not considered significant enough to record as an archeological site. Six shovel tests excavated in this area revealed no subsurface cultural evidence. It is recommended that construction be allowed to proceed.

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This report documents the results of a Phase 1 cultural resources survey of the proposed Panda Energy Pipeline Project in Comal and Guadalupe Counties, Texas. Specifically, the area examined consisted of 2.6 miles of proposed gas pipeline with a 30 foot permanent right-of-way and a 70 foot temporary laydown area and an electric generating plant site covering 134 acres (Fig. 1). Topographic coverage of the project area is provided by the U.S.G.S. 7.5' quadrangles, Marion and New Braunfels West, Texas (Figure 1).

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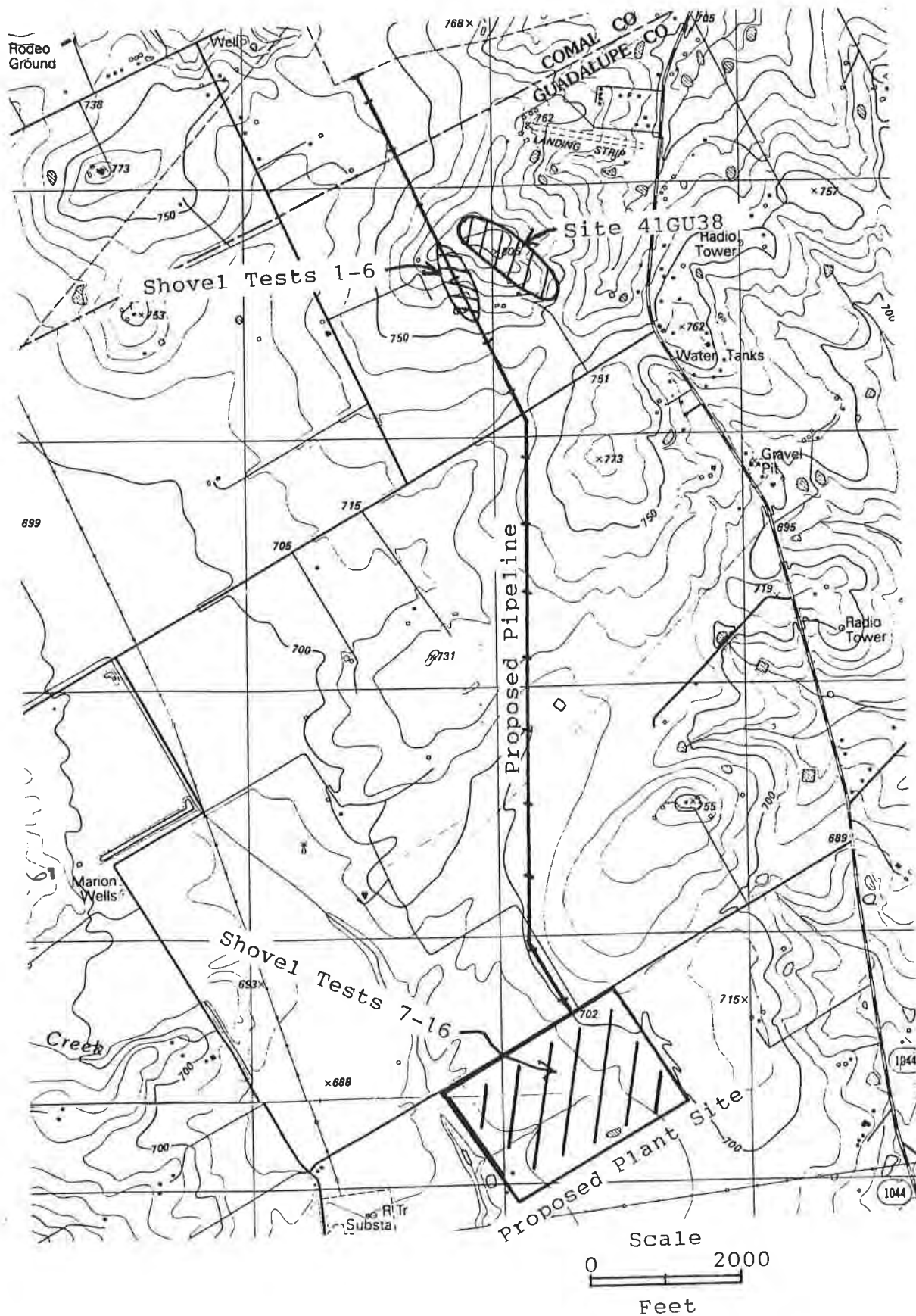
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The entire project area was surveyed on foot by Archaeology Consultants, Inc. with William E. Moore the Principal Investigator. The survey crew walked the entire

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right-of-way looking for surface indications of prehistoric and/or historic sites. High probability areas, especially near previously recorded site 41GU38, were shovel tested in an attempt to determine the potential for buried cultural materials. All excavated fill from the shovel tests was screened using quarter-inch hardware cloth. The tests measured 30 x 50cm. in size and ranged from 50 to 90cm. deep.

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Archival Research

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Six shovel tests were excavated in this area which failed to encounter any cultural evidence beneath the surface. The surface and subsurface in this area contained thousands of natural chert cobbles, many of which had been altered by farming equipment. Less than 10 of these cobbles appeared to have been manually altered. The field crew did not have permission to survey outside of the proposed ROW, therefore a connection between Site 41GU38

ST-8:
Depth: 80cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-80cm. 10YR 4/1 clay
Cultural evidence: None

ST-9:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-10:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-11:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-12:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-13:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-14:
Depth: 70cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-70cm. 10YR 4/1 clay
Cultural evidence: None

ST-15:
Depth: 60cm.
Profile: 0-20cm. 10YR 2/1 clay
 20-60cm. 10YR 4/1 clay
Cultural evidence: None

ST-16:
Depth: 60cm.
Profile: 0-30cm. 10YR 2/1 clay
 30-60cm. 10YR 4/1 clay
Cultural evidence: None

APPENDIX B:

Russ Brownlow Resume

RUSSELL K. BROWNLOW
PRINCIPAL / CULTURAL RESOURCES DIRECTOR

TECHNICAL SPECIALTIES

- Cultural resource management (CRM);
- Prehistoric archeology of Texas, Oklahoma, and Louisiana;
- Compliance with the Antiquities Code of Texas (ACT), Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Native American Graves Protection and Repatriation Act (NAGPRA);
- Prehistoric lithic technology (flint knapping);
- Ethnohistory;
- Project management;
- Archeological survey, testing, and data recovery;
- Technical report writing

EDUCATION

- B.A., Anthropology / Archeology, The University of Texas at Austin, 1992
- M.A., Anthropology, The University of Houston, 1998

PROFESSIONAL REGISTRATIONS AND TRAINING

- Registered Professional Archeologist since 2001 (RPA ID# 11924)
- TxDOT pre-certified for Service 2.10.1 (Archeological Surveys, Documentation, Excavations, Testing, Reports, and Data Recovery Plans)
- Mine Safety and Health Administration (MSHA) certified through 11/23/12

PROFESSIONAL / TECHNICAL SOCIETIES

- Texas Archeological Society (TAS)
- Council of Texas Archeologists (CTA)
- Register of Professional Archeologists (RPA)
- Texas Association of Environmental Professionals (TAEP)

AWARDS

- Texas Historical Commission Award of Merit (2004) for exceptional field research, laboratory analysis, and report production associated with 41WM815 in Williamson County, Texas

PROFESSIONAL EXPERIENCE

- Horizon Environmental Services, Inc., Austin, Texas
 - 2000 to present
 - Horizon Principal / Cultural Resources Director / Principal Investigator / Project Manager
- Texas Archeological Research Laboratory, University of Texas at Austin
 - 1998 to 2000
 - Research Associate
- Archeological and Environmental Consultants, Inc., Austin, Texas
 - 1999
 - Project Archeologist
- Houston Museum of Natural Science, Houston, Texas
 - 1998
 - Consultant
- University of Houston, Department of Anthropology, Houston, Texas
 - 1997 to 1998
 - Teaching Assistant
- Espey, Huston & Associates, Inc., Austin, Texas (now PBS&J)
 - 1994 to 1998
 - Field Technician, Laboratory Technician, Crew Chief, Field Director
- Prewitt and Associates, Inc., Austin, Texas
 - 1993
 - Field Technician
- Texas Archeological Research Laboratory, University of Texas at Austin
 - 1992
 - Laboratory Technician

FIELDS OF EXPERIENCE

Mr. Brownlow has over 19 years of experience conducting archeological research for both public institutions and private consulting firms. Examples of his archeological project experience include the following:

- In excess of 300 cultural resources surveys completed for a wide array of projects within Texas, Oklahoma, and Louisiana;
- National Register of Historic Places and/or State Archeological Landmark eligibility testing on a minimum of 36 archeological sites;
- Data recovery/mitigation efforts on a minimum of 11 archeological sites;

- Excavation of human burials from at least 7 different archeological sites including a historic cemetery containing in excess of 431 human interments, a Caddoan cemetery containing 16 human interments, and a burned rock midden site containing at least 4 human interments;
- Archeo-Geophysical (remote sensing) sampling on 3 archeological sites;
- Authoring or co-authoring over 250 technical reports of archeological investigations;
- Preparation of several archeological avoidance plans for seismic projects;
- Countless desktop archival reviews to determine the potential for cultural resources on various properties for inclusion in non-archeological documents (i.e. Phase I Environmental Site Assessments, Categorical Exclusions, etc.);
- Section 106 and/or Antiquities Code of Texas consultation for hundreds of projects with various permitting agencies including the Texas Historical Commission, Texas Water Development Board, Texas Parks and Wildlife Department, US Army Corps of Engineers, US Fish and Wildlife Service, Oklahoma State Historic Preservation Office, the Louisiana Department of Culture, Recreation, and Tourism, as well as a vast array of Tribal Historic Preservation Officers;
- In addition to his cultural resources experiences, Mr. Brownlow has also prepared a variety of non-archeological documents includes numerous Categorical Exclusions (CEs), Phase I Environmental Site Assessments (Phase I ESAs), Environmental Reports (ERs), and Environmental Assessments (EAs). He has also contributed to the production of several Environmental Impacts Statements (EISs).

Types of projects in which Mr. Brownlow has participated in or managed cultural resources services include:

- Oil and gas exploration, development, and transportation;
- Ethanol production;
- Coastal and inland residential, commercial, and industrial land development;
- Solid waste landfills;
- Dredging activities;
- Surface lignite mines;
- Municipal planning;
- Reservoir development;
- Coastal port and channel improvements;
- Transportation corridors;
- Water and wastewater transportation and treatment;
- Electricity generation and transportation;
- University research;
- Military installations.

PRESENTATIONS

- Flint knapping and stone tool technology lecture for the 1997 spring semester Introduction to Archeology class at the Department of Anthropology, University of Houston.
- Flint knapping and stone tool technology lecture for the 1997 spring semester Archeology of Texas class at the Department of Anthropology, University of Houston.
- Flint knapping and stone tool technology lecture for the 1997 fall semester Introduction to Archeology class at the Department of Anthropology, University of Houston.
- Flint knapping and stone tool technology lecture for the 1997 fall semester Introduction to Physical Anthropology class at the Department of Anthropology, University of Houston.
- Two flint knapping demonstrations for the Brazoria County summer archeology programs sponsored by BCI Long Distance.
- Perdiz Arrow Point Origins for the TARL Brown Bag Lunch, 1998.
- Perdiz Arrow Point Origins for the Houston Archeological Society, 1998.
- Perdiz Arrow Point Origins for the Travis County Archeological Society, 1998.
- Flint knapping demonstration for the Austin French Legation's annual summer camp program, 1999.
- Data Recovery Investigations at the Holt Site (41HY341). "Burned Rock Midden" Symposium at the Annual Council of Texas Archeologists Spring Meeting, 2005.
- Yearly flint knapping demonstrations for Camp Mabry's annual "Muster Day" Event.
- Routine visits to various elementary school classes to conduct flint knapping demonstrations and present archeological career details for "career days".

ARTICLES

Brownlow, R.K.

- 2000 Excavations at Rice's Crossing (41WM815). *Current Archeology in Texas*. November 2000, Volume 2, No. 2. Texas Historical Commission. Austin, Texas.
- 2009 In Search of the Lost Community of Nottingham: Archival and Archeo-Geophysical Investigations on Site 41GV71. *Current Archeology in Texas*. April 2009, Volume 11, No. 1. Texas Historical Commission. Austin, Texas.

TECHNICAL PUBLICATIONS

Espey, Huston & Associates (EH&A now PBS&J):

Brownlow, R.K.

- 1994 *Facilities Response Plan for Holly Street Power Plant, Austin, Texas*. EH&A Doc. No. 941257. Austin, Texas.

- 1995 *Facilities Response Plan for Decker Lake Power Plant, Austin, Texas*. EH&A Doc. No.950028. Austin, Texas.
- 1996 *Intensive Cultural Resource Survey of Proposed ORYX-MOYER 1-5 New 4-inch Pipeline Project*. EH&A Doc. No. 960270. Austin, Texas.

Schmidt, J.S., M.E. Cruse, and R.K. Brownlow

- 1995 *Cultural Resources Survey of Camp Swift, Bastrop County, Texas*. EH&A Doc. No. 951178. Austin, Texas.

Masters Thesis:

Brownlow, R.K.

- 1998 *Evaluating the Co-occurrence of Arrow Point Types in South Texas: Archaeological Excavations at the Batot-Hooker Site (41ME34), Medina County, Texas*. Masters Thesis presented to the Anthropology Department of the University of Houston. Houston, Texas.

Texas Archeological Research Laboratory (TARL):

Brownlow, R.K.

- 1999 Intensive Cultural Resource Survey of Fort Wolters Army National Guard Base, Parker and Palo Pinto Counties, Texas. *Studies in Archeology* 32. Texas Archeological Research Laboratory, The University of Texas at Austin.
- 2000 *Emergency Burial Salvage at 41PR88 on the Fort Wolters Training Facility, Parker Co., Texas*. Letter Report. Texas Archeological Research Laboratory, The University of Texas at Austin.
- 2000 Archeological Investigations at 41WM815, A Blackland Prairie Site, Williamson County, Texas. *Studies in Archeology* 36. Texas Archeological Research Laboratory, The University of Texas at Austin.
- 2001 National Register Eligibility of Four Sites at the Texas Army National Guard's Fort Wolters Facility, Parker Co., Texas. *Studies in Archeology* 37. Texas Archeological Research Laboratory, The University of Texas at Austin.

Contributing author in:

Takac, P.R., J.G. Paine, and M.B. Collins

- 2000 Reassessment of Ten Archeological Sites along the Houston Ship Channel – Morgan's Point to Buffalo Bayou, Harris County, Texas. *Studies in Archeology* 38. Texas Archeological Research Laboratory, The University of Texas at Austin.

Archeological and Environmental Consultants, Inc.:

Pertulla, T.K. and R.K. Brownlow

- 1999 An Archeological Survey of the Jett Road Water Project in Bexar County, Texas. *Letter Report of Investigations, No. 37.* Archeological & Environmental Consultants, Inc. Austin, Texas.

Horizon Environmental Services, Inc.:

Brownlow, R.K.

- 2000 *An Intensive Cultural Resources Survey of a Proposed Wal-Mart Site at the Northwestern Corner of the Intersection of U.S. Highway 183 and FM 1431, Cedar Park, Williamson County, Texas.* HJN 000255 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *Backhoe Trench Investigations for a Proposed Wastewater Line Crossing Brushy Creek on the Ivie Tract, Williamson County, Texas.* HJN 010016 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *Profile Documentation of Erosional Gullies in Borrow Pits Nos. 1 and 2 on Site 41WA255 for the Texas Department of Criminal Justice's Estelle Unit, Huntsville, Walker County, Texas.* Texas Antiquities Committee Permit No. 2509. HJN 000425 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of Centennial Pipeline's Proposed Pump Stations A, B, and C, Bearegard, La Salle, and West Carroll Parishes, Louisiana.* HJN 000302 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of the Proposed Centennial Pipeline Right-of-Way, Beauregard Parish, Louisiana.* HJN 000151 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of the Proposed Centennial Pipeline Right-of-Way, Jefferson, Orange, Jasper, and Newton Counties, Texas.* HJN 000151 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of a Proposed 15-acre Leander Independent School District School Site Located on the Steiner Ranch Tract, Travis County, Texas.* Texas Antiquities Committee Permit No. 2583. HJN 010136 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey and Subsequent Testing Along a Proposed Water/Wastewater Line within the Northern Right-of-Way of FM 1431 East, Williamson County, Texas.* Texas Antiquities Committee Permit Nos. 2385 and 2433. HJN 000053 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of 15 Proposed Well Sites and Flow Lines on the Freeman Ranch and Tucker Leases, Texas County, Oklahoma.* HJN 010239 AR. Horizon Environmental Services, Inc. Austin, Texas.

- 2001 *An Intensive Cultural Resources Survey of 22 Proposed Well Sites and Flow Lines on the Freeman Ranch and Tucker Leases, Texas County, Oklahoma.* HJN 010239 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of 13 Proposed Well Sites and Flow Lines on the Freeman Ranch and Tucker Leases, Texas County, Oklahoma.* HJN 010239 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of the Proposed Legacy Ridge Estates Residential Subdivision and Golf Course, Bonham, Fannin County, Texas.* HJN 010348 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of the Proposed UNOCAL Keystone Gas Storage Project, Winkler County, Texas.* HJN 000256 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of 300 Acres on the Phillips Ranch, Hays County, Texas.* HJN 010367 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of the approximately 25-acre United RV Campground, San Marcos, Hays County, Texas.* HJN 010382 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2001 *An Intensive Cultural Resources Survey of a Proposed Lower Neches Valley Authority 33-acre Water Treatment Plant Site and Associated Waterline Routes, Winnie, Chambers County, Texas.* HJN 010090. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of the 4.5-mile Rainbolt Lateral Pipeline Right-of-Way, Robertson and Leon Counties, Texas.* HJN 010392 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of the Proposed Widening of Ranch-to-Market Road 2243 (Alternates A and B), Leander, Williamson County, Texas.* Texas Antiquities Committee Permit No. 2722. HJN 010185 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of 12 Proposed Well Sites and Flow Lines on the Freeman Ranch and Tucker Leases, Texas County, Oklahoma.* HJN 010239 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of a Proposed 1.25-mile Natural Gas Pipeline Right-of-Way, Sweeny, Brazoria County, Texas.* HJN 020041 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of a Proposed 12-acre Home Depot Site at the Rivery, Georgetown, Williamson County, Texas.* HJN 020027 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey for a Proposed 29-mile Crude Oil Pipeline Right-of-Way, Port Neches Route of the Cameron Highway Pipeline Project, Jefferson County, Texas.* HJN 010344 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of the Proposed 27-acre Target in Bee Cave #2 Site, Bee Cave, Travis County, Texas.* HJN 020067 AR. Horizon Environmental Services, Inc. Austin, Texas.

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- 2002 *An Intensive Cultural Resources Survey of a Proposed 122-acre Target Store Site Located at Parmer Lane and Interstate Highway 35, Austin, Travis County, Texas.* HJN 010354 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2002 *An Intensive Cultural Resources Survey of the 197-acre El Camino Real Phase I Tract, A Proposed Subdivision Site in San Marcos, Hays County, Texas.* HJN 020123 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of the Proposed 75-acre Greenshores Subdivision Tract Located in Northwest Austin, Travis County, Texas.* HJN 020145 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of the 100-acre Wolf Tract, A Proposed Development Site in Georgetown, Williamson County, Texas.* HJN 020144 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2002 *Backhoe Trench Investigations Conducted along the 8-mile Pinnacle Gregory A-1 Pipeline Right-of-Way, Anderson County, Texas.* Texas Antiquities Committee Permit No. 2916. HJN 020149 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of a Proposed 8-mile EPGT Natural Gas Transmission Pipeline in Travis and Hays Counties, Texas.* HJN 020128 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2002 *An Intensive Cultural Resources Survey of a Proposed 6-acre Village 7 Sewer Treatment Plant #1 Located in The Woodlands, Harris County, Texas.* HJN 020207 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2004 *An Intensive Cultural Resources Survey of Proposed Oil/Gas Well Development on the Attwater's Prairie Chicken National Wildlife Refuge, Colorado County, Texas.* USFWS Special Use Permit #ATW-04-008. HJN 040088 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2004 *Archeological Avoidance Plan: Proposed Seismic Survey, Brigham Oil and Gas, L.P., Alamo Project, Aransas, Calhoun, and Refugio Counties, Texas.* HJN 040006 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2005 *An Intensive Cultural Resources Survey of the Proposed 452-acre Park Lakes East Development near Humble, Harris County, Texas.* HJN 050131 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2005 *Archeological Monitoring of Scraping Investigations within the Port Bolivar Community Cemetery, Galveston County, Texas.* Texas Antiquities Committee Permit No. 3857. HJN 050057 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2005 *An Intensive Cultural Resources Survey of the USACE Jurisdictional Areas within a Proposed Ethanol Plant Facility in Hereford, Deaf Smith County, Texas.* HJN 050113 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2006 *An Intensive Cultural Resources Survey of the USACE Jurisdictional Areas Associated with the Proposed Realignment of Macho Creek, Duval County, Texas.* HJN 060199 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2006 *An Intensive Cultural Resources Survey of the USACE Jurisdictional Areas Associated with 3 Proposed Detention Ponds and 2 Proposed Road Crossings within the Proposed Headwaters of Barton Creek Development, Drippings Springs, Hays County, Texas.* HJN 040116 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2006 *An Intensive Cultural Resources Survey of the Area of Potential Effect within the 164-acre Webb Development, Austin, Travis County, Texas.* HJN 050068 AR. Horizon Environmental Services, Inc. Austin, Texas.

- 2006 *Cultural Resources Assessments of 4 Maintenance Locations along the Longhorn Partners Pipeline, L.P. in Schleicher County, Texas.* HJN 050175 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2006 *An Intensive Cultural Resources Survey of the Proposed Ridgewood Detention Basin, Beaumont, Jefferson County, Texas.* Texas Antiquities Committee Permit No. 4029. HJN 060014 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2007 *An Intensive Cultural Resources Survey of 4 HDD Locations on the Proposed Pecan Pipeline Right-of-Way, Palo Pinto County, Texas.* HJN 060191 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2007 *An Intensive Cultural Resources Survey and Subsequent NRHP Eligibility Testing of Areas within the Proposed 238-acre Blanco Riverwalk Development, Hays County, Texas.* HJN 060195 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2009 *An Intensive Cultural Resources Survey of Louisiana Midstream Gas Services' proposed CHK LA Minerals 32 H-1 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 107. Horizon Environmental Services, Inc. Austin, Texas.
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- 2010 *An Intensive Cultural Resources Survey of Louisiana Midstream Gas Services' proposed Porter-Beach 26-12-1 Natural Gas Gathering Line in DeSoto Parish, Louisiana.* HJN 080147 AR 125. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Cultural Resources Survey of Louisiana Midstream Gas Services' proposed Gilliam 23-13-14 H-1 Natural Gas Gathering Line in DeSoto Parish, Louisiana.* HJN 080147 AR 130. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Cultural Resources Survey of Petrohawk Energy Corporation's Proposed Bolton 26-H1 Well Pad and Access Road in Bossier Parish, Louisiana.* HJN 100011 AR. Horizon Environmental Services, Inc. Austin, Texas.

- 2010 *An Intensive Cultural Resources Survey of Petrohawk Energy Corporation's Proposed Ratzburg 18H No.1 Well Pad and Access Road in Caddo Parish, Louisiana.* HJN 100029 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Cultural Resources Survey of Louisiana Midstream Gas Services' proposed Nabors Properties 13 H-1 Natural Gas Gathering Line in DeSoto Parish, Louisiana.* HJN 080147 AR 124. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Cultural Resources Survey of Louisiana Midstream Gas Services' proposed Brush Bayou Natural Gas Gathering Line in Caddo Parish, Louisiana.* HJN 080147 AR 138. Horizon Environmental Services, Inc. Austin, Texas.
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- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed CHK LA Minerals 24-13-12 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 140. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed Mansfield Lateral 4A East Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 141. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed Calhoun 9-13-12 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 149. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Petrohawk Energy Corporation's Proposed TBD 22-16N-10W Off-Unit Alt. No. 1 Well Pad and Access Road in Bienville Parish, Louisiana.* HJN 100057 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Talco Midstream Assets, Ltd's Proposed Country Club 29H No.2 Natural Gas Gathering Line, Caddo and DeSoto Parishes, Louisiana.* HJN 100058 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Petrohawk Energy Corporation's Proposed Weyerhauser 29H-1 and 32H-1 Well Pad Projects, DeSoto Parish, Louisiana.* HJN 100068 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed Wiggins 31-12-12 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 152. Horizon Environmental Services, Inc. Austin, Texas.

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- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed Keatchie 15-14-15 H-1 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 155. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *An Intensive Phase I Cultural Resources Survey of Louisiana Midstream Gas Services' Proposed JMD 3-14-15 H-1 Natural Gas Gathering Line, DeSoto Parish, Louisiana.* HJN 080147 AR 158. Horizon Environmental Services, Inc. Austin, Texas.
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- 2010 *An Intensive Cultural Resources Survey of G-M WSC's Proposed Surface Water Treatment Facility and Intake Structure Project in Sabine County, Texas.* Texas Antiquities Committee Permit No. 5676. HJN 10074 AR. Horizon Environmental Services, Inc. Austin, Texas.
- 2010 *Cultural Resources Investigations Conducted for the Proposed Rocky Creek Ranch WWTP Project in Travis County, Texas.* Texas Antiquities Committee Permit No. 5682. HJN 100081 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2010 *An Intensive Phase I Cultural Resources Survey of Petrohawk Energy Corporation's Proposed TBD 19-16N-11W Off Unit Well Pad and Access Road in Bossier Parish, Louisiana.* HJN 100088 AR. Horizon Environmental Services, Inc. Austin, Texas.
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- 2010 *An Intensive Cultural Resources Survey of the USACE Jurisdictional Areas within the Proposed Crossings at Plum Creek Development in Hays County, Texas.* HJN 100067 AR. Horizon Environmental Services, Inc. Austin, Texas.
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