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## **Preliminary Cultural Resources Investigations for the Pharr-Reynosa International Bridge, Hidalgo County, Texas**

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## Preliminary Cultural Resources Investigations for the Pharr-Reynosa International Bridge, Hidalgo County, Texas

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**PRELIMINARY CULTURAL RESOURCES INVESTIGATIONS FOR  
THE PHARR-REYNOSA INTERNATIONAL BRIDGE,  
HIDALGO COUNTY, TEXAS**

by

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and

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with Contributions by

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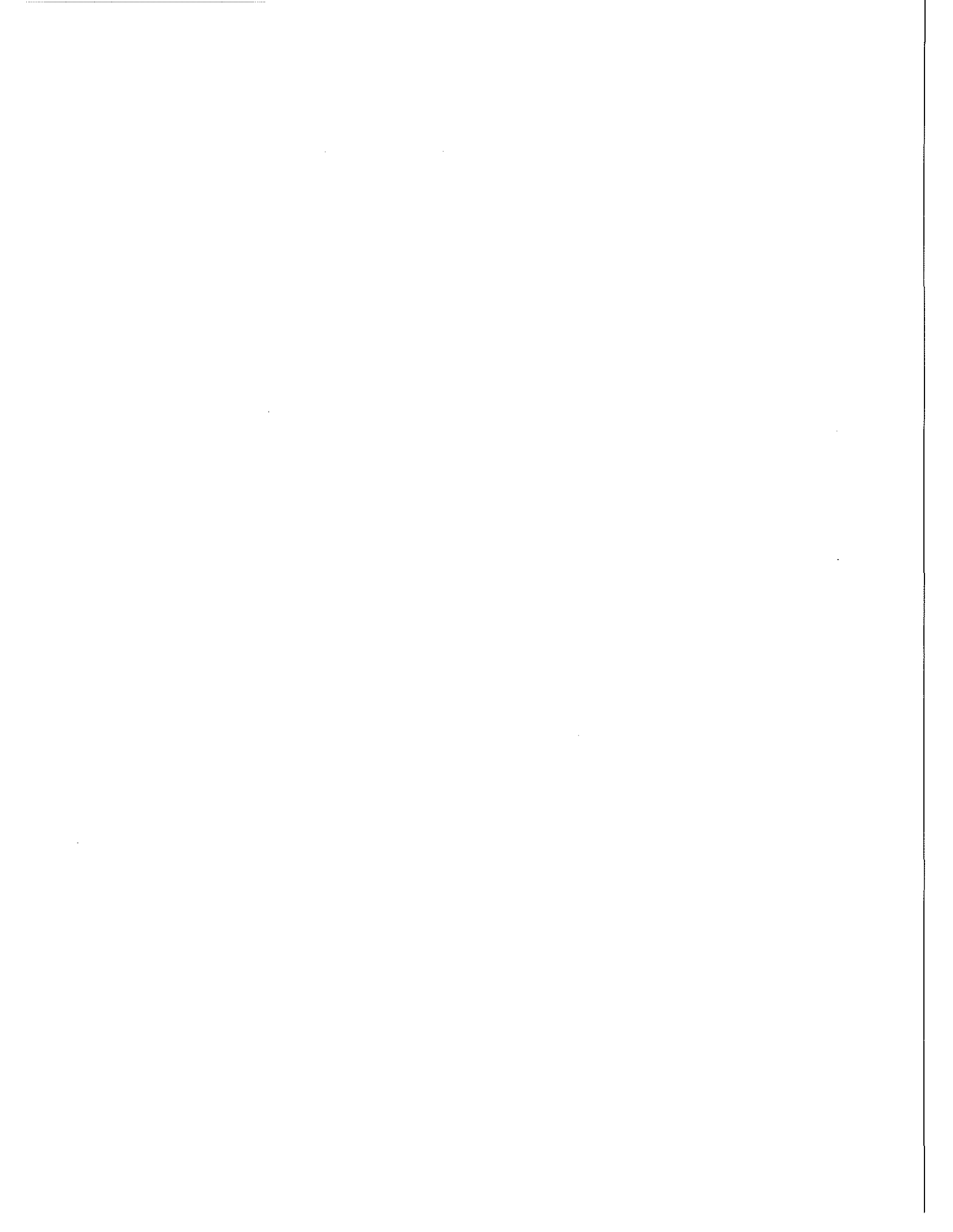
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San Antonio, Texas

by

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## ABSTRACT

Archeological, archival, and geomorphologic investigations were conducted for the proposed Pharr-Reynosa International Bridge Project in Hidalgo County, Texas, by Prewitt and Associates, Inc. from October 12-27, 1992. The purposes of these investigations were to locate and record any cultural resources within the project area, determine their eligibility for listing on the National Register of Historic Places and designation as State Archeological Landmarks, and to provide an overview of the Holocene geomorphic history of the project area.

The geomorphic history of the project area suggests that the Rio Grande has experienced continuous channel aggradation from the end of the Pleistocene to ca. 1000 B.P. Climatic changes and diminishing sediment loads led to channel incision around 1000 B.P., forming a low late Holocene terrace and resulting in increased sinuosity and a decreased channel width-to-depth ratio.

The investigations included a stratified sample survey of approximately 162 hectares (400 acres) and the excavation of 16 backhoe trenches and 14 shovel tests. A total of 10 sites, consisting of 10 historic and 2 prehistoric components, were documented. Six standing architectural properties, each consisting of a structure or groups of structures, also were documented.

Four of the sites (41HG153, 41HG155, 41HG156, and 41HG158) are considered to be potentially eligible for listing on the National Register of Historic Places and for designation as State Archeological Landmarks. Two of the architectural properties—the Carmichael and Sorenson farmsteads—also may be eligible for listing on the National Register. The four potentially eligible sites consist of four historic and two prehistoric components. The historic components date from the Texas Republic period to the early twentieth century, representing the establishment and development of the El Capote Ranch community. The two prehistoric components (41HG153 and 41HG158), of which only 41HG153 is potentially eligible, represent Late Prehistoric and unknown prehistoric components, respectively.

## ACKNOWLEDGMENTS

The successful completion of this project could not have occurred without the cooperation and assistance of a number of individuals. Lynn Kitchen of Malcolm Pirnie, Inc. was most helpful in scheduling, coordinating, and obtaining assistance and access permission from the City of Pharr and other landowners. A number of individuals representing the City of Pharr, including City Manager Pete Sepulveda, Jr., Assistant City Manager Ernesto S. Silva, and Assistant Public Works Director Frank Vecchio, helped in obtaining land access and a backhoe and in supplying legal documents and aerial photographs to the Project Historian. The backhoe excavations were completed by Robert Trejo and Roy Gutierrez of the Pharr Public Works Department. Their work and contributions to the project are greatly appreciated. The hard work and dedication of David Villarreal, who assisted with the archeological and geomorphologic field investigations, is also greatly appreciated.

Numerous local residents cooperated with the historian, suggesting sources of information and making contact with knowledgeable local informants. Individuals who were especially helpful to the research effort included David Mycue at the Hidalgo County Historical Museum, Mrs. Margaret McAllen of Linn, and Dr. Robert Norton and Mrs. Anna May Kelly of McAllen. In the project area itself, former and current residents Malcolm Dyer, Mrs. Wilbur Lucas, Miss Josephine Doffing, Roberto Garza, Nestor Garza, Jr., Manuel E. Cantu, and Prudencio Cantu discussed the history of El Capote and the settlement of the Fays Corner area. The Garzas and Cantus, especially, were accommodating and accompanied the historian to the project area where they pointed out the former location of houses at El Capote and explained the complex relationships of the families who lived there.

Institutional assistance was provided not only by the Hidalgo County Historical Museum but also by the Lower Rio Grande Historical Collection at Pan-American University in Edinburg, and at numerous repositories in Austin, including the General Land Office, Office of the Secretary of State (Corporations Division), Texas State Library and Archives, and Center for American History at The University of Texas at Austin.

The acknowledgments would not be complete without mentioning the help and assistance provided by the staff of Prewitt and Associates, Inc. As always, Elton R. Prewitt (Principal Investigator) provided the senior author with invaluable advice and support throughout the field investigations and production of this report. Jeanine McDonald directed the laboratory work for the project. Dr. Amy C. Earls identified and dated the many historic artifacts. Sandra Hannum drafted all the maps and nonartifact figures and assisted in the report production. Ellen Atha illustrated all of the artifacts, and Linda N. Foster edited and produced the report.

# INTRODUCTION AND ENVIRONMENTAL BACKGROUND

1

## INTRODUCTION

An archeological survey and geomorphologic assessment for the proposed Pharr-Reynosa International Bridge in Hidalgo County, Texas, was conducted by Prewitt and Associates, Inc. under Texas Antiquities Committee Archeology Permit No. 1144. The permit and subsequent investigations were authorized under the State of Texas Antiquities Code (Texas Natural Resource Code of 1977, Title 9, Chapter 191, VTCS 6145-9); Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665, P.L. 96-515), as amended in 1980; Executive Order 11593 (Protection and Enhancement of the Cultural Environment 1971); and the Archeological and Historic Preservation Act of 1974 (P.L. 93-291), as amended. The work was performed under a subcontract with Malcolm Pirnie, Inc. of San Antonio, Texas.

The Pharr-Reynosa International Bridge project area is located in south-central Hidalgo County (Fig. 1). The project area, consisting of bridge and highway rights-of-way and areas of secondary construction impact, encompasses approximately 766 hectares (1,895 acres) extending north from the Rio Grande to approximately 350 m north of U.S. Highway 281 at Fays Corner.

The archeological survey and geomorphologic investigations were conducted by Karl Kibler, Project Archeologist and Geomorphologist, and David Villarreal, Archeological Assistant, on October 12-27, 1992. Archival research was undertaken by Martha Doty Freeman, Project Historian, who reviewed files at the Texas Historical Commission, General Land Office, Texas State Library and Archives, Office of the Secretary of State, Hidalgo County courthouse, and Center for

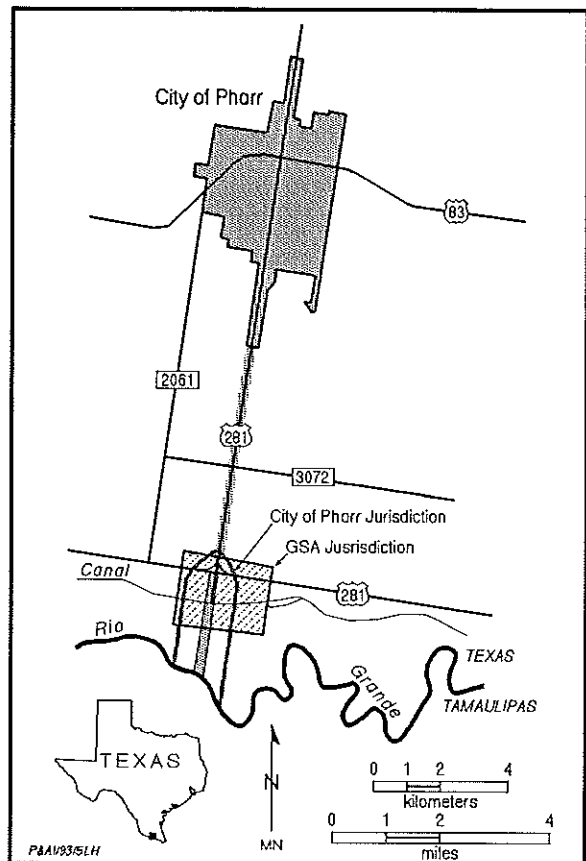


Figure 1. Project location map.

American History at The University of Texas at Austin. The purposes of these investigations were to locate and document any cultural resources that might be present within the project area, determine their eligibility for listing on the National Register of Historic Places and for designation as State Archeological Landmarks, and to provide an overview of the late Holocene geomorphic history

of the project area. The Historian also visited each recorded historic site in the field and documented architectural properties in the project area.

The report is organized in the following manner. The remaining portion of Chapter 1 is an overview of the Lower Rio Grande's environment, including geologic, climatic, pedogenic, floral, and faunal data. Chapter 2 provides background information on the prehistory and history of the area. Chapter 3 presents the research design and methods of investigations employed. The results of the geomorphologic investigations are presented in Chapter 4. Chapter 5 presents the results of the archeological and archival investigations. Site assessments and recommendations are provided in Chapter 6. An appendix presents detailed descriptions of the geologic profiles exposed through backhoe trenching.

## **ENVIRONMENTAL BACKGROUND**

### **Geology**

Hidalgo County is located in the Lower Rio Grande Valley portion of the South Texas Plain region (Arbingast et al. 1973:6). The Lower Rio Grande Valley is actually a fluvial-deltaic environment consisting mainly of Quaternary channel fill and distributary sands and floodplain and interdistributary muds. Deposition and incision of these sediments have been dictated by cyclical changes in sea level during Quaternary glacial and interglacial periods. The earliest deposits in the Lower Rio Grande Valley are Tertiary and are represented by the Goliad Formation, which consists of Pliocene sands, sandstones, marls, and limestones (Barnes 1976). Pleistocene-age deposits consist of fluvial-deltaic sediments of the Lissie and Beaumont formations. The age of these deposits is unclear, although they probably were deposited during the high sea stand of the Sangamon Interglacial period (Brown et al. 1980:17). More-recent Beaumont Formation deposits are the result of fluvial deposition during a later Pleistocene (Peorian?) interglacial stage (Brown et al. 1980:18). At the peak of the Last Glacial Maximum around 18,000 B.P., sea level dropped significantly and the Rio Grande cut a deep valley into the Beaumont Formation. Irregular rising sea levels during the Holocene caused the valley to fill through meanderbelt (point bar) and floodbasin mud deposition. Basinward,

the valley was flooded forming an estuary that eventually filled with estuarine, deltaic, and aggrading fluvial sediments. By 4500 B.P. sea level reached its approximate current level, after which South Padre Island and the Laguna Madre formed (Brown et al. 1980:19).

The project area consists entirely of Holocene fill composed of channel fill sands and floodplain and interdistributary muds. Channel scars or resacas are common and represent the dynamic lateral movements of a meandering fluvial system.

### **Climate**

The climate of Hidalgo County can be classified as semiarid subtropical (Natural Fibers Information Center 1987:16). Summers are hot and humid, while winters are mild. On an average of 2 years out of 10, the temperature never falls below freezing. The average daily maximum temperature is 84 °F, while the average daily minimum is 62 °F (Natural Fibers Information Center 1987:237). The total average annual precipitation is 58.4 cm (23 inches), of which 60% falls in April through September. The average relative humidity in midafternoon is about 60%. Humidity is higher at night, and the average at dawn is about 90% (Jacobs 1981:2). Winds are from the southeast to south-southeast throughout the year, except in December when they become north-northwesterly (Natural Fibers Information Center 1987:237).

### **Soils**

Soils within the project area belong to the Harlingen-Runn-Reynosa and Rio Grande-Matamoros soil units or soil associations (Jacobs 1981). The Harlingen-Runn-Reynosa unit consists of deep, very slowly to moderately permeable, grayish brown clayey vertic soils formed on floodbasin muds. Soils of the Rio Grande-Matamoros unit consist of deep, moderately to slowly permeable, light brownish gray to grayish brown silts formed on channel fills. Grulla soils are also part of the Rio Grande-Matamoros unit and consist of clayey soils formed in oxbows or resacas.

### **Flora and Fauna**

Blair (1950) characterized the biota of the South Texas Plain as Tamaulipan. However, Blair

(1950:103) also noted that, due to the differing nature of the floral and faunal patterns in the Lower Rio Grande Valley, the extreme southern portion of the Tamaulipan province be recognized as the Matamorán District. Jahrsdoerfer and Leslie (1988: 6–9) recognized 11 biotic communities, based on differences in floral, faunal, climatic, and topographic patterns and characteristics, composing the Matamorán District. They include the Chihuahuan Thorn Forest, Upper Valley Flood Forest, Upland Thorn Scrub, Barretal, Ramaderos, Mid–Valley Riparian Woodland, Sabal Palm Forest, Mid–Delta Thorn Forest, Loma/Tidal Flats, Woodland Potholes and Basins, and Coastal Brushland Potholes.

The project area falls within the Mid–Valley Riparian Woodland community, which parallels the Rio Grande for approximately 80 km in Hidalgo and Cameron counties (Jahrsdoerfer and Leslie 1988:7–8, Figure 4). Although the project area presently consists almost entirely of cleared agricultural fields, the indigenous floral community (Mid–Valley Riparian Woodland) would have been composed of riparian lands and bottomland deciduous forests (Jahrsdoerfer and Leslie 1988:7–8). The forested areas in the Mid–Valley Riparian Woodland community support scrub forest, upland thorn scrub, and thorn woodlands. Dominant tree species of the scrub forests include cedar elm (*Ulmus crassifolia*), sugar hackberry (*Celtis laevigata*), anaqua (*Ehretia anacua*), western soapberry (*Sapindus drummondii*), and ash species (*Fraxinus berlandieriana*, *F. pennsylvanica*, *F. texensis*). Upland thorn scrub and thorn woodland habitats contain stands of retama (*Parkinsonia aculeata*), mesquite (*Prosopis juliflora*), and granjeno (*Celtis pallida*). In addition, tree species associated with resacas, which are subject to periodic flooding, include retama and huisache (*Acacia farnesiana*). Beneath these forested canopies thrive several different types of shrubs and vines, including Barbados–cherry malpighia (*Malpighia glabra*), short–fruited serjania–vine (*Serjania brachycarpa*), and saw greenbrier (*Smilax bona–nox*).

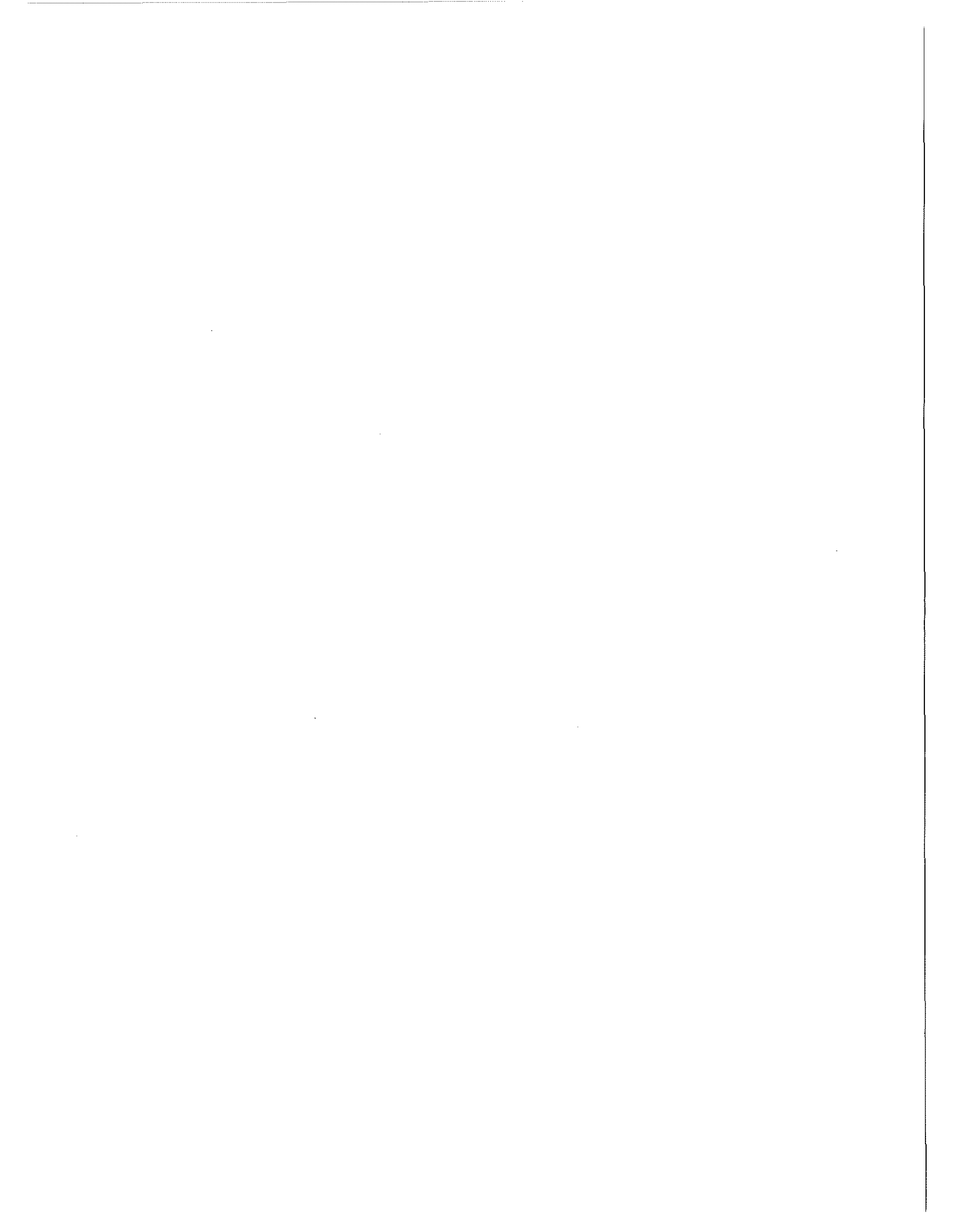
The riparian zone along the Rio Grande is limited to a narrow band of vegetation that parallels the river. It includes black willow (*Salix*

*niger*), Texas ebony/Ebano (*Pithecellobium flexicaule*), mesquite, giant cane (*Arundo donax*), common reed (*Phragmites communis*), cattail (*Typha* sp.), and species of rush (*Juncus* spp.) and sedge (*Cyperus* spp.). The riparian zone, like the forested areas, provides crucial habitat for aquatic and terrestrial vertebrates (Jahrsdoerfer and Leslie 1988:8).

The Tamaulipan faunal community consists of at least 61 species of mammals, 36 species of snakes, 19 lizards, 2 land turtles, 3 urodeles, and 19 anurans (Blair 1950:103–105). Commonly occurring large mammals include white–tailed deer (*Odocoileus virginianus*), javelina (*Pecari tajacu*), bobcat (*Lynx rufus*), and coyote (*Canis latrans*). Only a few of the mammalian species are limited to the Matamorán District. They include the Gulf Coast hog–nosed skunk (*Conepatus leuconotus*), Mexican spiny pocket mouse (*Liomys irroratus*), and the Coues rice rat (*Oryzomys couesi*). Other mammalian species such as the jaguar (*Felis onca*), ocelot (*Felis pardalis*), fulvous harvest mouse (*Reithrodontomys fulvescens*), and the nine–banded armadillo (*Dasybus novemcinctus*) are considered to be neotropical species that are moving or have moved north in the past into the Matamorán District and beyond into other biotic provinces.

The Matamorán District also provides important feeding, nesting, and cover habitats for many species of native and migratory birds. The Matamorán District represents the northernmost extent of 21 bird species that are found in Mexico and Central America (Winckler 1976). The Mid–Valley Riparian Woodland community is the preferred habitat for many rare birds such as orioles (*Icterus* spp.), chachalacas (*Ortalis vetula*), and green jays (*Cyanocorax yncas*) (Jahrsdoerfer and Leslie 1988:8).

Loss of wildlife habitat through land–clearing activities related to agriculture and development has had a profound impact on many species in the Matamorán District. Eighty–six species, including the ocelot and jaguarundi, are considered endangered, threatened, or placed on notice of review or watch–list by the U.S. Department of the Interior, the State of Texas, or the Texas Organization for Endangered Species (Jahrsdoerfer and Leslie 1988: 9, Table 3).





# PREHISTORIC AND HISTORIC BACKGROUND

2

## PREHISTORIC BACKGROUND

An understanding of the prehistory of the Lower Rio Grande Valley remains elusive. Detailed and extensive archeological investigations prior to 1980 are lacking (Hester 1981:119-128). Phases and complexes still either are not defined or are poorly defined, tool assemblages are not well defined, and even projectile point chronology (dominated by simple triangular styles) has not been clearly established at this time (although, see Jelks 1978). Associated with this is the lack of an established absolute chronology for the region, and adding a greater hinderance to our understanding of the region's prehistory are the well-documented land modifications and disturbances related to historic agricultural and ranching activities (Mallouf et al. 1977; Day et al. 1981; Hall et al. 1987). Attempts to interpret the cultural chronology of the Lower Rio Grande Valley rely heavily on comparisons of artifact and site types with those from surrounding areas such as the Lower Pecos, Central Gulf Coast, Central Texas, and Northeastern Mexico (e.g., Mallouf et al. 1977; Black 1989).

The prehistoric cultural sequence of the Lower Rio Grande Valley can be divided into three broad periods: Paleoindian, Archaic, and Late Prehistoric. The Paleoindian period (11,500-7000 B.P.) represents the earliest known cultural manifestation in North America but is poorly known and/or represented in the Lower Rio Grande Valley. The period is often characterized by small but highly mobile bands of foragers who were specialized hunters of Pleistocene megafauna. However, a more-accurate view of Paleoindian lifeways probably includes the utilization of a much wider array of resources, in addition to megafauna. The

late Pleistocene and early Holocene environment of the lower Rio Grande was markedly different than today, offering different resources and subsistence challenges. Paleoenvironmental data from stable isotope studies suggest that temperatures may have been 10 to 15.4 °F cooler than today in the Lower Rio Grande Valley at the end of the Pleistocene (Bousman et al. 1990:97-98). Climatic conditions probably also were arid to semiarid. Bousman et al. (1990:94, 98) have suggested that plant communities were dominated by C<sub>3</sub> and/or CAM plants, such as prickly pear and agave. Isolated projectile points collected from surface contexts indicate that the area was occupied by Paleoindian groups; however, intact cultural deposits representing Paleoindian occupations are unknown. Isolated projectile points have been collected from eolian dune fields in Willacy County and the La Perdida Site in Starr County (Weir 1956; Mallouf et al. 1977:167-168).

The Archaic period (7000-800 B.P.) is also poorly represented and understood in the Lower Rio Grande Valley. The Archaic represents a shift to the hunting and gathering of a wider array of animal and plant resources and a decrease in group mobility (Willey and Phillips 1958:107-108). Early to middle Archaic sites are extremely rare in the Lower Rio Grande Valley; this most likely is due to the onset of more-xeric conditions and eolian deflation of occupational surfaces during the early and middle Holocene (see Hall et al. 1987; Bousman et al. 1990). Evidence of utilization of the Lower Rio Grande Valley by Archaic peoples again comes from surface-collected artifacts, "primarily by unstemmed triangular thin bifaces, gouges, and infrequent stemmed dart points" (Hall et al. 1987:17-18). Late Archaic sites are more

common, but often their components are mixed with later Late Prehistoric assemblages, e.g., 41HG118 (see Hall et al. 1987). Human remains recovered from the Lower Rio Grande Valley have yielded late Archaic radiocarbon assays (Bousman et al. 1990:99-100), providing the earliest conclusive evidence of human occupation of the area. It is probably no coincidence that the apparent increase in sites during the late Archaic is coeval with the beginning of landscape stability and soil development (Hall et al. 1987:57-59). More-mesic conditions are apparent throughout much of Texas around 3000 B.P. and are represented by a predominance of  $C_3$  plants in the Lower Rio Grande Valley (Bousman et al. 1990:94-95).

MacNeish (1947) defined two Archaic complexes, Abasolo and Repelo, for northeastern Tamaulipas and the Lower Rio Grande Valley based mainly on surface-collected artifacts. Based on stratigraphic superposition, MacNeish (1958: Table 30) estimated that the Repelo Complex dated from 5000-4000 B.P. and the Abasolo Complex from roughly 4000-2000 B.P. However, few sites bearing Repelo and Abasolo components have been excavated, and radiocarbon assays are not available.

The Late Prehistoric period (800-300 B.P.) is the best known of the three periods. It is defined by the presence of the bow and arrow and marked by the production of small triangular arrow points beginning around 800 B.P. (Hester 1981:122). The emergence of ceramics and horticulture, which is apparent during the Late Prehistoric period in other parts of Texas, is absent or very nebulous in the Lower Rio Grande Valley. Increasingly xeric, but modern, conditions emerged at this time. Stable isotope analysis suggests that plant communities were in a state of flux and were marked by a steady increase in  $C_4$  grasses (Bousman et al. 1990: 94-98).

Sayles (1935) was the first to define a cultural complex for the Lower Rio Grande Valley—the Brownsville Phase. MacNeish (1947, 1958:186-192) later defined a Brownsville Complex, based on the collections and work of Anderson (1932), Sayles (1935), and Mason (1935). MacNeish (1958) also defined a Barril Complex beginning around A.D. 1000 and slightly predating the Brownsville Complex. The Brownsville and Barril complexes are characterized by a well-defined shell industry and were determined to be Late

Prehistoric based on the presence of small triangular arrow points and Huastecan-like ceramics indicative of the Panuco Periods V and VI (MacNeish 1958:189). Prewitt (1974:62) suggested that the Brownsville Complex was also contemporaneous with the Rockport Phase to the north on the central Gulf Coast of Texas. The Barril Complex is distinguished by the presence of conical bone and whelk columella projectile points, while the Brownsville Complex is uniquely associated with conical pumice pipes. Barril Complex sites are largely limited to the south side of the Rio Grande in northeastern Tamaulipas, Mexico, while Brownsville Complex sites are situated north of the river. MacNeish's assemblages, cultural complexes, and their geographical distributions, however, are based only on surface sites and surface-collected artifacts. A few excavated burials and cemetery sites have been attributed to the Brownsville Complex, even though radiocarbon assays are not available (Collins et al. 1969; Hester and Ruecking 1969; Hester and Rodgers 1971). The Ayala Site was attributed to the Late Prehistoric Brownsville Complex due to its superposition over an earlier Repelo-Abasolo midden (Hester and Ruecking 1969:147).

Historic aboriginal sites are noted by the presence of materials of European origin including metal and glass projectile points, trade beads, and wheel-made or glazed ceramics. Four historic aboriginal sites (41CF8 and three sites discovered by Anderson) in Cameron County have yielded glass arrow points and wheel-made or glazed sherds (Anderson 1932; Prewitt 1974). Salinas (1986) notes that the Rio Grande floodplain was utilized by a large number of aboriginal groups during the early historic period; however, this has not been confirmed archeologically. The last record of aboriginal inhabitants in the area was in A.D. 1886 near Reynosa, Mexico (Salinas 1986: 258).

## HISTORICAL BACKGROUND

### Previous Investigations

Previous investigations of historic sites and structures along the Lower Rio Grande River have included a predictive assessment of cultural resources in Hidalgo and Willacy counties by Mallouf et al. (1977) and a survey and assessment of

historic cultural resources in the same area by Victor (1981). Most recently, a study of the area from Webb to Cameron counties described the history of the region and catalogued recorded sites on both sides of the river along an arbitrarily designated Lower Rio Grande Heritage Corridor (Sánchez 1991). Finally, several general historical studies of the exploration and settlement of the lower Rio Grande area have been published in recent years, including works by Weddle (1991, 1992) and Sánchez (1992).

Mallouf et al.'s 1977 study included an ethnohistory of the area bordered by the Nueces River on the north and the Rio Grande on the south (Mallouf et al. 1977:29-51). The authors reviewed the period of time for which there were written accounts that described European-Indian contact in the Lower Rio Grande Basin, focusing on the immediate vicinity of Hidalgo and Willacy counties. They discussed the initial voyage of Alonzo Álvarez de Piñeda who explored the vicinity of the Rio de las Palmas in 1519, an interpretation disputed by Weddle (1992:99) who disputes the theory that Piñeda sailed up the Rio Grande and named it. Mallouf et al. also described the efforts of Diego de Camargo in 1520 and Gonzalo de Ocampo in 1523 who attempted to establish permanent settlements but were driven out by hostile Indians and a failure to find land suitable for settlement.

These initial expeditions were followed by those of Sancho de Cañedo and Pánfilo de Narváez in 1528 as the Spanish continued to explore the area, lured by rumors of mineral wealth and a desire to expand their missionary activities. Narváez's expedition culminated in a shipwreck and the travels of his treasurer, Cabeza de Vaca, who may have traversed the Lower Rio Grande Basin between 1521 and 1536. About the same time (1533), Pedro de Alvarado ventured up the Rio Grande, reportedly building a presidio upstream from present-day Brownsville at a site the Spaniards named Las Peñitas in 1682. According to Mallouf et al. (1977:30), Las Peñitas was located 14.5 km west of present-day Mission in Hidalgo County and represented one of the last of the sixteenth-century regional contacts between Spanish and Indian populations, although Weddle (1992:100) notes that Luis de Carvajal y de la Cueva probably crossed the Rio Grande and entered Texas from Nuevo León in 1572.

During the seventeenth century, Spanish

expeditions included those of Sergeant Major Jacinto García de Sepulveda in 1638 which traversed the area from present-day Mier and Rio Grande City to Brownsville (Sánchez 1992:62), the 1685 and 1686 expeditions of Captain Alonso de León who traversed the Lower Rio Grande to the coast and later traveled north to Garcitas Creek in the vicinity of Lavaca Bay in search of the French Fort St. Louis, and the exploration of the Rio Grande by Martín de Rivas and Andrés de Péz (Weddle 1992:101-104).

In 1739, steps to initiate settlement on the northern Mexican frontier were taken when the Spanish government issued a royal *cedula*, or order, that provided for the formation of a *junta*, a governing group of officials. A second *cedula* was issued in 1743, and 3 years later, Don José de Escandón was appointed conquistador and governor of the province of Nuevo Santander, an area that incorporated land now in the jurisdiction of Texas and northern Mexico.

It became Escandón's duty to colonize the province, and he initiated the process by surveying the region and organizing four expeditions which set out in 1747 and were led by Escandón, Blás María de la Garza Falcón, Miguel de la Garza Falcón, and Joaquin de Orobio Bazterra. As a result of the expeditions, Escandón "was able to ascertain the most suitable locations for permanent Spanish settlements" (Mallouf et al. 1977:33). He proposed 14 potential locations for civil towns, 12 of which were on the south side of the Rio Grande, and proceeded to recruit soldiers and civilians from among the pioneers of Nuevo León. In an advertising scheme that would be echoed by other land promoters in succeeding centuries, Escandón described the potential mineral wealth of the area as well as its agricultural fertility that would bring prosperity through crops and trade.

Between 1749 and 1755, Escandón founded numerous colonies and missions from Laredo to Reynosa. The primary occupation in the region was sheep, cattle, and goat ranching, but families farmed and traded as well. The Catholic Church established *visitas*, or sub-missions, around which local Indians clustered, and by the mid 1750s the towns that had developed along the Rio Grande included 6,385 colonists and 2,837 families.

In 1767, the Spanish government sent a Royal Commission to conduct an examination of the settlements. The purpose of this General Visit was

to grant titles to vacant land and unappropriated lands in Nuevo Santander. The Visit thus marked the beginning of individual ownership of land north of the Rio Grande.

Land was granted to individuals by the Royal Commission according to three categories. The first were *porciones*, narrow, long, rectangular-shaped strips of land that fronted on the Rio Grande and ran back from the river for several miles, thus embracing riverfront, bottomlands, terraces, and uplands. The *porciones* were located near the established towns of Revilla, Laredo, Mier, Camargo, and Reynosa and were "granted to the head of the household of 'each established family of colonists' to provide them with unfailing water for their livestock" (Mallouf et al. 1977:37). Typically, *porciones* measured 1,500 by 25,000 varas, but a few of them were 3,000 varas wide.

A second kind of grant consisted of larger tracts that were typified by fertile grasslands suitable for livestock. A few of these grants fronted on the Rio Grande, but most of them were located in the uplands north of the *porciones*. The third assignment of lands included vacant areas primarily located south of the Rio Grande, although some were located in present-day Zapata County.

According to Mallouf et al. (1977:38), these grants were not available to all citizens of Nuevo Santander but usually went instead to "citizens of wealth and status" such as Juan José Hinojosa, captain and chief justice of Reynosa; his son-in-law, José María de Balli; and José Narciso Cavazos who received enormous grants of land, both along the river and in the uplands. Owners of this land established ranches to signify their ownership, ranches that were occupied by not only family members but also friends and servants.

By the first decade of the nineteenth century, settlers in Nueva España were becoming increasingly dissatisfied with the Spanish government, and a period of unrest culminating in revolution began. Soldiers stationed in the frontier region of Nuevo Santander were recalled to central Mexico to protect the government, and the remote province suffered from Indian depredations. Finally, in 1821 the Spanish ruler was overthrown, Mexico became independent, and Nuevo Santander became part of the free state of Tamaulipas whose northern boundary was the Nueces River. Colonization north of the Rio Grande was encouraged anew by the Federal Colonization Law of 1824, the Coahuila-Texas

Colonization Law of 1825, and the Colonization Act of 1835. But few permanent settlers ventured into northern Tamaulipas before 1835 because of hostile Indians, the aridity of the area, and lack of productive soils. Finally, Texas challenged Mexico for its independence in 1835, and the frontier area became not just an unproductive but a hostile environment. Many Mexican ranchers retreated south across the Rio Grande, abandoning their livestock and opening the way for the Republic of Texas to claim that river as its southern boundary.

The controversy escalated in the mid 1840s when the United States annexed Texas. In 1845, Mexican troops crossed the Rio Grande, and President James K. Polk declared the move an act of aggression against the United States. He ordered General Zachary Taylor and an army of 3,554 men to the Lower Rio Grande region. The army marched from the mouth of the Nueces River southwest to the Rio Grande where they established a camp across from Matamoros.

Between 1846 and 1848, U.S. troops ranged in the Lower Rio Grande Valley, formalizing roads needed to facilitate transportation. One road (believed to be near present-day U.S. Highway 77) ran north-south through present-day Willacy County. The second road paralleled the Rio Grande. Called the "Old Military Highway," it enabled troop movement and either followed or was located immediately south of present-day U.S. Highway 281. In the present-day project area, it ran 0.7 miles south of U.S. Highway 281.

The Treaty of Guadalupe Hidalgo marked the end of war on February 8, 1848, and established the Rio Grande as the southern boundary of Texas and the United States. Subsequently, Texans and other Americans, many of whom had become familiar with the Lower Rio Grande Valley during the recent war, became attracted to the region with its abundant opportunities for trade and ranching. By 1848, the new counties of Webb, Starr, and Cameron had been formed, and on January 14, 1852, Hidalgo County was created from a part of Cameron County. A site opposite Reynosa was selected as the county seat and named Edinburg by two Scotsmen—John Young and John McAllen—who owned the surrounding land. County designation, however, failed to bring lasting peace for uprisings recurred regularly. Juan Cortina was the most famous of the rebels, and he raided ranches throughout the Valley during 1859.

In 1861, war returned to the Valley where river commerce had been increasing steadily since 1848. A Union blockade of southern shipping ports further stimulated steamboat traffic during the Civil War, and "the Rio Grande became the 'back door of the Confederacy' for the exportation of trade items" (Mallouf et al. 1977:47). Actual Confederate-Union combat was relatively rare in the region, which was abandoned by Union troops from 1861 to 1863 and inadequately manned by Confederates. But Union forces did accomplish a successful raid on the Confederate salt works at El Sal del Rey in 1863, and Colonel John S. ("Rip") Ford conducted guerrilla raids on Union forces in 1864. Finally, the last battle of the Civil War was engaged at Palmito Hill near the mouth of the Rio Grande where Confederates emerged victorious on May 13, 1865.

After the Civil War, agriculture replaced steamboating as the most profitable business in the Lower Rio Grande Valley. Ranches such as the one owned by Richard King and Mifflin Kenedy became enormously profitable. In addition, early attempts to raise sugar cane met with considerable success when John Closner built a mill in Hidalgo County in the early 1880s. After 1900, agriculture expanded with the widespread development of irrigation systems, and by World War I, fruit and vegetable production on small farms owned by Midwestern immigrants had supplanted sugar cane as the basis of the Valley economy. Lured by reports of the extraordinary fertility of the region's soils, colonists were brought by the recently completed rail system and soon transformed the demographics of South Texas. Towns also grew along the new rail lines, and the region rapidly filled with new urban centers surrounded by small farmsteads.

Victor's 1981 study (in Day et al. 1981:87-119) focused on cultural resources in limited portions of Hidalgo and Willacy counties, organizing the information around four historical phases: (1) early Spanish exploration (1519-1746); (2) Spanish settlement (1746-1836 [*sic*]); (3) Lower Rio Grande Valley history prior to railroad and land development (1836-1904); and (4) Lower Rio Grande Valley history after railroad construction from 1904.

Victor summarized the information presented in Mallouf et al. (1977) and several other sources, describing the various Spanish grants made in the region and pointing out the significance of the

Hinojosa, Balli, and other Spanish families who received the largest of the land grants. The Hinojosa and Balli families, for example, were residents of Reynosa who "intermarried in order to exercise and maintain both political and economic power in the region." Despite the fact that much of the land was remote and conditions were inhospitable, the Hinojosas and Ballis believed that their grants would increase in value. According to Victor (1981:93), "the enterprise of [these extended families] was a major factor in maintaining the ranching communities throughout the Lower Rio Grande Valley until major development pressures began at the close of the nineteenth century."

Victor summarized the history of the Valley prior to the turn of the century, noting that when Texas became an independent Republic and then a State, questions arose concerning the validity of grants made by the Spanish and Mexican governments. In 1849-1850, the Bourland-Miller Commission investigated titles in present-day Webb, Starr, Cameron, and Hidalgo counties for the purpose of reaffirming valid titles and identifying invalid titles and vacant land. In some cases, the grantees were found to have not followed the customs requiring permanent residence and ranching, and those titles were declared invalid. In numerous other cases, descendants were able to prove the validity of the titles, and they were confirmed by the State Legislature on September 4, 1850, and February 18, 1852, despite the loss of the field notes, original titles, and written testimony when the steamboat *Anson*, on which the Commissioners were traveling, sank at Brazos Santiago.

According to Victor (1981:95-96), there were numerous settlements in the Lower Rio Grande Valley prior to the construction of the railroad, but they were small ones organized around rural ranches where a few families raised cattle, sheep, and goats. The *ranchos* occurred both along the Rio Grande and on the interior prairies, and they were "virtually . . . self-sustaining establishment[s]" connected by a network of roads. Permanent settlement remained stymied, however, by political unrest, Indian raids, and unfavorable climatic conditions.

The Lower Rio Grande Valley remained a "sparsely populated ranching area" until the first decade of the twentieth century when railroad construction spurred development of a "populous center of agriculture" (Victor 1981:104). Construc-

tion of the St. Louis, Brownsville and Mexico Railroad (SLB&M) in 1904 was followed by construction of other private rail lines, all of which eventually were incorporated into the Missouri Pacific and Southern Pacific railroad systems. Between 1904 and 1912, these lines included the Sam Fordyce Branch of the SLB&M that ran west from Brownsville to Sam Fordyce, a line that extended north from San Juan to the townsite of Chapin (renamed Edinburg), and the San Benito and Rio Grande Valley Interurban Railway which connected "Valley towns by a network of spurs and branches."

Initial construction of the SLB&M was spurred by demonstrations of the agricultural potential of the Valley when George Brulay near Brownsville and John Closner near Hidalgo successfully constructed irrigation systems and raised sugar cane. According to Victor (1981:104), land and irrigation companies began forming in 1904 "for the purpose of developing large tracts of land throughout the Valley. Commercial enterprises had to be dramatically expanded to utilize the new rail system and to keep it operating at a profitable level." Properties immediately adjacent to the railroad were developed first, and towns platted by World War I included Raymondville, Harlingen, Mercedes, Weslaco, Sharyland, and Pharr. Development companies responsible for the towns included the Raymond Town and Improvement Company, Lon C. Hill Town Improvement Company, American Rio Grande Land and Irrigation Company, W. E. Stewart Land Company, Southwestern Land Company, and Louisiana-Rio Grande Canal Company.

Victor (1981:105) noted that "development companies radically changed the face of the lower Rio Grande Valley," inducing prospective buyers and settlers to come from all over the United States to "see the possibilities of agriculture in the Valley." They constructed vast irrigation projects that tempered the arid climate and low annual rainfall, creating images of a "tropical paradise that was verdant, fertile and warm." They also spurred dramatic growth in the Valley's population despite the threat of bandit raids that occurred regularly between 1913 and 1917 so that, in Hidalgo County alone, the population increased from 6,837 in 1900 to 13,728 in 1940 (Victor 1981:118). Agricultural and railroad development were the two factors most responsible for the "ballooning rate of population"

which did not slow sharply until the 1950s.

The most recent study of the Lower Rio Grande Valley region, *A Shared Experience* (Sánchez 1991), includes a survey of the history of the Valley that summarizes the Spanish exploration of the region, the river settlements of José de Escandón from Laredo to Reynosa, and the role of prominent families such as the Canos, Hinojosas, Garzas, Garza Falcóns, Cavazoses, Ballis, Sánchezes, Garciás, and Benavideses in the development of the Valley. The survey points out the contribution of the region to the evolution of the Texas cattle industry, the effects of early nineteenth-century revolutions on settlement, events of the Mexican-American War of 1846-1848, and initiation of steamboat traffic on the Rio Grande which stimulated trade and economic growth between the 1840s and the early 1880s when railroad construction began to siphon off commerce. The survey describes the impact of Juan Nepomuceno Cortina's raids of 1859, which were made in retribution for wrongs that Cortina believed his fellow Mexicans had suffered when they were deprived of their property by unscrupulous Anglo speculators. It also describes the establishment of military posts and camps by the United States government prior to the Civil War as attempts were made to restore peaceful conditions along the river.

The events and battles of the Civil War are described, culminating in the battle at Palmito Ranch. The author also summarizes the numerous raids conducted after the Civil War by Juan Cortina and Catarino Erásmo Garza between 1872 and 1892 and the threat posed by Mexican revolutionary activities of the twentieth century. In counterpoint, the development of the region's industries is described, including brick manufacturing, agriculture, and especially sheep ranching. Railroads are identified as the phenomenon that "brought the greatest growth and change" to the Lower Rio Grande Valley (Sánchez 1991:61), and lines mentioned specifically are the narrow-gauge railroad built near Boca Chica for military supplies during the Civil War; Uriah Lott's Corpus Christi, San Diego and Rio Grande Railroad that ran from Corpus Christi to Laredo in the 1870s and created a boom town by 1881; the International and Great Northern from San Antonio to Laredo in 1881; the St. Louis, Brownsville and Mexico Railway from Corpus Christi to present-day Harlingen, San Benito, and Brownsville in 1903-1904; and the

Hidalgo or Sam Fordyce line up the Valley through Mercedes, Weslaco, Donna, Alamo, San Juan, Pharr, McAllen, and Mission in 1904.

The study describes the impact of the railroad on the fledgling agricultural industry, noting its role in transporting crops throughout the United States and stimulating the development of irrigation farming and the raising of sugar cane, vegetables, fruits, and cotton. Land speculators and home buyers came to the Lower Valley in a flood that did not abate until the Great Depression of the 1930s. However, crop production and ranching continued to flourish, providing the mainstays in an economy increasingly dominated by oil and gas production, international trade, and tourism.

### A History of the Project Area

The project area is comprised of a rectangular block of land located in Hidalgo County, Texas, south of Pharr and east of Hidalgo and Reynosa. The tract fronts on the Rio Grande and runs north from it, covering bottomlands, terraces, and first-lift uplands. Because of this configuration, the project area could be said to encompass a representative "slice of history." Moving over land on which early Spanish and Mexican colonial settlement occurred and ranch communities developed, the project area crosses the mid-nineteenth-century Military Road to Brownsville and the early twentieth-century Louisiana-Rio Grande Canal Company Lateral A, to enter open fields cleared during the twentieth-century heyday of the Valley's agricultural boom.

The project area lies entirely within *Porciones* 69 and 70, two rectangular grants of land within the jurisdiction of Reynosa which was located approximately 3 miles upriver. According to Scott (1970: 68-69), the Jurisdiction of Reynosa included 80 *porciones* which surrounded and were located opposite the town. The *porciones* were surveyed as a result of the 1767 General Visit of the Royal Commission to the colonies of Nuevo Santander. Subsequently, the *porciones* were granted to residents of Reynosa who agreed to

establish stock ranches, to live under military protection and to unite with town people for defense against any invasion; . . . not to sell their land to any undesirable persons; and . . . [to] take possession of the land within two months after allocation.

According to General Land Office and Hidalgo County deed records<sup>1</sup>, *Porción* 69 was a double *porción* granted to Juan José Hinojosa (*Deed Record C:586-587*; Texas. General Land Office 1882b) and encompassing 72,250,355 square varas, twice the area of most *porciones*. The size of the grant probably was in recognition of the important role Hinojosa played in the founding and early development of Reynosa where he served as captain and chief justice. One of his daughters, Rosa María Hinojosa, married into the influential Balli family of Reynosa, who, with the Hinojosas, "acquired title to most of the river land on its north bank between a point west of the present town of Weslaco and on down to Point Isabel" (Scott 1970: 103-104).

While it is difficult to follow the legal history of *Porción* 69 because much of the tract appears to have been held in common by related families, it is clear that the land was granted to Hinojosa by the crown of Spain on October 22, 1767 (*Deed Record C:586-587*). Hinojosa owned the *porción* until September 3, 1794, when he conveyed it to José Matias Cavazos [Cavazos] (*Deed Record E:560-561*), a resident of Reynosa. Cavazos died, and the land passed to his son, Lino, who conveyed *Porción* 69 to Rafael Anaya on April 16, 1823 (*Deed Record E:562*).

Following the death of Rafael Anaya, *Porción* 69 passed to his heirs, one of whom, Luciano Anaya, passed his interest to a child, Luciana Anaya (*Deed Record E:560-562*). Another interest passed to María Aloquea Anaya de la Garza (wife of Jesus de la Garza), who had inherited from Manuel Anaya (*Deed Record A:304-305*). It seems likely that the Anayas were living on the *porción* in 1852 when the grant was confirmed to the heirs and

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<sup>1</sup>Scott states erroneously (1970:96) that *Porción* 69 was granted to José Gregorio Camacho and *Porción* 70 to Juan José de Hinojosa. All deed records cited herein are Hidalgo County records.

assigns of Juan José Hinojosa in February 1852 (*Deed Record C:586-587*). By that time, or soon after, the southernmost acreage of the grant was known as "El Capote," and it was the location of a ranch community that may have been situated in the vicinity of site 41HG153.

To the east of *Porción 69*, *Porción 70* also was confirmed as a legitimate grant in February 1852 (*Deed Record C:480-481*; Texas. General Land Office 1882a). The original grantee was José Antonio Velasco who received his land from the crown of Spain in 1767 and held it until December 24, 1793, when he conveyed it to Marcos Farías (*Deed Record I:474-476*). Farías held the grant until June 13, 1800, when he sold it to Pedro Villareal (*Deed Record I:479-483*). Subsequent owners included Manuel Hinojosa, José Flores, María Rosaria Flores, and María Antonio Gusman, a lineal descendant of José Flores (*Deed Record A:323-324*).

By the early 1850s, when both *Porciones 69* and *70* had been formally granted to the heirs and/or assigns of Juan José Hinojosa and Antonio Velasco, the eastern half of *69* and western half of *70* south of the present-day Lateral A were the location of a ranch community called El Capote. Historic artifacts collected from one site in the vicinity of the community (41HG153) suggest that settlement occurred by at least the mid nineteenth century and perhaps prior to 1850 (Amy C. Earls, personal communication 1992). Artifacts present at a second site (41HG158) confirm both the mid-nineteenth-century occupation (Amy C. Earls, personal communication 1992) and the possible areal extent of the community which was located between a bench marking the usual limit of overflow and present-day Lateral A.

Mallouf et al. (1977:46) and Sánchez (1991: 45) point to the unrest that occurred along the border in the late 1850s when local Hispanics, led by Mexican-American War veteran Juan Nepomuceno Cortina, became concerned about the "clique of judges and unscrupulous Brownsville attorneys" who had manipulated the legal system to acquire land from Tejanos in the Lower Rio Grande Valley. Families whose ownership had been confirmed by the State Legislature in 1850 and 1852 were accused by authorities of being in arrears on their taxes. As a result, they sometimes sold their land for a fraction of its value in an attempt to pay the "debt." Interestingly, it was

during this time that *Porción 68* to the west was acquired by Edward Dougherty, and other Anglos—Martin Norgrave and Jacob T. George—made an attempt to acquire an interest in *Porción 69* from members of the Anaya and Garza families (*Deed Record A:304-305*). However, after the Civil War, local resident Bernardo Cantu began to acquire the interests of his neighbors in *Porción 69*. On January 18, 1867, he purchased half of the interest of Luciano Anaya, son of Rafael Anaya, from Luciano's child and heir, "said right being understood to by [*sic*] on or about a place called Capoté on said porcion of land . . ." (*Deed Record E:563*).

By the late 1870s, when a General Land Office map depicted buildings in the vicinity of the project area (Fig. 2) (Texas. General Land Office 1878), most of the interest in the land in the southern portion of the Hinojosa grant was dispersed among the Anaya, Garza, and Cantu families (*Deed Record C:205, 214, 286; Deed Record D:139-140*). To the east, Juan Ramirez had purchased *Porción 70*, which was described as being bounded on the east by the lands of Manuel de la Viña and on the west by land owned by Bernardo Cantu (*Porción 69*) (*Deed Record B:362*). Both *porciones* were the location of El Capote, a major ranch community that ran along a portion of the Old Military Road from Fort Brown in Brownsville to Fort Ringgold in Rio Grande City. According to the 1880 census, the total population of El Capote was 229 individuals. The 47 separate households were comprised of members of the Anaya, Bustamente, Cano, Cantu, Cardenas, Casares, Castañeda, Cendejo, Escamilla, García, Garza, Gomez, Gonzales, Guajardo, Guerra, Guerrero, Leal, Lopes, Lozano, Mercado, Molino, Montes, Mora, Ortega, Peres, Piña, Rodrigues, Romero, Téran, Torres, and Zepeda families. Occupations of the residents of El Capote included laborer, farmer, saddler, general merchandiser, silversmith, shoemaker, carpenter, herder, musician, deputy inspector of hides and brands, servant, and shepherd. While the dominant occupation was that of farmer, the variety of other activities listed suggests the presence of a self-sustaining community, an image further reinforced by the fact that it was the first community downstream from Reynosa and Hidalgo and was the location of a major public ferry crossing (Hidalgo County Historical Commission 1992:n.p.).

In 1882, the Hidalgo County sheriff and tax collector certified that the owners of *Porciones 69*



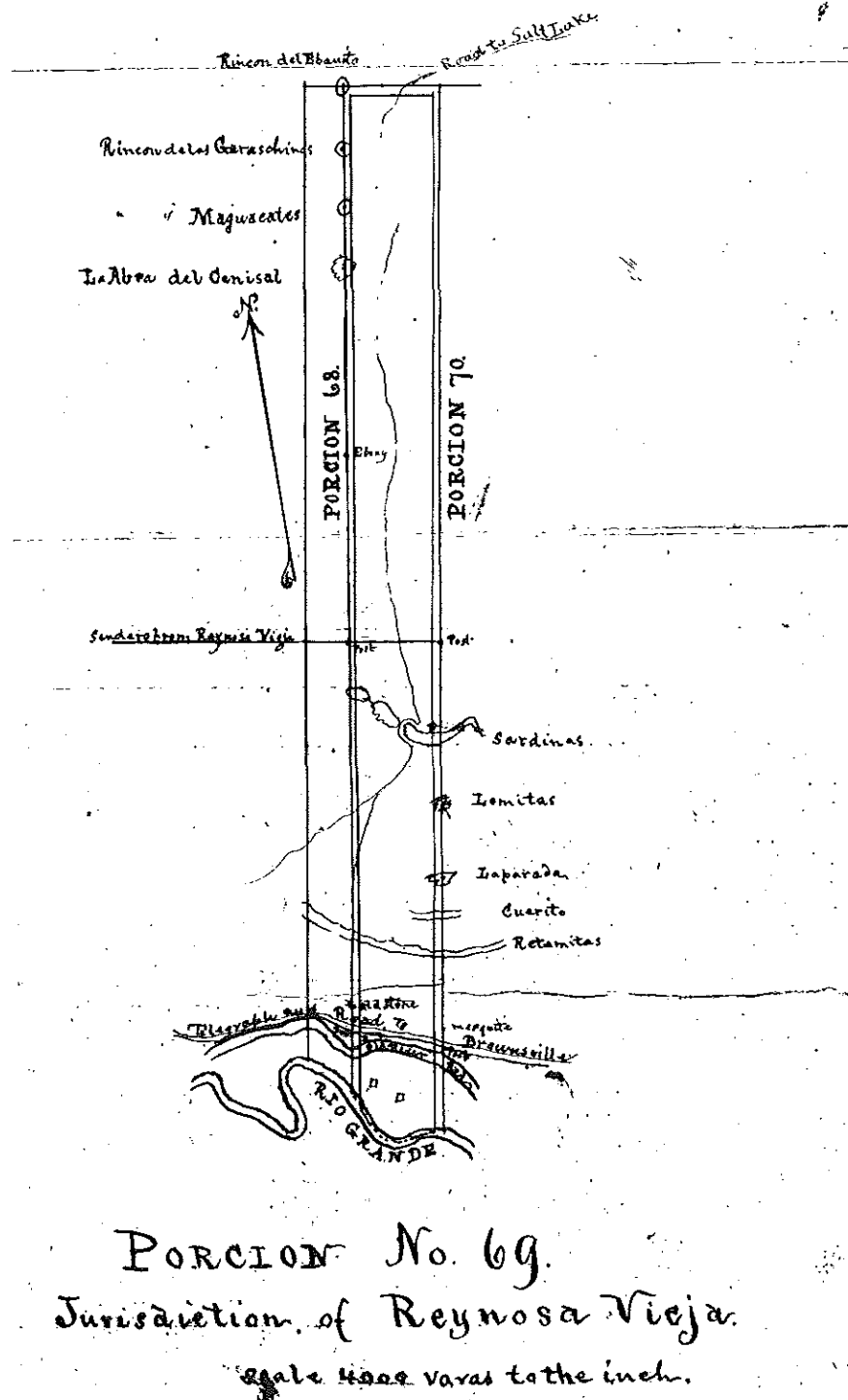


Figure 2. *Porción* No. 69. Jurisdiction of Reynosa Vieja. A map filed with the General Land Office on June 12, 1878, depicts a structure in *Porción* 69 near the community of El Capote. Map courtesy of the General Land Office, Austin.

and 70 had presented him tax receipts for the years 1852–1881 (Texas. General Land Office 1882a, 1882b), thereby affirming their legal ownership and clearing the way for the issuing of patents the same

year. Soon after, the Ramirez family constructed a large brick home at site 41HG158 (Fig. 3). Described by local residents (Dyer and Norton 1992) as having functioned as a store and home, the

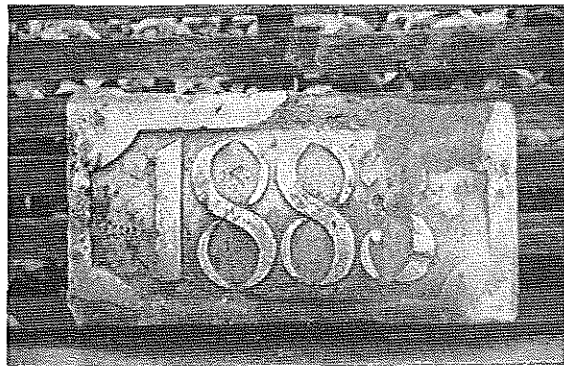


Figure 3. A brick from the Ramirez House at El Capote provides a date of construction.

building had carved vigas of cypress and ornate ironwork at the windows. It was situated in the easternmost area of the El Capote community on an elevated bench south of the Old Military Road.

Deed records suggest that the El Capote community was a stable one during the late nineteenth century and that there was little if any non-Hispanic ownership of the land in the southern area of *Porciones* 69 and 70. A map completed for the International Boundary Commission in 1898 (Fig. 4) depicted an area bounded by the Brownsville Road on the north and the Rio Grande on the south. Cleared fields occurred in the vicinity of the *bancos* (*resacas*). The balance of the land was comprised of brushy areas that were typical of the region during the first third of the twentieth century (Garza et al. 1992). "Capote Ranch" was indicated as being immediately west of the present project area, but other buildings were present to the east and southeast while a cemetery was located in the present-day vicinity of site 41HG155.

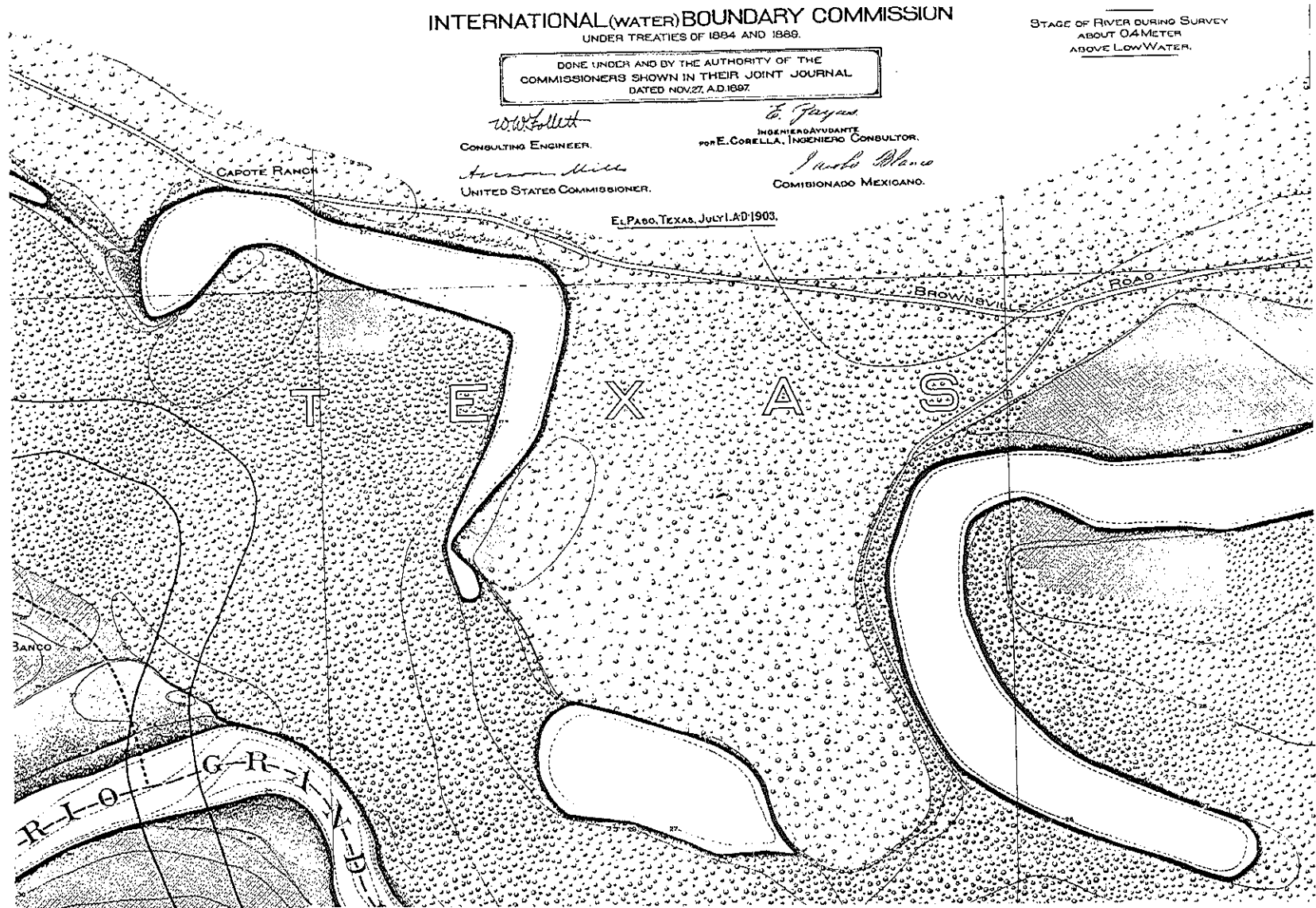
The 1890s represented something of a watershed in the history of the occupation and use of *Porciones* 69 and 70. To all outside appearances, control of the area was in the hands of Hispanic families who had occupied the land since at least the 1850s. However, dramatic changes in the ownership of adjacent *porciones* together with the development of new industries had practical ramifications for the project area as well. To the east and west, Hidalgo County sheriff John Closner had acquired thousands of acres, and following a drought in the early 1890s, he began to build canals and laterals and to irrigate his land using a 25-horsepower centrifugal pump brought to his plantation by T. J. Hooks. By 1898, he and a partner had 100 acres in sugar cane, a crop that "dominated the

final plantation era of the American South, ca. 1870–1920." Transferral of sugar cane technology from Louisiana where it represented a crop of significant economic consequence to the Lower Rio Grande Valley where the climate was semiarid required a "leap of technological faith" that could only be accommodated by the use of modern equipment and sophisticated irrigation systems (Farmer 1952:n.p.; Dames and Moore, Inc. 1992).

Land like that in *Porciones* 69 and 70 was attractive to Closner, and in 1898–1900 he and a partner, James B. Wells, acquired acreage in both *porciones* from members of the Garza family and other property owners (*Deed Record I*:56–57). In return, Closner and Wells acknowledged the title claimed by Guillermo Garza, Alejandro Garza, and Isabel Garza de Guajardo (the heirs of Valentin Garza) in the Capote tract, "now, and for many years . . . past, actually held, occupied and possessed by the said Guillermo Garza, and others, Heirs, of the said Valentin Garza, deceased" (*Deed Record J*:111–113).

Closner and Wells held the greater part of *Porciones* 69 and 70 until 1902 when they sold 11,647.63 acres in 69 and 2,139.08 acres in 70 to J. P. Withers of Kansas City, Missouri (*Deed Record J*:501–504). Closner then focused his attention on increasing his sugar cane production: by 1902 he had 200 acres planted, and in 1904 he had 400 acres planted with a 35- to 40-ton yield per acre, far in excess of the average Louisiana production (Dames and Moore, Inc. 1992:1–20).

Closner's display of his cane at the Louisiana Purchase International Exposition in 1904 when he took a gold medal (Dames and Moore, Inc. 1992:1–20), together with completion of the long-awaited St. Louis, Brownsville and Mexico Railway and Hidalgo or Sam Fordyce line, attracted the interest of land speculators and agricultural producers throughout much of the United States while providing them with a vehicle to look over the potentials of the region. H. N. Pharr, for example, whose family had long been involved in sugar production in Louisiana, saw Closner's award-winning display in St. Louis and then toured the Valley in 1905 where he visited Mercedes, "an attractive looking little town, surrounded by farm lands, which were producing rapidly growing crops, due to the irrigation water from the Rio Grande . . ." (*The Pharr Press*, February 13, 1939:1, 8). Pharr was impressed by what he saw but decided to return at



**Figure 4.** The southern portion of the project area in 1898. A map prepared for the International Boundary Commission in 1898 (U.S. Department of State 1903:Volume 2:Sheet 34) depicts buildings and a cemetery at El Capote Ranch as well as the route of the Brownsville (Old Military) Road.

a later date "when better roads had been built, better means of building irrigation plants and more experience obtained in learning the methods of distributing irrigation water" (*The Pharr Press*, February 13, 1959:8).

Another visitor in 1904 or 1905 was John C. Kelly of Waco, Texas, whose friend, Charles Hammond, convinced him to visit the Valley. Hammond subsequently purchased a large tract of land, including most of *Porciones* 69 and 70, and then sold a half interest in it to Kelly in about 1907 (*The Pharr Press*, February 13, 1959:1).

A year later, John Closner, J. R. Alamia, and W. L. Lipscomb formed The Rio Grande Valley Reservoir and Irrigation Company with headquarters in Hidalgo for the purpose of constructing, maintaining, and operating canals, ditches, laterals, reservoirs, and other irrigating devices, one of which would run through *Porciones* 67-70 to provide water to land owned and cultivated by Closner to the east of the project area at his San Juan Plantation. Construction started on the system on July 1, 1908 (Texas. Secretary of State 1908), and a map filed in 1909 (Fig. 5) (Carson Map Company 1909) suggests that by that date the Riverside Canal portion of The Rio Grande Valley Reservoir and Irrigation Company had been constructed through *Porciones* 69 and 70 in the same general area as present-day Lateral A.

In 1909, H. N. Pharr returned to the Valley, this time accompanied by several fellow Louisiana planters. They found improved roads and "a comprehensive system of irrigation" that had been developed by civil engineer Sam Robertson in cooperation with two other individuals who owned thousands of acres. Robertson and his partners had subdivided their land into 40- and 80-acre lots which they "sold to land hungry farmers from all sections of the country arriving in train loads at recurring intervals" (*The Pharr Press*, February 13, 1959:Section 2:1). Pharr and his fellow planters also met Hammond and Kelly who had formalized their ownership of *Porción* 69 by acknowledging the ownership of 232.8 acres of it by Guillermo and Manuella Gomez de Garza (*Deed Record* 1:410-412). Hammond subsequently sold his half interest

in the large holdings to H. N. Pharr, who then became a partner to John C. Kelly. The partners hired E. B. Gore, an engineer, to survey and subdivide the tract and to act as general manager for the "location, design and construction of the pumping plants for both the first lift and second lift lands" (*The Pharr Press*, February 13, 1959:Section 2:1). On July 26, 1909, Kelly and his associates filed a subdivision plat of *Porciones* 66-70 with the Hidalgo County Clerk (*Deed Record* 3:133) (Fig. 6).

On February 19, 1910, J. C. Kelly, H. N. Pharr, John C. Conway, and A. W. Roth formed the Louisiana-Rio Grande Canal Company in order to construct, maintain, and operate dams, reservoirs, canals, laterals, and other facilities for the purposes of irrigation, navigation, milling, mining, stock raising, and the operation of city water works; capital stock was \$20,000 (Texas. Secretary of State 1910). Several months later, the company purchased sites for a pumping station and canal right-of-way from John and J. B. McAllen (*Deed Record* 10:39-44). According to the deed by which the property was transferred, the McAllens conveyed 20.85 acres for use "as a pumping site and right of way for a canal" located in the southern portion of the town of Hidalgo. They also acquired a right-of-way over *Porción* 68 in November 1910, thus indicating their intent to initiate construction of Laterals A, B, C, E, F, and G (*Deed Record* 11:240-245).

Construction of the Hidalgo pump plant and of the canal and lateral system, Lateral A of which runs through the project area, apparently began in 1910 and was completed by 1911 (*Deed Record* 20:476-478). This period of productive activity was not without its problems, however. In the early months of 1911, the Louisiana-Rio Grande Canal Company and John C. Kelly apparently decided to part ways, and Kelly purchased 7,550.15 acres east of present-day U.S. Highway 281 from the Company, which agreed to continue providing irrigation water to the land (*Deed Record* 19:129, 257).<sup>2</sup> The land located west of the highway was held by H. N. Pharr's Louisiana-Rio Grande Sugar Company. As a result, each group was free to pursue its own

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<sup>2</sup>Kelly also received an equal number of shares in the Company, and these shares remained attached to the lots as Kelly sold them so that irrigation rights and acreage remained inseparable.

MAP SHOWING:  
 VALLEY CANAL,  
 HIGHLAND CANAL,  
 RIVERSIDE CANAL  
 OF  
 THE RIO GRANDE RESERVOIR  
 & IRRIGATION COMPANY  
 Chapin, Texas June 1909  
 Scale 1" = 12,000'

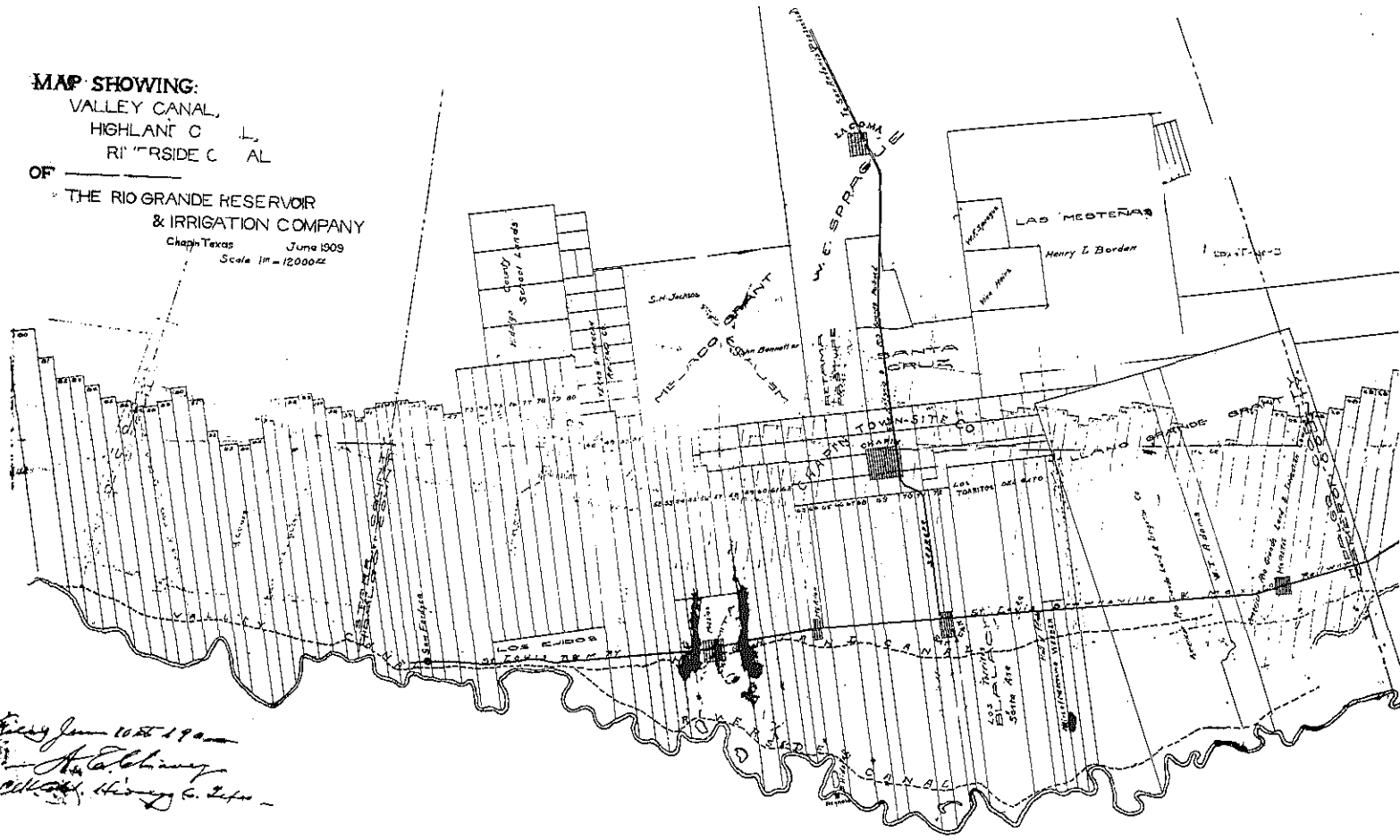
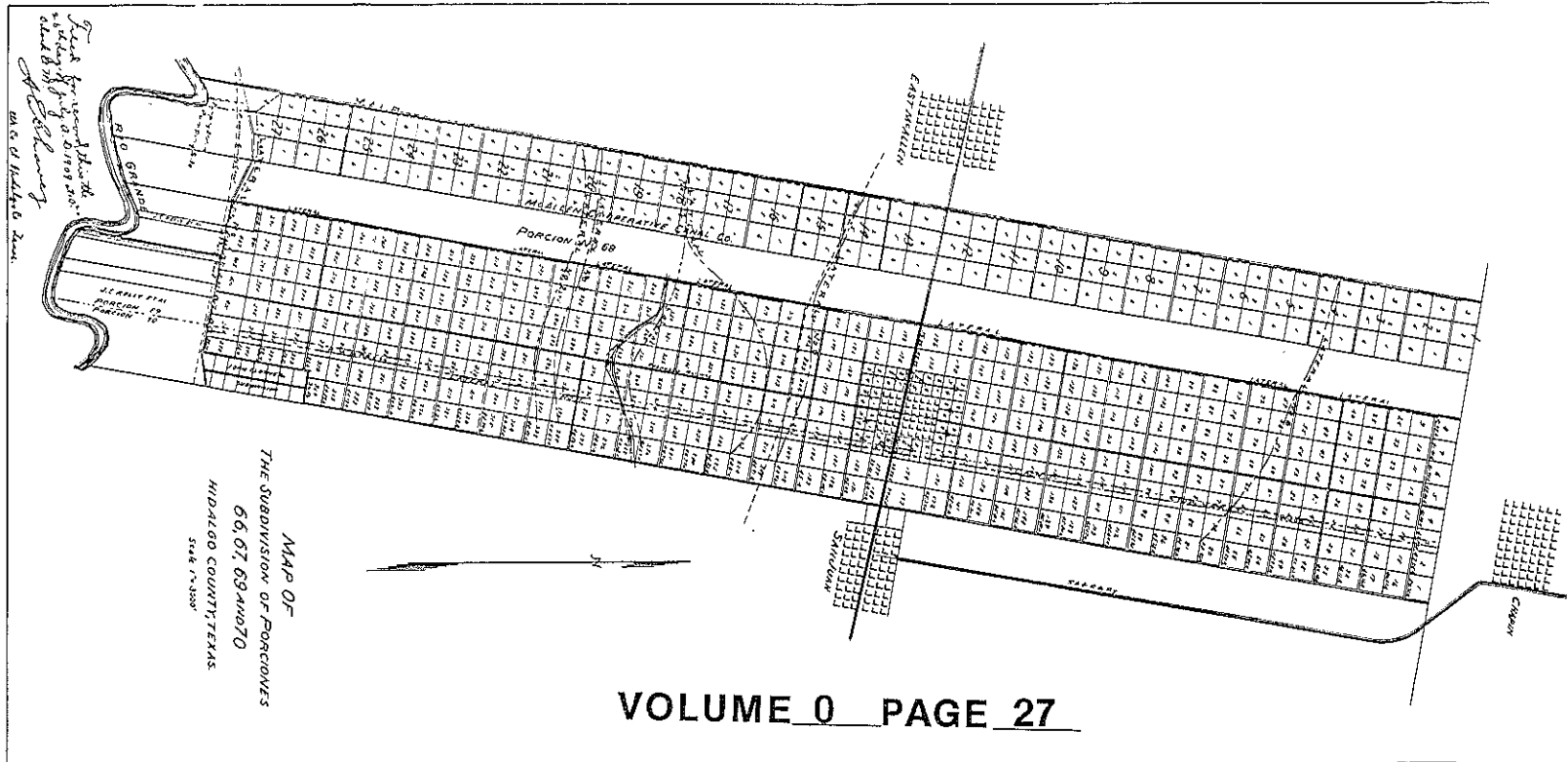


Figure 5. Map Showing: Valley Canal, Highland Canal, Riverside Canal of The Rio Grande Reservoir & Irrigation Company. This 1909 map depicts a canal (the Riverside Canal) that closely approximated the present-day route of Lateral A. It is copied from Carson Map Company records in the Hidalgo County Courthouse, Edinburg, Texas.



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THE STATE OF TEXAS  
COUNTY OF HIDALGO

I, E.D. Gore, Civil Engineer and Surveyor, do hereby certify that the foregoing and attached Map and Plat of a subdivision of Porciones Nos. 66, 67, 69 & 70, Hidalgo county, Texas, was made by me and that the same is true and correct.

*E.D. Gore*  
Civil Engineer and Surveyor

Sworn to and subscribed before me this 25th day of December A.D. 1920.



*W. H. [Signature]*  
Notary Public, Hidalgo County, Texas

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Figure 6. Map of the Subdivision of Porciones 66, 67, 69, and 70, Hidalgo County, Texas. John C. Kelly and Associates' subdivision overlaid much of the present-day project area. Map from Plat Record O:27.

course in the development and marketing of their property.

Further challenges developed in the spring and early summer of 1911 when it became apparent that the partners had underestimated the capital necessary to underwrite their plan, for at a special meeting of the stockholders in the Canal Company on June 9, 1911, a majority of them voted to increase the capital stock from \$20,000 to \$650,000. The board of directors also appears to have increased in number and revealed in its composition the two primary interests of the corporation: town-building and colonization on the one hand, and sugar cane production on the other. The 13 directors included H. N. Pharr, Lewis S. Clarke, E. A. Pharr, and Ventress J. Smith of Louisiana; W. E. Cage of Pharr; John Closner of Edinburg; John J. Conway of Mission; J. G. Fernandez and R. B. Creager of Brownsville; J. C. Kelly of Waco; John T. Beamer of Kansas City, Missouri; R. E. Brooks of Houston; and W. E. Stewart of McAllen (Texas. Secretary of State 1910).

Promotion of their subdivided acreage and of the townsite of Pharr was pushed by both John C. Kelly and the Louisiana-Rio Grande Sugar Company, but in 1912 Kelly apparently decided to turn over the sales and management aspect of his business to the Bankers Trust Company of Houston, managers of the Shary holdings as well (*Deed Record* 20:524-529). Pharr, for his part, chose to turn to the Chicago Savings Bank and Trust Company through which he floated bonds. Proceeds allowed the Louisiana-Rio Grande Sugar Company to finance land clearing, pump installations, and townsite development (*The Pharr Press*, February 13, 1959:Section 2:5).

By 1911-1913, land in the project area was a social and ethnic dichotomy, sharing only the common economic base of agriculture. In the portion of the project area between the Rio Grande and Lateral A of the Louisiana-Rio Grande Canal system, the land was held in substantial amounts of several hundred acres by members of the Garza and Ramirez families (Figs. 7 and 8). North of a low terrace, approximately a dozen buildings comprised the Capote Ranch community, many of them

arranged in a linear fashion along the Brownsville (Old Military) Road and Lateral A that formed the northern boundary of the community. Deed records and informants who lived at Capote recall that the community was comprised of interrelated Hispanic families who farmed and ranched on land they had owned for generations, a pattern that was in marked contrast to the land and communities north of the Lateral. There, small farms of 20 to 40 acres had been cleared of brush and sold to the numerous Midwestern and Northern farmers who had been brought to the area by land companies, railroads, and other promoters.

By the beginning of World War I, some farm lots marketed by the Louisiana-Rio Grande Sugar Company, Henry Pharr, John Kelly, and John Closner to the east had sold to families from states such as Illinois, Kansas, Iowa, and Wisconsin. However, the period was a time of readjustment for those men who had promoted the sugar industry. Henry Pharr, for example, noted that his company had sold some first-lift lands already partly planted in cane and had contracted with purchasers to buy the cane at maturity on a sucrose-content basis. In addition, he had purchased a sugar refining plant from the Ohio and Texas Company and, in anticipation of a good second-season crop, had contracted for crops at Harlingen and Donna as well as that being grown south of the Pharr townsite. However, Pharr and other planters encountered a problem created by the capillary attraction that brought "the long dormant alkalis [in the soil] to the surface" and gradually stunted the growth of the cane and its sugar content.

Accordingly, the plant cane (the first year's growth) on virgin soil showed a healthy growth and development while the stubble (second year's growth) reflected unmistakably great damage from the alkali which had been brought near the surface of the ground. . . .

Finally, the situation was exacerbated by the long hauls which made it difficult to deliver the cane to the railroad expeditiously and by a freeze that killed the bud and eyes of the standing plants.<sup>3</sup>

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<sup>3</sup>This freeze probably was the one that occurred on January 11-12, 1912, when the temperature in Brownsville was 24 °F or in February when there were widescale and repeated freezes in the Lower Valley (Dunn 1992).

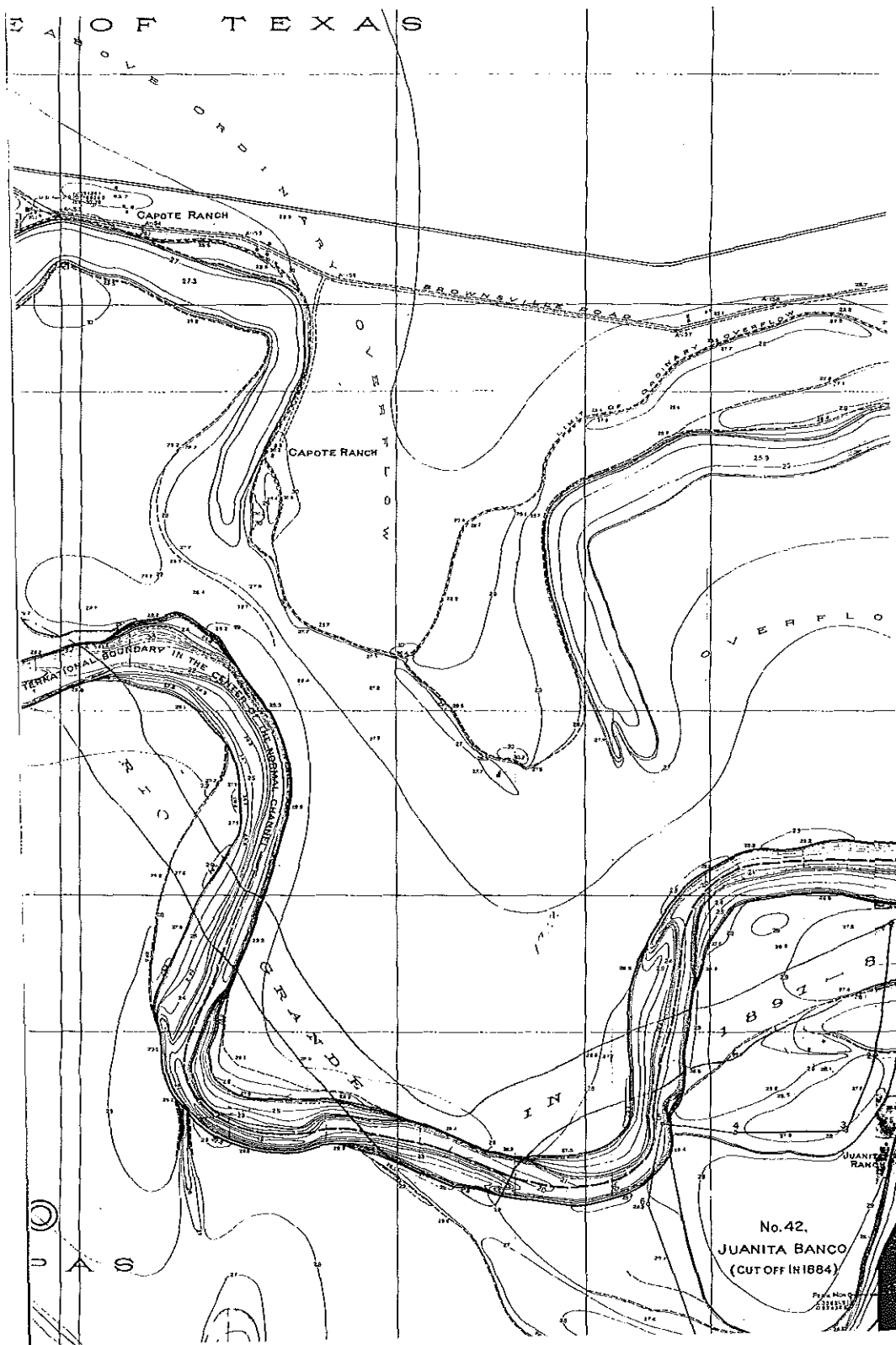


Figure 7. Sheet No. 14: Topographical Map of the Rio Grande. A map prepared in February 1911 of a portion of the survey area depicts a number of the components of the El Capote Ranch community (U.S. Department of State 1913).



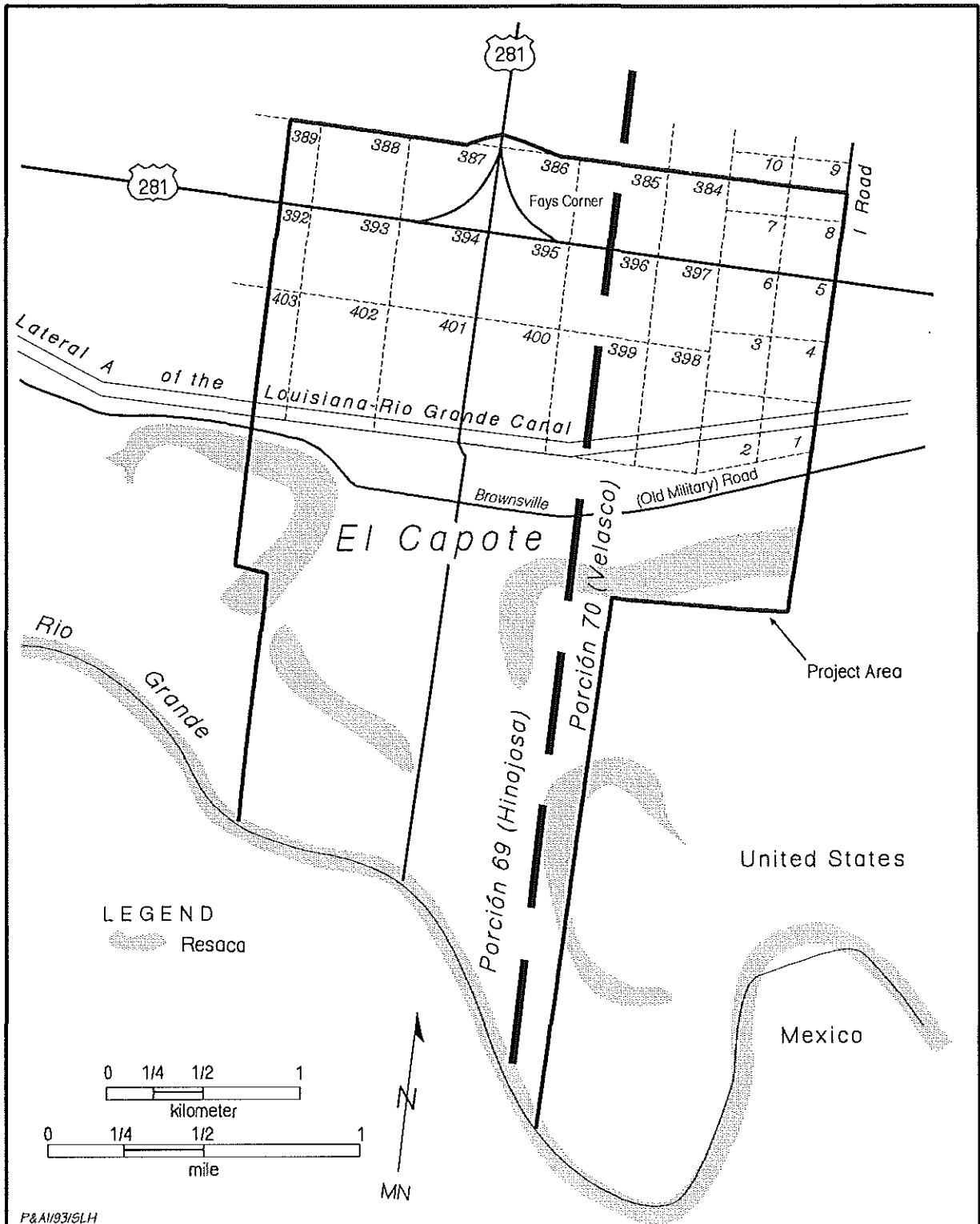


Figure 8. The project area after 1909. Land south of Lateral A of the Louisiana-Rio Grande Canal System was held in substantial acreages by residents of the El Capote Ranch community while that north of the Lateral had been subdivided into small farms and promoted to Midwestern and Northern agriculturalists.

According to Pharr, "the cane growers were demoralized at the loss of a portion of their cane crop and refused to continue cultivation for another season" (*The Pharr Press*, February 13, 1959:Section 2:5).

The rather sudden demise of cane production was paralleled by the ascendancy of fruit and vegetable growing as Texas made a World War I-era bid to "feed the world." Land sales that had been slack between 1910 and 1913 picked up briskly thereafter, aided by the numerous brochures published by Kelly's land company and out-of-state promoters such as the United Farms Company and A. J. McColl Land Company of Kansas City, Missouri. Such brochures were filled with letters from satisfied purchasers of lands in the Lower Rio Grande Valley and appealed to the immigrants' desire for fertile land, plentiful water, a tropical climate, and promises not just of self-sufficiency but of economic wealth (A. J. McColl Land Company [ca. 1919]; United Farms Company [ca. 1919]).

Between 1910 and 1920, the area used for farming in Hidalgo County increased from 8,940 to 74,168 acres; by 1924 that amount had grown again to 127,220 acres. According to Hawker et al. (1929:34-47), "the increased cultivated area, chiefly in small tracts, resulted from . . . the establishment of farms in areas subject to irrigation." These tracts were "operated by people chiefly from the Northern and West-Central States," and their frame, brick, and stucco bungalows could be seen throughout the southern portion of Hidalgo County. Cotton had become increasingly important by the early 1920s when "the first bale of cotton of the season in the United States [often came] from Hidalgo County." Corn also was an important crop, followed by truck crops such as cabbage, cantaloupes, onions, tomatoes, lettuce, watermelons, potatoes, beans, peas, and innumerable other

vegetables. Citrus fruits attracted a great deal of attention as well, and development of the industry was rapid despite a severe freeze in 1917. Production occurred on farms that were relatively small (ca. 10 to 40 acres) and had "good" farm buildings and other improvements together with "the best types of farm machinery." The most productive farms were irrigated, and by 1924 there were seven major irrigation systems in Hidalgo County.

The demand for productive soils meant that irrigated uplands and bottomlands were at a premium, and between 1920 and World War II, pressure increased on older property owners to sell. In the project area, Guillermo Garza, whose family had lived at El Capote since at least the mid nineteenth century, had sold some small acreages to children, other relatives, and neighbors. As a result, the El Capote community continued and included a brick and clay tile factory, store, coffin-making business, cemetery, school, and numerous homes on small farm tracts (Garza et al. 1992). However, age and lucrative offers apparently proved too tempting, and in 1928 Guillermo Garza and his wife, Manuella Gomez de la Garza, sold most of their land to A. A. Highbarger (*Deed Record* 275:556), who also purchased some adjoining tracts. A 380-acre tract in the El Capote and project areas was purchased by Wyan Nelson about the same time, while to the east the heirs of Manuel Ramirez sold 220 acres in the southwestern part of *Porción* 70 to Fred W. Turner in 1940 (*Deed Record* 475:490-491). The community of El Capote continued for several years after, but World War II drew away a generation of young men who moved from family farms to urban areas. By the 1950s, the use and appearance of the land divided by Lateral A had become integrated as larger-scale truck and cotton farming dominated the agricultural landscape.

# RESEARCH DESIGN AND METHODS OF INVESTIGATIONS

## 3

### NATURE OF CULTURAL RESOURCES AND RESEARCH STRATEGY

The archeological sites in the Lower Rio Grande Valley are characterized by disturbed contexts due to historical land modifications, widely variable site densities, short-term occupations, and low artifact densities. Land modifications and disturbances related to historic agricultural and ranching activities and their effects on archeological sites are well documented (e.g., Mallouf et al. 1977; Day et al. 1981; Hall et al. 1987). Since the 1920s, more than 95% of the natural vegetation has been cleared for agriculture and urban development in the Lower Rio Grande Valley (U.S. Fish and Wildlife Service 1978, 1980). Sites are so "fine-grained" that previous archeological surveys of the Hidalgo-Willacy drainage ditch system found that postconstruction survey was much more feasible for the detection and assessment of archeological sites (Hall et al. 1987).

Previous geomorphologic and paleoenvironmental investigations (e.g., Hall et al. 1987; Bousman et al. 1990) within the area indicated that more-xeric conditions and eolian deflation of much of the surface occurred during the early and middle Holocene. After 5000 B.P., sediments started to accumulate slowly and pedogenesis took place. Such processes may explain the apparent near-absence of Paleoindian and early to middle Archaic sites, while late Archaic and Late Prehistoric sites often are buried and intact. A cultural resource assessment by Mallouf et al. (1977) noted that a simple survey without subsurface testing would not suffice for an accurate assessment of the region's cultural resources.

Sites in the Lower Rio Grande Valley also tend to cluster around five different topographic/geomorphic settings: (1) clay dune-laguna; (2) resaca-laguna; (3) clay dune-lake; (4) resaca; and (5) barrier island (Prewitt 1974). Of these five settings, only resacas occur in the project area. Mallouf et al. (1977) also commented on the strong relationship between site location and freshwater sources.

Three factors, therefore, influenced the survey strategy and methods for the project: (1) the historic disturbance of low artifact density sites and land surfaces due to agricultural activities; (2) the slow continuous deposition of sediment over the last 5,000 years burying late Archaic and Late Prehistoric occupations; and (3) the high probability of sites being located adjacent to resacas. These factors suggested that a 100% pedestrian surface survey would be neither effective nor efficient.

### ARCHEOLOGICAL FIELD METHODS

Prior to initiating the fieldwork, a files search of the Hidalgo County records housed at the Texas Archeological Research Laboratory, The University of Texas at Austin, was conducted. The files revealed that no previously recorded sites were located within the project area.

The project area was divided into areas of low site potential and areas of high site potential (Fig. 9). Areas of high site probability consisted of four areas overlooking resacas, totaling approximately 81 hectares (200 acres). A 100% survey of these areas was accomplished by walking transects that ran parallel to the resaca at intervals of 10-20 m. Shovel tests and backhoe trenches were utilized to detect buried cultural resources.

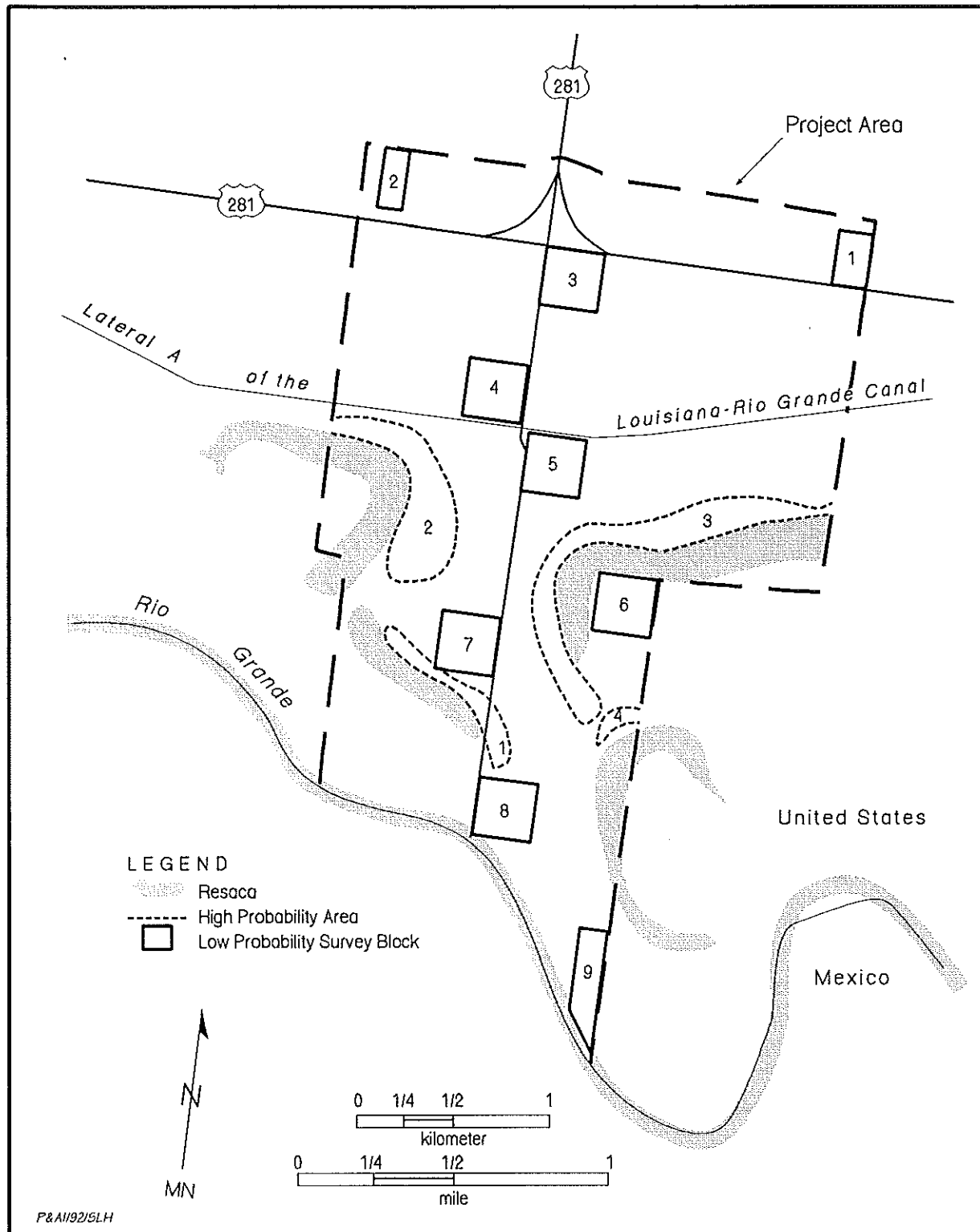


Figure 9. Project survey areas; high and low site probability areas or blocks.

Much of the project area consists of areas of low potential for the presence of prehistoric cultural resources. These areas were covered by a 10% pedestrian survey. Nine designated blocks of 4–10 hectares (10–25 acres, totaling 10% of the project area) were laid out randomly and covered by walking transects at intervals of 30 m. Shovel tests and backhoe trenches were excavated to detect buried cultural deposits in each low probability block, except when compacted clayey vertic soils were present or if the block was under cultivation, and in each high probability area.

Additional methods, free from the bias of the environmental/geomorphic model used to designate areas of low and high prehistoric site potential, were used in the search for historic sites. Recent and historic maps were utilized to locate the remains of historic structures that were not standing at the time of the survey. The maps used include the USGS 7.5' Las Milpas, Texas, quadrangle sheet (1962, photorevised 1983); a 1936 Texas State Highway map of Hidalgo County; and the 1911 International Boundary and Water Commission map.

When archeological sites were encountered, a State of Texas Archeological Site Data Form was completed, a site map was prepared, and black-and-white photographs were made of each site. Diagnostic artifacts, if present, were collected from the site's surface in an unsystematic fashion at the discretion of the survey crew. Collected artifacts were bagged, labeled with appropriate provenience documentation, and returned for temporary curation to the laboratory facilities at Prewitt and Associates, Inc. in Austin where the artifacts were washed, catalogued, and analyzed. Shovel tests and backhoe trenches were also utilized to determine the depth of cultural deposits on a few sites.

All of the shovel tests excavated were 0.9–1.6 m<sup>2</sup> in size and were dug to depths of 18–60 cm. All were excavated in 10-cm-thick levels, and all matrix was passed through 1/4-inch-mesh hardware cloth. Only two shovel tests yielded artifacts. None of these were diagnostic and only consisted of small pieces of brick, mortar, metal, glass, and charcoal; therefore, they were not collected. Their distribution and frequency is, however, noted in Chapter 5. All of the backhoe trenches ranged from 4.0–7.8 m in length and 1.12–2.02 m in depth.

Field records were kept in a standard format and include survey area maps (all shovel tests and

backhoe trenches are plotted on these maps), a daily journal, shovel test records, photograph logs, and State of Texas Archeological Site Data Forms. All artifacts and records produced during the current project are curated at the Texas Archeological Research Laboratory, The University of Texas at Austin.

### GEOMORPHOLOGIC INVESTIGATIVE METHODS

Geomorphologic investigations included the documentation of the 16 backhoe trench profiles (see Appendix) and the dating of 4 sediment/soil humate samples by radiocarbon assay. Each profile description is based on the examination of a 50–100-cm-wide column within the backhoe trench wall. The neutral term "zone" is used to allow both stratigraphic and pedogenic variation in the profile to be described under the same nomenclature. Each zone is numbered sequentially from the top (surface) down. Munsell color (moist), consistency, texture, structure, type and abundance of inclusions, and lower boundary characteristics are described for each zone according to the guidelines and criteria presented by Buol et al. (1980) and Birkeland (1984). Final soil horizon classifications were made based on the guidelines of Birkeland (1984) and Bettis (1984). Soil/sediment samples from zones were collected at the discretion of the Project Geomorphologist and were submitted for chronometric dating by radiocarbon assay.

Radiocarbon assays provide a chronological framework for the reconstruction of the geomorphic history of the project area. Age calculations are based on a 5,568 year half-life for <sup>14</sup>C. All of the assays have been corrected for carbon isotope fractionation by Beta Analytic, Inc., and their <sup>13</sup>C values are presented. A calibration factor (Stuiver and Pearson 1986) has been applied to the corrected assays in order to provide a calendrical date. The assays presented in this report are on organic materials or humates extracted from sediment and soil samples. The organic matter in sediments is detrital, having been deposited along with the clastic sediments. The radiocarbon assay therefore provides an approximate age of deposition. The humates in soils, however, represent organic matter that was produced on the stable surface and then translocated through illuviation into the subsurface, where it is bound by clays or silts. The assay

therefore represents an estimate of mean residence time and only provides a reliable measure of minimum age (see Stein 1992:202-203).

#### **ARCHIVAL RESEARCH METHODS**

The archival research methods included a variety of approaches that ranged from the use of historic maps to contacts with local informants. Fieldwork in Hidalgo County was preceded by several days of work in Austin where primary and secondary resources at the Texas Historical Commission, General Land Office, State Library and Archives, Secretary of State's Office, and Center for American History at The University of Texas at Austin were consulted. Particular attention was paid to historic maps such as early twentieth-century soil survey maps and a 1936 state highway map so that information about building locations or sites where structures had once stood could be supplied to the archeologists prior to the fieldwork.

Preliminary research in Austin was followed by fieldwork which consisted of an examination of each recorded site, attempts to locate sites that had been noted on historic maps, contact with local informants, and research at the Hidalgo County Courthouse and at several local history collections. The research was directed by several goals: (1) to identify the functions, associations, and history of each recorded site or structure; (2) to find new information that might lead to the identification of historic sites within the project area but outside of the areas actually surveyed; (3) to gather information about the history of the Lower Rio Grande Valley that would assist in identifying appropriate historic contexts and relating each recorded site or structure to those contexts; and (4) to compare the information available from each different kind of source for accuracy and completeness.

#### **DOCUMENTATION OF ARCHITECTURAL PROPERTIES**

During the fieldwork effort, attention was given to identifying standing buildings constructed prior to 1945, recording them, and assessing their significance. The historian used Texas Historic Sites Inventory forms (Residential) provided by the Texas Historical Commission, and these forms were filled out completely using information gathered in the field, at the Hidalgo County Appraisal Office, from local informants, and at the Hidalgo

County Courthouse. Each standing building was photographed from the public right-of-way using black-and-white film. In several cases, owner-occupants were interviewed. The additional access to the buildings allowed by those interviews usually resulted in more-comprehensive photographic coverage. Finally, all post-1945 buildings in the project area were photographed as well, but no Texas Historic Sites Inventory forms were completed for these properties since they are less than 50 years old.

#### **DOCUMENTATION OF UNRECORDED ARCHEOLOGICAL SITES**

During the fieldwork, numerous historic period archeological sites were identified. These sites were located through the use of historic maps found in various Hidalgo County repositories and during interviews with local informants. Because they fell within the project area but outside of the survey areas, they were not recorded. However, they were noted on the appropriate USGS quadrangle so that an attempt to locate and record them could be made in the future.

#### **ARTIFACT ANALYSIS**

The vast majority of the artifacts collected are historical glass and ceramic items. A number of references were used to identify and date each glass or ceramic sherd. These publications are appropriately referenced within the text of the Materials Observed and Collected sections of Chapter 5. Glass bottles and bottle fragments were classified and identified based on three criteria: (1) color; (2) manufacturing characteristics (finish and base morphology); and (3) embossing. Ceramic sherds were divided into three groups: earthenwares, stonewares, and porcelain. Earthenwares were further divided into hard paste refined sherds and soft paste sherds. The hard paste refined sherds, stonewares, and porcelain are described according to decoration type, e.g., hand painted, transfer printed, and banded wares. Colors, patterns, and rim morphology (if present) are also described for the decorated wares. The soft paste earthenwares are described according to their paste morphology and color. The temper of these sherds is also noted, along with the sherd's surface finish. Other artifacts such as metal items and bricks are described according to their morphology and material composition.

# RESULTS OF GEOMORPHOLOGIC INVESTIGATIONS

4

The geomorphologic investigations were conducted through the excavation of 16 backhoe trenches (Fig. 10). Detailed descriptions of all of the backhoe trenches can be found in the appendix to this report. A brief overview of the Holocene alluvial history of the Lower Rio Grande Valley is presented, followed by a presentation and discussion of the geomorphic environments of the project area. The geomorphology of the project area is discussed in terms of the depositional and pedogenic characteristics of selected backhoe trench profiles and overall geomorphic history of the area. The discussion is presented within a chronological framework, provided by four radiocarbon assays (Table 1). Finally, the geoarcheological implications and recommendations for future geomorphologic investigations in the area are presented.

## HOLOCENE ALLUVIAL OVERVIEW, SEDIMENTS, AND STRATIGRAPHY

The Rio Grande has been a large meandering fluvial system throughout most of the Quaternary (Brown et al. 1980:55). As sea level rose at the end of the Pleistocene, the Rio Grande Valley flooded, becoming an estuarine environment. Erosion along the margins of the Rio Grande estuary and valley walls widened the original Pleistocene valley. Tide-transported marine sediments were deposited over the earlier estuarine deposits. Around 10,000 to 7000 B.P., this transgressive period ceased and delta progradation took place. The Rio Grande built a sandy wave-dominated delta beyond the modern coastline, until the sediment supply greatly decreased and sea level reached its present level around 4500 B.P. (Brown et al. 1980:20). Landward, beyond the influence of

estuarine and marine transgression, the Rio Grande Pleistocene valley slowly filled throughout the Holocene by meanderbelt (point bar) and floodplain deposition (Brown et al. 1980:19).

The modern Rio Grande fluvial-deltaic environments consist of meanderbelt sands and silts, floodbasin muds, distributary sands and silts, interdistributary muds, crevasse splays, abandoned channels and resacas, local marshes, and headward-eroding streams (Brown et al. 1980:56). Most of these environments are inactive or ephemeral, abandoned by the shifting course of the river. Today, only the present Rio Grande channel periodically floods and deposits sediment. Point bar accretion, levee and crevasse splay building, and the flooding of floodbasins and interdistributary areas only occur during periods of heavy rainfalls and run-offs related to tropical storms and hurricanes.

The Pleistocene valley margin is approximately 8.4 km to the north of the project area, making the U.S. side of the valley 12 km wide at this point. The present Rio Grande channel is an underfit stream within the Pleistocene valley. Several headward-eroding streams, such as the Arroyo Colorado, have formed since the late Wisconsin glacial period and have pirated extensive run-off from the northern portions of the Pleistocene valley (Brown et al. 1980:20). The Arroyo Colorado has even deposited a meanderbelt. The present Rio Grande valley is approximately 3.1 km wide on the U.S. side of the river in the project area.

The project area can be divided into three major geomorphic environments, consisting of a late Holocene alluvial terrace overlooking the modern floodplain and resacas. These environments consist

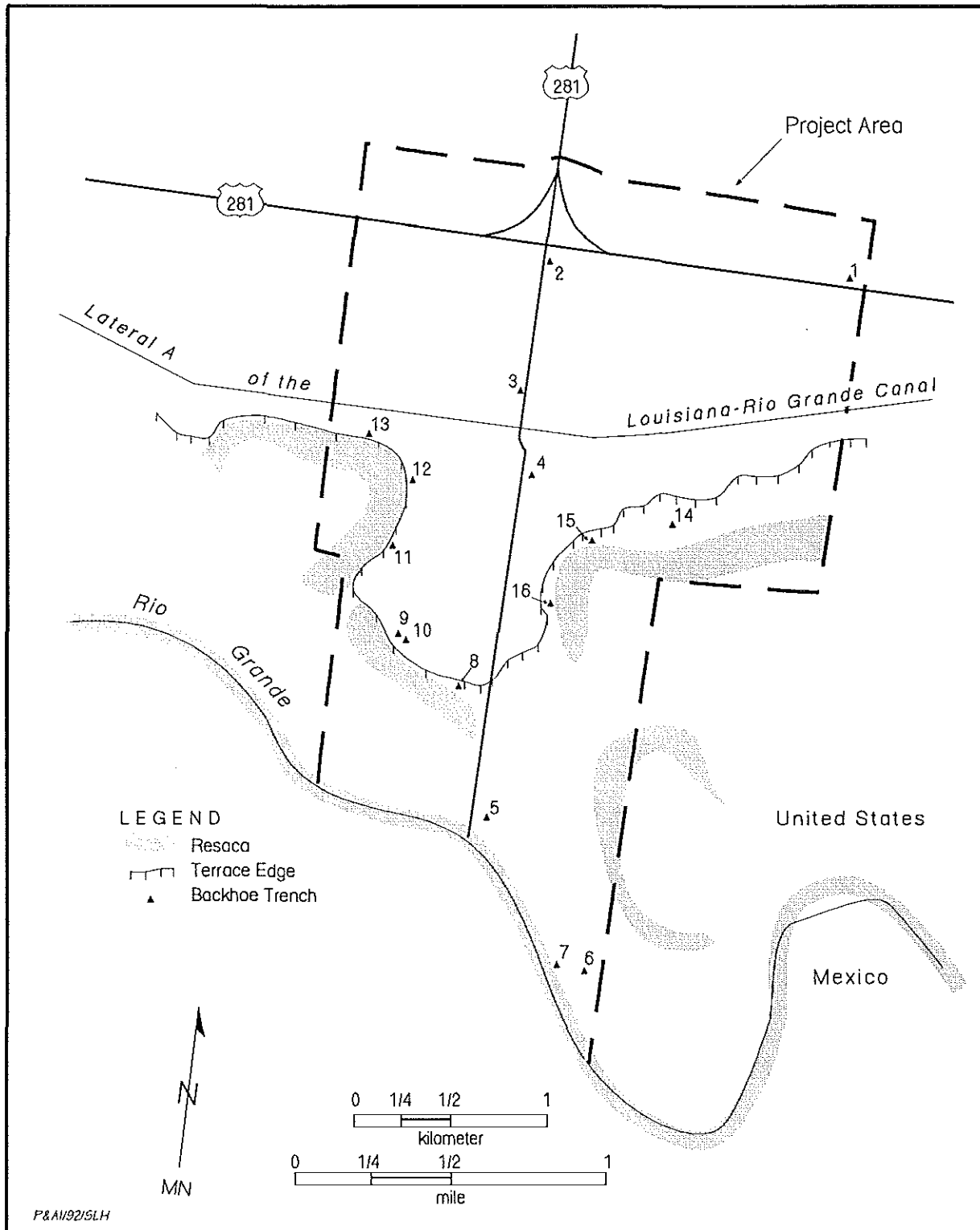


Figure 10. Backhoe trench locations.



TABLE 1  
RADIOCARBON ASSAYS ON SEDIMENTS AND SOIL HUMATES

Lab No.	Provenience	Uncorrected Age B.P.	Corrected Age B.P.*	Calibrated Date/Age (Intercepts and 1-Sigma Range)**
Beta-57853	BHT 3 41-50 cm bulk sediment	1140 ± 80	1200 ± 80 (-21.4)	A.D. 689 (812, 847, 852) 897 1261 (1138, 1103, 1098) 1053 B.P.
Beta-57854	BHT 5 141-151 cm soil humates	2100 ± 90	2160 ± 90 (-21.5)	375 (196) 100 B.C. 2324 (2145) 2049 B.P.
Beta-57855	BHT 6 19-26 cm bulk sediment	104.2 ± 1.1% modern***	102.9 ± 1.1% (-18.8) modern	not calibrated
Beta-57856	BHT 13 70-80 cm soil humates	1090 ± 60	1210 ± 70 (-17.7)	A.D. 689 (790) 892 1261 (1160) 1058 B.P.

\*Ages uncalibrated;  $\delta^{13}\text{C}$  values in parentheses.  
 \*\*Calibrations use 20-year record of Stuiver and Pearson (1986).  
 \*\*\*This represents a percent of modern radiocarbon activity and is characteristic of samples that date to nuclear testing.

of deposits representing meanderbelt sands and silts, floodbasin muds, crevasse splays, and abandoned channels and resacas deposited by the Rio Grande. More-distal floodplain muds from distributaries north of the project area may be represented in the extreme northern portion of the project area.

The late Holocene terrace surface covers the vast majority of the project area. The terrace is relatively low, only 1 to 2 m above the modern floodplain surface. Backhoe Trenches 1-4 and 9-13 were excavated on the terrace. With the exceptions of Backhoe Trenches 11-13, all of the trenches were dominated by floodbasin muds. Silts and sands of natural levees and crevasse splays are present in Backhoe Trenches 11-13, which are located adjacent to resacas at the terrace edge. The bulk of the terrace, as well as the project area, is constructed of floodplain deposits consisting of muds and clays. Channel fill and channel margin deposits were not encountered, although a small channel or meander remnant is preserved on the terrace margin in the western portion of the project area. Low channel fill sand percentages and high preservation rates of floodbasin mud deposits are typical of suspended-load fluvial systems (Galloway and Hobday 1983:75) such as the lower

Rio Grande.

Floodbasin muds were encountered in Backhoe Trenches 1-4, 9, and 10. Vertisols had formed within all the observed profiles, representing Harlingen clay soils (Jacobs 1981). Backhoe Trench 3, which is representative of the other five profiles, was excavated to a depth of 201 cm below the surface, and three zones were identified (Fig. 11). Zone 1 is a 26-cm-thick dark grayish brown (10YR 4/2) clay loam. It has weak fine to medium subangular blocky structure and is classified as an Ap horizon. Zone 2 is a 105-cm-thick grayish brown (10YR 5/2) strong medium blocky clay. Slickensides are common on ped faces. Incipient accumulations of carbonates are represented by a few  $\text{CaCO}_3$  filaments. Zone 2 represents a Ckj horizon. A bulk sediment sample from 41-50 cm yielded a  $\delta^{13}\text{C}$  corrected radiocarbon assay of 1200 ± 80 B.P. Zone 3 is a 70-cm-thick brown (7.5YR 5/3) massive clay and is designated a 2Cu horizon. Zone 3 may represent an old channel mud plug, but further excavation of the trench was hindered when the watertable was encountered at 201 cm.

Backhoe Trenches 11-13 were excavated along the terrace margin. They revealed natural

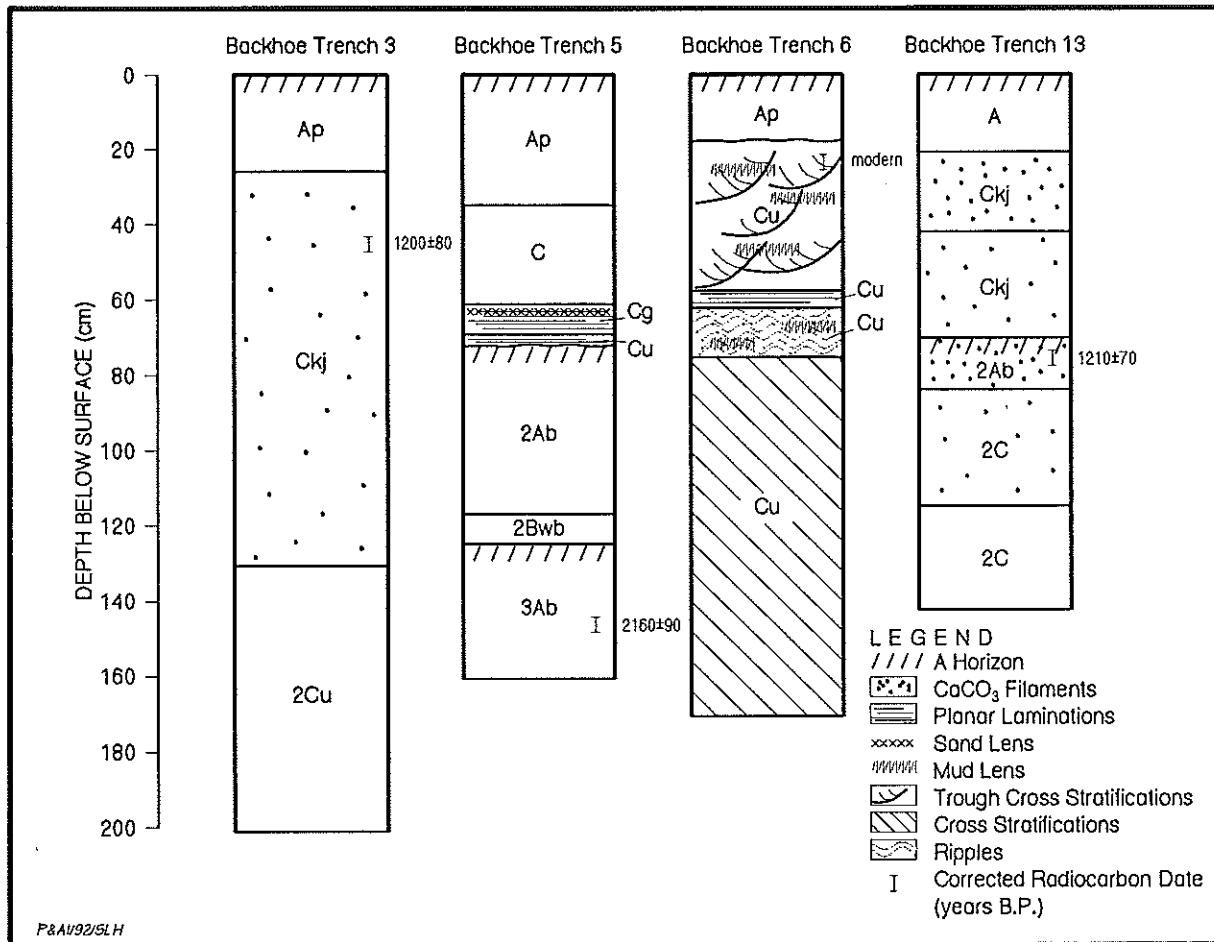


Figure 11. Profiles of selected backhoe trenches.

levees and crevasse splays deposited on the terrace when it was an aggrading floodplain. These deposits probably represent the most recent fill in the terrace, prior to channel incision and terrace formation. Only remnants of the channel responsible for depositing these levee and crevasse splay deposits are preserved due to a much later channel cut. Site 41HG154 is located on just such a small, older channel remnant. Backhoe Trench 13, representative of the other three trenches, was excavated to a depth of 142 cm, and six zones were identified (see Fig. 11). The profile reveals a buried soil (Zone 4) formed within natural levee, crevasse splay, and floodplain deposits. The soil (70–84 cm below the surface) is a dark gray (10YR 4/1) moderate fine blocky clay loam formed on floodplain sediments. A soil humate sample from 70–80 cm yielded a  $\delta^{13}\text{C}$  corrected radiocarbon assay of  $1210 \pm 70$  B.P. The radiocarbon assay provides a minimum age for

the soil and is essentially contemporaneous with the more-distal floodplain sediments in Backhoe Trench 3. Natural levee and crevasse splay deposits buried the soil after 1261 to 1058 B.P. (one-sigma calibration range of  $1210 \pm 70$  B.P.). The formation of filamental carbonates within the buried soil and in the deposits above the soil also suggests an age similar to that of the more-distal floodplain deposits. Poor preservation of sedimentary structures within the overlying levee and crevasse splay deposits also support a relatively great antiquity for the buried soil.

The two radiocarbon assays suggest that formation of the terrace occurred around 1100–1000 B.P. with channel incision and abandonment of the old floodplain. Deposition on the terrace surface after 1000 B.P. probably was limited to extremely heavy run-offs and floods related to tropical storms and hurricanes. The 1913 Inter-

national Boundary Commission map depicts the terrace margin as the "limit of ordinary overflow" (Fig. 12).

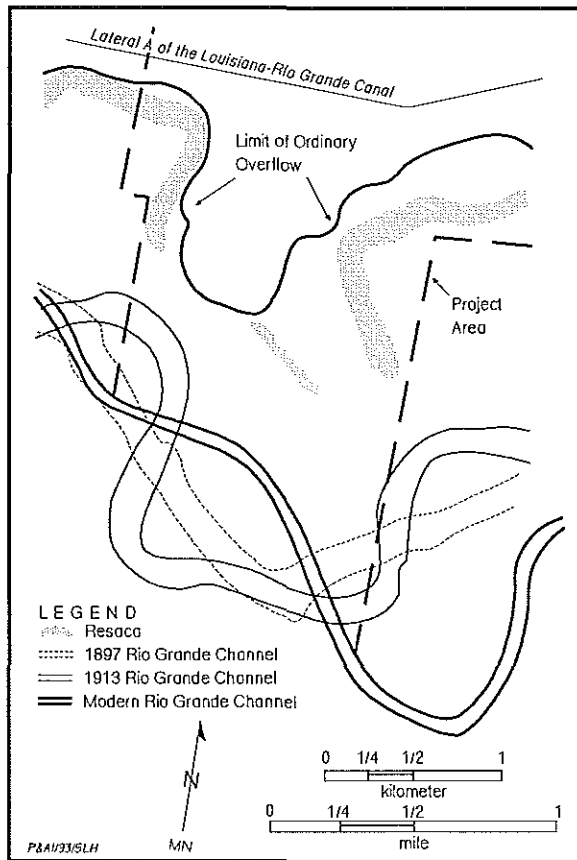


Figure 12. Map adapted from International Boundary Commission map of 1913 depicting the terrace margin, along with the modern Rio Grande channel and two former channel positions.

While the abandonment of the floodplain and terrace formation occurred around 1100–1000 B.P., the chronology of the initial deposition of this alluvial fill is unclear. An older, higher Holocene terrace does not exist in the project area or close to it on the U.S. side of the Rio Grande. Any older Holocene terrace existing north of the project area probably has been eroded away by headward-eroding streams. An older Holocene terrace, if only 1 to 2 m high like the late Holocene terrace, could be buried. Perhaps aggradation has been rapid and steady throughout the entire Holocene, resulting in an extremely deep and temporally continuous column of alluvial fill. Brown et al. (1980:56) suggest that meanderbelt sands may be up to 18 m thick in the Lower Rio Grande Valley

since fluvial deposits near the mouth of the river are known to be almost 20 m thick. This is entirely possible considering the extremely low gradient of the Rio Grande and past heavy sediment loads.

The late Holocene terrace overlooks the modern floodplain, which in the project area consists of a small narrow strip of channel fill sands and natural levee and crevasse splay sands and muds. In the western portion of the project area, these deposits are represented by relatively thin crevasse splay deposits. Within Backhoe Trench 5 they represent no more than the top 72 cm of the profile (see Fig. 11). The lower crevasse splay deposits (Zones 3–4, 61–72 cm) consist of thin silts and muds, representing the more-distal portions of the crevasse splay. As floodwaters breach a natural levee, the flow becomes unconfined and rapidly dissipates as sheetwash across the surface. Sands and other coarse sediments are quickly deposited, while silts and muds prograde out onto the floodplain. As the present Rio Grande channel continues to move north, the upper crevasse splay deposits (representing more-proximal portions) coarsen upwards. Crevasse splay deposits are often oxidized and reduced (gleyed), such as in Zone 3 of Backhoe Trench 5, due to wetting and drying cycles and fluctuating water tables (Galloway and Hobday 1983:65).

The crevasse splay in Backhoe Trench 5 overlies a truncated but moderately developed buried soil (Zones 5 and 6) formed on floodplain muds and a weakly developed A horizon formed on a channel mud plug (Zone 7) that yielded a  $\delta^{13}\text{C}$  corrected assay of  $2160 \pm 90$  B.P. These deposits will eventually be eroded as the present Rio Grande channel moves north, as is clearly revealed in Figure 12. Given its stratigraphic and geomorphic position, the first buried soil (Zones 5 and 6) is between ca. 2,160 and 1,000 years old. Both soils would have been far deeper on the late Holocene terrace than any backhoe trench excavated on the terrace. The difference in elevation between the  $2160 \pm 90$  B.P. assay and the assay of  $1200 \pm 80$  B.P. in Backhoe Trench 3 suggests that fluvial sedimentation rates were rapid throughout the late Holocene.

Downstream in the eastern portion of the project area, the Rio Grande is laterally accreting a point bar to the south. Backhoe Trenches 6 and 7 revealed much thicker, well-preserved crevasse splays over channel fill sands (point bar). A bulk

sediment sample from Backhoe Trench 6 at 19–26 cm (Zone 2) yielded a modern radiocarbon assay. Sedimentary structures throughout the crevasse splays are well preserved, depicting their heterogeneous structure which reflects their origin through multiple flood events, shallow flow conditions, and rapid sedimentation (Galloway and Hobday 1983:64). This internal heterogeneity is represented in Zones 2–4 of Backhoe Trench 6 and Zones 3–5 of Backhoe Trench 7 with well-preserved muddy lenses, alternating ripples of sand and mud, trough cross-stratifications, climbing ripples, and fine planar laminations. Common ferruginous stains in Zone 3 of Backhoe Trench 7 reveal that the deposit has been exposed to wetting and drying cycles. The crevasse splay deposits overlie grayish brown (10YR 5/2) and dark grayish brown (10YR 4/2) loose to friable cross-stratified sands in both Backhoe Trenches 6 and 7. A few very thin muddy and organic lenses are present within the cross-stratified sands. Although radiocarbon assays are not available for the deeper portions of these trenches, it is most likely that no alluvial fill predating 1000 B.P. was encountered in either trench.

Chronometric dates are not available for the alluvial fill observed in Backhoe Trenches 14–16, but it is assumed to postdate 1000 B.P. due to the modern floodplain location. Backhoe Trenches 14–16 were excavated on a natural levee overlooking a large resaca in the eastern portion of the project area. Levee deposits over channel fill sands and sandy muds were observed in the backhoe trenches. Sedimentary structures are preserved, but the sediments are slightly oxidized, and moderately developed soils with incipient B horizons have formed on the deposits, suggesting that while these deposits are less than 1,000 years old they are much older than the crevasse splay deposits observed in Backhoe Trenches 5–7.

With the exception of preserved channel remnants bordering the late Holocene terrace in the western portion of the project area, all of the large resacas in the project area postdate the late Holocene terrace. The large resaca along the eastern boundary of the project area appears to have been part of the active Rio Grande channel in the early twentieth century, according to the 1913 International Boundary Commission map (see Fig. 12).

## CONCLUSIONS

Geomorphologic investigations have documented the occurrence of two Holocene alluvial fills in the project area. It appears that the valley has continuously aggraded throughout much of the Holocene, from the end of the Pleistocene to around 1100–1000 B.P. Rapid fluvial sedimentation and continuous channel aggradation during this period probably were due to the extremely low gradient of the Rio Grande and past heavy sediment loads. Previous heavy sediment loads are evidenced by the fact that the Rio Grande is one of only two Texas rivers, the other being the Brazos, to have filled its late Pleistocene/early Holocene estuary and prograded a delta into the Gulf. Delta progradation began to diminish around 4500 B.P. when sea level reached its present level. A transgressive period of delta erosion and subsidence followed, when the sediment supply decreased (Brown et al. 1980:19). However, upstream in the project area aggradation continued for approximately 3,500 more years, suggesting that the stabilization of base level and diminishing sediment loads did not diminish channel aggradation (although it may have slowed). Therefore, it is believed that aggradation was controlled by the constant low gradient of the lower Rio Grande rather than base level and sediment load changes.

Climatic changes also may have contributed to the continual aggradation (see Knox 1983; Blum and Valastro 1989). At about the time the sediment supply decreased in the Rio Grande, a well-documented mesic interval (ca. 4500–1000 B.P.) occurred across the Southern Plains, Lower Pecos, and East and Central Texas (Bryant and Holloway 1985; Blum 1987; Bousman 1991; Meltzer 1991). On the Southern Plains, Abbott (1990:57) noted that the Double Mountain Fork of the Brazos and its tributaries rapidly aggraded their valleys between ca. 3000–1000 B.P. Blum and Valastro (1989) documented that the Pedernales River in Central Texas was an aggrading, gravel-dominated, meandering stream from ca. 4500–1000 B.P. Other studies have noted the increase in arboreal pollen, activation of springs, and soil development during this mesic period (e.g., Holliday 1983:36; Bousman 1991; Meltzer 1991). It appears that this mesic interval was widespread and included the Lower

Rio Grande Valley. Bousman et al. (1990:94–95) have noted significantly higher percentages of  $C_3$  plants in the Lower Rio Grande Valley based on stable carbon isotope analysis from soil humates and pedogenic carbonates during this period.

Channel aggradation in the Lower Rio Grande Valley seems to have been controlled by the low gradient of the lower Rio Grande and former high sediment loads. While the sediment loads decreased around 4500 B.P., a climatic shift to more-humid conditions appears to have negated the effects of a lower sediment supply upstream, and aggradation continued until 1100–1000 B.P. when channel incision resulted in terrace formation.

The occurrence of channel incision around 1100–1000 B.P. must also consider climatic factors since the base level for the Rio Grande has remained stable for the past 4,500 years. Channel trenching has in the past been viewed as the result of climatic changes to more-mesic regimes (see Knox 1983); however, over much of the Southern Plains and Southwest and Central Texas, channel incision has been found to be associated with increasing aridity (Hall 1977, 1988; Ferring 1986; Blum and Valastro 1989; Abbott 1990). Stream channels throughout these regions downcut in response to increasingly xeric but modern conditions around 1000 B.P. Whether the incision of the Rio Grande channel at ca. 1100–1000 B.P. reported here is related to the regional climatic changes suggested by Hall (1988) is a matter of speculation until further paleoenvironmental studies are carried out in the Lower Rio Grande Valley. However, Bousman et al. (1990:94–95) have noted a dramatic decrease in  $C_3$  plants after 2000 B.P. in the Lower Rio Grande Valley. An estimation of the percentage of  $C_3$  plant biomass from two of the  $\delta^{13}C$  values presented in this report also clearly show a decrease in the percentage of  $C_3$  plant biomass from 86% at ca. 2160 B.P. to 59% at ca. 1210 B.P. (Table 2).

Finally, the semiarid climatic conditions established ca. 1000 B.P. have been accompanied recently by an extremely sharp decrease in the sediment load of the Rio Grande due to the development of large-scale irrigation systems in the Lower Rio Grande Valley and the construction of Falcon Lake and Amistad Reservoir upstream. This has resulted in a decreased channel width-to-depth ratio, an increase in sinuosity, and cannibalization of point bars.

Lab Number	Corrected $^{14}C$ Age, Years B.P.	$\delta^{13}C$	Estimated Percent of $C_3$ Plant Biomass*
Beta-57854	2160 ± 90	-21.5	86
Beta-57856	1210 ± 70	-17.7	59

\*Estimates are derived from the formula  
 $[(\delta^{13}C - 3.5) + 13]/(-0.14)$  employed by  
 Bousman et al. (1990:93–95) based on Dzurec  
 et al. (1985) and Natelhoffer and Fry (1988).

### GEOARCHEOLOGICAL IMPLICATIONS

The preceding geomorphologic investigations and reconstruction of the Holocene alluvial activity in the project area have some implications that must be considered in the interpretation of the archeological record of the Lower Rio Grande Valley. Consideration must be given to the probability that archeological sites representing varied cultural periods are not uniformly represented. Alluvial environments often create a temporal bias that favors the preservation of occupations that are coeval with aggradational phases and relatively stable surfaces and discriminates against occupations that are coeval with or precede erosional episodes.

While Salinas (1986) has suggested that the Rio Grande floodplain was utilized by large numbers of Native American groups based on ethnohistorical research, it has not been confirmed archeologically. The paucity of prehistoric sites, particularly Paleoindian, early Archaic, and middle Archaic, in the Lower Rio Grande Valley is well documented (Mallouf et al. 1977; Day et al. 1980). The destruction of sites through agricultural and land-clearing activities has been used in the past to explain the low site densities across the Lower Rio Grande Valley. Outside of the Rio Grande floodplain, this explanation is more than appropriate, for the depositional environments are not as profoundly active or aggrading. However, the geomorphologic investigations here imply that low site densities in the Rio Grande floodplain are based on biases introduced by current archeological survey methods.

This suggests that many sites, including Paleoindian and Archaic, may be preserved and intact.

If valley aggradation was rapid and steady from the end of the Pleistocene to ca. 1100-1000 B.P., it would explain the paucity of Paleoindian and Archaic sites in the Lower Rio Grande Valley. Many of these prehistoric sites may be buried by up to 15 m of alluvial fill. Sites representing the late Archaic and Late Prehistoric periods are more common, due to stable surfaces such as terraces. However, even late Archaic and Late Prehistoric sites may be buried because the terraces are so low. The preservation of late Holocene deposits is not even guaranteed due to the increased sinuosity and channel entrenchment that has occurred over the last 1,000 years. Therefore, the low site densities in the Lower Rio Grande Valley

may not accurately reflect the utilization of the area by prehistoric populations.

Future archeological and geomorphologic investigations within the present Rio Grande valley probably should limit their areal coverage to high probability areas, such as resacas, and concentrate their efforts on a limited number of deep (4-6 m) mechanical excavations. Long-term stable surfaces can be inferred from maps such as the 1913 International Boundary Commission map, which depicts areas that have been outside of the active erosional and depositional environments for lengthy durations. Geotechnical borings would complement these investigations by determining the thickness of the Holocene (culturally relevant) alluvial fill in the valley.

## RESULTS OF INVESTIGATIONS

5

This chapter presents the results of the archeological and archival investigations. The archeological investigations involved the pedestrian survey of approximately 162 hectares (400 acres) and the excavation of 16 backhoe trenches and 14 shovel tests. A total of 10 sites, consisting of 10 historic and 2 prehistoric components, were recorded (Fig. 13). Six standing architectural sites, each consisting of a structure or groups of structures, also were documented and are described here. Individual site descriptions are presented, and each site is assessed in terms of its eligibility for listing on the National Register of Historic Places and for designation as a State Archeological Landmark. In addition, a portion (Lateral A) of the Louisiana-Rio Grande Canal Company Irrigation System passes through the project area. This property has previously been nominated for designation as a National Historic Landmark (Dames and Moore, Inc. 1992). It is described here for completeness of documentation of properties within the project area.

### **SURVEY OF LOW PROBABILITY BLOCKS**

The 100% pedestrian survey of the nine low probability blocks (10% of the project area) did not yield any cultural resources. Six backhoe trenches were excavated in six of the nine blocks. Blocks 2, 6, and 7 were under cultivation, prohibiting backhoe trench excavation. Six shovel tests were excavated, four in Block 1 and two in Block 2. The shovel tests proved to be a very ineffective and inefficient method of excavation in the vertisols, which were present in seven of the nine blocks. The six shovel

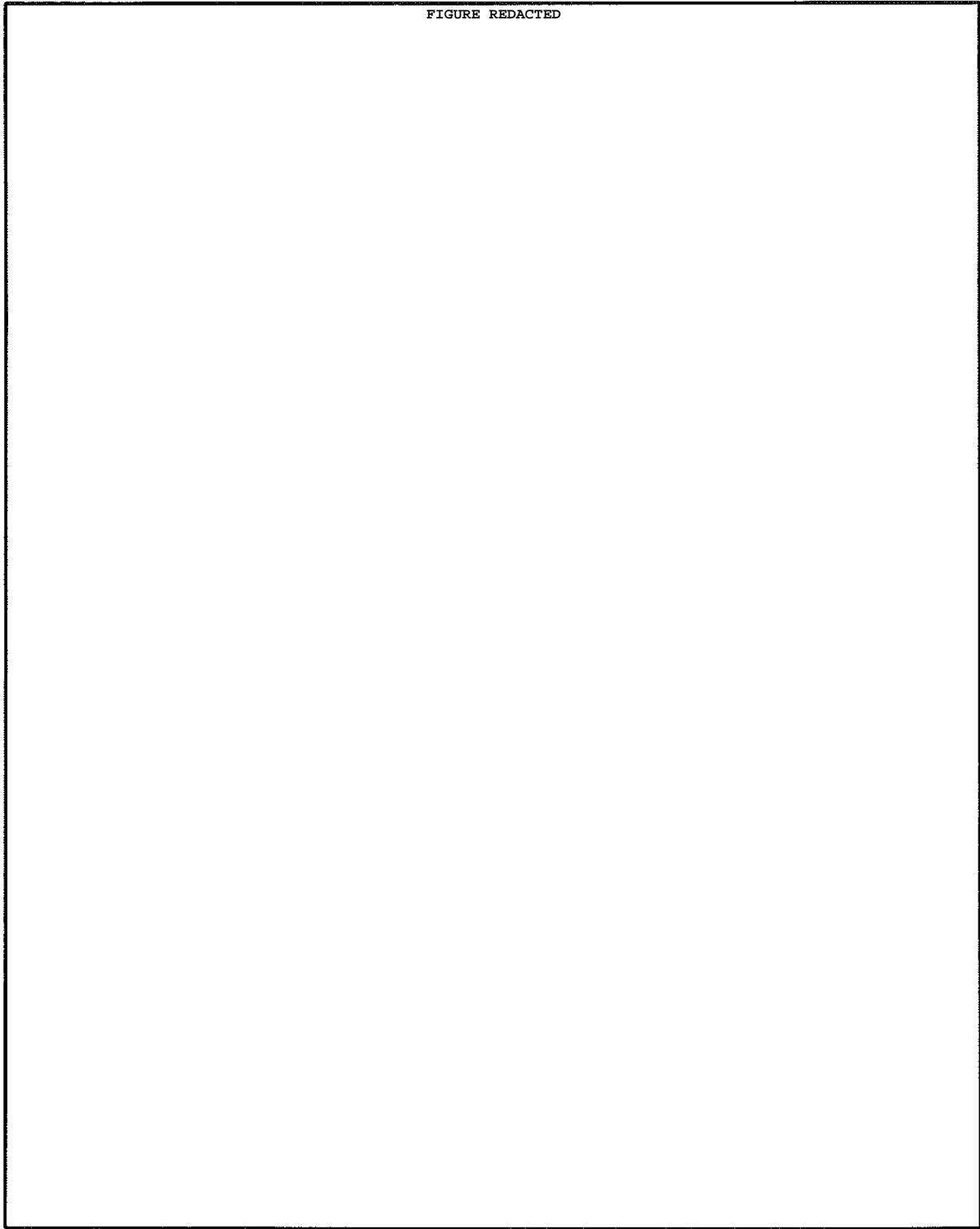
tests reached depths of only 18–35 cm with great difficulty. This ultimately led to the abandonment of shovel testing in the low probability blocks.

### **SURVEY OF HIGH PROBABILITY AREAS**

The survey and testing of the four high probability areas yielded four sites; all four are historic sites or structures, but one site also has a prehistoric component. High Probability Area 1 yielded one site, 41HG153, which has historic and prehistoric components. Backhoe Trenches 8, 9, and 10 were excavated in High Probability Area 1. High Probability Area 2 yielded three historic sites: 41HG154, 41HG156, and 41HG157. Backhoe Trenches 11, 12, and 13 were excavated in High Probability Area 2. High Probability Area 3 did not yield any cultural resources. Subsurface testing included the excavation of Backhoe Trenches 14, 15, and 16 and four shovel tests to depths of 30–60 cm. No cultural resources were encountered in High Probability Area 4, the smallest of the four high probability areas. Subsurface testing included the excavation of two shovel tests to depths of 60 cm.

### **SITES LOCATED THROUGH MAP DATA**

Six sites—41HG152, 41HG155, 41HG158, 41HG159, 41HG160, and 41HG161—were located in the low probability areas outside of the 10% sample survey blocks through the use of various maps.



**Figure 13.** Map showing locations of shovel tests, backhoe trenches, and archeological sites recorded.



## DESCRIPTIONS OF ARCHEOLOGICAL SITES

### Site 41HG152

#### *Description*

Site 41HG152 is an historic site located a few meters north of a small terrace on a flat featureless alluvial plain. The site is surrounded by cleared agricultural fields, although several mesquite, sugar hackberry, and locust trees are present within the site's boundary. The site lies 99 ft above mean sea level.

The site covers an area of 45 m north-south by 30 m east-west and includes four features: a windmill, a water tank, and two concrete slabs (Fig. 14). The windmill is depicted on the USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983); it consists of an angle tower of galvanized steel and a mill which is missing its blades and vane. Immediately north of the windmill is a water tank made of brick and mortar. The tank is 1.6 m in diameter and stands 0.8 m high. The brick and mortar is stacked to a height of 0.55 m above the ground surface. The remaining portion of the tank consists of a thin (4 cm) steel-mesh-reinforced concrete lip around the top of the tank and lining the inside.

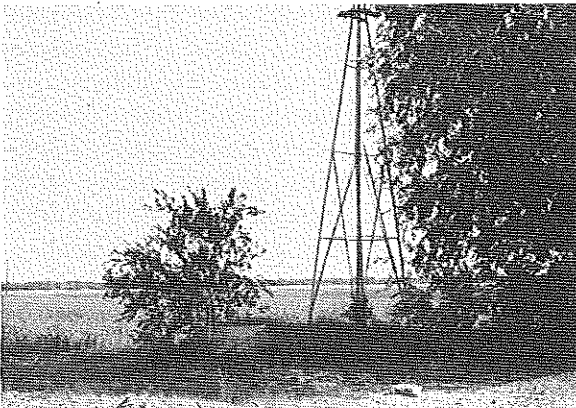


Figure 14. Looking southeast at 41HG152.

Approximately 12.5 m south of the windmill is a concrete slab that measures 4.3x2.5 m. The slab is flat and featureless, except for a 40-cm-diameter steel-ring-lined hole on the extreme northern half of the slab. The depth of this hole is unknown because it is filled with debris. A second concrete slab, approximately 21 m south of the first

slab, measures 3.3x1.9 m. The slab is broken and cracked in several places, leaving an uneven surface.

An electrical line runs along a dirt road that leads into the site and separates the two concrete slabs. The line terminates at a pole overlooking the larger concrete slab. A light on the pole is currently powered and being used. A second dirt road marks the western boundary of the site.

#### *Materials Observed*

Materials observed include pieces of sheet metal and a few pieces of whiteware ceramics. Other materials present at the site, but most likely not associated with its occupation, include pieces of plastic irrigation hose and plastic motor oil containers. None of these materials were collected.

#### *Site History*

Site 41HG152 is located near the east line of the Juan José Hinojosa *Porción* 69. According to local residents (Dyer and Norton 1992), the site was the former location of a house and barn where farming implements were kept. A 1936 highway map of the area does not depict a structure in the area, and former residents of El Capote (Garza et al. 1992) do not recall improvements on the site prior to World War II. Finally, the daughter of property owner A. E. Chavez who visited the site when she was a child believes that the house and other improvements were constructed in about 1950 for the use of a foreman and his family (Sperry 1992). For these reasons, it is assumed that site 41HG152 represents the former location of improvements made by a nonresident property owner after the World War II era.

#### *Assessment*

Site 41HG152 is considered to be ineligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark. The site is not 50 years old, and it is not associated with significant individuals or events. In addition, there are no standing structures, except for the windmill and water tank. Finally, the site does not appear to have the potential to address important research questions.

**Site 41HG153**

**Description**

Site 41HG153 is located on the edge of a 1.0–1.2-m-high terrace and consists of historic and prehistoric components (Fig. 15). The site has been cleared of vegetation due to the use and maintenance of a dirt road along the terrace edge and the cultivation of a field immediately north of the road. The site lies 95–100 ft above mean sea level.

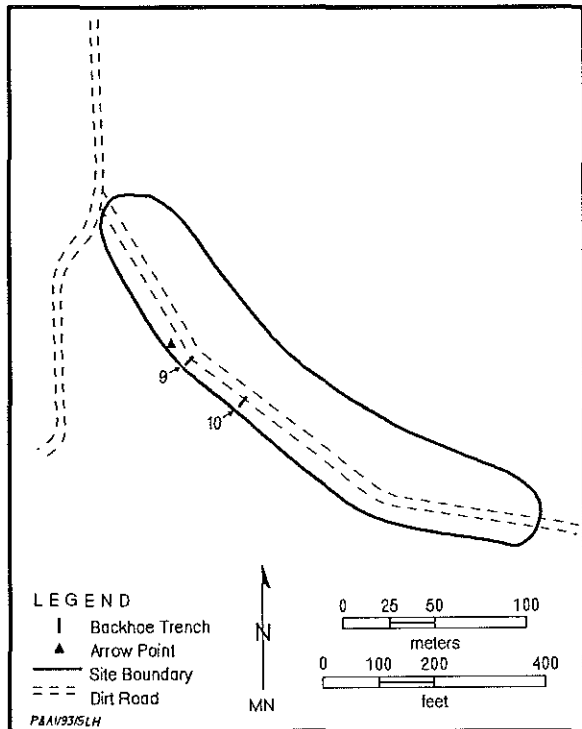


Figure 15. Site map, 41HG153.

Site 41HG153 was encountered during the survey and subsurface testing of High Probability Area 1. The site consists of a surface scatter of historic and prehistoric artifacts covering an area 25 m north–south by 250 m east–west. Surface artifacts were observed on the terrace and along its sloping margin. Artifact densities are much higher on the terrace slope, which is more vulnerable to erosion than the upper terrace surface. Backhoe Trenches 9 and 10 were excavated on the terrace slope and upper surface to depths of 112 and 120 cm, respectively. The profiles of both backhoe trenches revealed a deep brown clayey vertic soil (see Appendix). Cultural deposits could not be

discerned within the profiles, although a thin lens of snail shells was observed in the northern end of Backhoe Trench 9 at a depth of 30 cm below the surface. This may represent an old surface, possibly related to the prehistoric occupation of the site. On the downslope (southern) end of Backhoe Trench 10, a small fine charcoal and ash lens was observed at 20 cm below the surface. This ash lens probably represents a recent surface burn or grass fire due to its shallow depth at the toe of the terrace slope and its ephemeral and amorphous nature.

**Materials Observed and Collected**

Many prehistoric and historic artifacts were observed on the surface of the site. No artifacts were observed within the backhoe trenches. The prehistoric materials observed were lithic tools and debitage, many small bone fragments, and mussel shells. Historic items observed were ceramic sherds and metal ornaments. A sample of artifacts, focusing on diagnostic prehistoric and historic items, was collected at the discretion of the survey crew. In all, 44 artifacts were collected: 1 arrow point, 1 mussel shell fragment, 5 pieces of lithic debitage, 3 bone fragments, 2 metal artifacts, and 32 historic ceramic sherds.

The arrow point represents the proximal end of a Starr point (cf. Turner and Hester 1985:190) and is made of a brown chert (Fig. 16a). The lithic debitage consists of three flakes of fine-grained quartzite and two of limestone. One of the quartzite flakes appears to have been utilized. The bone and mussel shell fragments are moderately weathered, suggesting that they probably belong to the site's prehistoric component. The three bone fragments appear to be from a deer-size mammal.

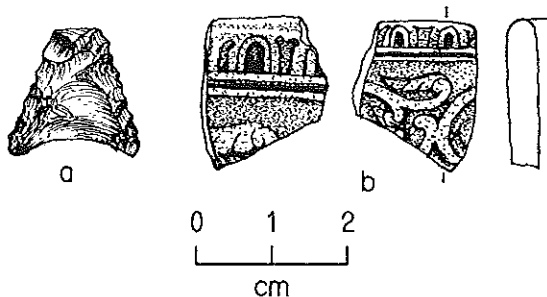


Figure 16. Artifact illustrations, 41HG153. (a) Starr arrow point; (b) transfer-printed rim sherd (exterior on left; interior on right).

The two metal artifacts are made of sheet brass showing little corrosion. One is a finial with a tri-lobed end. The artifact is broken at the center of the attachment hole opposite the tri-lobed end. The other is a fragmentary piece. Its original shape is unknown; two edges have been sheared off, perhaps by bending.

The 32 ceramic sherds consist of a variety of hard paste refined earthenwares and soft paste earthenwares. The hard paste refined earthenwares consist of 12 decorated sherds and 1 plain white-ware rim sherd. The decorated sherds include an edgeware rim fragment that is scalloped or cockled, molded, and painted blue. These attributes date the sherd to the pre-1840s (Moir 1987:106) or early nineteenth century.

Two transfer-printed whitewares were examined. One is a black foliate stippled design with fine detail on a lid or handle fragment. This pattern is not a sufficiently distinct face plate design to be identified in Williams (1978) or Williams and Weber (1986). The other is a light blue rim sherd with a border of three concentric arches (Fig. 16*b*). The center is solid blue, overlain by two white bands or arches separated by a solid blue line down the center. An incomplete arch consisting of a light stippled field with scrolls separates the sets of arches. This identifiable rim pattern could not be matched with any of those illustrated in Williams (1978) or Williams and Weber (1986). Transfer-printed whitewares with fine detail and bright colors are dated to about 1830-1860 (Kenmotsu et al. 1992:20).

Three slipwares or banded wares were examined. One is brown banded, another has a broad brown band on a gray-blue field (possibly a fragment of a mocha decoration), and the third has a broad cranberry band on a light blue field. Annular wares with dark earth-tone colors are dated to the 1840s-1850s in Texas (Dial 1992:39).

Two sherds are hand-painted underglaze floral designs. The fragments are monochrome: one is green, and one is deep blue. These designs have not been dated.

Another sherd is a yellowware with orange swirls and possible white banding on a yellow field. Annular yellowwares appeared in the 1840s and by the 1860s were used extensively in the United States (Majewski and O'Brien 1984:21).

Three sherds have off-white clay glazes. One is a refined red earthenware with a white glaze

interior and a medium blue glaze exterior. This sherd has a terra cotta paste and, although no luster is present, resembles lusterware sherds from sites at the Concho-Colorado confluence in west-central Texas (Amy C. Earls, personal communication 1992). The second sherd has only one exterior surface present and may represent a low-fired stoneware (although the paste is granular) with a Bristol glaze. The third sherd is a buff earthenware with a trace of red paint at the rim.

The remaining 19 sherds are soft paste earthenwares and are classified as historic based on the presence of glazes or paints, parallel striations (resulting from manufacture on a pottery wheel), and the paucity of aboriginal plainware ceramics on prehistoric sites in this area. Four of these sherds have traces of glaze or paint. One of these is a red earthenware with a brown and yellow tin glaze. The paste has a dark brown core and orange edges. Another is a red earthenware with a burnished surface. A dark red mineral paint is present on the light yellowish brown paste. The third sherd is a red earthenware with a light brown glaze on an orange homogeneous paste. The fourth sherd is a redware with a red painted band and a light reddish brown homogeneous paste containing rock (probably caliche) temper. Fifteen of these 19 sherds are identified as probable Mexican utilitarian wares. These 15 soft paste plainwares have pastes varying from red to gray. All have rock temper, which in most of the sherds is macroscopically visible and probably includes caliche.

Three sherds have light reddish brown surfaces and homogeneous pastes. One of these has striations on the inner surface perpendicular to those on the outer surface. Two other sherds have light reddish brown surfaces and gray cores. One sherd with a pale reddish brown exterior and gray core and one sherd with a light reddish brown exterior and brownish gray core also are part of the assemblage.

Six sherds have brown pastes. Of these, one has a light brown homogeneous paste, two have grayish brown exteriors and homogeneous pastes, one has a grayish brown exterior and a dark gray core, one has a grayish brown paste on one surface grading to a gray on the other surface, and one has a light brown/buff exterior with a gray core.

Two sherds have gray pastes. One is a light brownish gray homogeneous paste with fine to very fine rock temper, and the other is a brownish gray

with homogeneous paste.

The temporally diagnostic ceramic assemblage indicates dates ranging from the 1830–1860s or slightly later. The best estimate on the basis of these surface materials is the 1840s–1850s, or Texas Republic to early American period. There is a possibility that the occupation dates to the Mexican Republic period, particularly if the soft paste Mexican utilitarian wares can be dated.

### *Site History*

Site 41HG153 is located in *Porción* 69, a grant made to Juan José Hinojosa by the crown of Spain on October 22, 1767 (*Deed Record C:586–587*). Hinojosa owned *Porción* 69 until September 3, 1794, after which owners included José Matias Cavazos, Lino Cavazos, and Rafael Anaya, who purchased the grant on April 16, 1823 (*Deed Record E:560–562*).

*Porción* 69 remained in the ownership of the Anaya family and their relatives, including the Garzas and Cantus, and it is likely that they were living there in the 1850s when the grant was confirmed to Hinojosa, his heirs and assigns by the State Legislature (*Deed Record A:304–305; Deed Record C:586–587*). The area then went by the name "El Capote" and appears to have been the location of a sizable ranch community.

Artifacts from site 41HG153 suggest an occupation date by at least the mid nineteenth century when the families most strongly associated with *Porción* 69 were the Anayas and Garzas. By the last third of the nineteenth century, occupants of the area near the site were members of the Garza family. A map drawn in 1878 (see Fig. 2) (Texas. General Land Office 1878) depicts a building in the vicinity of the site, as does a map drawn in 1898 (see Fig. 4) (U.S. Department of State 1903: Volume 2:Sheet 34). Finally, descendants of Guillermo Garza, who owned the property on which 41HG153 is located, recall having seen the ruins of an old ranch headquarters there in the early twentieth century (Garza et al. 1992).

### *Assessment*

Sites yielding prehistoric components and diagnostic artifacts are rare in the Lower Rio Grande Valley. Due to this archeological paucity, even limited site integrity and low artifact densities

have great potential for answering important research issues of the region. The historic component of 41HG153 also has the potential to address important historical research issues. Diagnostic ceramic sherds suggest that 41HG153 dates to the Texas Republic or early American period. The historic component of 41HG153 appears to date to at least the mid nineteenth century when ranch communities such as El Capote, for which the site may have functioned as the headquarters, were the precursors to many formally planned towns of the twentieth century. The significance of El Capote in the Lower Rio Grande Valley is attested to by the presence there of an early public ferry crossing, by its unusually large size in the late nineteenth century, and by its ties to important Hispanic families of the region, including the Anayas and Garzas. According to Victor (1981:95), very little is known about this period in the Lower Rio Grande Valley because populations and settlements were sparse and little has been published on a ranch-specific level. Therefore, site 41HG153 is considered potentially eligible for listing on the National Register of Historic Places and for designation as a State Archeological Landmark, pending the results of further testing.

### *Site 41HG154*

#### *Description*

Site 41HG154 is an historic site situated in a shallow resaca overlooking a deeper resaca or abandoned channel cut immediately to the south. A small rise or levee marks the northern boundary of the site. The site area is surrounded by a dense stand of trees, while the site itself is covered by grasses, forbs, and a few trees. The site area is nearly flat and lies 95–100 ft above mean sea level.

Site 41HG154 was encountered during the survey of High Probability Area 2. It consists of several features comprising an old picnic area measuring 40 m north–south by 82 m east–west (Fig. 17). The main feature of the site is a picnic shelter, built on a 6.6–m north–south by 4.4–m east–west concrete slab, set on bricks similar to those composing a structure at nearby site 41HG156. Six wooden posts support a gabled roof covered by corrugated sheet metal. The shelter has a central fireplace made of brick that is plastered over and painted white. Open faces and elongated



Figure 17. Looking west at 41HG154.

barbecue pits occur on the south and north sides of the fireplace. The brick chimney terminates in a metal stove pipe that rises through the roof and is topped by a conical cap. The shelter has electrical outlets, although the power was not on.

A second feature, a "wishing well," is located approximately 13 m west of the shelter. The well is 1.3 m in diameter and made of brick and mortar which is plastered over and painted white. A nonfunctional draw bar is present across the top of the well. The bottom of the well is at ground level and is covered by bricks. This supports the conclusion that this well did not serve as a water source but instead is an ornamental feature or "wishing well."

Two concrete picnic tables also are present on the site. Both measure 1.8x0.8x0.9 m, and only one of them remains upright. Two outhouses made of corrugated sheet metal are present along the northern boundary of the site. The northernmost outhouse has a wooden sign reading "Ladies," while the other has a sign reading "Mens." The trunks of trees within the picnic area are painted white from the ground level to a height of approximately 1 m.

#### *Site History*

Site 41HG154 is located in the Juan José Hinojosa *Porción* 69 on a 456.19-acre tract

acquired by Hidalgo resident Ed Vela between 1942 and 1964. Local informants who lived in the immediate area and were familiar with it until the mid 1940s (Garza et al. 1992) do not recall the presence of improvements to the site prior to that time. It appears, therefore, that the site represents a post-World War II improvement constructed by or for property owner Ed Vela.

#### *Assessment*

Site 41HG154 is not considered eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark. It appears to be less than 50 years old and lacks architectural significance or associations with important events or individuals.

#### **Site 41HG155, Capote Cemetery**

#### *Description*

Site 41HG155, the Capote Cemetery, is situated on a terrace overlooking a nearly flat and featureless alluvial plain to the south (Fig. 18). Cleared agricultural fields surround the cemetery, although a few cedar and locust trees are within the cemetery boundaries. The site lies 95 ft above mean sea level.



Figure 18. Looking south at 41HG155, Capote Cemetery.

Capote Cemetery is depicted on the USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983). It is an historic Mexican-American cemetery that at its widest dimensions is 74.2 m north-south by 28.3 m east-west. The site boundaries were defined by the chain-link fence that circumscribes the cemetery. The cemetery contains an estimated 200 individual burials, determined by the number of visible headstones. Headstones vary from simple wooden and cement crosses to cut and polished granite. Several headstones are marked with a picture of the deceased and/or elaborate religious items or scenes (e.g., Catholic saints, the Madonna, and Christ). A few individual graves consist only of horizontal concrete slabs inscribed with a date (presumably the date of death) and a surname. The cemetery contains one crypt with the surname "Cantu-Garza." The vast majority of the headstones also have Spanish surnames, except for two headstones with the names "Kortz" and "Eisenhut." After examination of the surrounding

headstones, it appears that these two individuals married into Mexican-American families.

While the cemetery is known to date to at least the 1890s (U.S. Department of State 1903), the earliest marked burial is dated 1904; the cemetery has experienced continued use to the present. Many graves and headstones are well kept and recently have received flowers.

#### *Site History*

Site 41HG155, Capote Cemetery, is located in the easternmost part of the Juan José Hinojosa *Porción* 69. The site is identified with the El Capote Ranch community which may have started in the general area by the first half of the nineteenth century (see site 41HG153). A map made for the International Boundary Commission in 1898 (U.S. Department of State 1903:Volume 2:Sheet 34) depicts a cemetery at the present location of 41HG155 at that time, although the earliest dated

burial noted in 1992 occurred in 1904. Successive twentieth-century owners of the surrounding land were John C. and Cherrie Kelly until 1918, R. E. Brooks (1918–1933), J. A. Hollingsworth (1933–1934), L. R. Hollingsworth (1934–1942), and Fred W. Turner (*Deed Record 78:348–349; Deed Record 371:634–635; Deed Record 374:355–356; Deed Record 392:175; Deed Record 505:472–473*), none of whom referred to a cemetery in their deeds to successive owners.

#### Assessment

Capote Cemetery is the most visible site still associated with the long-lived El Capote Ranch community, one of the largest such ranches between Reynosa–Hidalgo and Brownsville, and home to numerous families between the early to mid nineteenth century and the World War II era. Thus, while Capote Cemetery does not include unique design features, it may include the graves of a number of individuals who were important to the history and development of the Lower Rio Grande Valley area. In addition, it is the most visible site remaining in the area of El Capote, an important nineteenth-century community in early Hidalgo County. Thus, it may be eligible for listing on the National Register of Historic Places under Criteria Consideration D because it is

associated with the settlement of an area by an ethnic group [that had] an important impact, [because] other properties associated with that group are rare, and [because] few documentary sources have survived to provide information about the group's history [U.S. Department of the Interior, National Park Service, Interagency Resources Division 1991:35].

Finally, Capote Cemetery may be eligible for listing on the National Register of Historic Places under Criterion D because it may have the potential to yield important demographic and genealogical information. In a number of cases, the legal records that normally supply such information do not exist. In addition, the surviving population of former residents is rapidly disappearing, taking with it valuable data. As a result, the cemetery itself may become the last repository for demographic and genealogical information about an

important nineteenth-century rural Lower Rio Grande Valley community.

At present, Capote Cemetery is protected by numerous State of Texas statutes. The site is more than 50 years old and therefore can be designated as a State Archeological Landmark (Texas Historical Commission 1986:3).

#### Site 41HG156

#### Description

Site 41HG156 is the remains of an historic brick and clay tile factory located on a tree-covered small rise or levee overlooking a shallow resaca immediately to the south. A cleared and cultivated field is present north of the site. The site is covered by a dense growth of hackberry, cedar, and mesquite trees. The site lies 100 ft above mean sea level.

Site 41HG156 was located through the survey of High Probability Area 2. The site covers an area approximately 30 m north–south by 45 m east–west. Site 41HG156 consists of the remains of one structure and mounds and scatters of clay products. The structure measures 4.65 m north–south by 5.80 m east–west and is composed of brick, mortar, and adobe blocks. Much of the structure has been razed. Only the foundation and portions of the north and south walls are standing (Fig. 19). Most of the foundation and the south wall consists of adobe blocks, which are up to 40 cm thick in most places. A mud plaster covers the insides of the standing walls. The northeast and southeast corners of the structure are reinforced by an extra-thick column or double wall of bricks. The structure appears to be subterranean; this may be due to the fact that the structure sits on a sloping surface and the upslope sides (north and west) of the structure are buried by scattered bricks and brick fragments. Large piles of bricks are scattered across the site, particularly north and west of the structure. One exceptionally large mound of bricks and tiles is present approximately 10 m east of the structure.

Backhoe Trench 13 was excavated approximately 16.5 m northwest of the structure to a depth of 1.42 m. A clear glass bottle was recovered from a pocket of ash and charcoal in the backhoe trench profile at 20 cm below surface.



a



b

Figure 19. Looking north at structure at 41HG156. (a) South wall; (b) north wall.

### *Materials Observed and Collected*

Many scattered bricks and tiles from the structure were observed on the ground, along with more-recent beer and soda bottles and tin cans. An older clear glass bottle was collected from Backhoe Trench 13 at 20 cm below the surface. Two bricks were collected from the surface.

The clear glass bottle is a mold-blown unpaneled medicine bottle with a plain oval base containing a maker's mark of an "O" in a square. The side seam extends up to but not over the lip, indicating manufacture by a semiautomatic bottle machine. The finish consists of a slightly sloping collar, and the lip is machinemade. The bottle measures 143 mm high, 36 mm wide, and 23 mm deep. The interior lip is approximately 10 mm in diameter. The maker's mark was used by the Owens Bottle Co. of Toledo, Ohio, from 1911-1929 (Toulouse 1971:393).

The bricks as artifacts, rather than as architecture, cannot be dated. One is a three-quarter fragment of a soft mud brick that was made in a mold. There is a frog (indentation) on one face, and the brick was struck (excess clay removed from the top of a full mold) on the opposite face. The frog has beveled edges and a maximum width of 6 cm. The paste is pale pink, homogeneous, and granular, with no temper visible, suggesting a low firing temperature. The fragment is 16+ cm long, 9.5 cm wide, and approximately 6.0 cm thick.

The other brick is a nearly complete adobe brick which was made in a mold, based on the fairly sharp edges. The brick is 31+ cm long, 22.5 cm wide, and 9.0 cm thick. Adobe mortar still adheres to one side. The paste is pale pink, homo-

geneous, granular, and very friable, suggesting a low firing temperature or sun firing. The temper includes nearly whole snail shells. Numerous fired clay tiles were observed on the surface of the site. The tiles appear to be pavers; they measure 29.5 cm long, 12.0 cm wide, and 2.0 cm thick.

### *Site History*

Site 41HG156 is located in the Juan José Hinojosa *Porción* 69. According to local informants who were familiar with the site prior to World War II (Garza et al. 1992), it was the location of a brick plant owned and operated by El Capote businessman Pedro Guajardo (1875-1952) during the first third of the twentieth century.

### *Assessment*

Brick manufacturing plants have been an important industry in the Lower Rio Grande Valley where deep deposits of clayey soils have provided plentiful resources for the industry. Since the nineteenth century, brick has been a favored building material, particularly in areas where stone is not readily available. During the nineteenth and early twentieth centuries, especially, numerous brick plants operated, and brick was widely used in the construction not only of individual homes but also of entire towns such as Roma and Rio Grande City where noted brick maker, architect, and builder Heinrich Portscheller erected numerous noteworthy buildings. In the vicinity of El Capote, several homes were constructed of brick (see 41HG158, Site History), only one of which is still standing west of the project area. However, the popularity



of the material is evident in the bricks and brick fragments that are scattered around several of the sites in the El Capote area.

Site 41HG156 is not known to be associated with significant individuals (Criterion B), and it is not eligible for listing on the National Register of Historic Places because of its architecture (Criterion C). However, it may be eligible for listing because of its associations with an important industry in the Lower Rio Grande Valley (brick-making) (Criterion A). In addition, small nineteenth- and early twentieth-century industries such as brick factories have not been well documented archeologically, architecturally, or archivally. As a result, site 41HG156 may have the potential to address topics pertaining to the distribution and technology of early twentieth-century brick-making in the Lower Rio Grande Valley. Therefore, it may be eligible for listing on the National Register of Historic Places and for designation as a State Archeological Landmark, pending further testing.

#### Site 41HG157

##### *Description*

Site 41HG157 is an historic farmstead situated on a flat featureless alluvial plain (Fig. 20). Several large mesquite and elm trees dominate the

site, which is surrounded by cleared agricultural fields. The site lies 100 ft above mean sea level.

Site 41HG157 is located in High Probability Area 2. The USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983) shows four structures present at 41HG157. Three of the structures are currently standing, while only remnants of the fourth are present. Standing structures include a house and two utility buildings or barns. The house measures 5.5 m north-south by 5.0 m east-west and is covered by horizontal wood siding on the east, west, and north sides (Fig. 21a). Vertical board-and-batten wood siding covers the south or back side of the house. The saltbox-like roof is covered with wood shingles. The front of the house (north side) has an overhang and a concrete and brick floor at the entrance. The house has one front and one back door. Four-over-four windows on the front (north) elevation flank the central entrance. There is one covered window on the west elevation and one four-over-four window and one covered opening on the east elevation. The house has electricity but no running water. An outside water tap is present on the southeast corner of the house.

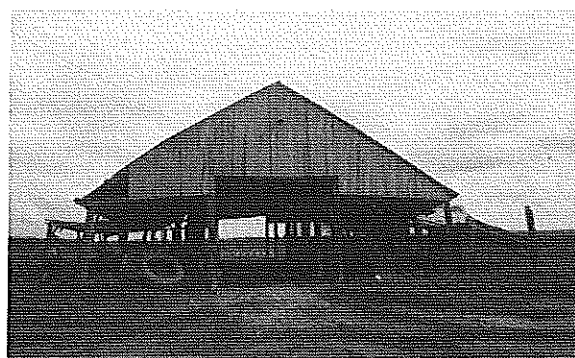
The second standing structure is a utility building measuring 9.4 m north-south by 8.5 m east-west with a corrugated sheet metal roof that gently slopes to the west. The outside is covered by vertical wood siding held in place by wire nails.



Figure 20. General overview of 41HG157, looking south.



a



b

Figure 21. Structures at 41HG157. (a) looking east at west side of house; (b) looking east at west side of pole barn.

The building has a poured concrete floor and two large swing doors on the east side. The south end of the building is deteriorated and falling apart.

The third building, a pole barn (Fig. 21b), is approximately 9 m east of the second building and measures 18.4 m north–south by 22.8 m east–west. The structure has a gable roof covered by corrugated sheet metal and adjoining sheds paralleling the entire north and south sides of the barn. The pole construction consists of 30 telephone poles covered by vertical wood siding only on the east and west sides. The entire structure leans to the south. Farm machinery and implements are currently being stored in the building.

Evidence of a fourth structure is located approximately 23 m west of the house. The remains of this structure consist of a brick and concrete slab that measures 5.5 m north–south by 5.0 m east–west. The slab currently supports a fuel tank.

#### *Site History*

Site 41HG157 is located on the Juan José Hinojosa *Porción* 69. While the frame house currently on the site appears to date to the first quarter of the twentieth century, no improvements are shown there on a 1936 Texas State Highway Department map. In addition, informants who lived in the El Capote community prior to World War II (Garza et al. 1992) recall the existence of houses a short distance away from 41HG157 but none at the site itself. As a result, it appears that the owner of the property after 1942 (Eduardo Vela) erected the pole barn and utility building and moved the house to the site from another location.

#### *Assessment*

Site 41HG157 is considered to be ineligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark. Two of the site components (the pole barn and utility building) appear to be less than 50 years old, and the house is believed to have been moved to the site within the last 50 years.

#### **Site 41HG158**

#### *Description*

Site 41HG158 contains historic and prehistoric components. The site consists of an artifact scatter along a 1.0–1.5-m-high terrace overlooking a flat featureless alluvial plain (Fig. 22). A dirt road runs along the edge of the terrace through the site. Cultivated fields surround the site area, which lies 95 ft above mean sea level.

Site 41HG158 was located through the use of the 1913 International Boundary Commission map and local informants Dr. Robert Norton of McAllen, Texas, and Malcolm Dyer. The site is composed of a scatter of historic and prehistoric artifacts on the surface in an area measuring 425 m east–west by 120 m north–south. The prehistoric component appears to be very small and limited to the extreme western portion of the site. Historic artifacts are scattered evenly across the surface of the site and down along the slope of the terrace margin. Structural remains were not observed on the surface or through limited subsurface testing. Two shovel tests excavated to depths of 50 and

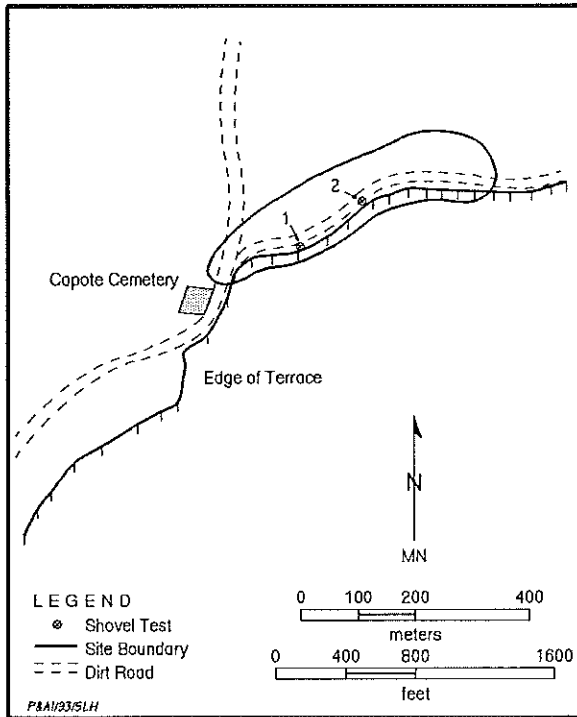


Figure 22. Site map, 41HG158.

60 cm revealed that the depth of the cultural deposit is 0–30 cm below the surface.

**Materials Observed and Collected**

Prehistoric materials observed on the site included lithic debitage and mussel shell fragments. One secondary flake of brown chert was collected from 41HG158. Historic artifacts observed on the surface include many red and yellow brick fragments and pieces of mortar, ceramic sherds, bottle glass (mostly clear but some green, blue, and brown), metal can fragments, charcoal, cut bone fragments, and window glass. A small sample of these materials was randomly collected from the surface at the discretion of the survey crew. The materials collected are one metal artifact, eight ceramic sherds, five glass bottle fragments, two brick fragments, and one cut bone fragment. Cultural materials encountered in the two shovel tests include small brick and mortar fragments, small unidentifiable pieces of metal, window glass fragments, and charcoal. These materials were not collected, but their frequency and distribution are given in Table 3.

Provenience	Bricks	Mortar	Glass	Metal	Charcoal
Shovel Test 1					
0–10 cm	–	–	–	–	–
10–20 cm	–	–	–	–	–
20–30 cm	–	–	–	–	–
30–40 cm	–	–	–	–	–
40–50 cm	–	–	–	–	–
50–60 cm	1	–	1	–	–
Shovel Test 2					
0–10 cm	2	1	–	–	–
10–20 cm	20	1	–	–	–
20–30 cm	24	–	–	2	1
30–40 cm	2	2	1	–	2
40–50 cm	3	–	–	–	–

\*All artifacts are fragmentary and are <1–5 cm in size.

The single metal artifact is a ferrous handle, fastener, or small tool. The eight ceramic sherds include hard paste refined earthenwares and soft paste wares. One of these is a plain off-white whiteware rim sherd. Two decorated whitewares are a flow blue sherd with a foot ring and a dark blue transfer sherd (Fig. 23). Flow blue dates from the 1840s to the 1870s (Miller 1991:9). The dark blue transfer dates to the 1820s–1860s (Kenmotsu et al. 1992:20), possibly earlier than the transfer sherds from 41HG153 because of the dark blue color and lack of detail. A yellowware sherd is from a bowl with a foot ring. A buff stoneware basal crock fragment has a Bristol interior and dry exterior. Bristol glazes are dated post-1910 by Lebo (1987:132). One porcelain rim sherd was collected. It has a molded and painted line and dot decoration. The colors are teal and mauve. The soft paste earthenware collection consists of two possible Mexican wares. A base fragment that has been molded and wheel-turned has a paste with a reduced core and pink edges. A tin glaze sherd has an orange-glazed interior and a dry exterior. The paste is orange and brown.

Five pieces of glass were collected. A purple glass liquor bottle lip has a straight brandy form, and no seams are evident. Marks parallel to the neck could indicate hand-blown manufacture. The combination of purple glass and lack of seams



Figure 23. Dark blue transfer sherd from 41HG158.

probably indicates a pre-1900 manufacture date. One of three pieces of clear glass is a medicine bottle lip with the seam over the top of the lip, indicating manufacture after 1904 (Intermountain Antiquities Computer System 1989:472/14). A second clear glass item consists of a round base from a bottle with embossed "DESIGN" on the base and diagonal lines on the side. The base probably dates to the twentieth century. The third item is a piece of pressed glass. Pressed glass manufacture flourished from the 1820s to around 1910 (Grow 1982:11). An aqua paneled medicine bottle fragment is embossed "ACEITE MEXICANO," or Mexican oil. Medicine bottles flourished from 1875 to 1906 (Freeman 1964:262).

One yellow and one red brick fragment were collected. Only small remnants of two and maybe three faces are present on the yellow fragment (only two of these faces are adjacent and therefore definite). The surfaces of these two faces have incisions parallel and oblique to the face which do not represent striking marks since they are present on two faces; these marks may be from rough smoothing of the brick if it was handmade. The paste is white to yellow, homogeneous, and granular, with fine to nonvisible temper indicating a low firing temperature. The red brick fragment has three adjacent faces, with two of these smooth and the rougher third face probably representing the struck face. The edges are moderately sharp but with chipping indicating wear on this basically soft brick. The paste is pale pink, homogeneous, and granular, with fine to nonvisible temper indicating a low firing temperature.

One cut bone fragment was collected. It represents an unidentifiable element from a cow-size mammal.

The historic artifact assemblage suggests both pre- and post-1875 occupations of the site. The meager evidence for the pre-1875 occupation consists of the flow blue and dark blue transfer ceramics, both of which probably predate the Civil War and its immediate aftermath. The evidence for

a post-1875 occupation consists of the late nineteenth- and turn-of-the-century purple glass brandy lip, the clear glass medicine bottle, the pressed glass, and the aqua glass embossed medicine bottle. The only evidence for a post-1910/World War I era occupation is the stoneware crock with Bristol glaze.

### Site History

Site 41HG158 is located on the western edge of the Juan Antonio Velasco *Porción* 70, a grant made by the crown of Spain in 1767 and confirmed to the heirs and assigns of Velasco in 1852. Local informants and deed records suggest that the area recorded as site 41HG158 may have been the location of three separate improvements. Informants, for example, recall that the westernmost portion of the site was the location of a twentieth-century adobe house occupied by El Capote resident Luis Arebalo (Garza et al. 1992). Immediately east of the Arebalo house was a piece of land approximately 450 ft wide that was known as the "Ramirez Strip" and was owned successively by Manuel Hinojosa, José Flores, María Rosaria Flores, and María Antonio Gusman, a lineal descendant of Flores, who sold it to Roland Ritchey on September 4, 1857 (*Deed Record A:323-324*). Ritchey or his heirs held the property until 1869 when they sold it to Juan Ramirez (*Deed Record B:362*). Artifacts collected at the site suggest that the Flores, Ritchey, and/or Juan Ramirez families may have occupied the central portion of the site during the mid nineteenth century.

The eastern part of the site is located on land whose ownership was confirmed to Manuel Ramirez by John C. Kelly (*Deed Record 28:443*). According to local informants (Dyer and Norton 1992; Garza et al. 1992), one of whom has an 1883 date brick from the site (see Fig. 3), the eastern portion of the site was the location of a rectangular-shaped brick house occupied by the Ramirez family. Deed records indicate that this was the Ramirez house until the early 1940s when the family sold the surrounding 220 acres to Fred W. Turner (*Deed Record 475:490*). The house was demolished within the last decade, and the site was leveled.

### Assessment

The prehistoric component at 41HG158 is

small and artifact densities are low. The potential for this prehistoric component to yield significant information for addressing regional research issues is limited, and thus the prehistoric component is not considered eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark. The historic component, however, has great potential for yielding information on the development of the El Capote Ranch community and other early settlements in the Lower Rio Grande Valley. Diagnostic artifacts suggest an occupation predating large-scale irrigation systems, the development of the Lower Rio Grande Valley rail system, and platting of many permanent towns. Sparse populations and settlements contribute to an incomplete picture of the early settlement of the Lower Rio Grande Valley at this time. Therefore, the historic component at site 41HG158 is considered potentially eligible for listing on the National Register of Historic Places and for designation as a State Archeological Landmark, pending further testing.

#### Site 41HG159

##### *Description*

Site 41HG159 is an historic site located on a flat featureless alluvial plain. The site surroundings consist of a cleared agricultural field and a resaca approximately 150 m to the south. The site lies 95 ft above mean sea level.

Site 41HG159 was located through the use of the USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983), which depicts four structures at the site's locality. None of the structures are standing today, and the site consists of a surface artifact scatter measuring 80 m north-south by 80 m east-west. Artifacts are distributed evenly across the surface and probably throughout the present plow zone (approximately 40 cm in depth). No structural remains or features were observed.

##### *Materials Observed and Collected*

Several different historic artifact types litter the surface at 41HG159. Observed artifacts include many ceramic sherds; clear, green, and blue bottle glass; brick fragments; and unidentifiable metal fragments. Many siliceous river gravels, pebbles, and cobbles are densely scattered across the surface

of the site. Some of the specimens have mortar adhering to them, suggesting that they may have been part of a structure or feature. A random sample collection of surface artifacts was made at the discretion of the survey crew. These materials are 1 metal artifact, 14 ceramic sherds, 10 glass fragments, and 1 piece of gabbro (an intrusive igneous rock).

The single metal item is a 2-1/4" square-head bolt. The 14 ceramic sherds are refined hard paste types and soft paste, possible Mexican, types. The refined hard paste types consist of three decorated white earthenwares. A rim sherd has a thin fugitive blue band. A plain whiteware sherd has a scalloped and molded rim. Moir (1987:109-110) refers to this decoration as light repoussé and dates it to 1890-1920. A hand-painted underglaze polychrome sherd is decorated with gaudy yellow, red, pink, and green lines or bands and black dots. This design appears to date to the twentieth rather than the nineteenth century.

A red transfer plate fragment depicts a man in a boat and resembles a red willow or other oriental pattern; the design is bold rather than detailed (Fig. 24). This pattern is executed on an ironstone paste, which indicates it dates to the latter part of the transfer period, perhaps as late as the 1870s-1880s (Miller 1991:9). A semiporcelain sherd is a rim with a blue band.

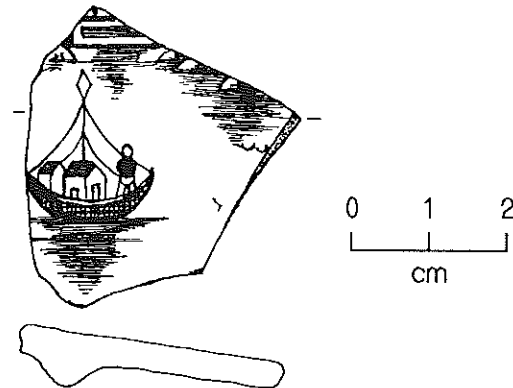


Figure 24. Red transfer plate fragment from 41HG159.

The sample collection also contains a yellowware body sherd and a rim sherd. Three stonewares were examined. One is a molded and blue painted cup handle. Another is a handle fragment with Bristol interior and Albany exterior glaze. The Albany glaze is very glossy, almost like a lusterware or flint enamel in appearance, and may

actually be a lead, rather than clay, glaze. The final stoneware item is a green glaze (not alkaline) cup fragment. The Bristol glaze indicates a post-1910 date (Lebo 1987:132), and the use of stoneware cups, rather than storage vessels, is consistent with a twentieth-century date. One piece of utility porcelain, embossed "660 W. . ." on an unglazed base, probably represents a twentieth-century electrical insulator.

Three sherds are soft paste, possible Mexican, wares. One is a stoneware body sherd with a glossy lead glaze interior and a black matte exterior. The paste is gray and vitreous. Two sherds are red earthenwares. One has a tin glaze brown interior, a dry exterior, and a homogeneous grayish brown paste. The other has a tin glaze brown exterior, black matte interior, and crushed caliche temper.

The collected glass consists of three tableware fragments, six bottle fragments, and one glass tube end. The tableware fragments are two milk-glass sherds and one yellow glass sherd. The milkglass sherds are one with yellow enamel paint on the interior and exterior and one plain fragment from a rectangular object such as a candy dish. The yellow glass is from a plate or saucer rim with floral embossing. The clear glass tube end, 7 mm in diameter, possibly is part of a radio tube dating to the twentieth century.

The bottle glass includes a clear pop bottle sherd with "PEPSI-COLA" in red-on-white enameled paint and a clear pop bottle sherd with enameled paint that has been burned. The other pop bottle sherd is medium green with enameled ". . . EVEN UP" or 7 Up. An aqua medicine bottle neck has a straight brandy-type finish and side seams. Two sherds from a ribbed/corrugated light green bottle are patinated. The two identified pop bottles are both twentieth century in date. The medicine bottle neck is probably turn of the century in date.

With the exception of the transfer-printed sherd, which probably dates to the 1870s-1880s, the other artifacts from this surface assemblage date to the turn of the century (e.g., aqua medicine bottle neck and molded plain whiteware) or the twentieth century. Most of the twentieth-century artifacts appear to postdate World War II.

#### *Site History*

Site 41HG159 is located on the Juan Antonio

Velasco *Porción* 70, a grant made by the crown of Spain in 1767 and confirmed to the heirs and assigns of Velasco in 1852. The grant was owned successively by Manuel Hinojosa, José Flores, María Rosaria Flores, and María Antonio Gusman, a lineal descendant of Flores, who sold the land to Roland Ritchey on September 4, 1857 (*Deed Record A:323-324*).

By 1869, when part of *Porción* 70 was sold to Juan Ramirez (see site 41HG158), the acreage on which 41HG159 is located may have belonged to [Juan] Manuel de la Viña (*Deed Record B:362*). While the de la Viña land is located east of the area traditionally identified as being part of El Capote, subsequent members of the family, including Plutarco de la Viña and four of his eight children, identified themselves as having been born at El Capote Ranch between 1875 and 1907. According to a local newspaper report, Plutarco de la Viña was an Hidalgo County judge (De la Viña Genealogy File), and it was on his ranch that the Reverend Alexander H. Sutherland, an early Methodist missionary, founded one of Hidalgo County's first Protestant congregations (Texas Historical Commission 1983). Local informants identified the World War II-era occupant of the frame house on the site as Paulo Jackson (Garza et al. 1992), probably a descendant of Martin Jackson who founded the late nineteenth-century Jackson Ranch community a short distance east.

#### *Assessment*

Site 41HG159 has been razed recently and the area plowed several times; it appears that most of the debris has been hauled away. The site may be associated with events and individuals who were significant in the development of Hidalgo County. However, the integrity of the site has been destroyed, and so 41HG159 is not believed to be eligible for listing on the National Register of Historic Places or for designation as a State Archaeological Landmark.

#### **Site 41HG160**

#### *Description*

Site 41HG160 is an historic housesite that is located on a flat featureless alluvial plain immediately north of Lateral A of the Louisiana-Rio Grande Canal. A few small trees occupy the site,

but for the most part the area has been cleared and filled with gravel. The site lies 90–95 ft above mean sea level.

Site 41HG160 was located through the use of the USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983) and the 1936 Texas State Highway map of Hidalgo County. The maps depict one structure at the site's locality. Artifacts are limited to a very sparse surface scatter in an area measuring 60 m east–west by 40 m north–south. No structural remains or features were observed.

#### *Materials Observed and Collected*

Two wood window frames and a large concrete form that had been bulldozed were observed on the surface of the site. Three historic artifacts were collected from the general surface. One is a sherd of clear pressed glass. Pressed glass manufacture flourished from the 1820s until 1910 (Grow 1982:11). Two ceramic sherds also were collected. One is a porcelain plate sherd with a matte film from the former floral decal design which has washed or eroded off the sherd. Decalcomania decoration dates to the 1890–1910 period (Moir 1987:104). The other is a semiporcelain rim fragment with a dark green glaze. This sherd could be Fiesta ware, which was made after 1930 (Moir 1987:107). These artifacts tentatively suggest a turn-of-the-century to post-1930 occupation for this site.

#### *Site History*

Site 41HG160 is located on Lot 1 of the John Closner Subdivision, originally a part of the Juan Antonio Velasco *Porción* 70. Closner subdivided the acreage during the first decade of the twentieth century and then sold Lots 1–8 and 10–16 to H. P. Griffin in 1912 (*Deed Record* 20:422–426). Artifacts at the site suggest that improvements existed during this period; it seems likely that they took the form of a tenant house, one occupant of which was Ruperto Rodriguez prior to World War II (Garza et al. 1992).

#### *Assessment*

Site 41HG160 is completely lacking in site integrity. In addition, it is not known to have been associated with significant events or individuals.

For these reasons, the site is not considered to be eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark.

#### **Site 41HG161**

##### *Description*

Site 41HG161 is an historic site located on a flat featureless alluvial plain. It is situated between the southwest and southeast diverging roads of U.S. Highway 281 South. The site is overgrown with grasses, mesquite, and elm trees and lies 90–95 ft above mean sea level.

This historic site was located through the use of the USGS 7.5' Las Milpas quadrangle (1962, photorevised 1983) and covers an estimated area of 30x30 m. The remnants of one structure were observed and recorded. The structural remains consist of a concrete slab measuring 13.4 m east–west by 21.8 m north–south that is elevated 70 cm above the ground surface. The slab is uneven due to fractures and breaks in the concrete and due to the settling and buckling of the foundation blocks. A small concrete ramp which is 9.5 m long and 2.5 m wide leads down to the ground surface from the southern end of the concrete slab. Remnants of the building's structural frame are absent. The concrete slab is currently overgrown with grasses and small trees. Several old and abandoned farm implements lie directly on the slab.

##### *Site History*

Site 41HG161 is located on Lot 387 of the Kelly–Pharr Subdivision of *Porción* 69. The subdivision was filed for record on July 26, 1909, and John C. Kelly began selling lots to prospective farmers soon after.

In 1912, Kelly turned management and sales over to the Bankers Trust Company of Houston (*Deed Record* 20:524–529), which sold Lot 387 and stock in the Louisiana–Rio Grande Canal Company to E. A. Mueller of Jackson County, Missouri, on July 30, 1917 (*Deed Record* 62:647–648). Subsequent owners included J. F. Lindauer of Franklin County, Missouri (1917–1923) and A. P. Dorf of McPherson County, Kansas (1923–1930) (*Deed Record* 62:647–648; *Deed Record* 148:275; *Deed Record* 337:271).

After 1930, Lot 387 was divided, and in April 1945 Dorf's heirs sold the north 30 acres to James A. and Virginia Sorenson (*Deed Record 570:570-571*). In November, the Sorensons sold the land to Fred Krenmueller (*Deed Record 570:579*), who then conveyed 3 acres to F. L. Husband and Joe Schaffer on August 24, 1947. It appears that Husband and Schaffer built a gin on the property after that date, for they were described as "doing business under the name of Husband and Schaffer Gin Company" of Hidalgo County (*Deed Record 623:172*).

#### Assessment

Site 41HG161 is not considered to be eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark because it is not 50 years old and it does not have transcendent significance according to the criteria of the National Register of Historic Places.

### DESCRIPTIONS OF ARCHITECTURAL AND ENGINEERING PROPERTIES

#### J. A. Weslander House

##### Description

The J. A. Weslander House (Fig. 25) is located in the northeastern portion of the project area east of Fays Corner and facing north onto U.S. Highway 281 South (Fig. 26). It is surrounded on the south and east by fields and on the west by a modern brick office building and a metal Butler building shop.



Figure 25. Looking south-southwest at the J. A. Weslander House.

The Weslander House is a one-story, wood frame, bungalow-plan structure covered with drop siding and having a gable roof covered with composition shingles. The primary entry, which is on the north elevation, is a single door which is obscured by a gable-roofed enclosed porch on a plastered brick foundation. Porch windows are aluminum sash; windows in the main part of the house are double-hung wood sash. Recent alterations have included the enclosing of the front porch and covering of the primary gable end with plywood.

##### History

The J. A. Weslander House is located on the west 14.75 acres of Lot 6 in *Porción 70*. The lot was part of a subdivision platted by John Closner by 1910, and it was sold with 14 other lots to H. P. Griffin by Closner on March 12, 1912 (*Deed Record 20:422-426*). The property became the object of a lawsuit during World War I and was not sold again until September 14, 1918, when it was purchased by D. F. O'Mara (*Deed Record 72:539-540; Deed Record 84:172-176*).

On April 10, 1919, O'Mara, a resident of Jackson County, Missouri, sold Lot 6 to Henry A. and Mamie S. Drake of Knox County, Illinois (*Deed Record 87:381-382*). In September 1921, the Drakes conveyed the property to J. A. Weslander of Hidalgo County (*Deed Record 130:258-261*). The house appears to have been constructed by the Weslanders between 1925 and 1936 when it appears on a Texas State Highway Department map.

##### Assessment

The J. A. Weslander House is a wood frame bungalow that appears to be associated with an important period of agricultural development in the Lower Rio Grande Valley when Midwestern colonists increased the development of land used for farming and the region became nationally known for its agricultural productivity. However, the building has been altered since its period of significance (ca. 1925-1940), and changes after World War II have had a negative impact on the integrity of the materials, design, and context. For this reason, the Weslander House is not believed to be eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark.



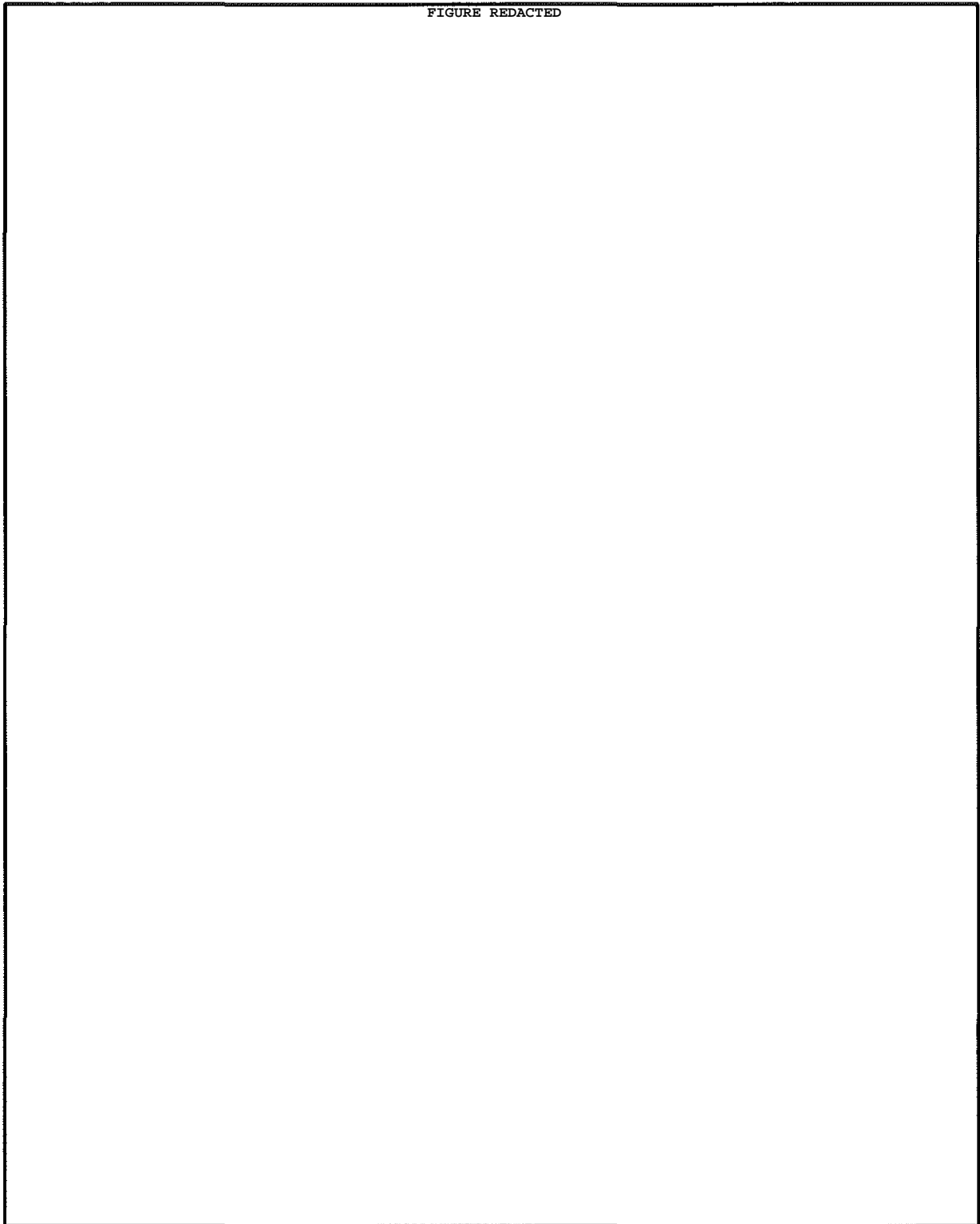


Figure 26. Recorded and unrecorded historic sites in the project area.

## R. J. Sorenson Farmstead

### Description

The R. J. Sorenson Farmstead is located in the north–central portion of the project area southeast of Fays Corner and facing north onto U.S. Highway 281 South (see Fig. 26). It is surrounded on three sides by fields.

The farmstead is comprised of three buildings — a main house and two outbuildings. The main house is a one–story brick bungalow with an intersecting gable roof and asymmetrical plan (Fig. 27). The front facade, which is covered by a nonhistoric shed–roofed porch, has a five–bay configuration and the front door is off–center; the porch has a three–bay configuration. A large, nonhistoric metal carport has been added to the west front facade of the house. Windows are a combination of wood and aluminum sash, exterior brick is buff colored, and the roof is covered with composition shingles. A single brick flue pierces the roof and appears to be associated with a kitchen near the rear of the house. With the exception of alterations to the front porch and some windows, and the addition of a carport, there appear to have been few changes made to the Sorenson House.

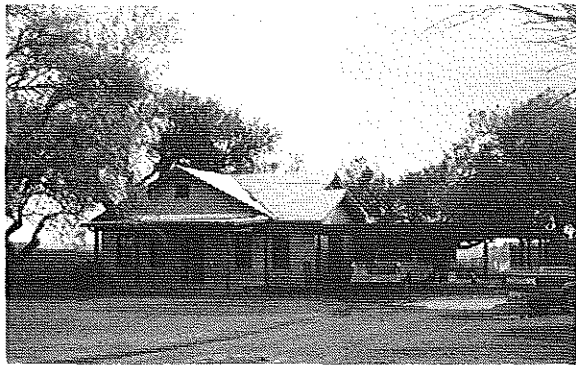


Figure 27. Looking south–southwest at the main house on the R. J. Sorenson Farmstead.

Outbuildings located south of the house consist of a frame granary that was moved from the Busch Farm and converted into living quarters by Malcolm Dyer (Dyer and Norton 1992) and a frame garage/ implement shed that probably dates from the same period as the main house.

### History

The R. J. Sorenson Farmstead is located on

0.33 acres in the north–central portion of Lot 396, Kelly–Pharr Tract. The lot was part of a subdivision platted in 1909. It was owned by John C. Kelly, developer of the subdivision, or his agent, the Bankers Trust Company of Houston, until March 15, 1916, when it was purchased by J. E. Couch who also owned the adjoining Lot 397 (*Deed Record 16:407; Deed Record 20:524–529; Deed Record 57:73–74*). The same day, Couch sold the two lots to L. R. Hicks, who held them for 3 years and then sold them to Peter J. Fay (*Deed Record 53:380–382; Deed Record 92:518–520*). Fay was unable to hold onto the property, and it was taken over by the Southwest National Bank of Dallas which sold the lots to R. J. Sorenson on August 14, 1924 (*Deed Record 169:567–568*). The Sorensons constructed the brick house at the farmstead sometime between 1924 and ca. 1935 and may have built the frame garage to the south as well. Within the last two decades, owner Malcolm Dyer moved the second outbuilding, a frame granary, from his father–in–law's farm and adapted it for use as a living space (Dyer and Norton 1992).

### Assessment

The R. J. Sorenson Farmstead is associated with an important period of agricultural history in the Lower Rio Grande Valley when Midwestern and Northern colonists increased the development of land used for farming and the region became nationally known for its agricultural productivity. During the 1920s and 1930s, the landscape "increasingly became one of bungalow–studded family . . . farms" (Dames and Moore, Inc. 1992:1–25). This landscape remained the dominant one until the late 1940s and early 1950s. As a result, the R. J. Sorenson Farmstead may be eligible for listing on the National Register of Historic Places under Criteria A and C because it is associated with important events and economic, social, and cultural patterns in the Lower Rio Grande Valley, and because the main residence at the farmstead is a good example of a bungalow from the period 1925–1935. For these same reasons, it may be eligible for designation as a State Archeological Landmark.

### Fays Corner

#### Description

Fays Corner is located at the intersection of

U.S. Highway 281 with Highway 281 South (see Fig. 26). The complex of buildings at the corner is oriented south to Highway 281 South. The complex is bounded by public roads on two sides. Other improvements in the area include modern buildings, trailer houses, and a gin site (see site 41HG161).

Fays Corner is comprised of a main residence (Fig. 28) and numerous outbuildings and site features, including store houses, a garage, and water pumping and storage devices. The main house appears to have been constructed in several different phases. It is a one-story, hip-roofed building. The exterior plaster has been finished in a decorative fashion (see Fig. 28). Windows are one-over-one wood frame.



Figure 28. Looking southwest at main residence at Fays Corner.

### History

Fays Corner is located on 0.4 acres of Lot 387, Kelly-Pharr Tract. It was sold originally to E. A. Mueller of Jackson County, Missouri, on July 30, 1917 (*Deed Record* 62:647-648). Subsequent owners included J. F. Lindauer of Franklin County, Missouri (1917-1923), A. P. Dorf (1923-1930), and the Borderland Orchard Company, Inc. of Hidalgo County, Texas, which bought the south 10 acres of the lot on December 6, 1930 (*Deed Record* 337:271).

The Borderland Orchard Company lost the land in 1932 when it was sold at a courthouse sale to W. E. Crawford (*Deed Record* 359:357). Crawford sold the land the same year to Ruth E. Gunnell, who then conveyed the east 5 acres of the south 10 acres of Lot 387 to W. C. Shippee (*Deed Record* 362:573; *Deed Record* 363:155). Shippee sold the land to F. H. Rhodes of New York immediately, and Rhodes conveyed it to Florence M. Fay on May 27, 1939 (*Deed Record* 362:575-576; *Deed Record* 457:196). According to informants (Dyer and Norton 1992),

the main house at Fays Corner was constructed by the Fay family. However, a 1936 highway map depicts a structure at Fays Corner by that date. It seems likely, therefore, that improvements were present by the mid 1930s.

### Assessment

Fays Corner is not believed to be associated with important events or individuals, and it is not architecturally significant. For these reasons, the property is not recommended for listing on the National Register of Historic Places or for designation as a State Archeological Landmark.

### Olson-Doffing-Busch House

#### Description

The Olson-Doffing-Busch House (Fig. 29) is located in the north-central portion of the project area southwest of Fays Corner and facing north onto U.S. Highway 281 South (see Fig. 26). It is surrounded on the south and west sides by fields and on the east by an open equipment lot.

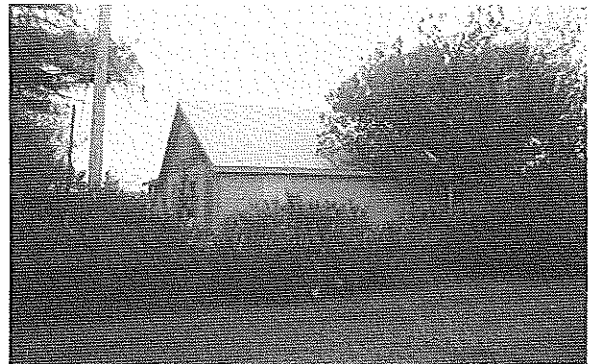


Figure 29. Looking south-southwest at the Olson-Doffing-Busch House.

The house is a one-and-a-half story, wood frame structure that appears to be a modified L plan. The house has a corrugated metal gable roof and wood sash windows. Obscuring of the original front elevation by alterations to openings makes it difficult to identify the historic configuration. In addition, the original wood siding has been covered by asbestos siding.

#### History

The Olson-Doffing-Busch House is located

on the east 10 acres of Lot 393 of the original 1909 J. C. Kelly and Associates Subdivision. When Kelly and his partner C. E. Hammond of Bexar County, Texas, divided their holdings, C. E. Hammond received the property west of present-day U.S. Highway 281. In 1911, he sold this property, totaling 2,465 acres, to the Louisiana–Rio Grande Sugar Company for \$37,333.33. Lot 393 was a part of the acreage conveyed (*Deed Record 14:524–525*).

The same year, the Company sold Lot 393 to Ira H. Spurrier of Cook County, Illinois (*Deed Record 18:17–20*). Spurrier then sold the lot to O. F. Olson of Hardin County, Iowa, on March 1, 1913, for \$1,099.58 (*Deed Record 30:527–529*). The Olsons held the property until December 21, 1917, when they sold it to Nick Doffing of Hidalgo County for \$4,100.00 (*Deed Record 72:281–282*). Although the Olsons lived in Hamilton County, Iowa, at the time of the sale, the increase in the price of the property between 1913 and 1917 (\$1,099.58 versus \$4,100.00) and the style of the house both suggest that the Olsons may have been responsible for its construction.

Doffing, who built a home on the western portion of Lot 393, owned the entire lot intact until 1947 when he sold the east 10 acres to his brother-in-law William Busch (*Deed Record 626:138*). The property currently is owned by Busch descendants.

### Assessment

The Olson–Doffing–Busch House is a wood frame resident that appears to have been constructed during an important period of agricultural development in the Lower Rio Grande Valley when Midwestern colonists increased the development of land used for farming almost 15-fold between 1910 and 1924. However, the building has been altered since World War II, and the changes have had a negative impact on the integrity of the materials, design, and context. For this reason, the Olson–Doffing–Busch House is not believed to be eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark.

### Nick Doffing Farmstead

#### Description

The Nick Doffing Farmstead is located in the

northwestern portion of the project area west of Fays Corner and facing north onto U.S. Highway 281 South (see Fig. 26). It is surrounded on the west, south, and east by fields.

The farmstead is comprised of a residence (Fig. 30) and a granary/equipment shed. The residence is a one-story, gable-roofed, asymmetrical-plan frame structure with a two-bay front porch and an off-center entryway on the north elevation. Windows are wood sash, the exterior walls have been covered with asbestos siding, and the roof is covered with composition shingles. The outbuilding south of the house is a one-story frame structure that served as a granary and tack room.



Figure 30. Looking south-southwest at the residence on the Nick Doffing Farmstead.

### History

The Nick Doffing Farmstead is located in the northwest portion of Lot 393, a part of the original 1909 J. C. Kelly and Associates Subdivision. When Kelly and his partner C. E. Hammond of Bexar County, Texas, divided their holdings, C. E. Hammond received the property west of present-day U.S. Highway 281. In 1911, he sold this property, totaling 2,465 acres, to the Louisiana–Rio Grande Sugar Company for \$37,333.33. Lot 393 was a part of the acreage conveyed (*Deed Record 14:524–525*).

The same year, the Company sold Lot 393 to Ira H. Spurrier of Cook County, Illinois (*Deed Record 18:17–20*). Spurrier then sold the lot to O. F. Olson of Hardin County, Iowa, on March 1, 1913, for \$1,099.58 (*Deed Record 30:527–529*). The Olsons held the property until December 21, 1917, when they sold it to Nick Doffing of Hidalgo County for \$4,100.00 (*Deed Record 72:281–282*).

According to a descendant of Doffing (Doffing 1992), Peter and Mary Doffing and their son Nicholas

moved to Hidalgo County from the Oklahoma City area where they farmed in 1908. Soon after, his parents moved back to Oklahoma, but Nick Doffing remained. He worked as a canal rider for the Louisiana–Rio Grande Canal Company and farmed, first north of Hidalgo and then at La Lomita. He bought Lot 393 in 1917, and his father-in-law, Mr. Jensen, who had migrated from Denmark to the North Plains and then to Houston, came and helped build a granary, tack building, and house for the Doffings.

Doffing farmed Lot 393 until his death, raising cotton, corn, and livestock for income and vegetables for home consumption. His brother-in-law and neighbor, William Busch, raised citrus trees, but the water table rose and killed the roots and, thus, the orchard.

#### Assessment

The Nick Doffing Farmstead is comprised of a wood frame house and granary/equipment shed that were constructed ca. 1917–1918 during an important period of agricultural development in the Lower Rio Grande Valley. At this time, Midwestern and Plains colonists increased the development of land used for farming almost 15-fold between 1910 and 1924. However, the residence has been altered since the 1940s, and the changes have had a negative impact on the integrity of the materials, design, and feeling. For this reason, the Doffing house is not believed to be eligible for listing on the National Register of Historic Places or for designation as a State Archeological Landmark. It was not possible during the initial survey phase to observe the granary/equipment shed in sufficient detail to ascertain its integrity. As a result, it is not possible at this time

to suggest whether or not the building is National Register eligible or eligible for designation as a State Archeological Landmark.

#### Charles Carmichael Farmstead

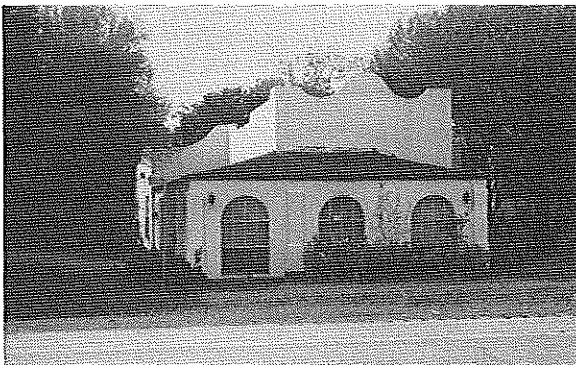
##### Description

The Charles Carmichael Farmstead is located in the northwestern portion of the project area west of Fays Corner and facing north onto U.S. Highway 281 South (see Fig. 26). It is surrounded on the west, south, and east sides by open fields.

The Carmichael Farmstead consists of a main house, a contemporaneous outbuilding, and a post-World War II secondary residence. The main house (Fig. 31a) is a one-story, asymmetrical plan, Mission Revival-style bungalow with high articulated parapets. The three-bay, round-arched porch with attached pilasters was open originally; the openings have been filled in with glass. Exterior and interior walls are plastered. A secondary, contemporaneous building (Fig. 31b) is located south of the main residence and is stylistically compatible with it. The building is a one-story, rectangular-shaped structure that functions as a garage and appears to include an apartment. The building is Mission Revival style and has high articulated parapets, round-arched full-length windows, and plastered exterior walls. The third building on the site is a post-World War II-era frame house.

##### History

The Carmichael Farmstead is located in the northern portion of Lot 392 of the original 1909 J. C.



a



b

**Figure 31.** Photographs of the Charles Carmichael Farmstead. (a) Looking south-southwest at the main residence; (b) looking south at the outbuilding.

Kelly and Associates Subdivision. When Kelly and his partner C. E. Hammond of Bexar County, Texas, divided their holdings, C. E. Hammond received the property west of present-day U.S. Highway 281. In 1911, he sold this property, totaling 2,465 acres, to the Louisiana-Rio Grande Sugar Company for \$37,333.33. Lot 393 was a part of the acreage conveyed (*Deed Record 14:524-525*).

The same year, the Company sold Lot 392 to Ira H. Spurrier of Cook County, Illinois (*Deed Record 18:14-17*), who conveyed the property to George E. Ness of Hamilton County, Iowa, on April 10, 1911 (*Deed Record 26:164-166*). Subsequent owners were O. L. Henderson (Story County, Iowa), L. M. Crosley (Hamilton County, Iowa), and W. H. Purdy (Wright County, Iowa) (1914-1916) (*Deed Record 47:33*); M. E. Monson of Faribault County, Minnesota (1916-1917) (*Deed Record 47:338*); and Charles Carmichael, a resident of Hidalgo County who owned the property from 1917 to 1931 (*Deed Record 361:509*).

According to a local informant (Doffing 1992), Carmichael was with the excursion business and worked for the land companies who brought trainloads of prospective landowners and farmers to the Lower Rio Grande Valley. Carmichael ran a "demonstration farm" where excursionists stayed; the farm was used to demonstrate to immigrants the ideal farming conditions in the region.

In 1931, Charles Carmichael sold his property to Ruth E. Gunnell, who held it until 1934 when she sold the east 27.21 acres of Lot 392 and the improvements to Harry and Blanche Lucas (*Deed Record 387:9*). The farm eventually was occupied by the Lucases son, Wilbur E. Lucas, whose widow owns it now.

#### Assessment

The main residence and outbuilding on the Carmichael Farmstead are excellent examples of Mission Revival-style architecture. They are associated with an important period of agricultural development in the Lower Rio Grande Valley when land companies and railroads promoted the area and encouraged prospective colonists to buy land, move, and establish farmsteads. Demonstration farms such as that owned by Charles Carmichael were one of the devices used by the companies and railroads to sell their land, and its attractive appearance and Mission Revival-style associations were an essential part of the marketing strategy. For these reasons,

the pre-World War II components of the Carmichael Farmstead may be eligible for listing on the National Register of Historic Places under Criteria A and C and for designation as a State Archeological Landmark.

#### Lateral A of the Louisiana-Rio Grande Canal Company Irrigation System

##### Description

Lateral A of the Louisiana-Rio Grande Canal Company Irrigation System (Fig. 32) is located in the middle portion of the project area south of Fays Corner and north of the Rio Grande (see Fig. 26). The project area intersects a portion of the lateral, which runs generally west to east from the vicinity of Hidalgo to the old San Juan Sugar Plantation site in *Porciones 71 and 72*. It is in a rural context and is flanked by open fields and scattered woods along the length of its route through the project area.



Figure 32. Looking west at Lateral A of the Louisiana-Rio Grande Canal Company Irrigation System.

Lateral A waters first-lift lands to the north of its route and consists of an open ditch atop an elevated levee. According to Dames and Moore, Inc. (1992:1-15), all canals and laterals originally were open and earthenwork. However, "during the 1930s, in an effort to prevent water seepage, many of the canals [and laterals] were lined with concrete," among them Lateral A.

##### History

Historic maps, deed records, and corporation records suggest that by 1908 The Rio Grande Valley Reservoir and Irrigation Company incorporated by John Closser, J. R. Alamia, and W. L. Lipscomb may

have constructed a ditch through the project area in the same general location as present-day Lateral A. The water would have been used to irrigate land on Closner's San Juan Plantation where he produced award-winning sugar cane.

In 1910, J. C. Kelly, H. N. Pharr, John C. Conway, and A. W. Roth formed the Louisiana-Rio Grande Canal Company; construction of a pump plant at Hidalgo, main canal, and laterals (including Lateral A) appears to have been completed by 1910-1911. Water supplied by the system was used by the Company, by the Louisiana-Rio Grande Sugar Company, H. N. Pharr, John C. Kelly, and other developers to water cane and alfalfa fields and to promote small farm lots to prospective colonists who might also wish to raise garden truck and, later, citrus fruits. Within 2 years, the sugar cane experiment had failed, but the irrigation system played an essential role in the general agricultural development of the region.

#### *Assessment*

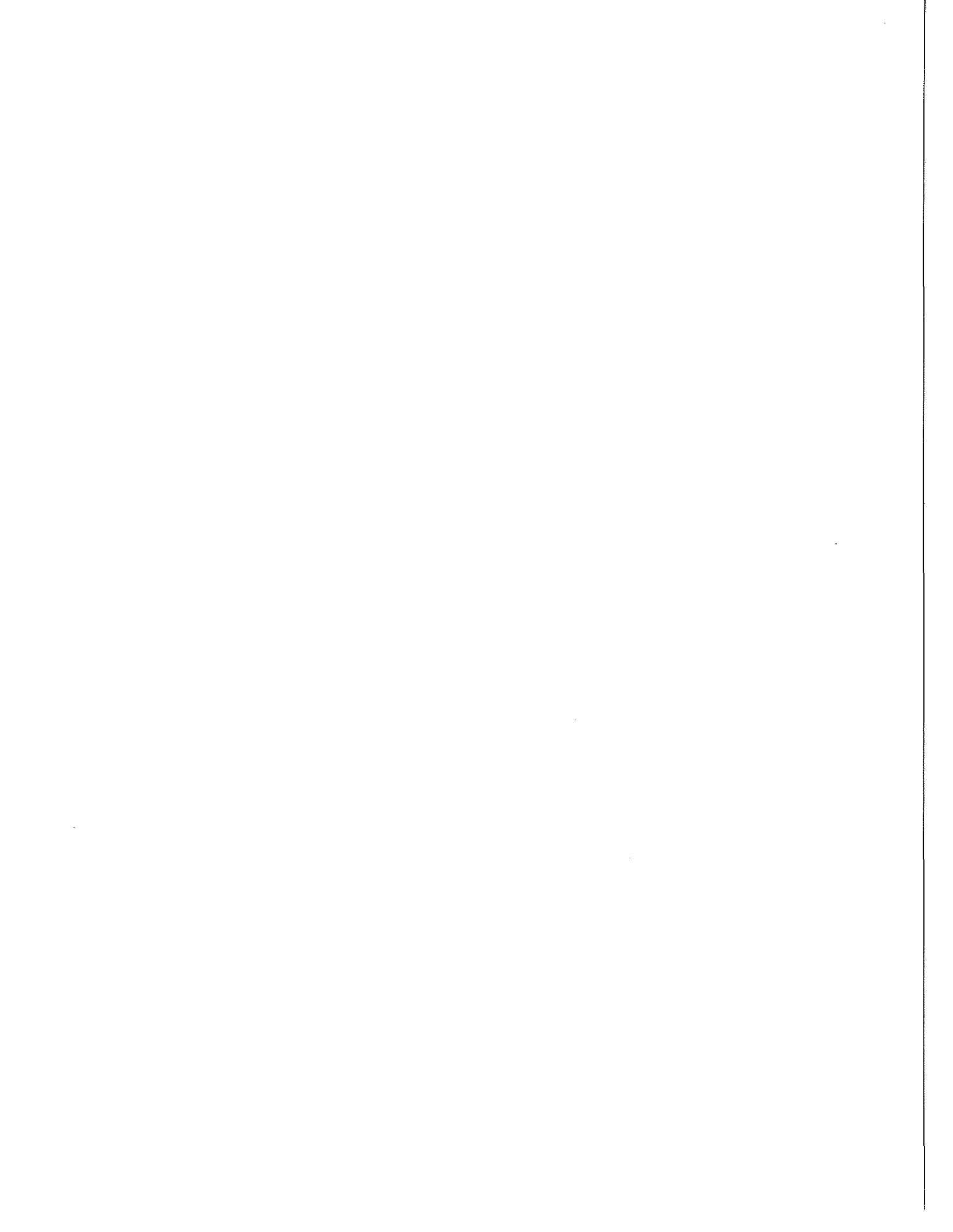
The Louisiana-Rio Grande Canal Company Irrigation System, of which Lateral A is a contributing element, has been nominated for designation as a National Historic Landmark. According to Dames and Moore, Inc. (1992:1-14),

the Louisiana-Rio Grande Canal Company pumphouse system of 1909-12 [*sic*], with modifications through the middle 1930s, is the only early 20th century steam-powered irrigation system for the entire lower Rio Grande region still extant with its full historic complement of components.

Furthermore, the pumphouse system,

including the first-lift, the second-lift, and the attendant canals, is of national significance in the agricultural-social history of the South in the post-plantation era and in the history of Western American irrigation technology at the turn of the century. . . [Dames and Moore, Inc. 1992:1-17].

The system is illustrative of three National Historic Landmark themes including "the post-plantation era in the Southern U.S., 1860-1920"; it "represents the close of the steam-powered irrigation era, 1906-1925"; and it is "vibrantly evocative of an American way of life, that of the plantation era as transplanted to the West in the end of its period" (Dames and Moore, Inc. 1992:1-18 through 1-19).





## ASSESSMENTS AND RECOMMENDATIONS

6

The archeological and architectural investigations conducted for the Pharr-Reynosa International Bridge project consisted of a stratified sample survey of approximately 162 hectares (400 acres), based on an environmental/geomorphic model of prehistoric site potential and location. Various historic maps also were used to document the archeological remains of historic sites whose locations and spatial distributions are less constricted by environmental factors. In addition, a windshield survey was conducted for the entire project area, and all standing structures 50 years old or older were recorded. Finally, a number of historic archeological site locations that lay outside of the stratified sample survey area were identified by means of historic maps and oral histories but were not field checked and recorded.

The archeological survey documented 10 sites consisting of 10 historic components and 2 prehistoric components. Ninety-four prehistoric and historic artifacts were collected from five of the sites (Table 4). Four of these sites, consisting of five components, are considered to be potentially eligible for listing on the National Register of Historic Places (Table 5). The windshield architectural survey documented six structures or groups of structures 50 years old or older. Two of the architectural properties or groups of properties are considered to be potentially eligible for listing on the National Register of Historic Places (Table 6). All sites on lands owned by the State of Texas, including political subdivisions of the State, eligible for listing on the National Register of Historic Places also are designated as State Archeological Landmarks.

Cultural resources are eligible for listing on the National Register of Historic Places, and thus

are worthy of avoidance, protection, or mitigation through data recovery, if they are significant in American history, architecture, engineering, or culture (U.S. Department of the Interior, National Park Service, National Register Division 1982:1). Significant properties are those that:

possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

- A. that are associated with events that have made a significant contribution to the broad patterns of our history; or
- B. that are associated with the lives of persons significant in our past; or
- C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the works of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- D. that have yielded or may be likely to yield information important in prehistory or history [U.S. Department of the Interior, National Park Service, National Register Division 1982:1].

Criterion D applies to archeological resources, and thus it is against this criterion that the prehistoric and historic archeological sites are judged. All four criteria may apply to architectural resources,

TABLE 4  
PROVENIENCE OF COLLECTED ARTIFACTS

Provenience	Prehistoric				Historic					
	Arrow Point	Lithic Debitage	Bones	Mussel Shell	Ceramics	Glass	Metal	Bone	Bricks	Other Stone
41HG153 Surface	1	5	3	1	32	-	2	-	-	-
41HG156 Surface BHT 13 at 20 cm	- -	- -	- -	- -	- -	- 1	- -	- -	2 -	- -
41HG158 Surface	-	1	-	-	8	5	1	1	2	-
41HG159 Surface	-	-	-	-	14	10	1	-	-	1
41HG160 Surface	-	-	-	-	2	1	-	-	-	-
Totals:	1	6	3	1	56	17	4	1	4	1

Site Number	Component(s)	Eligibility Status
41HG152	Historic	Not eligible
41HG153	Historic/Late Prehistoric	Both components potentially eligible
41HG154	Historic	Not eligible
41HG155, Capote Cemetery	Historic	Potentially eligible
41HG156	Historic	Potentially eligible
41HG157	Historic	Not eligible
41HG158	Historic/Unknown Prehistoric	Historic, potentially eligible; Prehistoric, not eligible
41HG159	Historic	Not eligible
41HG160	Historic	Not eligible
41HG161	Historic	Not eligible

Property Name	Component(s)	Eligibility Status/Criteria
J. A. Weslander House	Residence	Not eligible
R. J. Sorenson Farmstead	Residence and outbuildings	Potentially eligible/A and C
Fays Corner	Residence and outbuildings	Not eligible
Olson-Doffing-Busch House	Residence and outbuildings	Not eligible
Nick Doffing Farmstead	Residence and outbuilding	Not eligible
Charles Carmichael Farmstead	Residence and outbuilding	Potentially eligible/A and C
Lateral A	Irrigation canal	Potentially eligible/A, B, and C

and they are so evaluated. These two groups of cultural resources—prehistoric and historic sites and architectural resources—are discussed separately below.

Cemeteries, like Capote Cemetery (41HG155), may be treated as cultural resources under the National Historic Preservation Act of 1966 if they are important parts of National Register districts or if they derive "primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events" (U.S. Department of the Interior, National Park Service, National Register Division 1982:54). They also may be eligible under Criteria Consideration D if they are "associated with historic events including specific important events or general patterns that illustrate broad patterns." Thus, a cemetery may be eligible if it is associated with the

settlement of an area by an ethnic or cultural group if the movement of the group into the area had an important impact, if other properties associated with that group are rare, and if few documentary resources have survived to provide information about the group's history.

A cemetery also may be eligible if it has the potential to yield important information. Thus, such a property can qualify for listing "if it has the potential to yield important information about subjects such as demography, variations in mortuary practices, or the study of the cause of death correlated with nutrition or other variables" provided that information "is not available in extant documentary evidence" (U.S. Department of the Interior, National Park Service,

Interagency Resources Division 1991:35). Capote Cemetery, as a site that appears to have been associated with important broad patterns such as the Hispanic settlement of the Lower Rio Grande Valley, and as a site that may contain demographic and genealogical information not readily available in extant public records, may be eligible for listing on the National Register of Historic Places. In addition, the Cemetery is protected by numerous State of Texas statutes that deal with the maintenance and preservation of organized cemeteries (Utley 1985). Finally, Capote Cemetery is more than 50 years old and therefore can be designated as a State Archeological Landmark (Texas Historical Commission 1986:3).

### PREHISTORIC COMPONENTS

Prehistoric archeological sites in the Lower Rio Grande Valley are relatively sparse. Artifact densities are usually low, and site integrity is most often questionable at best. These along with other factors have led to a rather nebulous view of the prehistory of the Lower Rio Grande Valley.

Two sites, 41HG153 and 41HG158, yielded prehistoric components. The prehistoric component of 41HG153 is considered to be potentially eligible for listing on the National Register of Historic Places. Site 41HG153 is considered to have the potential to yield much needed and important data on prehistoric lifeways in the Lower Rio Grande Valley. The surficial provenience of the prehistoric artifacts on the late Holocene terrace suggests that the prehistoric component postdates 1000 B.P. An arrow point base collected from the site's surface indicates that the prehistoric component dates to the Late Prehistoric period. The presence of a diagnostic artifact and a large number of bone and mussel shell fragments suggests the possibility of a Late Prehistoric campsite at 41HG153. Further subsurface testing is needed to define and delineate the depth and integrity of the prehistoric component.

The prehistoric component at 41HG158 yielded few artifacts, none of which are diagnostic. The cultural materials seem to be limited to a small area on the extreme western end of the site. Subsurface testing (i.e., two shovel tests) did not reveal any buried prehistoric deposits or features. Due to the low artifact density and limited site area, the potential of the prehistoric component at 41HG158 to provide information to address the prehistoric

research issues of the region is very limited. Therefore, the prehistoric component at 41HG158 is considered to be ineligible for listing on the National Register of Historic Places.

### HISTORIC COMPONENTS

All 10 sites yielded historic components, 5 of which have standing structures or structural remains. Sites 41HG152, 41HG154, 41HG157, 41HG159, 41HG160, and 41HG161 are not considered eligible for listing on the National Register of Historic Places. Standing structures and/or structural remains are present at four of the ineligible sites (41HG152, 41HG154, 41HG157, and 41HG161). These sites do not meet Criteria A, B, C, or D, however, because they are not believed to be 50 years old or they do not appear to have integrity of location. The artifacts, standing structures, and structural remains from these sites are not distinctive or unique to any type, period, or method of construction, and they are not likely to yield any important historical data. The integrity of most of these sites is very poor due to demolition, land clearing, and agricultural practices.

Sites 41HG155 (Capote Cemetery) and 41HG156 and the historic components at 41HG153 and 41HG158 are judged to be potentially eligible for listing on the National Register of Historic Places, pending further work. The historic component at 41HG153 has yielded ceramic sherds that date to the Texas Republic period. There is also the possibility that the occupation dates to the Mexican Republic period. Archival evidence and oral history information are sparse from this discrete time period in the Lower Rio Grande Valley. Thus, the historic component at 41HG153 is potentially eligible under Criterion D.

Site 41HG156 is potentially eligible under Criteria A and D. Brick manufacturing was an important industry in the Lower Rio Grande Valley during the nineteenth and twentieth centuries, and brick was a preferred construction material, where it was available. The site could be considered to be an important economic component within a self-sufficient borderlands community. In addition, while numerous brick kilns and clay products manufacturing plants are known to have existed in the region, few have been archeologically or archivally documented.

The historic component at 41HG158 is poten-

tially eligible under Criterion D. Artifacts, particularly ceramic sherds and bottle glass, suggest that the site was occupied just prior to the Civil War and up to the early twentieth century. There are little archival data for much of this period, especially prior to the construction of the large-scale irrigation systems and the railroads in the early twentieth century. Although structural remains were not observed on the surface or through limited subsurface testing, the 1913 International Boundary Commission map depicts several structures at the locality. Further subsurface testing is recommended in order to find possible structural remains. It is believed that site 41HG158 has the potential to add important information on the development of early ranches or settlements in the Lower Rio Grande Valley.

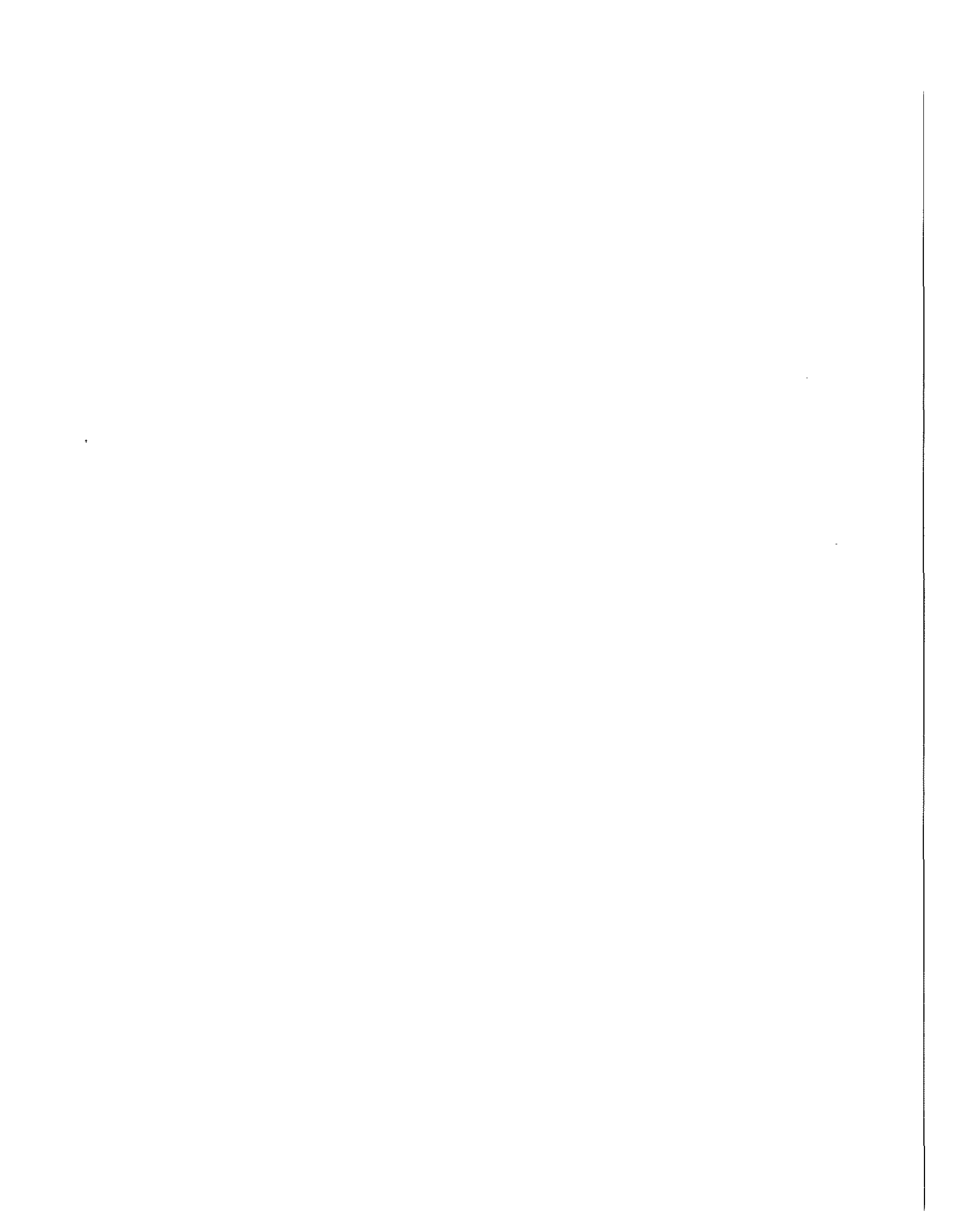
#### ARCHITECTURAL PROPERTIES

Six architectural properties located in the project area but outside the survey areas were recorded. Four of the properties (J. A. Weslander House, Fays Corner, Olson-Doffing-Busch House, and Nick Doffing Farmstead) are judged to be ineligible for listing on the National Register of Historic Places or for designation as State Archeological Landmarks because changes to the architectural fabric after the World War II era have resulted in a loss of integrity of the materials, design, workmanship, feeling, and association. The remaining two architectural properties (R. J. Sorenson Farmstead and Charles Carmichael Farmstead) are good examples of particular architectural styles, and they are associated with important broad patterns of history in the agricultural, economic, and demographic evolution of the Lower Rio Grande Valley. These two properties may be eligible for listing on the National Register of Historic Places and for designation as State Archeological Landmarks.

#### UNRECORDED HISTORIC ARCHEOLOGICAL SITES

Numerous historic period archeological sites were identified by using historic maps and interviewing local informants. Many of these sites are located within the project area but outside of the survey areas (see Fig. 26). While two of these historic period sites are located north of Lateral A and are associated with the twentieth-century agricultural development of the region (the Marinoff and Luca Gonzales houses), the majority of the sites are south of Lateral A and are associated with the historic ranching community of El Capote. Among these properties are the Old Military Road from Brownsville to Rio Grande City (ca. 1846-1930s), the Carlos Casares and Luca Gonzales houses in the vicinity of 41HG155 and 41HG158, and the Joe M. Garza House and Store, Amado Lozano House, Tirso Garza House, and Nestor and Roberto Garza House. Finally, early ranching sites such as the Anaqual Ranch near the Don Juan Cross Banco No. 155 and unidentified sites immediately north were noted on maps and mentioned by informants. A ferry crossing on the Rio Grande that was mentioned as early as the 1860s is assumed to have disappeared due to the numerous late nineteenth- and early twentieth-century changes in the configuration of the river.

A lack of field data for these historic archeological sites makes it impossible to assess their significance at the present time. But attempts should be made in the future to locate and record the sites because of their associations with important historic events and trends in the Lower Rio Grande Valley and because they may have the potential to yield important information about the ethnic, social, and economic development of the region.



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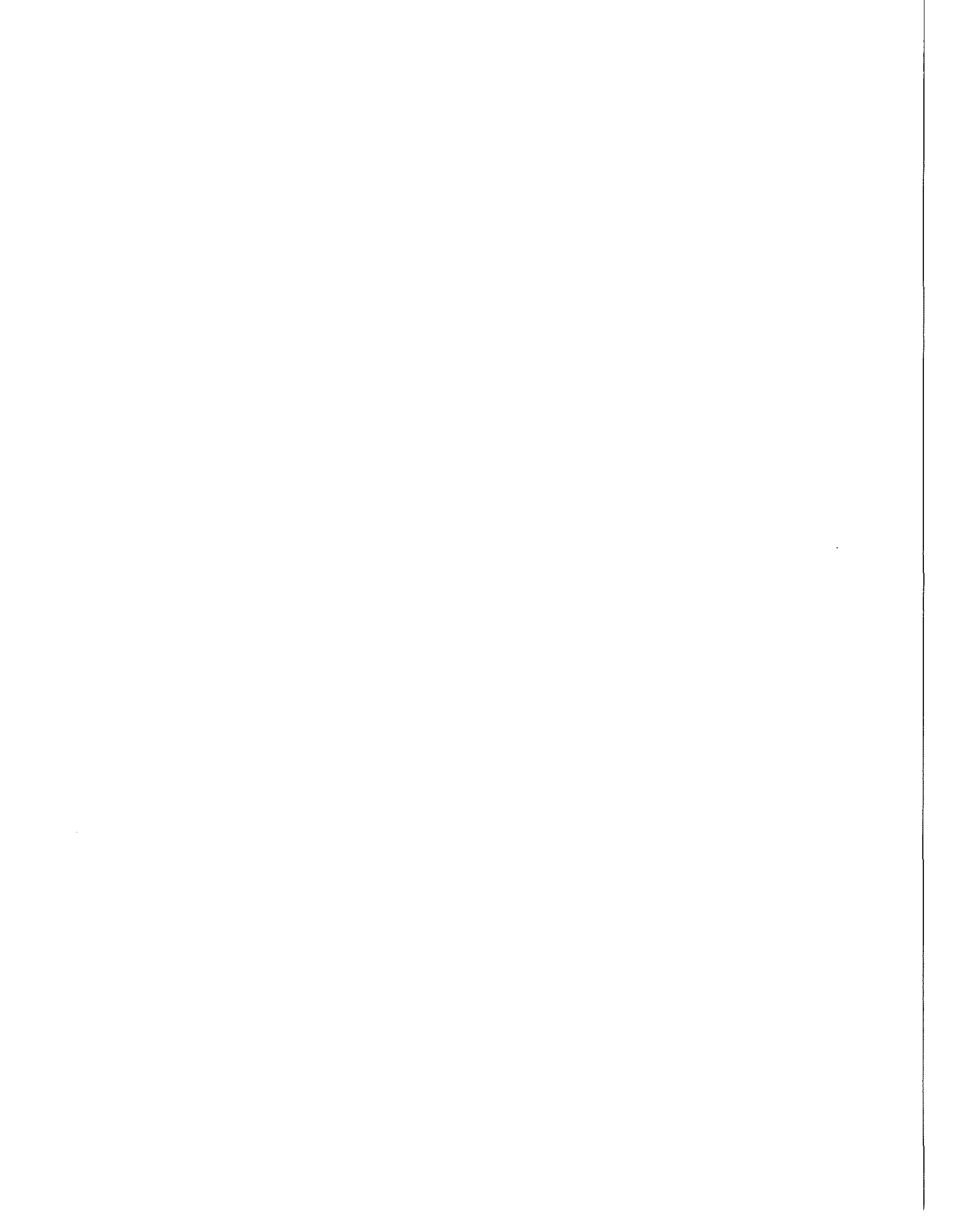
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## **APPENDIX: Geologic Profile Descriptions**

Karl W. Kibler



The sediments and soil horizons are described and classified according to the procedures and criteria presented by Buol et al. (1980:21-43), Birkeland (1984), and Bettis (1984). The color (Munsell Soil Color Chart) and consistency (loose, friable, firm, very firm, and extremely firm) of a zone or sediment are recorded from a moist condition. Field definitions of texture consist of (1) sand (loose, single grained, moist cast will crumble); (2) sandy loam (mostly sand with silt and clay, individual sand grains are visible, moist cast bears careful handling); (3) loam (even mixture of sand, silt, and clay, gritty but smooth, slightly plastic, moist cast handles freely); (4) silt loam (fine sands, little clay, mostly silt, dry clods break easily, soft, smooth, and floury if dry, moist casts do not break, will not ribbon); (5) clay loam (hard dry clods, moist ribbon breaks easily, moist cast bears heavy handling, kneaded heavy compact mass that will not crumble); and (6) clay (very hard clods, very plastic and sticky when wet, flexible ribbon). The terms sandy clay, sandy clay loam, loamy sand, silty clay, silty clay loam, and silt loam are used when the texture of a zone could not be confidently placed into one of the above categories. The structure or soil aggregation of a zone or horizon is described by grade, size, and type. The grade is shown as weak, moderate, or strong. The size of the peds is shown as fine (<2 cm), medium

(2-5 cm), or coarse (>5 cm). The type, referring to the shape of the peds, is identified as blocky (subangular and angular), platy, prismatic, columnar, or granular. Soil horizons not containing these characteristics are considered structureless. Final soil horizon classifications were made based on the terminology and criteria presented by Birkeland (1984) and Bettis (1984).

In the absence of soil formation, the sedimentary structures of a zone are presented. Types of sedimentary structures include, but are not limited to, planar laminations, graded beds, cross-stratifications, trough cross-stratifications, ripples, climbing ripples, and massive beds.

Mottles are described by color, abundance, contrast, and size. Abundance is shown as few (<2%), common (2-20%), and many (>20%), while contrast is described as faint, distinct, or prominent. Size ranges are given as fine (<0.5 cm), medium (0.5-1.5 cm), or coarse (>1.5 cm). Terms pertaining to abundance are also used to describe the occurrence of inclusions or intrusive objects, such as gravels and charcoal. The lower boundary of each zone or horizon is described in terms of distinctiveness—abrupt (<2.5 cm), clear (2.5-6.4 cm), gradual (6.4-12.7 cm), and diffuse (>12.7 cm)—and topography—smooth, wavy, irregular, and broken.

*Pharr-Reynosa International Bridge, Hidalgo County, Texas*

<b>Zone</b>	<b>Depth (cm)</b>	<b>Description</b>
<u>Backhoe Trench 1, Block 1</u>		
1	0-21	Grayish brown (10YR 5/2) firm silty clay loam, many rootlets and roots, few rounded gravels, common humic materials, common insect burrows, strong medium subangular blocky structure, clear wavy lower boundary, Ap horizon.
2	21-74	Grayish brown (10YR 5/2) very firm clay, common rootlets, common humic materials, few insect burrows, strong medium blocky structure, common slickensides on ped faces, clear smooth lower boundary, AC horizon.
3	74-122	Grayish brown (10YR 5/2) extremely firm clay, common rootlets, few ferruginous stains, common CaCO <sub>3</sub> filaments, strong fine to medium blocky structure, common slickensides on ped faces, clear smooth lower boundary, Ckj horizon.
4	122-167+	Brown (10YR 5/3) firm clay loam, common organic stains, common decaying plant material, moderate medium blocky structure, lower boundary not observed, 2Cu horizon.
<u>Backhoe Trench 2, Block 3</u>		
1	0-48	Dark grayish brown (10YR 4/2) extremely firm clay to clay loam, many rootlets, common rounded gravels and pebbles, common humic materials, strong medium blocky structure, common slickensides on ped faces, gradual smooth lower boundary, AC horizon.
2	48-108	Grayish brown (10YR 5/2) very firm clay, common rootlets, few charcoal flecks, few insect burrows, strong medium blocky structure, common slickensides on ped faces, clear smooth lower boundary, C horizon.
3	108-184+	Brown (7.5YR 5/3) firm clay to clay loam, common rootlets, few prominent fine-gleyed mottles (2.5Y 6/0) in lower half of zone, massive structure, lower boundary not observed, water table encountered at bottom of trench, 2Cgj horizon.
<u>Backhoe Trench 3, Block 4</u>		
1	0-26	Dark grayish brown (10YR 4/2) firm clay loam, few rootlets, common humic material, common rounded gravels and pebbles, weak fine to medium subangular blocky structure, clear smooth lower boundary, Ap horizon.
2	26-131	Grayish brown (10YR 5/2) extremely firm clay, few CaCO <sub>3</sub> filaments, strong medium blocky structure, common slickensides on ped faces, clear smooth lower boundary, Ckj horizon.
3	131-201+	Brown (7.5YR 5/3) firm clay, massive, lower boundary not observed, water table encountered at bottom of trench, 2Cu horizon.



Zone	Depth (cm)	Description
<u>Backhoe Trench 4, Block 5</u>		
1	0-27	Dark grayish brown (10YR 4/2) firm clay loam, few charcoal flecks, moderate medium blocky structure, few slickensides on ped faces, gradual smooth lower boundary, Ap horizon.
2	27-126	Dark grayish brown (10YR 4/2) firm to very firm clay, few CaCO <sub>3</sub> filaments in lower half of zone, few ferruginous stains, moderate medium subangular blocky structure, common slickensides on ped faces, clear smooth lower boundary, Ckj horizon.
3	126-148+	Brown (7.5YR 5/3) very firm clay to clay loam, massive, common organic stains, lower boundary not observed, 2Cu horizon.
<u>Backhoe Trench 5, Block 8</u>		
1	0-35	Grayish brown (10YR 5/2) friable clay loam, few insect burrows, few charcoal flecks, common ferruginous stains, moderate medium blocky structure, few slickensides on ped faces, abrupt smooth lower boundary, Ap horizon.
2	35-61	Pale brown (10YR 6/3) friable sandy loam, few insect burrows, massive structure, abrupt smooth lower boundary, C horizon.
3	61-69	Dark grayish brown (10YR 4/2) firm clay, common ferruginous stains, common sandy lenses throughout the zone, common mud lenses within the sandy lenses, common gleyed mottles, moderate fine blocky structure, abrupt smooth lower boundary, Cg horizon.
4	69-72	Pale brown (10YR 6/3) friable silt loam, common ferruginous stains, fine weak planar-laminated structures with very thin mud lenses, abrupt wavy lower boundary, Cu horizon.
5	72-117	Grayish brown (2.5Y 5/2) very firm clay, many ferruginous stains, common insect and rodent burrows, strong medium subangular blocky structure, common manganese stains, common slickensides on ped faces, clear smooth lower boundary, 2Ab horizon.
6	117-125	Brown (10YR 5/3) friable silty clay loam, weak medium blocky structure, few insect burrows, abrupt smooth lower boundary, 2Bwb horizon.
7	125-161+	Grayish brown (2.5YR 5/2) very firm clay, many ferruginous stains, many gleyed mottles, strong medium blocky structure, many slickensides on ped faces, many ferruginous stains on ped faces (oxide cutan), lower boundary not observed, 3Ab horizon.
<u>Backhoe Trench 6, Block 9</u>		
1	0-18	Dark grayish brown (10YR 4/2) friable sandy loam, many rootlets, common insect burrows, common humic materials, structureless, abrupt wavy lower boundary, Ap horizon.

Zone	Depth (cm)	Description
2	18-58	Grayish brown (10YR 5/2) firm loamy sand, few rootlets, common insect burrows, common mud lenses (3 cm thick), trough cross-stratification, climbing ripples, abrupt smooth lower boundary, Cu horizon.
3	58-62	Grayish brown (10YR 5/2) firm clay, common rootlets, common ferruginous stains, few insect burrows, weak fine planar-laminated structures, abrupt smooth lower boundary, Cu horizon.
4	62-75	Grayish brown (2.5Y 5/2) firm sandy clay loam, common rootlets, common insect burrows, few mud lenses (1 cm thick), many alternating ripples of sand and mud, abrupt smooth lower boundary, Cu horizon.
5	75-171+	Grayish brown (10YR 5/2) loose to friable coarse sand that fines down-profile, cross-stratified sands with a few thin mud and humic lenses, Cu horizon.

Backhoe Trench 7

1	0-30	Brown (10YR 5/3) friable sandy loam, many roots and rootlets, few charcoal chunks and flecks, common humic materials, structureless, clear smooth lower boundary, AC horizon.
2	30-56	Brown (10YR 5/3) friable sand, many rootlets, common charcoal flecks, structureless, abrupt smooth lower boundary, Cu horizon.
3	56-73	Dark grayish brown (2.5Y 4/2) firm clay, fine planar-laminated structures, common rootlets, common ferruginous and brownish yellow mottles, abrupt smooth lower boundary, Cu horizon.
4	73-80	Brown (10YR 5/3) loose fine sand, common rootlets, weak planar-laminated structures, abrupt smooth lower boundary, Cu horizon.
5	80-98	Brown (10YR 5/3) friable silt loam, alternating planar-laminated structures of silt and clay, clays increasing down-profile, common rootlets, abrupt smooth lower boundary, Cu horizon.
6	98-139	Brown (10YR 5/3) loose fine sand, trough cross-stratifications, increasing silt in lower half of zone, common rootlets, abrupt smooth lower boundary, Cu horizon.
7	139-150	Dark grayish brown (10YR 4/2) to brown (10YR 5/3) alternating planar-laminated structures of silt and clay with increasing clay in bottom half of zone, common rootlets and common brownish yellow mottles, abrupt smooth lower boundary, Cu horizon.
8	150-175	Brown (10YR 5/3) loose fine sand, trough cross-stratifications, increasing silt in lower half of zone, common rootlets, abrupt smooth lower boundary, Cu horizon.
9	175-202+	Dark grayish brown (10YR 4/2) loose to friable coarse sand, cross-stratifications, lower boundary not observed, Cu horizon.

Zone	Depth (cm)	Description
<u>Backhoe Trench 8, High Probability Area 1</u>		
1	0-48	Grayish brown (10YR 5/2) firm silt loam, common to many rootlets, common charcoal flecks, common insect burrows, strong medium blocky structure, clear smooth lower boundary, AC horizon.
2	48-109	Light brownish gray (10YR 6/2) friable silt, few rootlets, common to many ferruginous stains, three thin mud lenses (1 cm thick) at 60, 85, and 101 cm, common insect burrows, weak fine planar-laminated structures, abrupt smooth lower boundary, Cu horizon.
3	109-173+	Brown (10YR 5/3) loose to friable sand, grades down-profile to a silt, cross-stratifications, lower boundary not observed, Cu horizon.

Backhoe Trench 9, High Probability Area 1, Site 41HG153

1	0-44	Grayish brown (10YR 5/2) firm clay loam, common roots and rootlets, few insect burrows, common snail shells, moderate medium blocky structure, few charcoal chunks and flecks, clear smooth lower boundary, A horizon.
2	44-78	Pale brown (10YR 6/3) firm clay, common rootlets, few charcoal chunks and flecks, few CaCO <sub>3</sub> filaments, moderate medium blocky structure, few slickensides on ped faces, gradual smooth lower boundary, Ckj horizon.
3	78-112+	Light brownish gray (10YR 6/2) very firm clay, few charcoal flecks, few CaCO <sub>3</sub> filaments, moderate fine blocky structure, lower boundary not observed, Ckj horizon.

Backhoe Trench 10, High Probability Area 1, Site 41HG153

1	0-40	Dark grayish brown (10YR 4/2) firm silt loam, many roots and rootlets, fine charcoal and ash lenses at 20 cm representing old surface burn, few insect burrows, few snail shells, weak fine blocky structure, clear smooth lower boundary, A horizon.
2	40-67	Grayish brown (10YR 5/2) very firm clay, common rootlets, few charcoal flecks, few insect burrows, strong medium blocky structure, clear smooth lower boundary, C horizon.
3	67-120+	Pale brown (10YR 6/3) very firm clay, common CaCO <sub>3</sub> nodules (<5 mm), strong medium blocky structure, lower boundary not observed, Ck horizon.

Backhoe Trench 11, High Probability Area 2

1	0-28	Dark grayish brown (10YR 4/2) friable silty clay loam, many rootlets, common humic materials, few insect burrows, strong medium blocky structure, abrupt smooth lower boundary, A horizon.
2	28-127	Pale brown (10YR 6/3) friable silt loam, common rootlets, weak fine blocky structure, abrupt smooth lower boundary, C horizon.

*Pharr-Reynosa International Bridge, Hidalgo County, Texas*

<b>Zone</b>	<b>Depth (cm)</b>	<b>Description</b>
3	127-153	Pale brown (10YR 6/3) firm clay loam, few charcoal flecks, one rodent burrow, moderate medium blocky structure, abrupt smooth lower boundary, C horizon.
4	153-186+	Grayish brown (10YR 5/2) very firm clay, few charcoal flecks, common CaCO <sub>3</sub> filaments, strong medium blocky structure, lower boundary not observed, Ckj horizon.

Backhoe Trench 12, High Probability Area 2

1	0-26	Grayish brown (10YR 5/2) friable silt loam, many roots and rootlets, massive structure, common gravels represent recent road fill, abrupt wavy lower boundary, Cu horizon.
2	26-61	Brown (10YR 5/3) firm silt loam, common rootlets, few insect burrows, common humic materials, moderate medium blocky structure, abrupt smooth lower boundary, 2Ab horizon.
3	61-138	Dark grayish brown (10YR 4/2) firm clay loam, few rootlets, few insect burrows, common snail shells, moderate medium blocky structure, abrupt smooth lower boundary, 2C horizon.
4	138-156+	Dark grayish brown (10YR 4/2) very firm clay, few CaCO <sub>3</sub> filaments and nodules, few insect burrows, few charcoal flecks, strong medium blocky structure, lower boundary not observed, 2Ckj horizon.

Backhoe Trench 13, High Probability Area 2, Site 41HG156

1	0-21	Dark gray (10YR 4/1) firm silty clay loam, common roots and rootlets, few gravels, common charcoal flecks, common insect burrows, strong medium blocky structure, abrupt smooth lower boundary, A horizon.
2	21-42	Grayish brown (10YR 5/2) firm silty clay loam, common rootlets, common insect burrows, common charcoal flecks, common CaCO <sub>3</sub> filaments, moderate medium blocky structure, abrupt smooth lower boundary, Ck horizon.
3	42-70	Brown (10YR 5/3) friable fine sand, common rootlets, common insect burrows, few CaCO <sub>3</sub> filaments, structureless, abrupt smooth lower boundary, Ckj horizon.
4	70-84	Dark gray (10YR 4/1) friable clay loam, common rootlets, common CaCO <sub>3</sub> filaments, few insect burrows, moderate fine blocky structure, clear smooth lower boundary, 2Ab horizon.
5	84-115	Dark grayish brown (10YR 4/2) firm clay, few rootlets, common insect burrows, few CaCO <sub>3</sub> filaments, moderate fine blocky structure, abrupt smooth lower boundary, 2C horizon.
6	115-142+	Brown (10YR 5/3) friable loamy sand, weak fine blocky structure, few rootlets, lower boundary not observed, 2C horizon.

Zone	Depth (cm)	Description
<u>Backhoe Trench 14, High Probability Area 3</u>		
1	0–24	Dark grayish brown (10YR 4/2) firm silt loam, many rootlets, common insect burrows, few charcoal flecks, strong medium blocky structure, clear smooth lower boundary, A horizon.
2	24–48	Brown (10YR 5/3) friable silt loam, common rootlets, few charcoal flecks, common insect burrows, common illuvial clays, moderate fine blocky structure, clear smooth lower boundary, Bj horizon.
3	48–91	Brown (10YR 5/3) friable silt, common rootlets, slightly oxidized, many ferruginous stains, moderate fine blocky structure, one mud lens (1 cm thick) at 86 cm, clear smooth lower boundary, Cox horizon.
4	91–140	Brown (10YR 5/3) friable silt, common rootlets, weak fine blocky structure, abrupt smooth lower boundary, C horizon.
5	140–178	Brown (10YR 5/3) loose to friable sand, cross-stratified, abrupt smooth lower boundary, Cu horizon.
6	178–183+	Grayish brown (10YR 5/2) firm sandy clay, fine planar-laminated structures, lower boundary not observed, Cu horizon.

Backhoe Trench 15, High Probability Area 3

1	0–38	Grayish brown (10YR 5/2) firm clay loam, many roots and rootlets, few charcoal flecks, common insect burrows, common humic materials, moderate fine blocky structure, abrupt smooth lower boundary, A horizon.
2	38–68	Pale brown (10YR 6/3) loose to friable fine sand, common rootlets, common insect burrows, weak fine blocky structure, common illuvial clays in bottom of zone, abrupt smooth lower boundary, E/Bj horizon.
3	68–152	Brown (10YR 5/3) friable loamy sand, few rootlets, slightly oxidized, few insect burrows, weak fine blocky structure, abrupt smooth lower boundary, Cox horizon.
4	152–160+	Grayish brown (10YR 5/2) firm sandy clay, slightly oxidized, common ferruginous stains, massive structure, lower boundary not observed, Cox horizon.

Backhoe Trench 16, High Probability Area 3

1	0–35	Dark grayish brown (10YR 4/2) firm clay to clay loam, many roots and rootlets, few charcoal flecks, strong medium blocky structure, abrupt smooth lower boundary, AC horizon.
2	35–172+	Brown (10YR 5/3) loose to friable fine sand that grades down-profile to a silt, slightly oxidized, one mud lens (5 cm thick) at 83 cm, common rootlets, few insect burrows, one rodent burrow, weak fine blocky structure, lower boundary not observed, Cox horizon.

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