

***AN ARCHAEOLOGICAL SURVEY FOR THE
EDWARD DAVID ESTATES PROJECT
IN MATAGORDA COUNTY TEXAS***



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*Brazos Valley Research Associates
Contract Report Number 143*

2004

AN ARCHAEOLOGICAL SURVEY FOR THE
EDWARD DAVID ESTATES PROJECT IN MATAGORDA COUNTY, TEXAS

BVRA Project Number 04-30

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ABSTRACT

Brazos Valley Research Associates (BVRA) conducted an archaeological survey at two construction sites (areas A and B) along the coast in Matagorda County, Texas. When completed, Area A (42 acres) will contain a boat canal and lots to be sold as house sites. Thirteen acres in Area B (20 acres) will be converted into wetlands as a "trade off" for a wetlands area that will be destroyed through construction of the 42-acre tract. The northern two-thirds of the 42-acre tract had been scraped to clay and cleared of vegetation prior to this study, and some construction had already begun. The 20-acre tract, planned for conversion to a wetlands area was covered with grass.

A 100% Pedestrian Survey was conducted on both tracts, and the subsurface of each area was examined through shovel testing and backhoe trenching. Although oyster shell was observed on the surface in three areas of the 42-acre tract, no prehistoric artifacts were present. It is hypothesized that some of the shell was originally associated with a road culvert in the northeast corner of the tract. The remaining areas of shell are interpreted as natural occurrences.

According to local informants, a barn and corral were once present in the northeast corner of Tract A. These features were constructed over 50 years ago, but have been demolished and burned. Therefore, they could not be evaluated. The only information regarding this historic site was found in the scattered surface debris and through a personal communication with a former resident of the area.

Although a historic site may have been present in the 42-acre tract, no cultural resources remain that are significant. No evidence of a prehistoric or historic site was found in Tract B. It is, therefore, recommended that construction be allowed to proceed as planned. No artifacts were collected.

ACKNOWLEDGMENTS

BVRA is appreciative of the assistance provided by the following individuals. Wayne J. Crouch initiated the project and represented the landowner and developer Mike Mobley. Both persons were present throughout the field survey. Doris Moberly, a local resident, provided information regarding the historic site in Area A. The project reviewers are Carole Nichole Minnichbach, Staff Archaeologist at the United States Army Corps of Engineers (COE), Galveston District, and Ed Baker, Staff Archaeologist at the Texas Historical Commission, Archeology Division. The Project Archaeologist was Ed Baxter. Mr. Baxter also prepared the figures that appear in this report. Jennifer McMillan was the Technical Editor.

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INTRODUCTION

Mike Mobley, a local developer, plans to convert a 42-acre tract (Area A) into a residential area complete with boat canal and house lots known as the Edward David Estates in south-central Matagorda County (Figure 1). As a direct result of this construction, 13 acres of wetlands in the southern portion of the tract will be affected. In order to compensate for this loss, 13 acres of new wetlands will be created in a 20-acre tract (Area B) to the northeast. Figure 2 depicts the location of areas A and B. The permit application number for this project assigned by the COE is 23521.

In order to create a boat canal in Area A, a 150-foot wide trench will be dug to a depth of 13 feet from the ground surface to the bottom of the canal. The excavated area will be protected from erosion by a steel bulkhead along the Intracoastal Waterway and 180 feet into the proposed boat canal. The bulkhead along the boat canal will consist of concrete panels for the remaining distance. Three feet of earth will be removed from a 13-acre portion of Area B.

The project area is bounded on the north by County Road 259 (Old Gulf Road), on the east by coastal plain and wetlands, on the west by the Matagorda Harbor levee, and on the south by the Intracoastal Waterway. This area is depicted on the U.S.G.S. 7.5' topographic quadrangle Matagorda, Texas (2895-323).

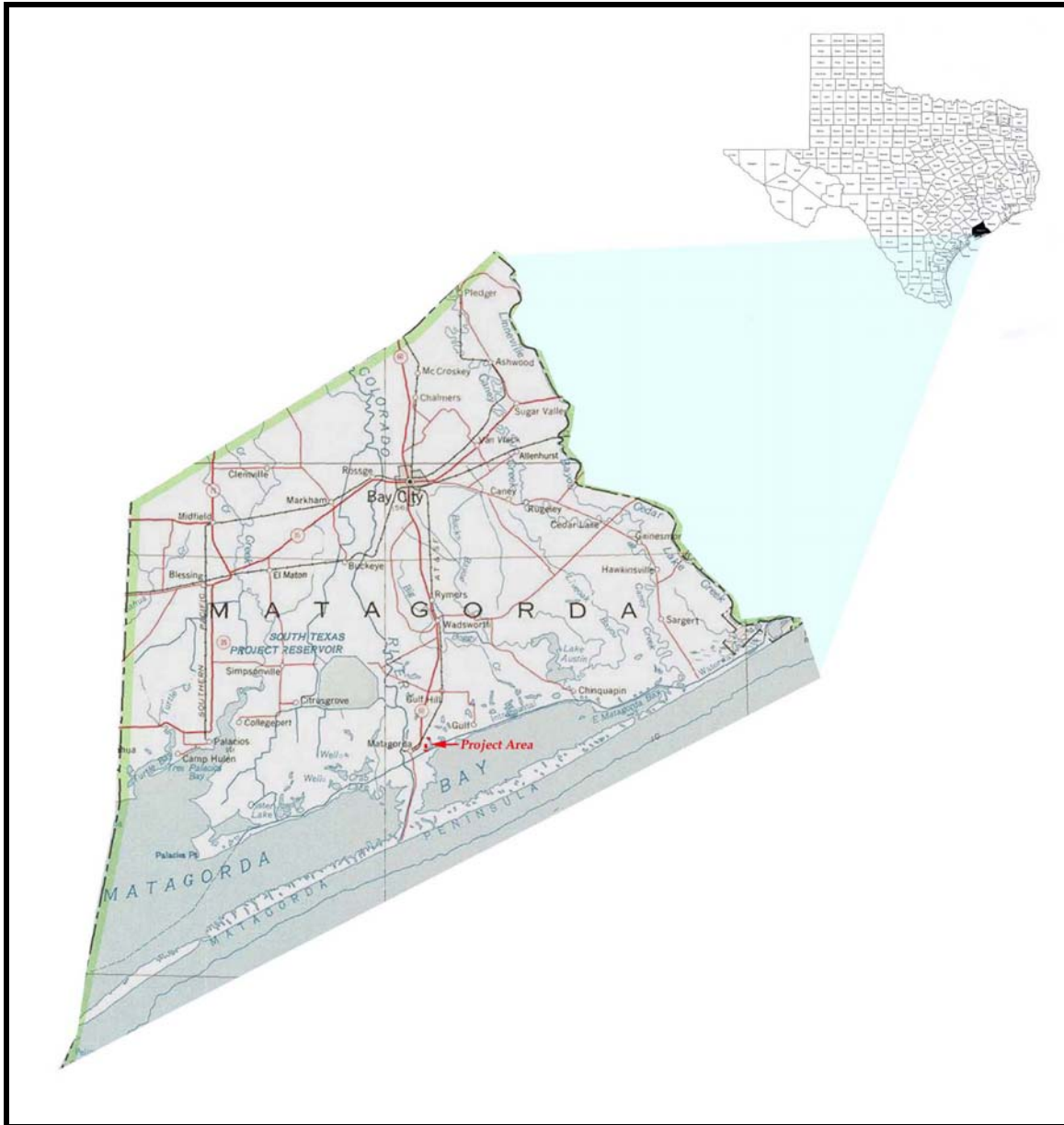


Figure 1. General Location

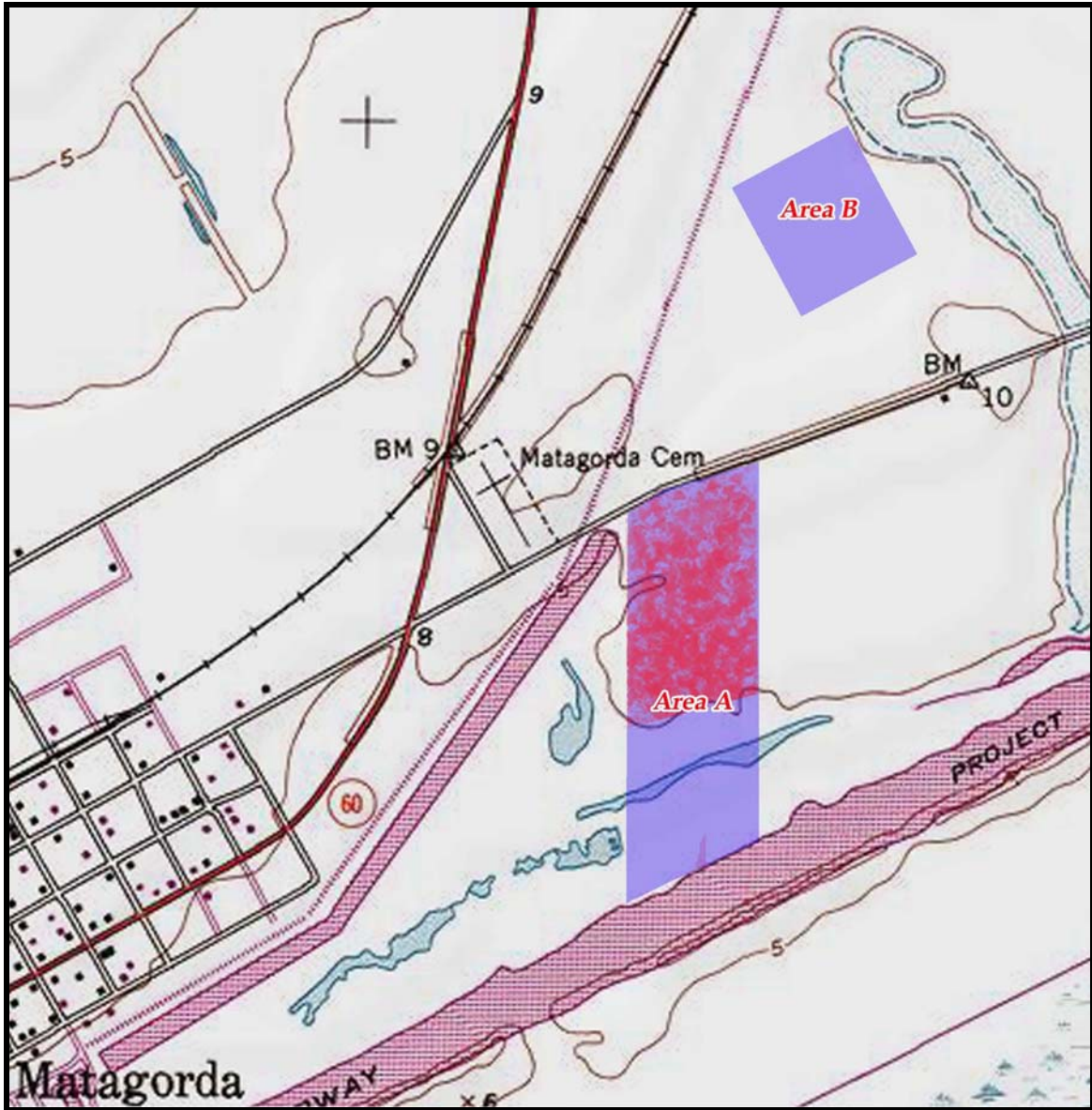


Figure 2. Project Area
(Area A has been disturbed)

ENVIRONMENT

Matagorda County is located in the southeastern part of Texas along the Gulf of Mexico. It lies in two major land resource areas, the Gulf Coast Prairies and the Gulf Coast Saline Prairies. The county is roughly rectangular in shape and covers about 888,173 acres. The landscape in the county is generally broad and nearly level. Sloping areas are typically next to the Colorado River, Tres Palacios River, Caney Creek, Peyton Creek, and Wilson Creek. Overall, the land slopes upward from the southeast to the northwest, and elevation rises from sea level at the Gulf of Mexico to over 70 feet at points along the Wharton County line. Most drainage flows to the south and southeast through the rivers, sloughs, and bayous that dissect the county.

Soils belonging to two soil series are present in the project area. These are the Livia-Palacios-Francitas and Harris-Velasco-Placedo series, dominantly clayey soils found on coastal lowlands (Hyde 2002:General Soil Map). Specifically, five types are present. They are the Francitas clay, 0 to 1 percent slopes (FrA), Ijam clay, 1 to 3 percent slopes (ImB), Livia loam, 0 to 1 percent slopes (LvA), Palacios loam, 0 to 1 percent slopes (PaA), and Placedo silty clay, frequently flooded (Pc). All five types are located within Area A, and PaA soils occupy all of Area B.

FrA is a very deep, saline, clayey soil found on nearly level coastal uplands. The source of this soil is related to saline parent material or flooding by sea water during high tides. Typically, the surface layer is very dark gray, slightly saline, moderately alkaline clay about six inches thick. From a depth of about 55 inches, the subsoil is a clay that is black in the upper part and grades to grayish-brown in the lower part. Between 55 and 80 inches, the subsoil is light yellowish-brown clay in the upper part and a yellowish-red silty clay loam in the lower part. The subsoil is saline in the upper part and moderately alkaline throughout. This soil is poorly drained. Permeability and surface are very slow, and available water capacity is low or moderate because of high sodium content. A perched water table is within a depth of two feet during rainy periods. This soil is present within the central portion of Area A. This discussion was taken from the soil survey for Matagorda County (Hyde 2002:35-36).

ImB is a very deep, very gently sloping soil that forms in material dredged from the channel of the Intracoastal Waterway. There is a distinct break between the stratified Ijam soil and an underlying darker colored soil, and this is observable all along the Waterway. Typically, the surface layer is grayish-brown, moderately saline and moderately alkaline clay about six inches thick. Between 6 and 63 inches, the underlying material is a moderately saline and moderately alkaline, mottled clay that has strata in colors of dark grayish-brown, grayish-brown, and olive gray. Between 63 and 80 inches, the underlying material is a moderately alkaline, stratified sandy clay and sandy clay loam that is dark brown in the upper part and yellowish-red in the lower part.

This soil is poorly drained and permeability is very slow. Surface runoff is rapid. The degree of salinity is dependent on the original salinity of the dredged material and the length of time since dredging. The water table is at the surface in some areas and as deep as three feet in other areas. This soil is present in the wetlands portion of Area A. This discussion was taken from the soil survey for Matagorda County (Hyde 2002:38).

LvA is a very deep, nearly level, saline, loamy soil that forms on ancient stream meander ridges on broad coastal uplands. Typically, it is at an elevation of 10 to 40 feet above sea level. The surface layer normally consists of a dark grayish-brown, slightly saline, slightly alkaline loam about six inches thick. The subsoil extends to a depth of approximately 61 inches. From a depth of 6 to 47 inches, it is saline, moderately alkaline clay that is very dark gray in the upper part, dark grayish-brown in the next part, and grayish-brown in the lower part. Between 47 and 61 inches, it is light brownish-gray, slightly saline, moderately alkaline clay. The underlying material, 61 to 80 inches, is a pale olive, slightly saline, moderately alkaline clay that has grayish mottles. This soil is poorly drained, and surface runoff and permeability are very slow. Available water capacity is moderate, but high sodium content makes this soil “droughty” during dry periods. It is saturated at times during rainy periods in winter months. This soil is present in the center portion of Area A. This discussion was taken from the soil survey for Matagorda County (Hyde 2002:43).

PaA is a very deep, nearly level, saline, loamy soil that forms on ancient stream meander ridges on broad coastal uplands. Typically, this soil is found at an elevation of 10 to 40 feet above sea level. A typical surface layer consists of a neutral, very dark grayish-brown loam about five inches thick. The upper part of the subsoil, between 5 and 13 inches, is a black, slightly alkaline clay loam. The lower part, from a depth of 13 to 72 inches, is a moderately saline or slightly saline, slightly alkaline to strongly alkaline clay. It is a very dark gray and grades to light gray and light brownish-gray with increasing depth. The subsoil has yellowish and brownish mottles below a depth of 25 inches. The underlying material, between 72 and 80 inches, is a yellowish-brown, moderately alkaline silty clay loam. This soil is poorly drained, and surface runoff and permeability are very slow. Available water capacity is moderate, but high sodium content makes this soil “droughty” except during rainy seasons. It is saturated at times during the winter. This soil is found in the northern part of Area A and is the only soil type present in Area B. This discussion was taken from the soil survey for Matagorda County (Hyde 2002:45-46).

PC is a very deep, saline, clayey soil that forms on nearly level to weakly concave flood plains along the coast. A high water table fluctuates from above the surface to a depth of about 12 inches, and ponding is common. A typical surface layer is dark gray, strongly saline, moderately alkaline silty clay and clay about 31 inches thick with brownish mottles. The underlying material, from a depth of 31 to 62 inches, is a gray, strongly saline and moderately alkaline clay loam with yellowish mottles. This soil is very poorly drained. Permeability is very slow, and surface runoff is very slow or ponded. The water table is at or near the surface most of the time. This soil is frequently flooded for durations of seven days to a month by runoff from nearby uplands, by daily or monthly high tides, and by storm tides. This soil is present in the wetlands portion of Area A. This discussion was taken from the soil survey for Matagorda County authored by (Hyde 2002:46-47).

ARCHAEOLOGICAL BACKGROUND

Prehistoric Period

Matagorda County is located in a portion of Southeast Texas where few systematic and professional archaeological investigations were conducted prior to the 1970s. The first documented archaeological report from Matagorda Bay consists of field notes written by A. M. Woolsey working under the Anthropology Department of The University of Texas at Austin during the 1930s. In July of 1932, Woolsey and his crew spent five days working at the Battle Island site (41MG1) in Matagorda County (Woolsey 1932:43-45). This site represents the location of a battle between a band of Karankawa Indians and a company of volunteers led by Captain Ayeltt E. Buckner in 1826. This site is along the Intracoastal Waterway about 3500 meters east of the current project area.

The next large-scale project was conducted by G. E. Arnold, a field archaeologist from The University of Texas at Austin, in 1941. He spent one month conducting a reconnaissance along the coast in Matagorda and adjacent counties. Arnold (1941:1) reported one village campsite and three shell middens.

In 1950, the probable location of La Salle's Fort Saint Louis and the first location of *Presidio Nuestra Senora de Loreto de la Bahia* (Keeran site) were excavated by the Texas Memorial Museum of Austin, Texas. Unfortunately, the results were never published, and the field notes are no longer available. Kathleen Gilmore (1973), working through the Texas Historical Commission, published a report concerning this site.

In 1965, Dee Ann Story and Doris Olds conducted an archaeological survey between the channels of the Lavaca and Navidad rivers several miles above their confluence. Three prehistoric sites and four historic sites were recorded. One of the Indian sites (Anaqua) was excavated under the direction of Dr. Story in 1967. That work represents the only systematic excavation of a prehistoric site ever conducted in the Matagorda Bay area.

In 1967, the Texas Archeological Salvage Project (TASP) recorded five archaeological sites in the Palmetto Bend Reservoir area (Wakefield 1968). Their research was designed to compare site density of the freshwater reservoir area with that of the higher salinity environment closer to the Lavaca Bay margin. As a result, their study recorded five sites in the Matagorda Bay survey area outside their survey area.

During the period 1972 – 1973, three target areas in Calhoun, Jackson, and Matagorda counties were examined by archaeologists from the Texas Archeological Survey (Fritz 1976). This effort recorded four prehistoric sites (41MG7 – 41MG10) in a marshy area north of the Intracoastal Waterway. Fritz describes two of these sites as shell middens, and the remaining two as areas containing prehistoric artifacts with little or no shell present. This large concentration of aboriginal sites is between 3000 and 4000 meters to the northeast of the current project area.

The most recent professional investigation in the area was a survey of the area along the Intracoastal Waterway for the United States Army Corps of Engineers, Galveston District by Prewitt & Associates, Inc. in 2002. According to E. Francis Gados, the report has been written but remains unpublished. This survey revisited one shell midden (41MG2) and recorded two previously unreported shell middens (41MG123 and 41MG124).

Two reports which provide histories and maps of past surveys and excavations along the entire Texas coast have been prepared by Aten (1971) and Briggs (1971). Both of these publications deal with the problem of site destruction and include recommendations for mitigating damage in the future. Additional sources are the well-researched book by Lawrence E. Aten (1983), a bibliography of the Southern Coastal Corridor Region of Texas by Gail Bailey (1987), and the Abstracts in Texas Contract Archeology series published by the Texas Historical Commission (1987-1992).

Historic Period

Matagorda County is one of the 23 original counties in Texas. It was created in 1836 and organized in 1837. American colonists founded the port town of Matagorda in the 1820s on the east side of the Colorado River overlooking Matagorda Bay. Stephen F. Austin brought 300 families to Texas in 1823, and 53 of these families settled in what is now Matagorda County. Matagorda was reported by a representative of the Mexican government to be the third largest town in the Province of Texas in 1835. The community of Matagorda was a prominent seaport and a major port for Texas immigrants. From 1840 to 1865, it ranked to Galveston as a leading port on the Texas coast. By the 1870s, the construction of railroads to the Brazos River and the increased use of other nearby ports lessened Matagorda's importance as a seaport. The town of Matagorda had a cotton gin in 1825, the largest sugar mill in the state before 1860, and a gristmill in 1859. Rice, fruit, and vegetables are important crops, and oil and sulphur deposits have been developed in recent years. In addition fishing and hunting adds to the local economy. The population of the county was 20,066 in 1940, 21,519 in 1950, and 37,828 according to the 1980 census figures.

METHODS

Prior to conducting this survey, the site records at the Texas Archeological Research Laboratory (TARL) in Austin, Texas were checked for the presence of previously recorded sites in the project area and vicinity. In addition, a review of the literature for the region was conducted in order to become familiar with recent work in the area and the types of sites recorded in the county. When possible, the project area was examined by a 100% Pedestrian Survey in an attempt to locate surface indications of prehistoric and historic sites. The field survey was documented by a Kodak 4 mega pixel digital camera, various forms for use in the field, and a daily journal.

Area A

This area consists of an upland margin or shoreline (29 acres) bounded on the south by a 13 acre area designated as wetlands (Figure 3). The total area is 42 acres.

The 29 acres that make up the upland portion of this tract have been previously disturbed prior to the field survey (figures 4-5). Much of the area had been scraped and bulldozed. Between 6 and 18 inches of soil have been removed, and no topsoil or native vegetation was present in this area at the time of this survey. The deepest excavation was in the proposed boat canal where soil had been re-deposited along both sides of the channel cut. Two large topsoil stockpiles occupied a part of the project area, and a smaller pile of soils and debris from the barn and corral were also present. These accumulations obscured the ground surface; therefore, the ground surface beneath these piles could not be examined. Concrete bulkhead sections had been prepared and stored on site. The ground surface in these areas could not be examined as well. According to local informants, a barn and corral used to be present in the northeast corner of this tract. It is believed that these features were demolished and burned prior to this survey.

The subsurface was examined through 20 shovel tests and 4 backhoe trenches (Figure 6). Fifteen shovel tests were placed randomly in the upland portion of the tract, and five shovel tests were excavated in the wetlands area where shell was observed. Each test was excavated in arbitrary 10 cm levels and varied from 10 to 30 cm in depth. All matrix was screened using ¼" hardware cloth. Shovel test data were recorded in the daily journal and on a shovel test log (Appendix I).



Figure 3. Wetlands in Area A

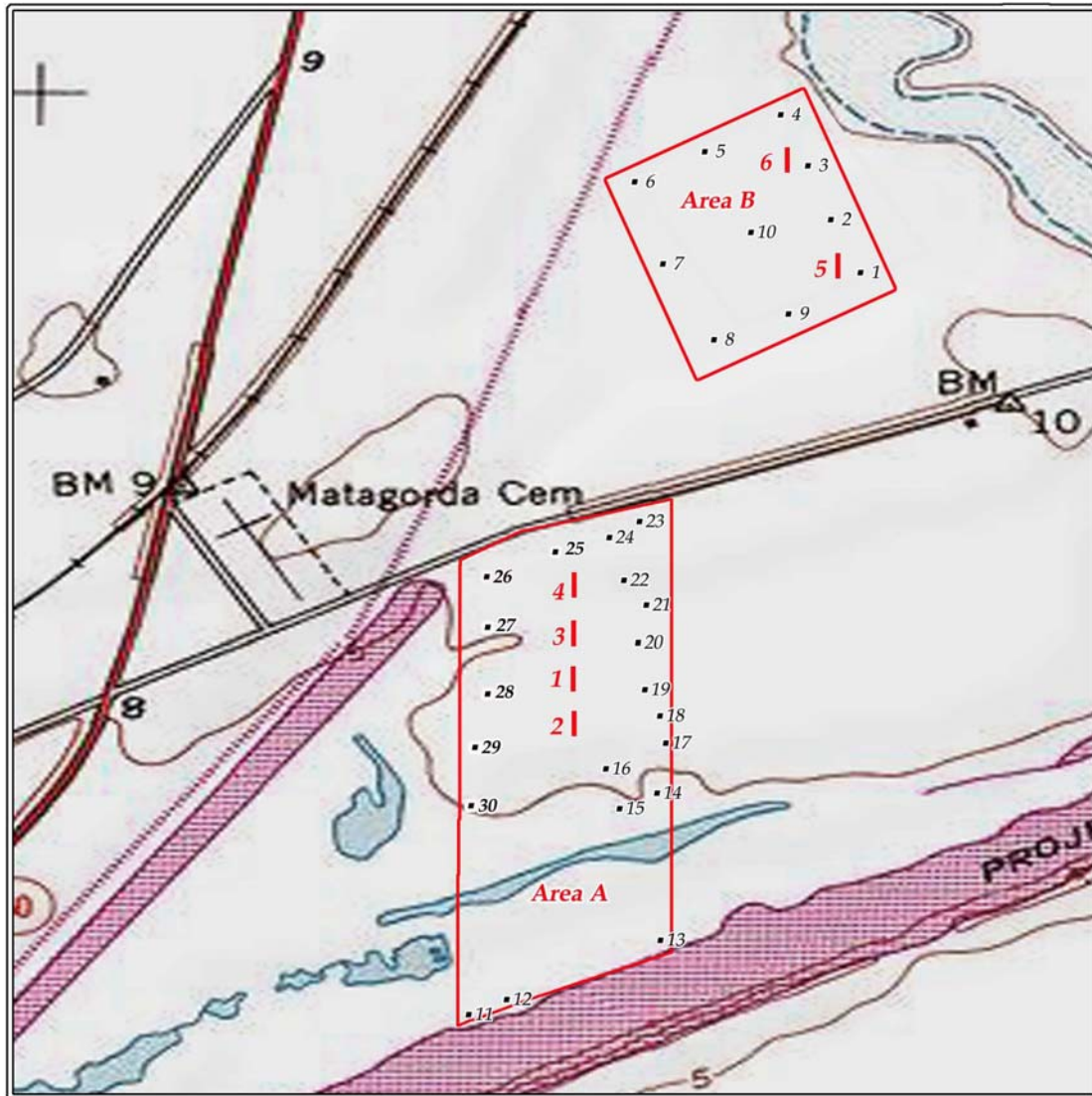


Figure 4. Disturbance in Area A



Figure 5. Disturbance in Area A

The four backhoe trenches were excavated within the footprint of the proposed boat canal. They were dug with a trackhoe with a four-foot wide bucket. This produced a wide trench with an excellent view of the profiles. Each trench was dug to the water table, and several collapsed during the excavation. The dimensions for the four backhoe trenches in Area A are 10 meters long and between two and three meters deep. Backhoe Trench 3 is depicted in Figure 7. The Project Archaeologist examined the profiles (Appendix II) and photographed and monitored backhoe excavation. In addition, soil samples of each stratum were taken. Control was achieved by the use of a hand-held Garmin Map 76 GPS system. At the time of this investigation, small, low water-filled areas, grasses, and shrubs covered the thirteen acres that were virtually undisturbed. No backhoe trenches were excavated in this low, marshy area.



USGS Matagorda, Texas
 Quadrangle 2895-323

- Shovel Test
- | Backhoe Trench

Figure 6. Shovel Test and Backhoe Trench Locations



Figure 7. Trench 3 (East Wall)

Area B

This is an upland area that is twenty acres in size and adjacent to a marshy area to the east (Figure 8). At the time of this investigation, the only observed disturbance was the removal of natural vegetation sometime prior to acquisition by the Applicant. Ten shovel tests and two backhoe trenches were excavated in the area where soil will be removed (Figure 6). Each shovel test was excavated in arbitrary 10 cm levels and varied from 30 to 40 cm in depth. All matrix was screened using $\frac{1}{4}$ " hardware cloth. Shovel test data were recorded in the daily journal and on a shovel test log (Appendix I). The two trenches in this area were dug with a backhoe with a two-foot wide bucket. The dimensions of the trenches were 10 meters long and 2 meters deep. The Project Archaeologist examined the profiles (Appendix II) and photographed and monitored backhoe excavation. Backhoe Trench 6 is illustrated in Figure 9. In addition, soil samples of each stratum were taken. Control was achieved by the use of a hand-held Garmin Map 76 GPS system.



Figure 8. Area B



Figure 9. Trench 6 (West Wall)

RESULTS

The archival researched identified the presence of the historic Matagorda Cemetery on the north side of County Road 259 just to the northeast of the project area. The oldest graves in this cemetery date to the 1830s. Additionally, the site of Fort St. Louis on Matagorda Bay and a battle site between the local settlers and the Karankawa Indians are located in the area. In addition to the better-known historic Indian groups in this part of Texas, the French explorer Joutel encountered a group of Ebahamo Indians living along the lower Colorado River near Fort St. Louis who told him about a band who were known as the Spicheat Indians. It is reported that the Spicheat lived between Matagorda Bay and the Colorado River (Webb 1952).

No prehistoric sites were found in either Area A or Area B. Oyster shell was observed in three locations: (1) barn and corral area, (2) edge of the Intracoastal Waterway, and (3) edge of the wetlands in Area A. As debris associated with the barn and corral was moved across Area A, shell and historic artifacts were spread throughout the northern and western parts of Area A.

Based on a discussion with local resident Doris Moberly and the results of the field survey, it was concluded that the shell in the barn and corral area were originally deposited during construction of the culvert associated with County Road 259. Shovel tests revealed that the shell along the edge of the Intracoastal Waterway was only present on the surface. No cultural materials were found in any of these shovel tests. The shell at the interface of the wetlands and upland area (Area A) was found to be a shell hash, an indicator of a wave deposition along a former shoreline. Shovel tests and surface inspection did not yield any cultural materials. No evidence of prehistoric utilization of the project area was found in any of the six backhoe trenches.

The demolished and burned remains of a historic site were found within the northeast corner of Area A where a barn and corral dating to the 1940s is reported to have been present. In the field, evidence of this site was noted in the form of 20th century artifacts (ceramic floor tiles, metal pipe, white ware, amber glass, clear glass, burned timbers, roofing tin, plastic, and brick fragments), some of which were scattered across the northern and western portions of Area A as a result of pushing of earth and debris during land clearing. According to local resident, Doris Moberly who is 84 years old, the ceramic tiles were stored in the barn and never used. She stated that her husband, Oscar Moberly and the landowner (Mr. Dumbar), constructed the barn in the late 1940s.

The Dumbar residence was located to the east and outside the project area. It was constructed by the Dumbar family who owned the land prior to 1919 and until recently when it was purchased by Mrs. Moberly.

Mrs. Moberly also stated that she never found any Indian artifacts in the area, and she had no knowledge of artifacts being found by others. According to her, prior to construction of the Intracoastal Waterway, the Bay Shore was part of the project area that is now designated as wetlands.

RECOMENDATIONS

No evidence of a prehistoric site was found within the project area, and no intact historic site is present. Therefore, it is recommended that construction be allowed to proceed as planned. Should evidence of a prehistoric or historic site be encountered during construction, especially in Area B, work must cease until the COE and THC can evaluate the situation.

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APPENDIX I: SHOVEL TEST LOG

Shovel Test	Depth (cm)	Soil Type	Area Description
Area B			
1	0 - 30 30 - 40	sandy clay loam over clay clay	mowed grass
2	0 - 20 20 - 30	clay loam clay	mowed grass
3	0 - 20 20 - 30	clay loam clay	mowed grass
4	0 - 30 30 - 40	sandy clay loam clay	mowed grass
5	0 - 20 20 - 30	clay loam clay	mowed grass
6	0 - 30 30 - 40	sandy clay loam clay	mowed grass
7	0 - 30 30 - 40	clay loam clay	mowed grass
8	0 - 30 30 - 40	sandy clay loam clay	mowed grass
9	0 - 20 20 - 30	clay loam clay	mowed grass
10	0 - 20 20 - 30	clay loam clay	mowed grass
Area A			
11	0 - 10 10 - 30	shell over clay clay	wetlands
12	0 - 10 10 - 30	shell over clay clay	wetlands
13	0 - 30	clay	wetlands
14	0 - 10 10 - 30	shell hash over clay clay	wetlands
15	0 - 10 10 - 30	shell over clay clay	wetlands
16	0 - 30	clay	disturbed

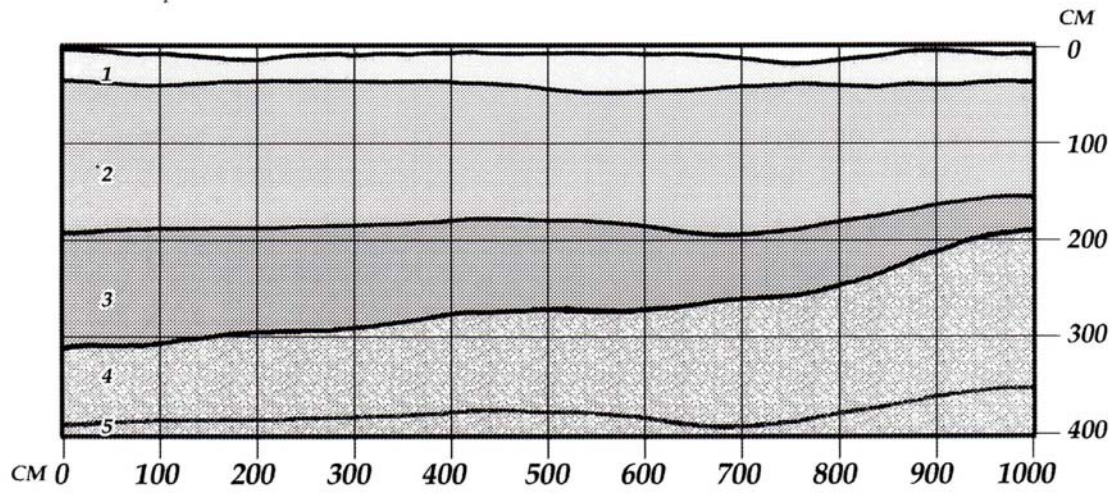
Appendix I (continued)

Shovel Test	Depth (cm)	Soil Type	Area Description
17	0 - 20	clay loam over clay	disturbed
18	0 - 20	clay loam over clay	disturbed
19	0 - 20	clay loam over clay	disturbed
20	0 - 20	clay loam over clay	disturbed
21	0 - 20	clay loam over clay	disturbed
22	0 - 20	clay loam over clay	disturbed
23	0 - 20	clay loam over clay	disturbed
24	0 - 20	clay loam over clay	disturbed
25	0 - 20	clay loam over clay	disturbed
26	0 - 20	clay loam over clay	disturbed
27	0 - 20	clay loam over clay	disturbed
28	0 - 10	clay loam over clay	disturbed
29	0 - 10	clay loam over clay	disturbed
30	0 - 10	clay loam over clay	disturbed

APPENDIX II
BACKHOE TRENCH PROFILES

Backhoe Trench 1, West Wall Profile

(Area A)



Zone 1: B horizon. Saline moderately alkaline very dark gray clay. 10YR4/2.

Zone 2: B horizon. Saline moderately alkaline-grayish brown clay. 10YR5/3.

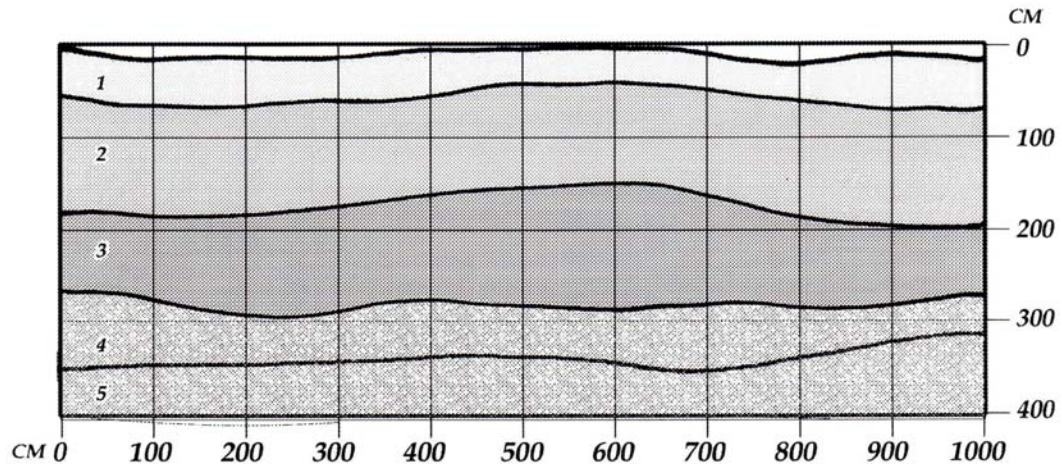
Zone 3: C horizon. Yellow clay. 10YR8/6.

Zone 4: Orange clay 2.5YR4/8.

Zone 5: Unexcavated

Backhoe Trench 2, West Wall Profile

(Area A)



Zone 1: B horizon. Saline moderately alkaline very dark gray clay. 10YR4/2.

Zone 2: B horizon. Saline moderately alkaline grayish-brown clay. 10YR5/3.

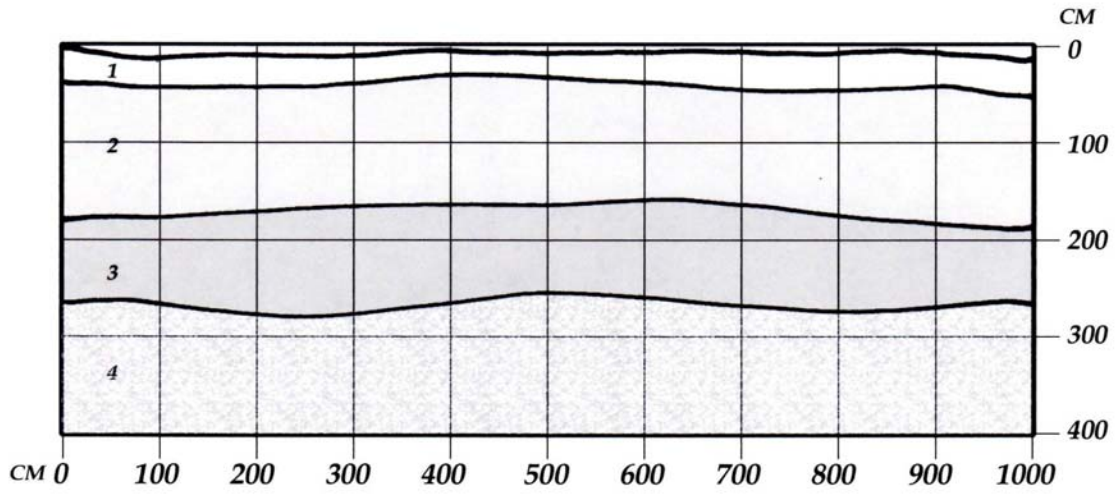
Zone 3: C horizon. Yellow clay. 10YR8/6.

Zone 4: Orange clay 2.5YR4/8.

Zone 5: Unexcavated

Backhoe Trench 3, West Wall Profile

(Area A)



Zone 1: B horizon. Saline moderately alkaline very dark gray clay. 10YR4/2.

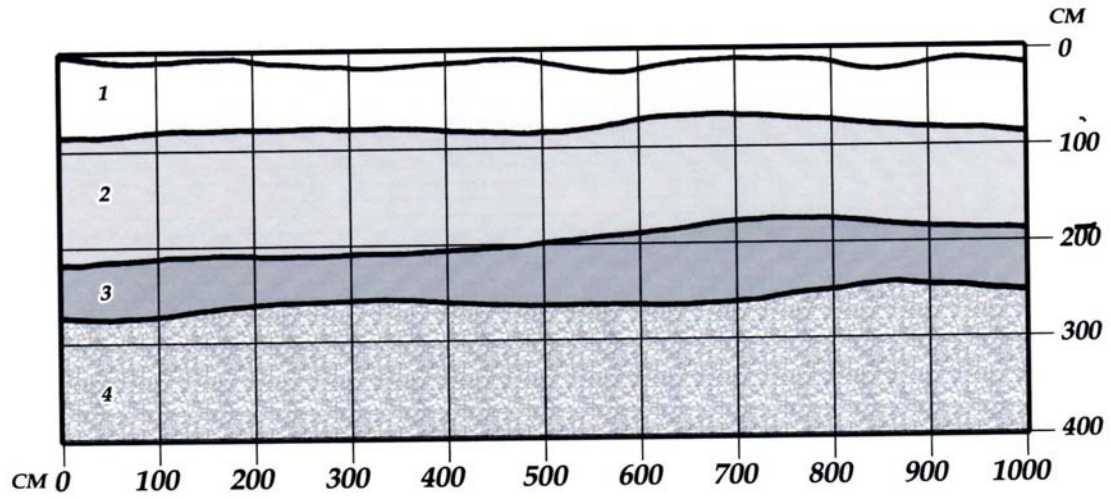
Zone 2: Mottled B and C horizons.

Zone 3: C horizon. Yellow clay. 10YR8/6.

Zone 4: Unexcavated

Backhoe Trench 4, West Wall Profile

(Area A)



Zone 1: B horizon. Saline moderately alkaline very dark gray clay. 10YR4/2.

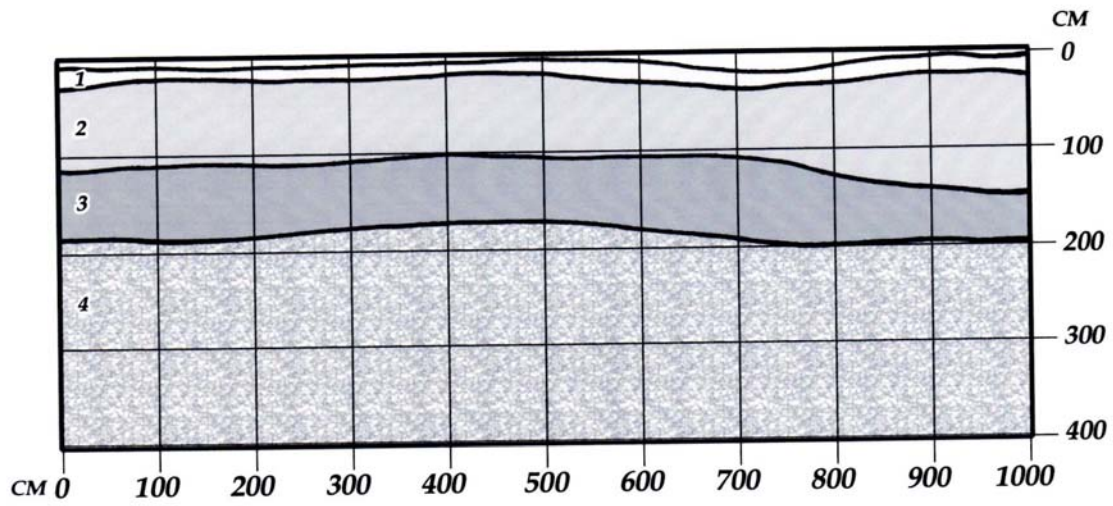
Zone 2: Mottled B and C horizons.

Zone 3: Orange clay 2.5YR4/8.

Zone 4: Unexcavated

Backhoe Trench 5, West Wall Profile

(Area B)



Zone 1: A horizon. Light gray clay loam mixed with humus, 2.5Y6/2.
May be an old plow zone.

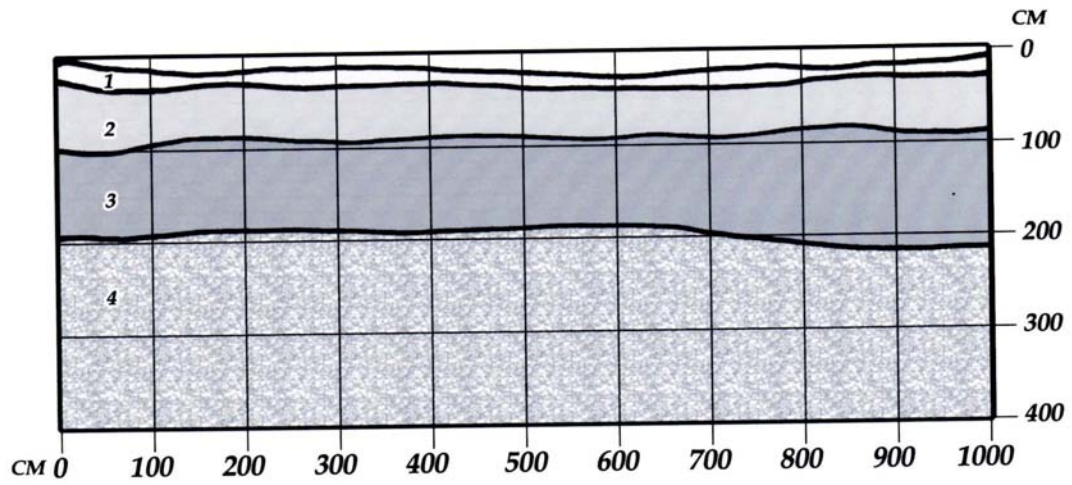
Zone 2: B horizon. Dark gray clay loam. 10YR4/2

Zone 3: C horizon. Light yellow clay. 2.5Y7/8

Zone 4: Unexcavated.

Backhoe Trench 6, West Wall Profile

(Area B)



Zone 1: A horizon. Light gray clay loam mixed with humus, 2.5Y6/2.
May be an old plow zone.

Zone 2: B horizon. Dark gray clay loam. 10YR4/2

Zone 3: C horizon. Light yellow clay. 2.5Y7/8

Zone 4: Unexcavated.