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## **A Geophysical Investigation of an Approximately 1.95 Acre Portion of the Old Velasco Site (41B0125), Village of Surfside Beach, Brazoria County, Texas – Texas Antiquities Permit No. 9419**

Jeremy W. Pye  
*Cultural Resource Analysts Inc.*

Chris Kneupper  
*Texas Archeological Society*

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**A Geophysical Investigation of an Approximately 1.95 Acre Portion of the Old Velasco Site (41B0125), Village of Surfside Beach, Brazoria County, Texas – Texas Antiquities Permit No. 9419**

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A GEOPHYSICAL INVESTIGATION OF AN  
APPROXIMATELY 1.95 ACRE PORTION OF THE OLD  
VELASCO SITE (41BO125), VILLAGE OF SURFSIDE  
BEACH, BRAZORIA COUNTY, TEXAS  
TEXAS ANTIQUITIES PERMIT NO. 9419



by  
Jeremy W. Pye, PhD,  
with contributions by Chris Kneupper

Prepared for



Prepared by



Kentucky | West Virginia | Wyoming  
Indiana | Louisiana | Tennessee | Virginia



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Jeremy W. Pye, PhD,  
with contributions by Chris Kneupper

*Prepared for*

The Cradle of Texas Conservancy  
c/o Chris Kneupper  
Member of the Board of Directors,  
1083 Riverview Ranch Drive  
Brazoria, Texas 77422  
Cell: (979)-487-9095  
Email: kneupper@brazoriainet.com

*Prepared by*

Cultural Resource Analysts, Inc.  
9105 Avalon Drive  
Shreveport, Louisiana 71118  
Phone: (318)-213-1385  
Email: jwpye@crai-ky.com  
CRA Project No.: L20C003



Jeremy W. Pye, RPA 989943  
Principal Investigator

August 23, 2021  
Lead Agency: Texas Historical Commission

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Cultural Resources Analysts, Inc., would like to thank the Cradle of Texas Conservancy for the opportunity to conduct this work. In particular, Chris Kneupper, member of the Cradle of Texas Conservancy Board of Directors, provided Cultural Resource Analysts, Inc., field personnel with an introduction to the site and field support during the geophysical fieldwork, as well as the background report section, historical maps and documents, and also results of follow-up ground-truthing investigations conducted by himself and members of the Brazosport Archaeological Society. On behalf of the Cradle of Texas Conservancy, Cultural Resource Analysts, Inc., would like to note that the study of early efforts to research and to build a replica Fort Velasco was greatly helped by reviewing the papers of the late George Kramig, which his two daughters graciously loaned to Chris Kneupper for an extended period. Additionally, Michael Bailey of the Brazoria County Historical Museum was most helpful in locating documents in their electronic and vertical files. Johnney Pollan, James Smith, Sue Gross, Clint Lacy and other members of the Brazosport Archaeological Society provided invaluable assistance with old maps, records and knowledge of past archaeological efforts. The Blueline Print Shop in Freeport, Texas, graciously provided professional copying and digitizing work for old documents at no, or reduced costs to the Cradle of Texas Conservancy. James Glover and Jennifer Parsley of the Brazoria County Parks Department reviewed early drafts of the historical research section of this report, making many helpful suggestions. The staff of the Dolph Briscoe Center for American History, the Texas State Library and Archives (both in Austin, Texas), and the Galveston & Texas History Center (Rosenberg Library, Galveston, Texas) were also most helpful in locating old documents in their collections. Jeff Durst of the Texas Historical Commission has helped with counsel about this site for many years. George Nelson has provided historical context, in relation to other Spanish colonial sites. James E. “Jake” Ivey, Xavier Sendejo, Sonia Bennett and Flor Leon helped translate Spanish-language documents. Tiffany Osburn (Texas Historical Commission, Austin, Texas) and Doug Boyd (Prewitt & Associates, Austin, Texas) provided advice to the Cradle of Texas Conservancy on the use of remote sensing techniques and contractors. Lastly, Cultural Resource Analysts, Inc., and the Cradle of Texas Conservancy would like to thank the Texas Historical Foundation, which provided the Cradle of Texas Conservancy with a small grant to partially fund the geophysical survey.

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# MANAGEMENT SUMMARY

Cultural Resource Analysts, Inc., personnel completed geophysical investigations of an approximately 0.79 hectare (1.95 acre) portion of the Old Velasco Site (41BO125), Village of Surfside Beach, Brazoria County, Texas. The project area consists of the platted Surfside Block 568, which is owned by the Cradle of Texas Conservancy, as well as adjacent rights-of-way areas, which are controlled either by the Village of Surfside Beach or by the Brazos River Harbor Navigation District. The project area overlaps the townsite of Old Velasco (41BO125) and is in the vicinity of the suspected location of the 1832 Mexican fort, Fort Velasco, as well as subsequent fortifications dating through the Civil War. Historical research suggests that it is possible that the land surrounding the fort may contain informal graves associated with casualties of the Battle of Velasco, which took place June 25 and 26, 1832, and was one of the first military conflicts between Mexican and Texan forces leading up to the Texas Revolution.

The geophysical survey was conducted on behalf of the Cradle of Texas Conservancy to determine the type and possible extent of archaeological features on the property and guide future actions at the site. The project is being conducted for research purposes only and the project area is not currently slated for sale or development. Therefore, the project does not require federal permits, licenses, or funding, and is not subject to Section 106 of the National Historic Preservation Act. Due to the fact that portions of the project area are controlled by subdivisions of the State of Texas, however, it was necessary to obtain a Texas Antiquities Permit (No. 9419) for the project; and therefore, the Texas Historical Commission has oversight and serves as the lead agency.

Fieldwork for the geophysical survey was conducted by Cultural Resource Analysts, Inc., geophysical specialists and occurred between June 3 and 7, 2020. Fieldwork began with the establishment of the survey grid to permit geophysical data collection over the survey area. The geophysical survey was conducted using three techniques: ground-penetrating radar, magnetic gradiometry, and electrical resistivity. Analysis of the collected geophysical data confirmed the presence of numerous geophysical anomalies related to modern features and modern disturbance of the property, as well as probable historic occupation of the site, including possible footprints of a number of structures, indications of enclosures, and pit features. Previously identified historic archaeological features, including a brick foundation, brick chimney base, and a brick-lined cistern were also identified in the geophysical data, and limited ground-truthing efforts conducted by the Brazosport Archaeological Society confirmed their locations and condition.

Based on the geophysical results, it is thought that the data shows strong evidence for the presence of the rear bastion of the Civil War Era Fort Velasco in the southwestern portion of the survey area, as well as almost the entirety of the 1832 Fort Velasco in the northwestern portion of the survey area. No definitive geophysical evidence was found within the survey area to suggest that grave features, possibly associated with casualties of the 1832 Battle of Velasco, were present. It is probable that the graves in question are located elsewhere in the vicinity, perhaps in the area formerly known as "Monument Square," which lay beyond the northern boundary of the current geophysical survey area. That said, geophysical survey is not infallible and there has been a lot of post-1832 disturbance to the project area that could obscure the signatures of grave features, if present within the project area.

The geophysical survey results, combined with the historical research presented in this report, are promising and research potential at the site seems high. The limited ground-truthing, conducted by members of the Brazosport Archaeological Society, following the geophysical survey, was helpful in confirming the exact position and condition of the brick foundation, cistern, and chimney base, all of which were previously known archaeological features on the property. It is Cultural Resource Analysts, Inc.'s recommendation that additional ground-truthing and deep testing should take place in order to investigate the nature of some of the other geophysical anomalies that were identified. In particular,

deep testing should be pursued in order to confirm the presence of the Civil War Era Fort Velasco and the 1832 Fort Velasco. Ideally, trenches would be excavated from one side of each of the possible forts to the other, straight across the center of the possible gun platforms. Moreover, if possible, additional trenching should take place on the landward side of the shoreline protection jetty adjacent to where it is estimated that the Civil War Era features were found during the construction of the jetty.

Prior to the initiation of any intensive ground-truthing efforts, Cultural Resource Analysts, Inc., recommends consultation with the Texas Historical Commission to ask advice about the appropriate actions to be taken and to make sure that all involved parties are in agreement about the approach to ground-truthing. It would also be wise to have an Inadvertent Discoveries Plan, based on the guidance and requirements from the Texas Historical Commission, drawn up and agreed upon by all involved parties in case human remains or mortuary artifacts (either historic or prehistoric), are discovered during archaeological fieldwork. If human remains or associated funerary artifacts are encountered, the procedure laid out in the Inadvertent Discoveries Plan should be followed.

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# Chapter 1. Introduction

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Cultural Resource Analysts, Inc. (CRA), personnel completed geophysical investigations of a 0.79 ha (1.95 acres) portion of the Old Velasco Site (41BO125), Village of Surfside Beach, Brazoria County, Texas (Figure 1.1). The project area consists of the platted Surfside Block 568, which is owned by the Cradle of Texas Conservancy (CTC), as well as adjacent rights-of-way areas, which are controlled either by the Village of Surfside Beach or by the Brazos River Harbor Navigation District.

## Project Description

The project area overlaps the townsite of Old Velasco (41BO125) and is in the vicinity of the suspected location of the 1832 Mexican fort, Fort Velasco and possibly subsequent fortifications dating to the Civil War (Figure 1.2). Historical research suggests that it is possible that the land surrounding the fort may contain informal graves associated with casualties of the Battle of Velasco, which took place June 25 and 26, 1832, and was one of the first military conflicts between Mexican and Texan forces leading up to the Texas Revolution.

The geophysical survey was conducted on behalf of the CTC to determine the type and

possible extent of archaeological features on the property and guide future actions at the site. The project is being conducted for research purposes only and the project area is not currently slated for sale or development. Therefore, the project does not require federal permits, licenses, or funding, and is not subject to Section 106 of the National Historic Preservation Act. Due to the fact that portions of the project area are controlled by subdivisions of the State of Texas, however, it was necessary to obtain a Texas Antiquities Permit (No. 9419) for the project; and therefore, the Texas Historical Commission has oversight and serves as the lead agency.

## Summary of Findings

CRA personnel completed geophysical investigations of an approximately 0.79 ha (1.95 acre) portion of the Old Velasco Site (41BO125), Village of Surfside Beach, Brazoria County, Texas. Fieldwork for the geophysical survey occurred between June 3 and 7, 2020. Fieldwork began with the establishment of the survey grid to permit geophysical data collection over the survey area. The geophysical survey was conducted using three techniques: GPR, magnetometry, and resistivity.



Figure 1.1. Map showing the location of Brazoria County in the state of Texas.

Analysis of the collected geophysical data confirmed the presence of numerous geophysical anomalies related to modern features and modern disturbance of the property, as well as probable historic occupation of the site, including possible footprints of a number of structures, indications of enclosures, and pit features. Previously identified historic archaeological features, including a brick foundation, brick chimney base, and a brick-lined cistern were also identified in the geophysical data, and limited ground-truthing efforts.

Based on the geophysical results, it is thought that the data shows strong evidence for the presence of the rear bastion of the Civil War Era Fort Velasco in the southwestern portion of the survey area, as well as almost the entirety of the 1832 Fort Velasco in the northwestern portion of the survey area. No definitive geophysical evidence was found within the survey area to suggest that grave features, possibly associated with casualties of the 1832 Battle of Velasco, were present. It is probable that the graves in question are located elsewhere in the vicinity, perhaps in the area formerly known as "Monument Square," which lay beyond the northern boundary of the current geophysical survey area. That said, geophysical survey is not infallible and there has been a lot of post-1832 disturbance to the project area that could obscure the signatures of grave features, if present within the project area.

The geophysical survey results, combined with the historical research presented in this report, are promising and research potential at the site seems high. The limited ground-truthing, conducted by members of the Brazosport Archaeological Society (BAS) following the geophysical survey, was helpful in confirming the exact position and condition of the brick foundation, cistern, and chimney base, all of which were previously known archaeological features on the property. It is CRA's recommendation that additional ground-truthing and deep testing should take place in order to investigate the nature of some of the other geophysical anomalies that were identified. In particular, deep testing should be pursued in order to confirm the presence of the

Civil War Era Fort Velasco and the 1832 Fort Velasco. Ideally, trenches would be excavated from one side of each of the possible forts to the other, straight across the center of the possible gun platforms. Moreover, if possible, additional trenching should take place on the landward side of the shoreline protection jetty, adjacent to where it is estimated that the Civil War Era features were found during the construction of the jetty.

Prior to the initiation of any intensive ground-truthing efforts, CRA recommends consultation with the THC to ask advice about the appropriate actions to be taken and to make sure that all involved parties are in agreement about the approach to ground-truthing. It would also be wise to have an Inadvertent Discoveries Plan (IDP), based on the guidance and requirements from the THC, drawn up and agreed upon by all involved parties in case human remains or mortuary artifacts (either historic or prehistoric), are discovered during archaeological fieldwork. If human remains or associated funerary artifacts are encountered, the procedure laid out in the IDP should be followed.

## **Project Personnel**

Jeremy W. Pye, PhD, RPA 989943, represented CRA as the geophysical principal investigator and conducted all geophysical data collection. James Baldwin, BA, assisted Pye during fieldwork as a field technician. Chris Kneupper (CTC Board of Directors Member) mowed and conducted clearing on the property prior to the geophysical survey and also provided support during the geophysical fieldwork. Chris Kneupper, Carl Kneupper, Sue Gross, and Clint Lacy conducted ground-truthing investigations following the geophysical work. CRA's final report of findings for the geophysical investigations was authored by Jeremy Pye with contributions by Chris Kneupper, who wrote the majority of the historical background chapter and the brief discussion of ground-truthing methods. Report mapping was prepared by Li Bai, MA, who also provided GIS support during the project. The final report production was completed by the CRA publications department. All

documentation and geophysical data produced during fieldwork will be shared with the CTC and will be curated at the Anthropology and Archaeology Lab (ALL), Stephen F. Austin State University (SFA).

## **Report Organization**

This report presents a discussion of the geophysical investigations conducted by CRA personnel within Surfside Block 568 and adjacent rights-of-way, which encompasses a portion of the Old Velasco Site (41BO125) and is the suspected location of the 1832 Mexican fort, Fort Velasco. This report is organized into six numbered chapters. Chapter 1 provides an overview of the project and summarizes the results of the field investigations. Chapter 2 presents the environmental background of the project area. Chapter 3 relays the extensive historical research on the site that has been graciously contributed by Chris Kneupper. Chapter 4 includes field and analytical methods employed during the current geophysical fieldwork, while Chapter 5 elaborates on the results of the geophysical survey. The report summary and recommendations are presented in Chapter 6. Appendix A provides the detailed resume for Jeremy Pye, who acted as the geophysical principal investigator and primary report author for the project.



Figure 1.2. Map showing the location of the client-defined project boundary on the Freeport, TX, USGS 7.5-minute series topographic quadrangle map.

## Chapter 2. Environmental Setting

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This section of the report provides a description of the modern and prehistoric environment and considers those aspects of the environment that may have influenced the choices made by past peoples for the utilization of the landscape in the vicinity of the current project area. Attributes of the physical environment also often guide the methods used to discover archaeological sites. Physiography, bedrock geology, hydrology, soils, vegetation and animal life, and climate for the region where the project is located are discussed briefly below.

### Physiography, Geology, and Hydrology

Site 41BO125 and the current project area are located in southern Brazoria County on the southwestern edge of the Village of Surfside Beach on the northeastern bank of the Freeport Harbor Ship Channel at the historic mouth of the Brazos River on the Gulf of Mexico. This area lies within the West Gulf Coastal Plain physiographic province and the Mid-Coast Barrier Islands and Coastal Marshes ecoregion (Griffith et al. 2007).

The West Gulf Coastal Plain physiographic province is the southern-most element of an elevated former sea bottom that extends from the Texas Gulf Coast northward to the Atlantic seaboard, while the Mid-Coast Barrier Islands and Coastal Marshes ecoregion stretches only from Galveston Bay in the north to Corpus Christi in the south. The province is characterized by relatively flat topographic relief with elevations ranging from sea level to approximately 133 m (436.4 ft) AMSL covered mainly with grasslands and coastal swamps. Inland from the coastal areas are higher plains with mostly forest or savannah-type vegetation (Griffith et al. 2007).

Griffith et al. (2007) claim that the Mid-Coast Barrier Islands and Coastal Marshes are dominated by Holocene deposits with saline, brackish, and freshwater marshes, barrier

islands with minor washover fans, and tidal flat sands and clays. More inland areas of the ecoregion are said to contain older Pleistocene deposits. The geology of Brazoria County as a whole, is characterized by sedimentary formations dating to the Cretaceous, Tertiary, and Quaternary Periods (Hunt 1967, 1974; and Sellards et al. 1932). Brazoria County is dominated by Quaternary alluvium containing thick deposits of clay, silt, sand, and gravel overlying the Pleistocene-aged Beaumont Formation (Barnes 1982, 1987). The Quaternary alluvium originates from stream channel, point bar, natural levee, and backswamp deposits associated with former and current river channels and bayous. The Quaternary alluvium outcrops in a belt approximately 112.7–144.8 km (70–90 miles) wide, paralleling the Texas coastline. The underlying Beaumont Formation is estimated to be less than 30.5 m (100 ft) thick and consists mostly of clay, silt, sand, and gravel (Barnes 1987).

Previous archaeological researchers, conducting work in the vicinity of the current project area (Haley and Mangum 2017; McWilliams and Boyd 2007; and Stahman 2008) note that the vicinity of the project area can further be characterized by the addition of recent fill and subaqueous dredged material associated with the construction of the Freeport Harbor Channel for Port Freeport and the nearby chemical-processing complex. Typically, fill and dredged material consist of mixed mud, silt, sand, shell, and reworked dredged material. The deposits of dredged material are inconsistent across the landform and the depth of said deposits varies greatly, from no evidence of dredged materials to as much as 3.6 m (11.8 ft) below ground surface (bgs) (Stahman 2008:1).

Most drainage flows in Brazoria County lead to the southeast, following the general slope in elevation toward the Gulf of Mexico. The Linnville Bayou, San Bernard River, Oyster Creek, Brazos River, Bastrop Bayou, Chocolate Bayou, Halls Bayou, Mustang

Bayou, and Clear Creek carry most of this flow, but the San Bernard River, Brazos River, and Oyster Creek are the primary drainages in the county. The San Bernard River and the Brazos River empty directly into the Gulf of Mexico, while many of the other drainages mentioned above empty into bays connected to the Gulf of Mexico (Crenwelge et al. 1981). The water table is relatively high in the vicinity of the current project area depending on the depth of dredged materials in specific locations, with Stahman (2008:1) reporting that the water table can be reached typically anywhere between 0.3 m (1 ft) above and 0.6 m (2 ft) below the transition to the clay subsoils.

## Soils

Soils in the project area consist primarily of upland soil types found within landform situations described as interfluves, ridgetops, terraces, sideslopes, flats/plains, and floodplains (Table 2.2). The project area soils tend to be along areas that are level or mildly sloping, and tend to have few limitations for development. Project area soil codes, soil names, and physical soil characteristics are presented in Table 2.1. A representative profile of each soil type is presented as Table 2.2.

As mentioned above, previous archaeological investigations in the vicinity of the current project area (i.e., Stahman 2008), indicate that sediments in the vicinity of the project area include the aforementioned subsoil base of Beaumont clay, which is overlain by a sandy layer of Holocene-aged alluvium typically from 0.3 to 0.6 m (1 to 2 ft) in thickness. Overlying the sandy layer is a deposit of modern dredged material typically from 0 to 3.6 m (0 to 11.8 ft) in thickness. Based on previous investigations (Earls et al. 1996), archeological remains associated with Site 41BO125 may be located either within the sandy layer, atop the clay subsoil, or possibly extending up to 0.6 m (2 ft) into the clay subsoil.

## Flora and Fauna

The project area is located within the Upper Coast division (described by Hatch et al.

[1999]) of the Gulf Coast Prairies and Marshes Vegetational Region (described by Gould [1975]) and the Texan Biotic Province (described by Blair [1950]). The Texan Biotic Province supports a diverse assortment of fauna composed of a mixture of species common to neighboring provinces. Austroriparian species from the east are generally restricted to forests, bogs, and marshes. Grassland species, entering the area from the west, are generally restricted to the prairies (Blair 1950).

Vegetation is variable within the Upper Coast Division of the Gulf Coast Prairies and Marshes Vegetational Region, and includes multiple tree species and a large variety of grasses and opportunistic weedy growth. Smooth cordgrass (*Spartina alteriflora*), marshhay cordgrass (*S. patens*), and coastal saltgrass (*Distichlis spicata*) dominate in more saline zones of the region. Other native vegetation in mainly grasslands composed of seacoast bluestem (*Schizachyrium scoparium* var. *littorale*), sea-oats (*Uniola paniculata*), common reed (*Phragmites australis*), gulfdune paspalum (*Paspalum monstachyum*), and soilbind morning-glory (*Ipomoea pes-caprae*). Some areas have clumps of sweetbay (*Magnolia virginiana*), redbay (*Persea borbonia*), and dwarf southern live oak (*Quercus virginiana*) (Griffith et al. 2007). Stahman (2008:6) noted that vegetation present in the vicinity of their project area included huisache (*Acacia smallii*), blackbrush (*A. rigidula*), goatweed (*Hypericum perforatum*), bushy sea-ox-eye (*Borrichia frutescens*), dewberry (*Rubus* sp.), morning glory (*Ipomoea* sp.), and several varieties of coastal grasses.

**Table 2.1. Characteristics of Mapped Soil Units within the Project Area.**

Soil Unit Code	Soil Unit Name	Landform	Slopes	Elevations	Drainage Class	Parent Material	Depth to Water Table	Source
18	Galveston fine sand, 0 to 3 percent slopes, occasionally flooded	foredunes, dune fields	0 to 3 percent	0 to 30 ft	moderately well-drained	sandy eolian deposits derived from igneous, metamorphic, and sedimentary rock	36 to 72 in	USDA 2021
21	Ijam clay, rarely flooded	flats	0 to 1 percent	0 to 10 ft	poorly drained	clayey dredge spoils derived from igneous, metamorphic, and sedimentary rock	0 to 36 in	USDA 2021

**Table 2.2. Typical Soil Profiles of Mapped Soil Units within the Project Area.**

Soil Unit Code	Soil Unit Name	Typical Profile	Source
18	Galveston fine sand, 0 to 3 percent slopes, occasionally flooded	A - 0 to 15 cm (0 to 6 in), light gray (10YR 7/2) fine sand; C1— 15 to 76 cm (6 to 30 in); light gray (10YR 7/2) fine sand; and C2— 76 to 203 cm (30 to 80 in); light gray (10YR 7/2) fine sand	Crenwelge et al. 1981; USDA 2021
21	Ijam clay, rarely flooded	A1 - 0 to 23 cm (0 to 9 in), dark grayish brown (10YR 4/2) clay, with grayish brown (10YR 5/2) and yellowish brown (10YR 5/6) mottles; Cg - 23 to 152 cm (9 to 60 in), light brownish gray (2.5Y 6/2) clay, with light gray (2.5Y 7/2) and yellowish brown (10YR 5/6) and gray (10YR 6/1) mottles	Crenwelge et al. 1981; USDA 2021

Blair (1950) indicates that there are at least 49 mammal species common within the Texan Biotic Province, while the United States Fish and Wildlife Service (USFWS) indicates that in the Texas mid-coastal region where the project area is located, there are 52 common mammal species present (USFWS 2021a). Although terrestrial habitat is limited in the vicinity of the project area, common terrestrial mammals of potential occurrence include Virginia opossum (*Didelphis virginiana*), swamp rabbit (*Sylvilagus aquaticus*), black-tailed jackrabbit (*Lepus californicus*), marsh rice rat (*Oryzomys palustris*), fulvous harvest mouse (*Reithrodontomys fulvescens*), hispid cotton rat (*Sigmodon hispidus*), nutria (*Myocastor coypus*), coyote (*Canis latrans*), northern raccoon (*Procyon lotor*), and striped skunk (*Mephitis mephitis*) (Schmidly 2004).

Blair (1950) lists at least 18 anurans (frogs and toads), 5 urodeles (newts and salamanders), 16 species of lizards, and 39 species of snakes as living in, or having lived in the Texan Biotic Province. The USFWS (2019b) records the presence of 19 anurans, 4 urodeles, 19 turtles (both terrestrial and sea) or tortoises, 11 lizards, 1 alligator, and 36 snakes. Terrestrial amphibian and reptile species present in the province include Blanchard's cricket frog (*Acris crepitans blanchardi*), Gulf Coast toad (*Bufo nebulifer*), green treefrog (*Hyla cinerea*), squirrel treefrog (*Hyla squirella*), American bullfrog (*Rana catesbeiana*), green anole (*Anolis carolinensis*), eastern six-lined racerunner (*Aspidoscelis sexlineata sexlineata*), Mediterranean house gecko (*Hemidactylus turcicus*), western cottonmouth (*Agkistrodon piscivorus leucostoma*), western diamond-backed rattlesnake (*Crotalus atrox*), several species of watersnake (*Nerodia spp.*), Gulf saltmarsh snake (*Nerodia clarkii clarkii*), and Gulf Coast ribbonsnake (*Thamnophis proximus orarius*) (Dixon 2000). Aquatic reptile species of the Texan Biotic Province include American alligator (*Alligator mississippiensis*) and Texas diamond-backed terrapin (*Malaclemys terrapin littoralis*) (Dixon 2000).

Brazoria County supports a diverse and plentiful assortment of birds as well. Tidal flats,

bay margins, and beaches provide excellent habitat for numerous species of herons and egrets, shorebirds, wading birds, gulls, and terns. Common species include great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*), roseate spoonbill (*Platalea ajaja*), clapper rail (*Rallus longirostris*), common moorhen (*Gallinula chloropus*), killdeer (*Charadrius vociferus*), black-necked stilt (*Himantopus mexicanus*), yellowlegs (*Tringa spp.*), willet (*Catoptrophorus semipalmatus*), long-billed curlew (*Numenius americanus*), sanderling (*Calidris alba*), least sandpiper (*Calidris minutilla*), dunlin (*Calidris alpina*), dowitchers (*Limnodromus spp.*), Wilson's snipe (*Gallinago delicata*), laughing gull (*Larus atricilla*), ring-billed gull (*Larus delawarensis*), herring gull (*Larus argentatus*), Forster's tern (*Sterna forsteri*), and least tern (*Sterna antillarum*) (Richardson et al. 1998; USFWS 2021c). The mainland and barrier islands of the Texas Gulf Coast provide critical stopover habitat for numerous species of neotropical songbirds during migration (USFWS 2021c)

Lastly, fish life is plentiful off of the coast and in the rivers of Brazoria County. The USFWS (2021d) lists 127 species of fish. All of these species will not be presented here, but include multiple species of gar, puffer, bowfin, herring, shad, Gulf Menhaden, anchovy, Goldeye, pickerel, stoneroller, carp, goldfish, shiner, minnow, chub, carpsucker, sucker, chubsucker, buffalo, redhorse, mullet, Lady fish, pipefish, bullhead, catfish, toadfish, midshipman, perch, silverside, needlefish, mosquitofish, molly, topminnow, killifish, bass, jack, flier, sunfish, warmouth, bluegill, crappie, darter, mojarra, pigfish, drum, kingfish, seatrout, spot, croaker, pinfish, flounder, whiff, hogchoker, sole, tonguefish, stingray, and goby. Various types of shark, dolphin, and other marine animals are also present in the waters off of the coast and in the bays and harbors. This region has three commercially important species of shrimp (*Penaeus aztecus*, *P. duorarum*, and *P. setiferus*) as well as important oyster



(*Crassostrea virginica*) and blue crab (*Callinectes sapidus*) fisheries (Griffith et al. 2007).

## Modern Climate

The modern climate of Brazoria County is typically dominated by offshore weather patterns, with periods of modified continental influence during the colder months when cold fronts from the northwest occasionally reach the coast areas. Because of its coastal location and relatively low latitude, cold fronts that reach the area are seldom severe. Climatic conditions for Brazoria County have been recorded since 1946 at three weather stations located in Alvin, Angleton, and Freeport, Texas. Monthly normal temperatures and precipitation, as recorded at these weather stations for the period of 1971 to 2000, ranged from an average of 12.7 degrees C (55 degrees F) in December and January, to above 26.6 degrees C (80 degrees F) in the summer months. Average minimum temperatures fall as low as 6.1 degrees C (43 degrees F), while maximum temperatures rise as high as 33.3 degrees C (92 degrees F) (Stahman 2008). The lowest temperature on record as reported by Crenwelge et al. (1981) is -10 degrees C (14 degrees F), recorded at Angleton on January 12, 1962, while the highest temperature was 39.4 degrees C (103 degrees F), recorded on June 27, 1967.

Monthly rainfall for this area is evenly distributed throughout the year. Average annual precipitation is about 132, 145, and 130 cm (52, 57, and 51 in) for Alvin, Angleton, and Freeport, respectively. Monthly precipitation averages range from about 7.16 to 19.81 cm (2.82 to 7.80 in), with most (about 60 percent) of the rainfall occurring in the period between April and September. Snowfall is rare. In 95 percent of the winters, there is no measurable snowfall. In 5 percent, the snowfall, usually of shore duration, is no more than 10.1 cm (4 in). The heaviest 1-day snowfall on record was more than 5 cm (2 in) (Crenwelge et al. 1981, Srahman 2008).

The average humidity in midafternoon is about 60 percent. Humidity is higher at night,

and the average at dawn is about 90 percent. The sun shines 60 percent of the time possible in the summer and in winter. The prevailing winds are from the south and southeast, typically. Average wind speed, 10 miles per hour, is highest in March (Crenwelge 1981).

## Description of the Project Area

The current survey area consists of a 0.79 ha (1.95 acres) portion of the Old Velasco Site (41BO125), Village of Surfside Beach, Brazoria County, Texas, as discussed above. The project area encompasses the accessible portion of platted Surfside Block 568, which is owned by the CTC, as well as adjacent rights-of-way areas, which are controlled either by the Village of Surfside Beach or by the Brazos River Harbor Navigation District. The project area overlaps the townsite of Old Velasco (41BO125) and is in the vicinity of the suspected location of the 1832 Mexican fort, Fort Velasco and possibly subsequent fortifications dating to the Civil War.

The survey grid is contained entirely within clear, mowed fields covered in largely uniform, dense grasses. The northeastern edge of the survey area is formed by the northeast side of Parkview Road, which is bordered by a narrow strip of grasses adjacent to a large hedgerow. Because the hedgerow on the northeastern edge of the project area sits away from the edge of the road, it was not an obstructive factor (Figure 2.1). The southwestern edge of the project area was also vegetated, with several medium-sized trees and a mix of small trees and dense hedges in the southern portion and transitioning to smaller bushes and tall grasses toward the north (Figures 2.2 and 2.3).

The portion of the property covered by the current survey grid is fairly flat overall with a minor slope to the north-northwest. As one can see in Figures 2.1 and 2.2, however, there are only minor topographic fluctuations within the project area, itself, the most substantial of which is related to the presence of a relatively shallow ditch running along the southwestern edge of Parkview Road. Of course, a short distance to the southwest of the project area is



Figure 2.1. Overview of the eastern portion of the survey area, view to the northwest from the survey grid origin at the eastern corner of the project area.



Figure 2.2. Overview of the southern portion of the survey area, view to the southwest from the survey grid origin at the western corner of the project area.



**Figure 2.3. Overview of the western portion of the survey area, view southeast from the northwestern portion of the project area, showing the vegetation along the southwestern boundary of the property.**

a drop off along the jetty line to the harbor. A marked change in elevation is also present immediately to the southeast of the project area as the landform rises to a hill upon where large metal tower, a parking lot, pavilions, and a splash pad are located.

At the time of the geophysical fieldwork, there were numerous observable modern disturbances to the project area. Parkview Road, itself, is one modern disturbance, which can be seen in Figure 2.1. As shown in Figure 2.2, a graveled drive and a dirt walking trail run along the southeastern boundary of the survey area, with the trail exiting the survey area through the trees in the southern corner of the project area. A stone-encircled planting bed lay immediately southeast of the area as well, immediately adjacent to the walking trail, but outside of the survey grid. A dirt walking trail lay at the northwestern portion of the survey area as well. This trail led from the intersection of Monument Avenue and Parkview Road

curving around a concrete barrier and extending toward the jetty line where it joins another walking trail along the jetty on the other side of the vegetation, forming the southwestern boundary of the survey grid. This northwestern portion of the project area has a number of large obstacles, including the aforementioned concrete barricade, one high wood timber planting bed, one large stone-enclosed planting bed, as well as a thatched roof palapa with a heavy wooden swing constructed in the western corner of the project area (see Figure 2.4). Although the survey did not extend this far north, only a short distance north of the project area was the circular wood-post reconstruction of the 1832 Fort Velasco, which was commissioned by the Village of Surfside Beach (Figure 2.5). A dirt walking trail extended around the reconstructed fort and connected to the trail previously discussed that runs through the northern portion of the project area.

Other minor modern disturbances, like signs and at least two locations where there were wood slats marking the locations of rebar in the ground were present, but there were also a few indications of possible older archaeological features. In the southwestern portion of the project area was a very small mounded stump of a bush. Scattered around this stump were a variety of historic artifacts, including metal, glass, and ceramics (Figure 2.6). These materials may have been related to a trash pit at the location. Unfortunately, a lot of modern debris was present in this location as well. A square wooden post lay a short distance

to the north of the artifact scatter and appears to be of some age. It is possible this wood post may have been part of a fence marking property boundaries at some point. Lastly, a number of pieces of historic brick were observed just below the sod in the northwestern portion of the survey area. Chris Kneupper (CTC) indicated that somewhere in the central portion of the survey area was the location of a cistern, brick chimney base, and a brick structure foundation, but evidence of these features was not observed on the ground surface at the time of the geophysical survey.



**Figure 2.4. Overview of the northern portion of the survey area, view west-southwest from the northern corner of the project area in the intersection of Parkview Road and Monument Avenue.**



Figure 2.5. View of the Old Fort Velasco sign affixed to the front of the palisade wall of the reconstructed fort north of the current project area, looking northwest.



Figure 2.6. View of the surface scatter of historic artifacts and modern debris centered on a small mounded stump of a bush, looking northwest.

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## Chapter 3. Historical and Archaeological Background

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This section provides a cultural and a brief historical overview of the project area and also provides a brief overview of the various archaeological investigations that have taken place in the vicinity over the years. The information is drawn from a number of local and regional studies, historic maps, and archaeological reports of findings. The section is broken up into two main parts starting with the historical review, followed by the review of archaeological research at Site 41BO125.

### History of the Velasco Area

As the 1830s began in southeast Texas, significant but mostly rural settlement had been underway for almost a decade in this previously undeveloped area, largely through the colony established by Stephen Fuller Austin known as Austin's Colony, with his original settlers known as the Old Three Hundred. The only towns of note were San Felipe de Austin, Brazoria, Matagorda and Harrisburg, each only a few years old.

Although some unimproved roads existed, much of the transportation and commerce occurred via waterways by using shallow-draft schooners in the Gulf of Mexico, bays and lower portions of major rivers; as well as sloops, packet boats and small steamers in the inland rivers and canals (Francaviglia 1998, Meed 2006:6). To bolster commerce, the colonists had been granted a reprieve from customs duties for a period of seven years by a decree from the Mexican Congress on 29 September 1823 (Supremo Gobierno 1825). Consequently, no attempt was made to establish customs posts for Austin's Colony until near the expiration date of the reprieve in 1830 (Morton 1945:508). As a result, free trade practices became the norm for these colonists, unlike other portions of Mexico.

The area at the mouth of the Brazos River was a key port of entry for Austin's Colony, but the adjacent low "salt flats" were mostly barren of fresh water, timber and game, and vulnerable to tides and storms; only a few settlers chose to

eke out an existence there. One of the few was Asa Mitchell, who had settled there in the early 1820s. Mitchell obtained a land grant in 1824 in the unnamed area on the left bank (east side) of the Brazos River, and established a salt works around 1826. In 1830, it was estimated that two vessels per month arrived at the Brazos River from New Orleans over the prior ten months, with a combined capacity of 1200 tons (Barker 1926a:183; Fisher 1830d; Letts 1928:46). However, in the next few years, major developments in the history of Texas would occur here, primarily due to its strategic location for transportation, military, and commercial purposes.

Alarmed by Austin's success at colonization, the Mexican national government chose to establish a customs post at the location, soon joined by a small military fort initially named Fortaleza de Velasco, later lending its name to the surrounding area. Soon after its construction in 1832, this fort was the site of a skirmish called the Battle of Velasco, sometimes memorialized as the "first battle of the Texas Revolution" or its version of the "Boston Tea Party" or "Lexington and Concord," after which the fort was largely abandoned. Although many accounts have been published about the Battle of Velasco, very few details (size or dimensions) were mentioned about the 1832 fort's actual construction. Due to the strategic nature of the mouth of the Brazos River, later forts were also built in this same general area during the Texas Revolution and the Civil War.

The history of the several "Forts Velasco" can be very confusing. As such, this chapter seeks to elaborate on all of the chronological and archaeological facts to describe the several military emplacements in the immediate vicinity of the project area and Site 41BO125. Here follows a chronological and archaeological history of the area, with emphasis being placed on the forts and ports of old Velasco. More of the commercial and social history can be found in other reports prepared

by previous researchers (Earls et al. 1996; Fox et al. 1981; Myers and Smith 1996).

## Initial Settlement of the Brazos

The first (of four) land contracts to Stephen F. Austin extended from the Lavaca River on the southwest to the San Jacinto River on the northeast, bounded by the coast and “El Camino Real” or “San Antonio Road” (between San Antonio de Béxar and Nacogdoches). Although the background and history of Austin’s Colony is beyond the scope of this document, Stephen F. Austin wrote a concise summary of his efforts up to 1829 (Austin 1829a), and the eminent Austin-era historian and professor, Eugene Campbell Barker, wrote an excellent synopsis (Barker 1918). The very first effort to actually bring colonists there involved the voyage of the schooner *Lively* to the Brazos River. It sailed from New Orleans on or about 23 November 1821 with about 20 colonists and important supplies steering for the mouth of the Colorado River to meet Stephen F. Austin. After a difficult, month-long trip, however, the ship dropped its passengers at the mouth of the Brazos River (Lewis 1899). Upon returning to Texas on a second voyage with more colonists and supplies in 1822, the *Lively* was lost on Galveston Island, although the passengers were rescued and continued on to the mouth of the Colorado (Bugbee 1899).

Ships and colonists continued to arrive, and by the summer of 1824, most of the Old Three Hundred had arrived, and taken title to much of the prime property along the lower Brazos and Colorado Rivers. Stephen F. Austin foresaw the need for an authorized port, and wrote to the military commander of the Eastern Interior Provinces (which included Texas) on 27 May 1823, asking for authorization on several matters, including a port of entry and authority to issue clearances for vessels (Austin 1823), apparently without success.

After the Mexican federal legislature passed a national colonization law on 18 August 1824 that forbade settlement in a 10-league band along the coast, Stephen F. Austin felt it urgent to request formal permission to

establish El puerto de Galvezton in a petition also asking to extend his empresario contract to an additional 300 (then 500) families (Austin 1824; White 1839:582). Although the land contract was successfully authorized by the new state of Coahuila y Tejas on 27 April and 20 May 1825 (White 1839:610-613), the port was separately authorized in a modest decree by the federal legislature on 17 October 1825 (Arévalo 1829:6), which was published as a circular (Pedraza 1825). This decree anticipated creation of a customs house (*aduana marítima*), but did not specify the location of the port. Thus, “El puerto de Galvezton” became the authorized port on the upper Texas coast.

After inspection of Galveston Bay and Island, probably in late January of 1826 (Austin 1826; Martin 1982:384), Austin realized the island was uninhabited, isolated from the mainland, without timber and subject to inundation, so he favored a port at the mouth of the Brazos River (Austin 1829b; Barker 1926:180). No port or town was established on Galveston Island in this period, and the Brazos River continued to be used instead, perhaps under the authority of Puerto de Galvezton. Mary Wightman Helm, widow of Elias R. Wightman who was the surveyor for Stephen F. Austin and founder of Matagorda, wrote later of her first arrival at Matagorda in 1829 that, “...All immigrants heretofore having landed at the mouth of the Brazos.” (Helm 1884:45). Although not completely true, it probably indicates that the majority of settlers were indeed entering this area of Texas at the Brazos River.

A Mexican general officer, Manuel de Mier y Terán visited Texas as leader of a boundary-commission expedition and inspection tour from late 1827 to early 1829, visiting Laredo, San Antonio de Béxar, Gonzales, San Felipe de Austin, Nacogdoches and the east Texas border area (boundary line set by the Adams-Onís Treaty of 1819), before returning to Matamoros (Morton 1945; Terán 2000). Terán was considered “...one of the most admirable men of the Mexican revolutionary era...a brilliant tactician, a broadly interested scholar, a



sympathetic leader, and an outstanding patriot” (Berlandier 1980:xii).

After his visit to Texas, and alarmed at what he had seen, Terán became one of the advocates for a revised immigration policy and stronger military presence, later writing an influential report about his visit that was issued in early 1830. After playing a pivotal role in repelling a Spanish expeditionary force at Tampico in August 1829, Terán was promoted to “General of Division” with the post of Commander General of the Eastern Internal Provinces (which included Texas), eventually establishing his headquarters at Matamoros in March 1830. In this role, Terán initially had plans to gather a large military force at Matamoros to be used in Texas as necessary (Morton 1944:194-196). Stephen F. Austin, hearing of these plans, wrote editorials in the *Texas Gazette* in an attempt to assure his colonists this was in their best interests (Austin 1830a). But, these plans were altered somewhat by a new law soon enacted by the Mexican federal legislature.

Based on Terán’s report, Lucas Alamán y Escalada (Mexican Minister of Foreign Relations) and others created the infamous “Law of April 6, 1830”, in some cases exceeding Terán’s advice. One provision called for the military occupation of Texas using, in part, convicts as soldiers. Another important aspect of the law was that authority for colonization in frontier states was vested in federal commissioners, removing such authority from the individual states. This was in direct opposition to Stephen F. Austin’s stated opinions (Austin 1830b). For Texas, the post of colonization commissioner was added to Terán’s duties in late April of 1830 (Morton 1944a:199). Another provision of the law was Article 12, which stated, “Coastwise trade shall be free to all foreigners for the term of four years, with the object of turning colonial trade to the ports of Matamoros, Tampico and Veracruz.” (Howren 1913:416). This law, justified from the Mexican government’s perspective, had a negative and galvanizing effect on the loyalty of the Anglo-American colonists in Mexican Texas (Texians), and its effect is often equated with the “Stamp Act” in

catalyzing the American Revolution. But, this law’s immediate effect was to give birth to the first efforts at a military site at the mouth of the Brazos River, to enforce its customs and immigration provisions.

## **Mexican Republic (1830–1835), and Fort Velasco No. 1**

The first public development at the mouth of the Brazos River involved creation of a customs house; however, it was a very strange beginning due to the appearance of one George “Jorge” Fisher. The year 1830 would involve a very unusual interlude in Austin’s Colony with this man. He arrived in San Felipe de Austin in early May of 1830, being announced in a small notice in the 8 May 1830 issue of the hometown weekly *Texas Gazette* newspaper as, “Col. Fisher, *Administrador*, for the Port of Galveston, arrived in our town a few days since, from New Orleans – and will enter on the duties of his office in a short time” (Barker 1926:327; Cotten 1830 [8 May 1830]). Two weeks later, a letter by Fisher (dated 18 May 1830, in English and Spanish) was published in the same newspaper, declaring that he had assumed his duties that day as “Collector of the Maritime Customs House that is to be established for the Port of Galvezton”. Also published was a “Battalion Order” from Stephen F. Austin to the militia to treat Fisher as such (Cotten 1830 [22 May 1830]), similar in nature to two letters sent directly to Stephen F. Austin and a circular from Thomas Barnett (then the Alcalde of the San Felipe ayuntamiento), also on 18 May 1830 (Fisher 1830a). Fisher stated that he would establish a provisional customs house at the mouth of the Brazos River on the left bank (east side), and post a deputy collector at Punto de Culebra, the northeast end of “Isla de San Luis” (Galveston Island) (Barker 1926:327; Cotten 1830 [22 May 1830]). So, in a significant way, the Brazos River continued to represent the “Port of Galvezton”, and Fisher, himself, defined it to include “... an extensive coast, from the Sabine River to Matagorda Bay ...” (Fisher 1830c [5 June 1830]).

Hearing of Fisher's activities in Texas, Terán wrote to him from Matamoros on 24 May 1830 that establishment of a customs house was premature, agreed to by Stephen F. Austin, so this plan was postponed (Morton 1945:509, Terán 1830). Stephen F. Austin wrote: "The custom house at Galveston is suspended by order of Govt. and the reason given is that the exemptions from duties in favor of the colonists of Texas has rendered it unnecessary to establish any custom houses here for the present ..." (Austin 1830c), although Terán was also probably concerned that Fisher had been dispatched by then-deposed civil authorities (and his political opponents) in Mexico City, into his jurisdiction. Terán was referring to Article 12 of the Law of April 6, 1830, which opened coastal trade for a period of four years (Howren 1913:416).

Even in this short interval, Fisher had already initiated many plans, apparently of his own invention, including several newspaper announcements and many actions and letters. He was especially keen to enforce the outright prohibition on tobacco, passed by the legislature of Coahuila and Texas on 2 November 1827 as Decree No. 28 (White 1839:501). One of Fisher's notices involved instructions to ship owners and captains, dated 27 May 1830 at "Bar of Brazos", indicating that Fisher was there by that time. Fisher also advertised for "SEALED PROPOSALS" to build a brick customs house at the mouth of the Brazos River, and a "Light-House at Brazos Bar and one on Galveston Island" (Cotten 1830 [5 June 1830]; Ward 1962:214-215). It was published in five consecutive issues of the Texas Gazette (Cotton 1830). A little later (dated 1 June 1830 at Bar of Brazos), he added a notice about pilot instructions over the Brazos Bar, which was published three times. The "pilot" mentioned may have been Asa Mitchell.

Fisher led the seizure of the schooner *Cañon* at the Brazos Bar in the late evening of 1 June 1830 (Fisher 1830b), which was found to be importing a cargo of contraband tobacco. Notice of his suspension only reached Fisher on 1 July 1830 while still guarding the schooner (Letts 1928:36; Williams 1830). No permanent

customs facilities are known to have been constructed at this time.

One of the first more-successful steps in implementation of the new law was the creation of a fort near Perry's Point (an elevated prominence atop a bluff at the northeast corner of Galveston Bay, near the mouth of the Trinity River), which came to be known as Fort Anahuac. Colonel Juan Davis Bradburn, three lieutenants (Ignacio Domínguez, Juan María Pacho and José Rincón), and about 40 soldiers were the first to arrive for this purpose on the sloop *Alabama Packet* from Matamoros to Galveston Bay on 26 October 1830, relying on Bradburn's previous knowledge of the area to select a good location. (Bradburn 1830; Henson 1982). Plans for the establishment at the Brazos followed quickly, initially in the form of a customs post, using Anahuac as a staging point. It was apparently manned or built in stages over a period from early 1831 to June 1832 by an ever-increasing garrison of Mexican soldiers (ultimately under the command of Lt. Colonel Domingo de Ugartechea (beginning in April 1832).

Bradburn, acting in his role as commander of Fort Anahuac, reported that at some point in early 1831 he:

*... sent Captain James Lindsay with a sergeant and 10 soldiers (to the Brazos)...Señor Lindsay remained as Captain of the Port and Don Juan Austin as administrator.... In September, Lieutenant (Ignacio) Domínguez went to take Lindsay's place until Señor George Fisher should arrive ... [Bradburn 1832c:132-133]*

Presumably, Lindsay took over the customs duties from Asa Mitchell and Samuel May Williams. Although Bradburn does not specify a date, this posting was probably before mid-March 1831, when a visitor "from the Northern States" aboard the sloop *Majesty* (out of New Orleans) landed at the beach near the Brazos by rowboat and, after overturning in the surf, reported:

*... we soon reached the house of Captain Cotton (Godwin Brown M. Cotten), where a flag was flying. It stands on the bank of the Brazos river, and is an inn, for the*

*accommodation of passengers landing here, though a mere log house. The owner was formerly the editor of a Mexican gazette. ... There were ten or twelve puny, dark-complexioned men, at Captain Cotton's in uniforms, who I learnt were Mexican soldiers, stationed there to enforce the revenue laws." [Fiske 1836:3-5]. Cotten was formerly editor of the Texas Gazette, from Sep-1829 to Jan-1831, published at San Felipe de Austin. [Bacarisse 1952].*

A record from this period has been preserved in the Samuel May Williams Collection which shows the ships that entered the Brazos River between 1 March and 20 August 1831 (Bradburn 1831), perhaps indicating that the post began operations at this point (Figure 3.1). A total of 9 ships (7 schooners, 2 sloops) were listed during this period of almost 6 months, carrying a total of 399 tons of cargo, earning 99 pesos and 6 reales in duties.

Mary Austin Holley described the post on 22 October 1831, when she entered the mouth of the Brazos aboard the ship *Spica*:

*... Here there is a Mexican garrison, and the tri-colored flag is hoisted, the first signal of our approach to a foreign land. .... On our right, in front of their palmetto-roofed, and windowless barracks, the lazy sentinels were 'walking their lonely rounds,' without excessive martial parade; nor did the unturretted quarters of the commanding officer, show forth much of the blazonry of a Spanish Don." After a while, she further writes "We came to, before the door of the pilot's house, which fronts the stream. The officer of the garrison boarded us, to examine our passports; a ceremony, the Mexicans are very tenacious of, from their known jealousy of foreigners. He was a young man, dark and rather handsome, in a neat Mexican uniform, probably his dress suit; for occasions of so much company, are not of every day occurrence, on this station. [Holley 1833:24-25, 29]*

The officer mentioned in this passage may have been Lt. Ignacio Domínguez.

Terán reinstated George Fisher on 27 September 1831 as the civilian customs

collector for the Galveston area, and also named Lt. Juan Pacho (Bradburn's paymaster at Anahuac) to become his assistant. Fisher then named Francisco Duclor to be his assistant and customs collector for the Brazos (Henson 1982:73). Terán wrote to Stephen F. Austin on 3 October 1831, notifying him of this development, and asked Austin to forget past difficulties with Fisher (Fisher 1831, Terán 1831a). Similar sentiments were repeated in a second letter (Terán 1831b). The October letters specifically mention the "Aduana Maritima de Galvezton" was to be partnered with the "Receptoría Subalterna á ella de Brazoria" (Subordinate Reception to it at Brazoria), clearly indicating their intention to establish the main customs house on Galveston Bay at Anahuac, and there would be a secondary receiving office for the Brazos (Terán 1831a).

Domingo de Ugartechea reported that he had successfully disembarked at Anahuac on or about 6 March 1832 "... with 86 men and two pieces of 18 at the disposition of .... Bradburn" (Ugartechea 1832a). Mirabeau Lamar reports that "[Ugartechea's vessel, the schooner *Topaz*] reached Anahuac in safety, landed the soldiers; and then filling her with pickets to build a fort at Velasco, she sailed with Col. Ugartechea aboard to the mouth of the Brazos, where she was wrecked and lost" (Bradburn 1832c:138-139; Gulick et al. 1968 V:352-354). The 1832 letter by Ugartechea (1832a) also states that he was:

*... getting myself ready for marching, within eight days, with one cannon of 6 (un cañón á 6.) and 100 infantrymen, carrying at the same time aboard, all of the utensils for fortifying myself at the mouth of the Brazos River, carrying with me the receiver named by the government for that point, Don Francisco Duclor ... [Ugartechea 1832a]*

Administracion de Galveston.

Relacion de los Buques que han entrado al rio de Brazoria,  
con expresion de lo que han dejado de venderse y correspondiente al Estado de Coahuila y Texas. Pres. N. E.

En 1. <sup>o</sup> de Marzo causó la Esleta Mayor 35 - Vendidos _____	8. 6. "
En 5. de Marzo causó la Esleta Nelson 21 Vendidos _____	10. 2. "
En 13. de Abril causó la Balandra General Núm. 25. Vendidos _____	11. 2. "
En 7. de Abril, causó la Esleta Spina 60 Vendidos _____	15. " "
En 22 de Abril causó la Esleta Nelson 21 Vendidos _____	10. 2. "
En 23. de Mayo causó la Esleta Nelson 21 Vendidos _____	10. 2. "
En 1. <sup>o</sup> de Junio causó la Balandra Splendi 25 Vendidos _____	8. 6. "
En 3. de Julio causó la Esleta Nelson 21. Vendidos _____	10. 2. "
En 8. Agosto causó la Esleta Spina 60. Vendidos _____	15. " "
<u>Suma</u>	<u>99. 6. "</u>

Atestado Agosto 20 de 1831.

Figure 3.1. List by Bradburn of ships entering the "rio de Brazoria" between 1 March and 20 August 1831 (Courtesy of Rosenberg Library, Galveston, Texas).

Ugartechea, however, was still at Anahuac on 26 March 1832, when he wrote another letter from there to José de las Piedras, commander at Nacogdoches, stating slightly different facts (arrival on the 5th, carrying “dos piezas de á 16” for Anahuac, and twice mentions his own “cañón de á 8/ocho”). Further, he writes that he had no gunpowder cartridges for his “cannon of eight” that he had brought, but he will make 100 cartridges from Anahuac’s supply of gunpowder, and asks Piedras to replace it (Ugartechea 26 March 1832]. Thus, it seems likely this cannon was purposely brought by Ugartechea from Mexico on the Topaz, and that some staging and preparations were obviously being done first at Anahuac. The plans are further detailed in a letter from Juan D. Bradburn on 4 April 1832, which mentions that Ugartechea was planning to leave with 100 infantrymen, 17 artillerymen and a cannon to establish a fort at the Brazos to be named “Fortaleza de Velasco” (Fortress of Velasco) (Bradburn 1832a; Rowe 1903:277).

This is the first known mention of the site as Velasco, but the namesake of the fort is unclear. It has been suggested that the site was possibly named after José María Cervantes y Velasco, a Mexican army officer and signer of the “Act of Independence of the Empire of Mexico”, and thus was probably known to Terán, Bradburn and Ugartechea. Terán’s wife also came from a family whose paternal surname was Velasco, so that may also have been a possible influence. It has also been purported that it was Terán who chose the name, possibly naming the site after Luis de Velasco, an early viceroy of New Spain (Allhands 1931; Holley 1965:73).

The actual date of Ugartechea’s departure from Anahuac was delayed by bad weather, but finally occurred on 12 April 1832 according to Bradburn (1832b), but 2 April 1832 according to Filisola (1985[1848]:81). The date is again contradicted by Ugartechea, himself, who mentioned in a letter (sent from the mouth of the Brazos River) on 15 May 1832 that he had disembarked on 19 April 1832 and began work on the fort, that the cannon was mounted nine days after arrival, and that the fort was mostly complete (by the time of the writing in May)

(Ugartechea 1832c). Apparently, the men, artillery, and other supplies were successfully removed from the grounded Topaz, and the fort was built quickly with pickets scavenged from the wreck and perhaps also available drift logs, in a short period between 19 April and 15 May 1832. It is also possible, given that the Topaz was available, that it made more than one trip ferrying men and supplies to the site, before its final demise. The available labor force could have been up to about 150 men, or probably less, as there was trouble with many desertions (Ugartechea 1832d, 1832h) and only 100 men were reported present by early June (Ugartechea 1832d).

Disagreements over customs and other matters with the officious Fisher and the autocratic Bradburn had been developing at Anahuac in 1832, known to history as the “Anahuac Disturbances”, which came to a head when Bradburn imprisoned five civilians, one of which was the hot-headed William Barret Travis. Ugartechea became aware of the Brazoria colonists’ involvement in the Anahuac dispute while visiting Brazoria and, perhaps anticipating trouble on the Brazos too, had written from there seeking reinforcements from other Mexican garrisons in Texas (Ugartechea 1832d, 1832e, and 1832f) and also reported this situation to Bradburn and the regional commander (Col. Antonio Elosúa, based at San Antonio de Béxar) (Ugartechea 1832e). The commander at the post known as “Barranco Colorado” on the lower Lavaca River (Lt. Aniceto Arteaga), though, declined to endanger his troops in the “Caney Swamp” (Linn 1986:21-22), who had suffered for months without proper provisions (see many letters in Béxar Archives). Other letters in the Béxar Archives (Ugartechea 1832a, 1832b, 1832c, 1832d, 1832e, 1832f, 1832g1, 1832g2, and 1832h) suggest that Ugartechea had also written elsewhere or the other posts were aware of the situation, although few if any were in a position to assist, since the few available troops had already been dispatched to Anahuac.

Ugartechea further indicated that he had met with John Austin (Alcalde of Brazoria) and tactfully proffered for Austin to travel to Anahuac to act as civilian judge to defuse the

issue, but also said that he could only spare up to 60 of his 100 troops (and apparently, himself) to reinforce Bradburn. A response from Elosúa on 18 June 1832 repeated back some parts of Ugartechea's letter, and also complimented his diplomatic approach but also ordered him to assist Bradburn, "... in everything that may be in your means and authorities in shielding him from any insult that with such scandal is to be feared ..." (Elosúa 1832). No settlement was reached at Anahuac, because of Bradburn's renegeing on a tentative agreement to release the prisoners.

John Austin returned to Brazoria, and prepared by gathering militia to forcibly reclaim the prisoners from Fort Anahuac. An incident then occurred involving the forced passage of the schooner Brazoria (under William J. Russell) to take two cannon and militia from Brazoria to Anahuac for this dispute, made problematic by the existence of a heavily armed Fort Velasco. Curiously, the two cannons put aboard the Brazoria had arrived in August 1830 from the Rio Grande on the steamboat Ariel but had been left at the town of Brazoria so the ship (after taking on wood) could pass the Brazos Bar. Bradburn had apparently sought to purchase the cannon, and Stephen F. Austin also suggested they might be delivered to the customs officer at Brazoria (Austin 1832a; Chriesman 1832). Ugartechea's refusal to allow passage of the Brazoria (in compliance with his orders) led to the Battle of Velasco over several days in late June of 1832. Several first-hand accounts of the battle are available in the written record (see Brown 1892; Smith 1836; Peareson 1900; Russell 1872; and Ugartechea 1832g1, 1832g2) along with many retellings available (Bancroft 1889; Boddie 1978; Brazosport 1970; Cotton 1968; Creighton 1975:58-72; Dow 1961; Foote 1841; Freeport 1971; Fry 1832; Henson 1982:107-108; Hill 1937:15-17; House 1960; Jordan 2006:4-5; Linn 1986:17-23; Meed 2001:11-16; Newell 1838; Rowe 1903:289-292; Thrall 1883; Ward 1962:272-308; Willson 1847; and Yoakum 1855) and even an entire historical novel (Hicks and Parkinson 1980). The Newell account (Newell 1838:28) seems to be the origin of the story that Domingo de Ugartechea,

once his artillerymen had been depleted by the Texian rifle fire, had bravely manned the cannon bastion himself to great acclaim even from the opposing forces; however, this seems to have later been embellished to the fact that he actually fired the cannon (House 1960:94) and to Texian applause (Hicks and Parkinson 1980:228-229). The battle was heard down the coast at Matagorda, where Mary Wightman Helm recollected that "... in June, 1832, we distinctly heard the sound of cannons for six or eight hours, we living 25 miles west, at the head of Matagorda Bay" (Helm 1884:49).

Several participants in the battle left accounts, which describe the fort in 1832. Henry Smith wrote:

*It will be recollected that there was a strong fortress at the mouth of the river Brazos garrisoned by about one hundred and fifty men, well-armed and provisioned with one long brass nine mounted on a carriage and one iron four-pounder on a pivot...During the time our vessel (Brazoria) was getting in readiness, we had prepared a kind of breastwork for the land forces which was made of cypress plank ten or twelve feet in length nailed on battons to the widths of about four feet which were to be set up with props... we must suffer severely from the effects of their nine-pounder... they let off their nine-pounder and threw a double headed shot through her (Brazoria's) rigging ...The fort was a complete circle enclosing but a small area so that it was full and completely manned. The nine-pounder was planted on an elevation in the center of perhaps ten feet above the musquetry. As soon as our company opened on the fort, it seemed to ignite instantaneously and flame like a volcano. And from that time until the battle ended, the fort seemed to emit one continued blaze of fire. They had burned all the houses but two, one was used as a custom house, and the other a small office. We...learned one thing, and that was in some measure to escape the shot of the nine-pounder...planted the palisades within thirty paces of the fort so that their nine-pounder could not be depressed enough to bear upon us, but were compelled to stand the four-pounder and the musquetry. [Smith 1835]*

Edwin Waller later reminisced:

*...fort of circular form, having in the center a mound or raised platform of earth, whereon the artillery was placed en barbette, so as to fire over the outer wall, and command a range on every side. This outer wall was surrounded by a fosse or ditch, and perhaps something intended for chevaux de frize or abattis. [Peareson 1901].*

William J. Russell (who commanded aboard the Brazoria) wrote:

*The plan and structure of the fort were well understood, of circular form, of logs and sand, with strong stakes, sharpened, and placed close together, all around the embankment. In the center, stood a bastion, in height considerably above the outer wall, on top of which was mounted a long nine-pounder, worked on a pivot, and around which, on top of the bastion, was a parapet made of wood, about two feet in height...It was well known by that attacking party (Capt. John Austin's party) that there was mounted on the wall of the fort a small piece of artillery facing the point of their approach, but it was believed that the wooden breastwork was of sufficient thickness to protect those behind them. This proved quite a mistake. Very much damage was done by this small gun, the balls often passing through the planks, inflicting death or wounds. The man Robinson, who gave the alarm, was the first man killed...the distance being only one hundred and sixty-nine yards from the schooner to the bastion gun in the fort...The only serious damage done on board the vessel by the post was, that during the night a nine-pound shot passed through her side, striking the mate (who, as per agreement, had retired, as was supposed, to a place of safety) just between his shoulders, passing entirely through him. His death was instantaneous. [Russell 1872]*

John H. Brown (whose father was present at the battle) wrote:

*...The fort at Velasco stood about a hundred and fifty yards both from the river and the Gulf shore which formed a right angle. It consisted of parallel rows of posts six feet apart, filled between with sand,*

*earth and shells, for the outer walls. Inside of the walls was an embankment on which musketeers could stand and shoot over without exposing anything but their heads. In the center was an elevation of the same material, inclosed (sic.) by higher posts, on which the artillery was planted and protected by bulwarks. [Brown 1970(1892)]*

Accounts vary, but the Texian casualties have been given as 2 to 23 killed and 2 to 40 wounded, with Mexican casualties of 7 to 42 killed and 7 to 70 wounded. Edna Rowe evaluated several accounts, but felt a reliable number was 7 killed and 27 wounded for the Texians, and 35 killed and 15 wounded for the Mexicans (Rowe 1903:292). However, it was also reported that two additional Texians died from their wounds later, and a mate was killed aboard the Brazoria. An extensive discussion of the casualties can be found in (Ward 1962) and (Boddie 1978). By the time the battle was over, the prisoner issue at Anahuac had been resolved, by the arrival from Nacogdoches of Bradburn's superior (José de las Piedras) who negotiated with the locals, releasing the prisoners, and then later relieved Bradburn of command on 2 July 1832. Bradburn left Anahuac on the evening of 13 July 1832 by a land route, narrowly escaping pursuit by eight men while losing his horse and swimming the Sabine River, before heading to New Orleans, where he took ship back to Mexico (Morse 1832; Rowe 1903:297).

After the Battle of Velasco, the Mexican and (at least some of the) Texian dead were buried in the vicinity of the fort according to some accounts (Ugartechea 1832g1, 1832g2; and Holley 1965:54). The *Arkansas Advocate* newspaper on 6 February 1833 published some proceedings of a meeting at San Felipe de Austin in late 1832, under the headline "'Monument – (to be erected at the mouth of the Brazos River)", with these words:

*In all civilized countries, and ages, the chivalric deeds of the brave, have been commemorated, not only in history and song, but by lasting monuments erected on the spot where their imperishable glory was achieved. In the infancy of a country, these mementos of the bravery of her sons – should never be neglected. They*

*constitute the records of renown; and when connected with Liberty, they should be hoarded as a rich and sacred treasure. Even the remains of such spirits should be treated with that respect, to which their heroism and courage entitled them – there should be something to point out the spot where their ashes lie, and say “Here rests the Brave.”* [Bertrand 1833].

The article then gives specific details for the monument (Bertrand 1833).

During the mid to late 1990s, a journal by Eduard Harkort (a German national and engineer recruited into the Republic of Texas Army) was found with descendants in Germany, translated and published by Brister (1999). The journal included a scale drawing of Velasco in Spring 1836, showing a circular fort of just less than 100-foot diameter, now believed to be the only extant document to show or even mention the size of the as-built 1832 fort. On this 1836 drawing, the distance to the beach is about 500 feet from the fort’s seaward wall, and about 200 feet to the river from the fort’s riverside wall (Harkort 1836). A close-up of the Velasco portion is shown below in Figure 3.2.

It is unclear when this drawing was made, but Harkort’s journal indicates he arrived in Velasco about 8 February 1836, staying in the Brazoria area until leaving for San Felipe on 21 February 1836. The drawing is found in the journal between the entries of 12 and 15 March 1836, when the text reveals he was at Washington-on-the-Brazos, so perhaps he copied it into his journal then from observations made as he came through Velasco some weeks earlier. Harkort was ordered back to the coast (from Beeson’s Ford) by Sam Houston on 27 March 1836, when the journal stops for six weeks. Sam Houston wrote to Thomas Rusk saying, “I sent Colonel Harkort, as principal engineer of the army, down to the coast, to erect fortifications at the most eligible point of defence.” (Brister 1999:361). The “coast” referred to the coastline between Velasco and Galveston, so it would seem likely that Harkort was directly involved in fort construction at Velasco circa April 1836. His name seems to appear in a document previously cited (Morgan 1836), when the “Twin Sisters”, Robert Potter and others were transported on the schooner Flash from Velasco to New Washington in early April 1836, with the entry reading as “Col. Harkort ... passage from Velasco”.

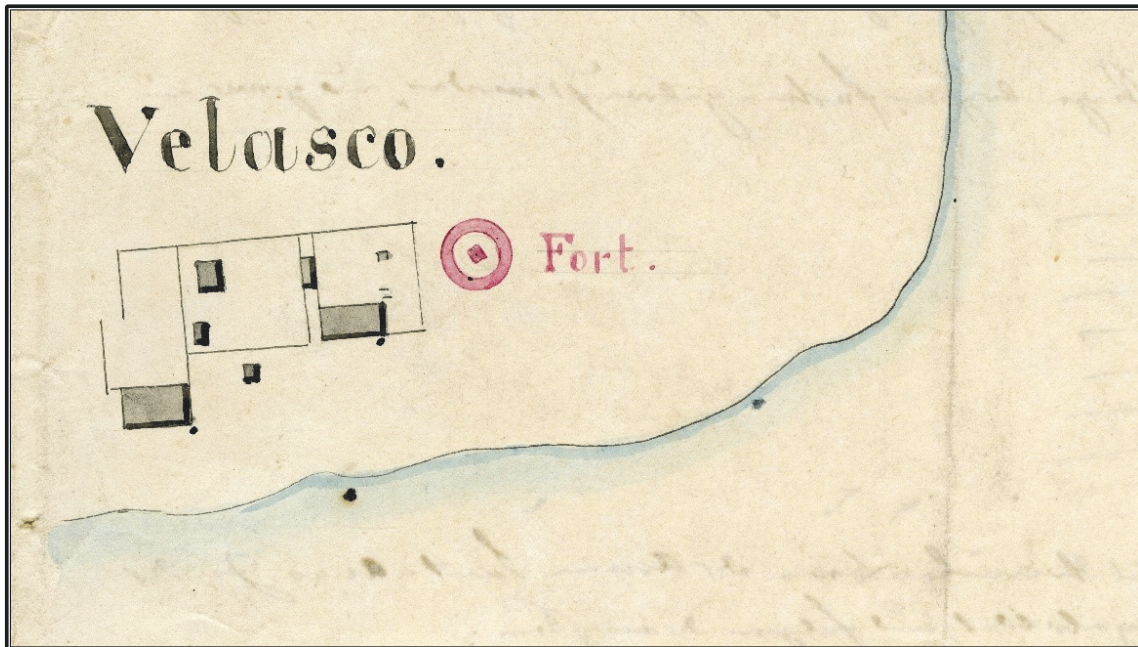


Figure 3.2. Close-up of Velasco from scale drawing (Harkort 1836) (Courtesy of the Stiftung Westfälisches Wirtschaftsarchiv).



In 1838, Mary Austin Holley wrote in her diary:

*We crossed over to Velasco. Went shopping (they have one store), visited the Archer House, a fine hotel. Large 2 story with gallery painted, white, looks well. Had a commanding view. Met with Gen. Green (Thomas Jefferson Green) the master spirit here who attended us in our walk – pointed to the graves of those who fell in the first battle for Independence – looked at the old fort – the work of the Mexicans – Velasco looks like quite a place. [Holley 1965:54]*

The reader will note the mention of the graves of those who died in the battle being present near the location of the fort. It is also clear the awe and reverence that Holley felt when visiting the site.

The Mexican soldiers who survived the battle were paroled back to Matamoros, and the fort was apparently occupied by the victorious Texians for a short period, as William H. Wharton wrote a defiant letter on 4 July 1832 from the fort, in which he mentions having "... kept 80 rounds of powder for the 9 pounder and all the shots and slugs" (Wharton 1832). Although the surrender terms (Cotten 1832; Holley 1833:158-9) indicated that Ugartechea and troops would be carried back to Matamoros by sea, the Brazoria was so damaged in the battle that it was not seaworthy; the owners abandoned her to the underwriters, who eventually billed the Mexican government \$7,215 (Brazoria County 1832). That said, it was, curiously, aboard the schooner that Ugartechea wrote a lengthy "after action report" and explanation to the regional commander, Col. Antonio Elosúa (Ugartechea 1832g1, 1832g2), which mentions many details about the fort and battle.

During these same few days, Terán was involved in a rebellion in Mexico fighting against the forces of Santa Anna, and he suffered defeat, having to move his command to Hacienda de Buena Vista del Cojo and then to Croix (now Casas) further south in Tamaulipas. While traveling back from the legislature in Saltillo, Stephen F. Austin was able to meet briefly with Terán. Having also heard of the trouble at Anahuac but not yet

aware of the Battle of Velasco, Terán issued orders (29 June 1832) to Ugartechea to replace Bradburn at Anahuac, for Juan Cortina to take over the Galveston customs office, and for Francisco Duclor to move the Brazos customs office to Brazoria (Terán 1832). Stephen F. Austin, having first-hand knowledge of Terán's intention to issue the orders, also mentioned the situation in a letter to Ugartechea on the same date (Austin 1832b). This was one of Terán's last official acts, as he committed suicide on 3 July 1832 behind a church in Padilla, Tamaulipas, near his new headquarters, despondent over Mexican politics (since he had sided with the unsuccessful centralist regime that had just fallen to Santa Anna) and his belief that Texas was lost.

The 1832 fort, itself, arms, supplies and also the wounded were enumerated after the attack, listing a brass 8-pound cannon and an "iron swivle" gun (Cotten 1832; and Holley 1833), with a slightly different version listing a brass long 9-pounder on a carriage, and an iron swivel (gun) on a block (Breedlove 1832). The items were returned to Gen. Jose Antonio Mexía who arrived with five ships and 400 men (including Stephen F. Austin) at the mouth of the Brazos on 16 July 1832, in what has been termed "Mexía's Expedition." The Texians received Mexía warmly, and convinced him that they were not rebels against Mexico, but (like Mexía) were supporters of Santa Anna and the Mexican Constitution. Indeed, one part of the effort to convince Mexía was an evening "public dinner and ball" held at Brazoria in honor of Santa Anna (not present) on 22 July 1832. (Cotten 1832; Holley 1973[1833]).

This ball has been revived in recent years as an annual costume ball and fund-raising program for the Brazoria Heritage Foundation, called the "Santa Anna Ball." The name of the ball has not been without controversy, since Santa Anna became such an archenemy of Texans just a few years after 1832. Indeed, the ever-faithful federalist, Mexía, fought against Santa Anna in 1834–1835 in Mexico once the latter assumed dictatorial power, ending in what is known as the unsuccessful "Tampico Expedition," resulting in Mexia retreating by sea to the mouth of the Brazos in December of

1835 and then to New Orleans for a few years. Mexia did eventually return to Mexico to again take up the fight, but suffered further military defeat and was executed by Santa Anna near Puebla in 1839. The town of Mexia (in east Texas) was named in 1871 in honor of the Mexia family, at the site of their 1833 land grant (Estep 2021).

There does not appear to be any direct evidence that the 1832 fort was ever used again, and it was probably robbed gradually of its wood and other materials as the town of Velasco grew up around the location beginning in the period of the Texas Revolution. It is believed that the site of the fort was set aside as an open block called Monument Square (commemorating either the fort and the battle, or the Texian graves there), adjacent to Fort Street, as shown in two early plat maps of Velasco (Mesier 1837; Hunt 1838). Some credence to the latter hypothesis (about Monument Square being instead the site of Texian graves) is to be had from the previously mentioned article (Bertrand 1833) in *The Arkansas Advocate* newspaper, since it also mentioned the creation of a granite and marble monument at the mouth of the Brazos River to honor the men that perished at the Battle of Velasco, which apparently never got built.

Mary Austin Holley did visit Velasco again while coming and going on a May–June 1835

trip up the Brazos River (Holley 1965). She had initially traveled from New Orleans aboard the schooner *San Felipe* under Capt. Fuller of Sandwich, Massachusetts, arriving at Velasco in early May. Apparently, upon her departure, on or about 10 June 1835, while awaiting favorable tides and winds aboard the same vessel, she drew a series of four sketches of Velasco and Quintana (Earls et al. 1996:302-307; Holley 1965:16-18). Earls et al. (1996) concluded that three of the images could be combined into a panoramic view of Velasco and the river mouth, and indeed this composite image was used for the cover art of their report, and is presented here as Figure 3.3 below. The researchers surmised that the two left-most buildings were to the left of posts that might be the ruins of the 1832 fort, as seen in the background of the sketch, circled in red.

In 1845, Velasco Lots 4, 5, 6 and 7 of Block 13 and Lots 1 and 10 of Block 29 (see Figure 3.3 for lot numbers), which then included a house, known as the Archer House, was sold with the following comment:

*... all that certain parcel of property lying and situated in the Town of Velasco known as the "Archer House" with the four lots immediately adjoining said "Archer House" and not including the two lots near what was called the "Old Fort." [Brazoria County 1845; Smith 2014a].*

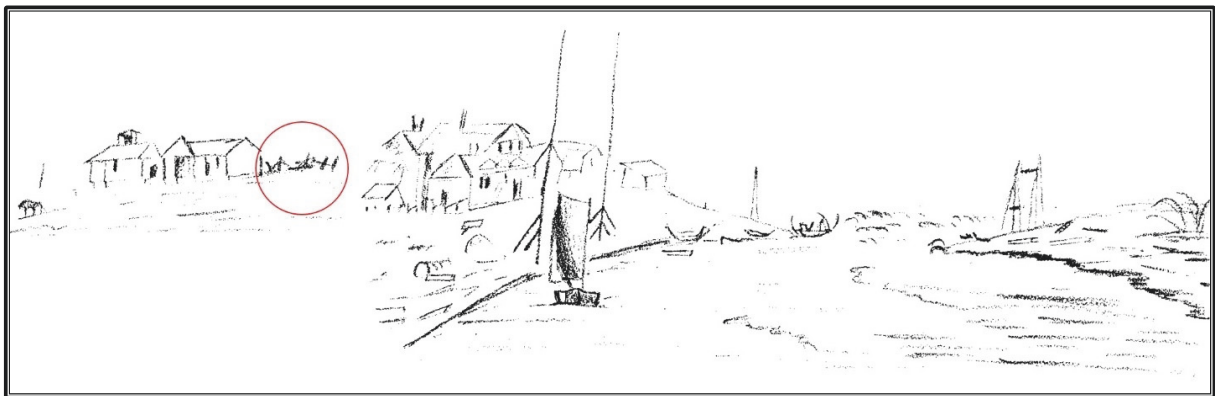


Figure 3.3. Panoramic compilation of Mary Austin Holley sketches (Courtesy of Prewitt & Associates, Inc.).

Since the Republic of Texas battery was located in Block 61, this seemingly can only refer to the 1832 Fort Velasco. Lots 4 and 7 were on the river side of the Archer House, so they may have been the ones not sold, and may be nearest the “Old Fort.” Lots 8 and 9 of Block 13 were purchased by James Thompson Shannon in 1856 (Smith 2014b), immediately adjacent to Lot 7. The Archer House was bought in 1855 by John H. Herndon, and was known afterwards as the “Archer-Herndon House” or simply the “Herndon Beach Home” (Smith 2014a).

In 1898, Adele B. Looscan (1848–1935) published a seminal article, entitled “The Old Mexican Fort at Velasco” (Looscan 1898), apparently after interviewing several life-long residents of the area. In this article, the second wife of James T. Shannon (Mrs. Ellen Adele Wilcox Shannon) claimed her residence (in Lots 8 and 9 of Velasco Block 13, fronting on the southeast side of Fort Street) as the site of the Mexican fort. Mr. Alexander Glass Follett, Sr. (1822–1906) agreed, and also added that Mrs. Shannon’s house was newly-built in 1887, after the previous structure was damaged in the 1886 hurricane.

## Texas Revolution and Republic Period (1835–1845), and Fort Velasco No. 2

In the years prior to the Texas Revolution of 1835–1836, the population of Texas gradually came to believe in independence, and excellent discussions of these political developments in (what would become) Brazoria County were written by Forrest Elmer Ward (Ward 1960, 1962). Ward (1960, 1962) indicates that this area was originally simply part of Austin’s Colony, later organized by the Mexican Government of Texas in 1834 as the “Department of the Brazos”, and played an important role in the change of attitudes leading to the Texas Revolution.

The Battle of Gonzales is often presented as the first significant event of the Texas Revolution, yet more-serious happenings at Velasco presaged even this event. In *Thunder*

*On the Gulf*, Douglas (1936) wrote that, “the merchant schooner *San Felipe* under full sail and with a fair wind behind, was beating in for Velasco, the Texas trading port at the mouth of the Brazos River.” Carrying trade goods, munitions and two important passengers, Stephen F. Austin (returning from twenty months of imprisonment in Mexico City via New Orleans) and Lorenzo de Zavala (former minister for Santa Anna, now a political refugee), Captain William A. Hurd had armed the ship in New Orleans with two 6-pound waist guns and small arms for the crew, and armored its deck with bales of cotton. Waiting at anchor off Velasco was the blockading sloop-of-war, *Correo Mexicano*, captained by the notorious Thomas M. “Mexico” Thompson, who had just captured the American brig, *Tremont*, earlier in the day without apparent justification (Bryan 1897:107-108; Dienst 1909:2-4; Francaviglia 1998:108-109; and Underwood 1927:24). Although the *San Felipe* appeared to have slipped past the Mexican warship into the Brazos bar on 1 September 1835, the owner Thomas F. McKinney observed the situation from land (seeing the *San Felipe* was the *Correo*’s next target), and then loaded some armed volunteers aboard his steamer *Laura* to challenge the *Correo*. First swapping out the passengers for the volunteers, the *San Felipe*, assisted by the *Laura*, went after the becalmed *Correo* and captured her after a cannon duel and overnight sea chase, eventually sending the crew of the *Correo* to New Orleans to be charged with piracy (Cantrell 1999:308-310; Dienst 1909; Hill 1987; Jordan 2006:10-18; Meed 2001; and Parker 1836:330-331).

The episode has been described as the “San Felipe Incident,” and was the last step in convincing Stephen F. Austin to support Texas independence (Binkley 1952:63). As Austin’s nephew later wrote:

... he walked the beach until late at night, hoping to hear or see something of the vessels. Next day the *Laura* returned with the intelligence of the capture of the *Correo*. Austin saw in this the beginning of trouble.” [Bryan 1897:108].

Gregg Cantrell wrote:

*But in his own mind he had already reached the most critical conclusion: Texas must be free from Mexico...The question was no longer one of ends, only of means. [Cantrell 1999:309]*

Thus, this incident was important not only as a sign that the Texas Revolution was underway but, more profoundly, was also a proximate cause of it, since it convinced “The Father Of Texas” (Stephen F. Austin) to throw his considerable influence behind the “War Party,” after which things moved rapidly to open revolt.

Several weeks later, McKinney wrote on 24 October 1835 and the 29 October 1835 that:

*...we have this evening completed the mounting on our fort at Velasco a most superior long 18 pounder besides some other smaller pieces...[McKinney 1835a]*

*The Mexican cruiser is off this place, has been seen yesterday & the day previous fired one shot at Velasco which fell short of the shore, four at her were fired from shore, none however took effect, it has made her less bold in her movements ... You would doubtless say by all means go and take her, so we say and so we will endeavor to do at all hazards. [McKinney 1835b]*

Since no fortifications other than the 1832 fort are known to have existed yet at Velasco, it is possible that McKinney mounted the cannon there. The letters also indicate that men and supplies were arriving on ships from New Orleans, and were being forwarded on to the camp of the Texas Revolutionary Army. Indeed, the 18-pounder mentioned above may have been sent on to the army, leaving the “smaller pieces” at Velasco [McKinney 1835c]. So, significant revolutionary activity was well underway at Velasco before the end of October of 1835.

After blockades by these “Mexican cruisers” offshore, James F. Perry and 11 other citizens of Brazoria wrote to the provisional Texas government in November of 1835 that the sea coast was defenseless and unprotected. They suggested the building of forts at the east

end of Galveston Island, at the mouth of the Brazos, and at the entrance to Matagorda Bay. They also, reportedly, suggested the development of a naval force to drive away these cruisers [McKinley 1934]. Similar sentiments were also expressed by McKinney (1835c) and the, then, newly-named governor, Henry Smith (Smith 1835). Such thoughts about a naval force were not unusual and soon acted upon to create the first Republic of Texas Navy. Velasco became the homeport of the steamboat *Yellowstone* and the war schooners *Invincible* and *Independence* (Stahman 2008:14). The *Invincible's* first captain was Jeremiah Brown, formerly captain of the *Sabine*, who lived at Velasco (Smith 2014b).

As the Texas Revolution began in earnest in late 1835, Velasco, itself, became a staging and training area for about 250 Texian volunteers under the command of Col. James W. Fannin, known as the “Georgia Battalion of Permanent Volunteers.” Their military training under their adjutant, Capt. John Sowers Brooks, occurred in camps near Velasco named “Camp Independence” and “Camp Fannin”. In late January of 1836, they had been ferried on the schooners *Columbus* and *Flora* down the coast to Copano, Texas (Fannin 1836; Helm 1884:54), and then marched to Presidio La Bahía (at Goliad), which they called Fort Defiance [Roller 1906]. Fannin, Brooks and most of these men died in the Goliad Massacre on 27 March 1836. Mary Austin Holley mentioned Velasco in her guidebook, entitled “Texas” and published in 1836, writing “A Mexican garrison was formerly situated at Velasco; at present, it is a rendezvous of the patriot troops” (Holley 1990[1836]).

The battery of artillery was, apparently, placed in a new more-substantial earthen embankment or fort at Velasco at some point after February 1836, when an address was published by the Brazoria Committee of Safety calling for aid in erecting a new fort at Velasco (Streeter 1955). This new fortification has been called the Texan Fort Velasco, and is sometimes confused with the 1832 Mexican Fort Velasco. In early March, Capt. George W. Poe commanded troops at Velasco, consisting of Amasa Turner’s company of regulars and

Richard Roman's company of volunteers. Initially, Poe recommended that they stay to defend the area, writing:

*I have received letters from the Citizens beseeching me not to remove the troops from here....they have offered to work with hands and oxen in the Construction of Batteries & mounting the Cannon – moreover there is a large supply of arms ammunition & Clothing here which without troops cannot be protected...[Poe 1836]*

These troops apparently left soon after to join the army under Sam Houston, as it retreated from Santa Anna's advance after the defeats in revolutionary battles at the Alamo and Goliad. The civilian population also retreated, abandoning their settlements in what is known as the "Runaway Scrape." Velasco was no different.

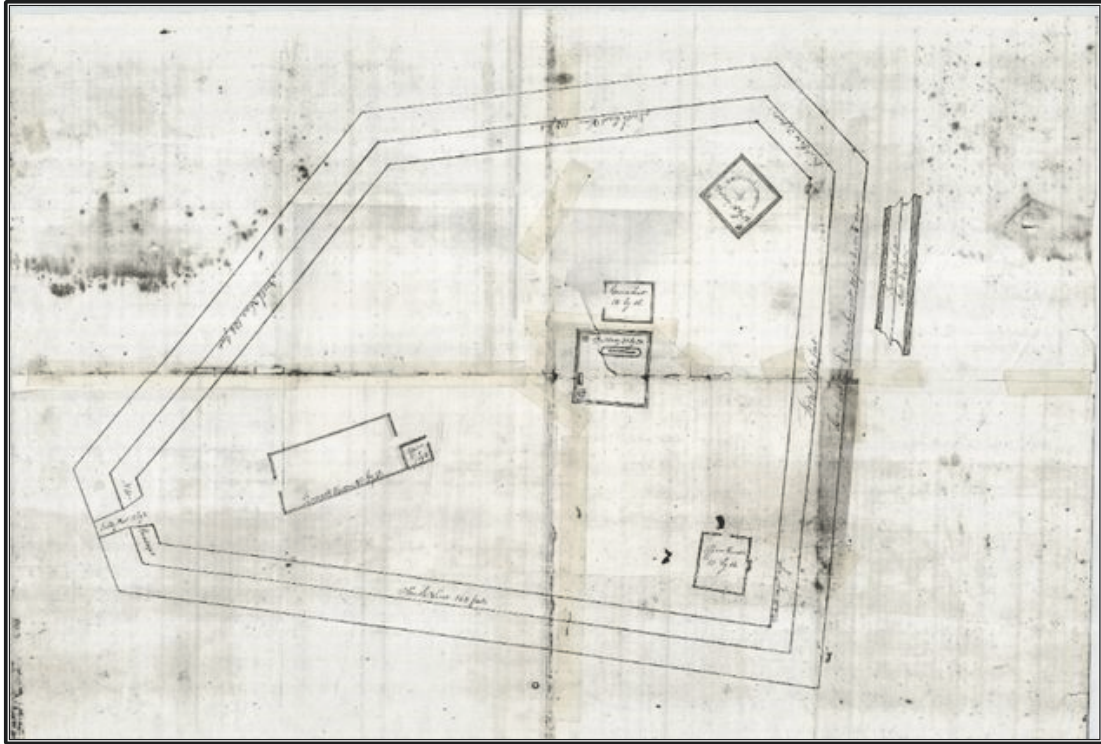
Col. Warren D. C. Hall was ordered to defend Velasco and Galveston at some point after mid-March but, noticing Velasco was abandoned, he initially consolidated his defense only at Galveston. A group of volunteers under Thomas B. Bell arrived in late March and agreed to defend Velasco. Robert Potter, the appointed Secretary Of The Navy, by the provisional Texas government, wrote to Bell on 31 March 1836, saying:

*The offer of service by yourself and friends to fortify and defend Velasco is accepted, and as soon as communication can be had with other members of the Government, a Captain's commission will be sent to you to authorise you to organize your friends into a company and be constituted a part of the Army of the Republic of Texas. Genl. Hall will return to Velasco as soon as he is informed of the stand you have taken; but in the meantime you are requested and authorized (sic.) to take command and proceed immediately to collect laborers, teams &c for constructing fortifications .... Col. Edwd. Harcourt an experienced and scientific engineer has been ordered to Velasco and Galveston to superintend the construction of fortifications at those respective points – in all matters therefore relating to that branch of the public service at Velasco, Col. Harcourt will have the command." [Potter 1836].*

Bell responded on 12 April 1836, writing that "We are pressing forward, in the operation of the Fort..." (Myers and Smith 1996). This suggests that construction of the Texan Fort Velasco occurred mid-April of 1836.

James F. Perry (while traveling to the mouth of the Brazos) wrote to wife, Emily (then at William Scott's plantation, Point Pleasant, with the family, having escaped there during the "Runaway Scrape"), on 15 April 1836 from Galveston Island, saying that "Mr. Grayson is here he left Velasco yesterday morning and says there is a fort there and one at Columbia" (Perry 1836). The Mr. Grayson, referred to here is likely Thomas W. Grayson, captain of the *Laura*. In a second letter to his wife, written on 26 April 1836 from aboard the *Laura* (then at Galveston Harbor), Perry mentioned being sent to Velasco for tools to build a fort (at Galveston possibly, since the fort at Velasco had already been completed, according to Grayson), but that it had not yet been started (Perry 1836). Francis J. Haskins later wrote on 13 July 1836 to Col. James Morgan, asking that his account and expenses for building the fort at Velasco be settled (Haskins July 1836), so one might conclude the Texan Fort Velasco was mostly completed by then. Haskins appears to have been a harbor pilot for the mouth of the Brazos (Gray 1835:3). One draft to him dated 6 July 1836 was reproduced as Figure 6.8 in Bevill (2009:138).

A diagram labeled as "Fort Velasco" and indexed as "Plan of Fort Velasco", which may be a drawing of this Texan battery or fort, is found in the Nacogdoches Archives (see Figure 3.4 below). This is suspected to be designed by Harkort. This hypothesis is considered likely since these archives only extended through 1836, the labeling is in English, and the design is unlike the prior 1832 fort or the subsequent Civil War forts to be discussed further below (Nacogdoches 1830s).



**Figure 3.4. Map #6312 from the Nacogdoches Archives - hypothesized to be a diagram of the Republic of Texas battery (Courtesy of Texas State Library and Archives Commission).**

The location for the Republic of Texas fort/battery is shown on an 1837 plat map of Velasco (Mesier 1837) in Block 61, then on the extreme corner of the mouth of the Brazos River at the Gulf of Mexico (Figure 3.5), an area now in the open water of the widened harbor channel. Please also note the location of Monument Square in the figure, the adjacent Block 13 (with Lots 1–10), and Fort Street between them.

This battery was impermanent, but was known as the best coastal defense work in Texas in May of 1836 (Pierce 1969). Perhaps for this very reason, and the new robust Texas Navy, the government of the Republic of Texas first convened at Velasco after the Battle of San Jacinto from May to October of 1836. Ad interim president of the Republic, David G. Burnet, and General Sam Houston, along with Santa Anna and his officers, were transported on the steamboat *Yellowstone* from Buffalo Bayou to Galveston on 5 May 1836. Santa Anna was then placed aboard the *Independence*, and on 8 May 1836, President

Burnet and his Cabinet came aboard and made sail for Velasco (Dienst 1909:58). As Dienst (1909:58) wrote, “Velasco was the great seaport of the Republic at that time.” A slightly-different account was given by Col. Gabriel Nuñez Ortega, whose diary indicates it was on 7 May 1836 when they went to Galveston Island, and 10 May 1836 when they went to Velasco aboard the steamer *Laura* (Nuñez Ortega 1836).

The Republic of Texas government’s records were kept at Velasco for a short period, and the fort was occupied with a small garrison (Dorchester and Wilson 1936; Earls et al. 1996:49; Fox et al. 1981:21-23; Guthrie 1993:107; Pierce 1969:164; and Winkler 1906). Financial warrants, notes and pay certificates were also issued by the government from Velasco, according to Bevill (2009). Other types of financial documents known as audited drafts can be found in Southern Methodist University’s Rowe-Barr Collection of Texas Currency, which were issued at Velasco.

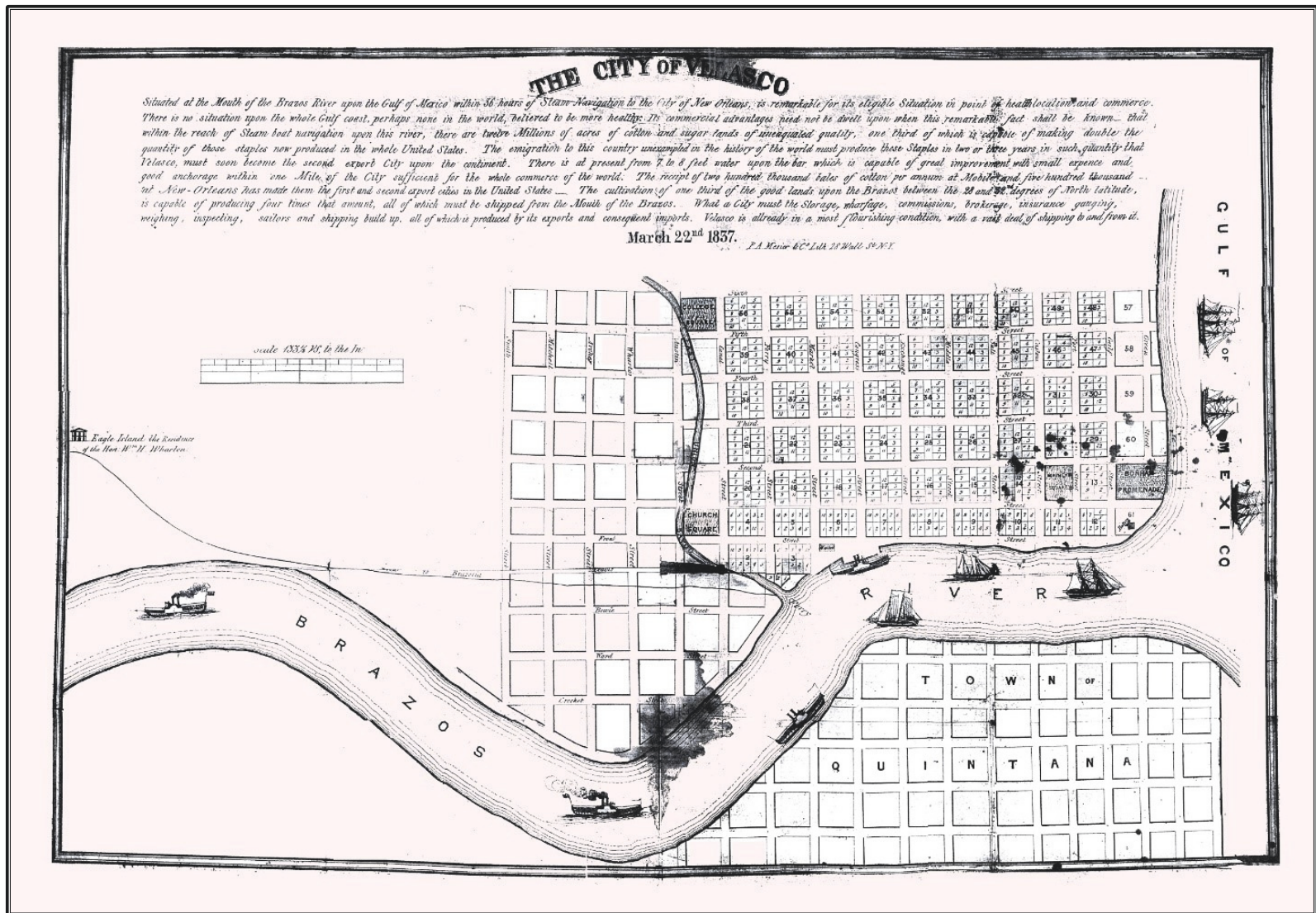


Figure 3.5a. 1837 Plat Map of Velasco (a. full size, b. detail) – from Streeter Collection Map #1283 (Mesier 1837) (Amended diagram courtesy of Brazoria County Historical Museum).

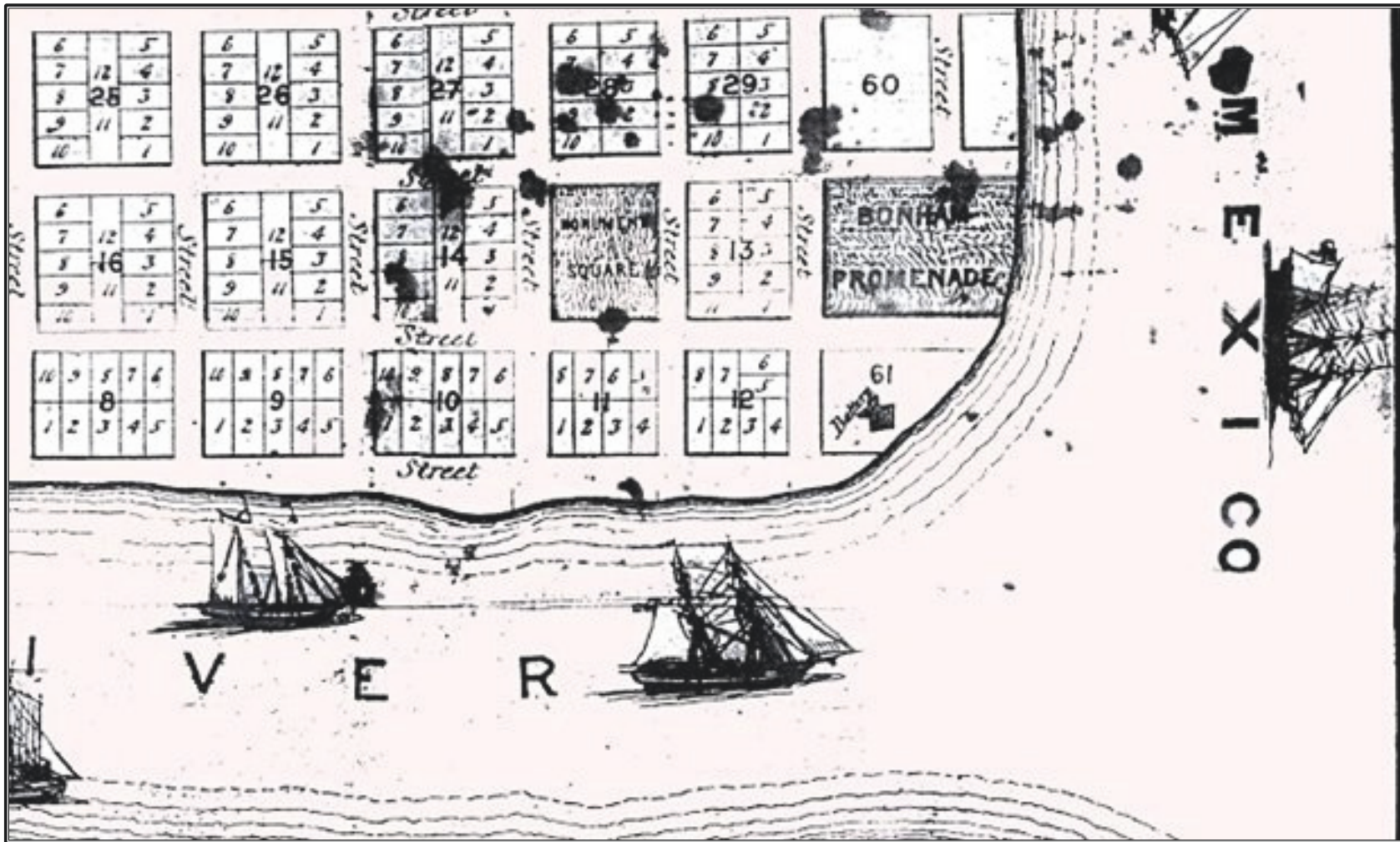


Figure 3.5b. 1837 Plat Map of Velasco (a. full size, b. detail) – from Streeter Collection Map #1283 (Mesier 1837) (Amended diagram courtesy of Brazoria County Historical Museum).



It was also at Velasco that Santa Anna signed the Treaties of Velasco on 14 May 1836. During this period, Santa Anna was held prisoner at Velasco, along with Ramon Martinez Caro (his secretary), Col. Juan Nepomuceno Almonte, and Col. Gabriel Nuñez Ortega. It is very likely that the Republic government met at existing and modest houses, such as the Brown-Hoskins hotel/tavern (American Hotel) or others. Indeed, “Santa Anna and suite” (Santa Anna and several of his officers) were provided board from this establishment (found in Velasco Block 11), as indicated in a receipt sent by the Republic of Texas to Isaac C. Hoskins (Hoskins 1836). Santa Anna, himself, seems to have actually stayed in a building owned by Francis J. Haskins, as indicated in another receipt for rent of the house by the Republic of Texas (Haskins 1836a).

At least two of the individuals imprisoned at Velasco left brief accounts. Gabriel Nuñez Ortega made several entries in his diary during his imprisonment in Velasco:

*May 10 - ... we were given a small house, very dirty and without hope of means of living. In the evening a hotel sent us a piece of fried fish, coffee and some terrible (ugly) bread.*

*May 11 – In Velasco we did nothing else but kill and shoo away the many flies that were there.*

*May 12 – They talked a bit about the negotiations for the Agreement. Our good friend Wharton arrived with milk, butter and some greens and he went away to bring us back other things.*

*May 13- There were conferences with the Texas Cabinet and almost concerned the Agreement. Colonel Wharton assisted in the discussion. That night our trunk was robbed of \$125.00 while we slept.*

*May 14 – The Agreement and Public was definitely agreed upon and reached agreement a published, both were put in clean (final) form for signatures with this date, although it must be verified tomorrow Sunday. Present were President Burnet, Hardyman, Collingsworth and Grayson. Mr. Lamar was not present because of*

*occupation elsewhere. Mr. Porter because he was absent.*

*May 15 – The agreements were signed in the evening and it was agreed to send them to the Mexican and Texas Generals tomorrow. [Nuñez Ortega 1836]*

In 1836, Ramon Martinez Caro, Secretary to General Santa Anna, described being held “in the second story of a house whose first floor was a restaurant” (López de Santa Anna et al. 1956).

The Republic of Texas capital at Velasco is described briefly in the article “Capitals of the Lone Star” in *National Republic* magazine (Crouch 1932). In this article, a photograph is shown of a two-story building (reproduced below as Figure 3.6) which may be the structure referred to by Caro (López de Santa Anna et al. 1956) above. No date is given with the photograph, but the structure is believed to be what would later be known as the Brown-Hoskins Tavern.

In compliance with the treaties, Santa Anna was to be returned to Mexico, and indeed was put aboard the *Invincible* standing off of Velasco on 1 June 1836 for his return to Veracruz. Hard feelings among the Texans, especially a group of 230 (some references say 130) new volunteers under Gen. Thomas Jefferson Green who arrived on the steamer *Ocean* from New Orleans, however, delayed the departure (Dienst 1909:58; Binkley 1940; Pierce 1969:165; Myers and Smith 1996; Francaviglia 1998:126). The enraged Texans wanted to punish Santa Anna for his past actions, and so Santa Anna was brought ashore on the 4 June 1836 at Quintana for safekeeping, staying a few days with Thomas F. McKinney (from 4 to 9 June 1836) according to the Ortega diary (Nuñez Ortega 1836), before returning again to Velasco, staying at the Brown-Hoskins Tavern/Hotel until the 15 June 1836. Ortega’s diary entry for the 9 June 1836 says, “There was great excitement for us to go to Velasco in Captain Paton’s care .... At 5 in the afternoon ... we were installed in a hotel” (Nuñez Ortega 1836:7). Ramon Martinez Caro, Secretary to General Santa Anna, wrote of this period “After we were turned over to Captain Patton ... he

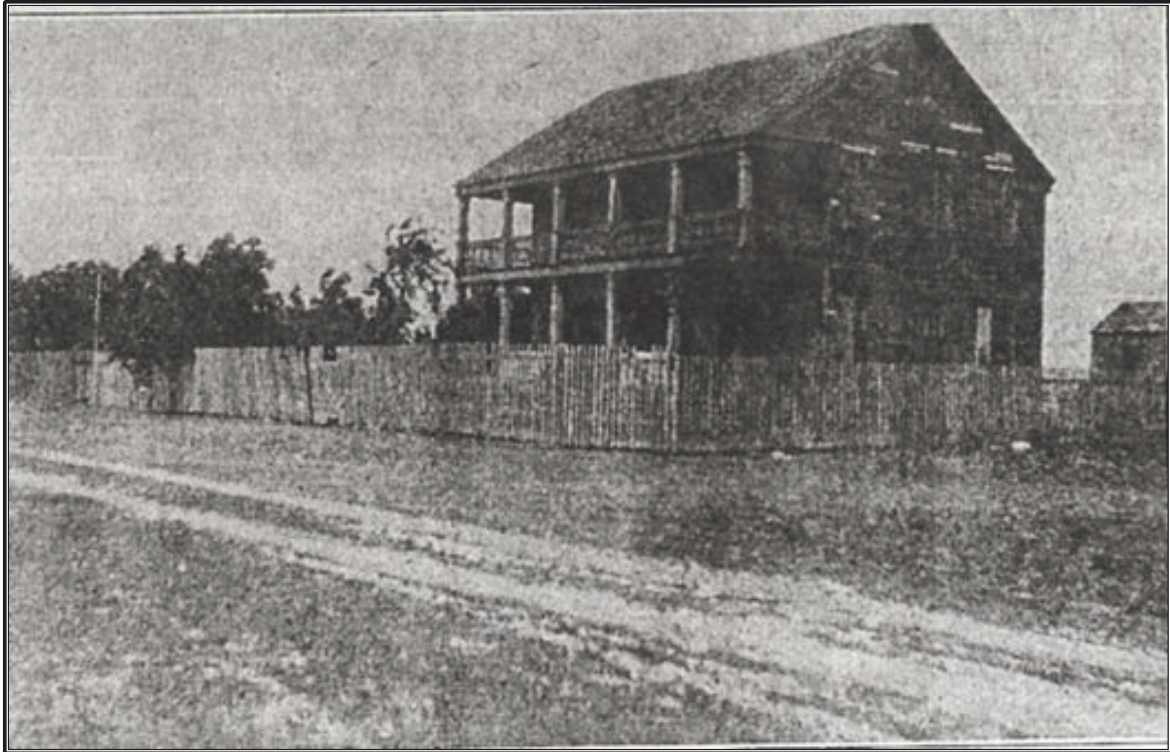


Figure 3.6. Former Capitol of Texas at Old Velasco (Crouch 1932).

took us to Velasco and lodged us in the second story of a house whose first floor was a restaurant” (López de Santa Anna et al. 1836). William H. Patton was the one put in charge of the prisoners, and took them to his family’s plantation two miles upriver from Columbia on 15 June 1836 aboard the steamer *Laura* for some weeks, until they were again transferred on 30 July 1836 to Orozimbo Plantation, where they stayed for several months. Finally, at the request of the Republic of Texas government, Santa Anna was sent to Washington D. C., departing Velasco by sea on 6 December 1836 (Nuñez Ortega 1836:22).

A man named Buegel, who served as a soldier at Fort Velasco in the period of 1836–1837, provided an account of his time in Velasco:

*I served for sixteen months with the soldiers in Velasco. Our captain’s name was Snell. We had to guard the fort since the Mexicans were trying to land. From the fort, which was three hundred paces from the shoreline, we could, during the day, see*

*three ships in the telescope. That was in May 1837. [Seele 1979]*

The Capt. Snell, referred to above was likely Capt. Martin K. Snell of Company E, 1st Regiment of the Army of The Republic of Texas, which moved to Velasco in September of 1836. Buegel also describes night-time sentry duty along the beach two miles from the fort, and that he scared off an attempt by three Mexican longboats to come ashore. Buegel also described the poor state of morale in his unit, ultimately leading to the burning of a barracks building. (Seele 1979). Lastly, Buegel describes a sea battle off Velasco, perhaps referring to an incident where the *Independence* was defeated by the *Vencedor del Alamo* and the *Libertador* on 17 April 1837, resulting in the capture of William H. Wharton who was a passenger (Dienst 1909; Douglas 1936; and Seele 1979).

This battery was apparently still in operation in 1840, when a visitor from the British diplomatic service described it in this way:

*...had an old brass 18-pounder with a touch-hole equivalent to the circumference of the mouth of Mrs. Sharp(e) – and 3 other small ones whose united ages amount to a greater number, than my arithmetic (which is fair to say was neglected in my youth) will permit me to calculate ...* [Sheridan 1954:19].

Mrs. Sharp was the wife of John Sharp, merchant, notary public, and the United States Consular Agent at Velasco, who Sheridan (1954:16) had earlier described as:

*...a young lady, with beautiful eyes and an agreeable expression of countenance, but with a mouth of such dimensions, as entitles it to be compared only with the orifice which through which Harlequin jumps in the Pantomimes.* [Sheridan 1954:16]

Sheridan further describes the battery as having a Liberty Pole,

*“... which rears high its stately head, crowned with a small beer barrel, intended to represent the Cap of Liberty, which I must take the liberty to represent, it hardly succeeds in doing.”* [Sheridan 1954:19]

Attention to the battery appears to have been discontinued about this time, as the threat from Mexico abroad decreased due to turmoil within the country (Pierce 1969). With the reduced threat and attention from Mexico, Texas was left to thrive under the new republic. Velasco, in particular, became a bustling port. Eventually, the Brazos Bar proved too hazardous for increasingly larger ships, and with road and railway connections over a causeway, Galveston (and Houston) began to surpass Velasco in importance as port cities (Francaviglia 1998; and Guthrie 1993).

## Early Statehood and Civil War Period (1846-1865) and Forts Velasco No. 3 and No. 4

As mentioned above, the importance of Velasco began to wane in the mid-nineteenth century and many people moved from the area. In 1858, a map was made of the mouth of the Brazos with topographic data measured in 1852 (Bache 1858). This map is presented here as Figure 3.7. One will note the lack of buildings in Monument Square, the fact that the Battery is now gone, and that significant growth of the beach has occurred, with a new sandbar forming on the Quintana side of the channel.

During the Civil War, a series of artillery positions were constructed by the Confederate States Army, changed and improved over time, beginning with a simple earthen redoubt of two 18-pound cannons (known as the "Town Redoubt" or "Town Fort"), probably on new beachfront land closer to the Gulf of Mexico than the position of the former Republic of Texas battery. The redoubt was manned by two artillery companies belonging to the 13th Texas Infantry regiment, utilizing at least one 18-pound cannon on 11 August 1862 to drive off a Union warship (Barr 1961). The location of this redoubt is shown in a large hand-drawn map of the central Texas coast by Confederate Army Capt. Tipton Walker from the early Civil War era (Walker 1862, Sheet 2 of 3). A close-up of the Velasco portion is shown here as Figure 3.8. The location of Monument Square is marked in this map by a tent-like image, perhaps indicating an encampment used by soldiers in the early part of the war. In January of 1862, the Union ships *Midnight*, *Arthur* and *Rachel Seaman* engaged this shore battery, testing its strength and range (Barr 1961:9).

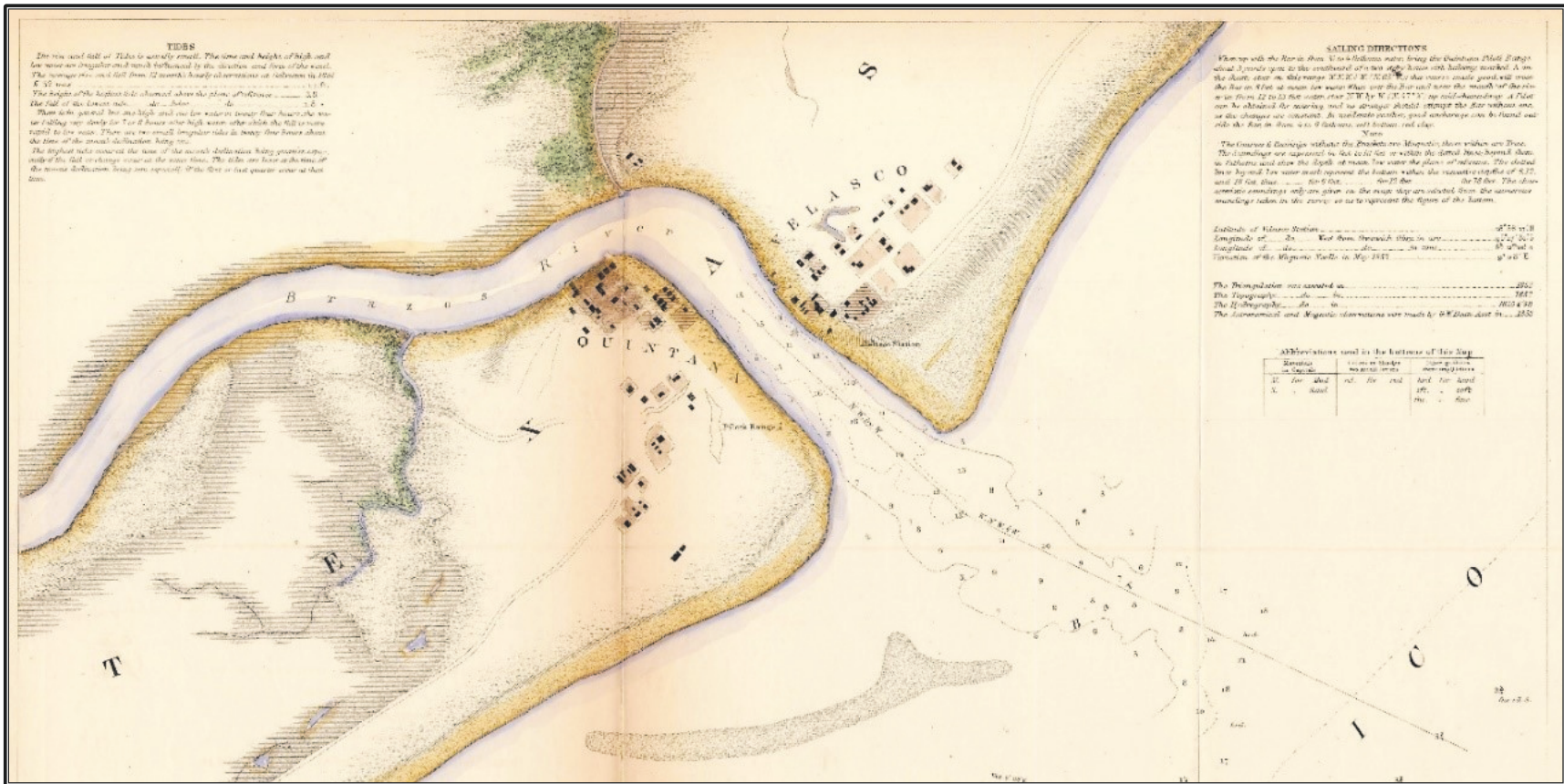


Figure 3.7. Upper portion of 1858 Bache Map of the Entrance to Brazos River by Coast Survey Office (Digitized by Blueline Print Shop, Freeport, Texas, from an original map at the Brazosport Museum of Natural Science).



Figure 3.8. Detail of the circa 1862 Tipton Walker map (Walker 1862) (Courtesy of the National Archives and Records Administration).

The defenses depicted in the Tipton Walker map in 1862 are apparently the ones described by Commodore Henry Haywood Bell aboard the USS Brooklyn in his diary entry of 1 June 1863:

*Saw in the river at Velasco one steamer and one schooner. A newly-built fort on the Quintana side, and 100 tents adjacent ... On the Velasco side the battery is not so prominent; situated near the water and to the south of the white house with colonnades, some 40 or 50 men there in the rear of the fort. [Bell 1863]*

The “white house,” mentioned above, is presumed to be the Archer-Herndon House (Smith 2014a). Mrs. T. A. Humphries also mentioned the Archer-Herndon House in a 1932 reminiscence:

*On a sandy ridge in the neighborhood of the coast guard station, stands a clump of gnarled salt cedars and the crumbling ruins of a huge brick cistern. They are all that remains of the palatial summer home of the Herndons ... this spot was occupied by a stately white mansion, surrounded by wide porches and supported by solid colonial columns. It was the tallest house along the coast and could be seen so far at sea that it became a landmark. It stood on the highest point of land and was used as a lookout by the neighborhood. .... The house was surrounded by salt cedars and oleanders. Hidden among the shrubbery was an icehouse with concrete walls. In the spring of each year, a shipload of ice was brought from the north, carefully packed in sawdust, and stored for their use in the summer. ... In order that enemy ships should not enter the Brazos, the Confederate soldiers barred the channel with live oak logs driven into the bottom of the stream. [Humphries 1932]*

This original Archer-Herndon house was reported as destroyed in the 1875 hurricane (Smith 2014a).

Due to the strategic importance of the Brazos River for blockade runners, work began at Velasco to build a more formal fortification than the earlier redoubt and battery. The new fort was designed by Valery Sulakowski, then Chief Engineer for the Confederate States

Army for the District of Texas. New Mexico, and Arizona, while construction was overseen by one of his subordinates, Lt. Abram Cross. The fort was labeled as Fort Sulakowski in one of Cross’ reports (Cross 1864) where he reported completion of the fort on 11 January 1864 (see Item 1 in Figure 3.9), but was labeled as Fort Velasco in other documents (Freeman 1995) as well as on a December 24, 1864 schematic of the fort (Unknown 1864) included here as Figure 3.10 (Figure 3.10). As can be seen in Figures 3.9 and 3.10, the fort had five gun platforms. Armament consisted of one 30-pound Parrot gun, one 32-pound Navy gun, one 24-pound and one 18-pound sea coast gun, and one 12-pounder (Cross 1864, and Freeman 1995). So effective was this battery that blockading Union warships estimated in early 1864 that it had six 32-pounders, and so never engaged them for any lengthy period of time (Barr 1961:29). Based on the location of the fort on historic maps, it is believed that the fort was located at or near the south corner of Surfside-platted Block 568.

The Velasco fort complex was but one of three such forts built at or near the Brazos River mouth in this period. Similar Civil War Era forts existed across the river at Quintana (Fort Bates) and about a mile upriver (Fort Terrell, also known as Fort Bend) (see Figure 3.8). This last site is believed to have been lost due to riverbank erosion in the 65 years after its founding (Freeman et al. 1997; Freeman 1998). These forts were thick stacked-earth embankments topped with sod, with the guns en barbette, since brick forts (such as Fort Sumter) were by-then considered obsolete (Barr 1961:3). It is also reported that, during this time, the large number of Confederate troops at Velasco scavenged material from the nearby site of the 1832 fort (Looscan 1898).

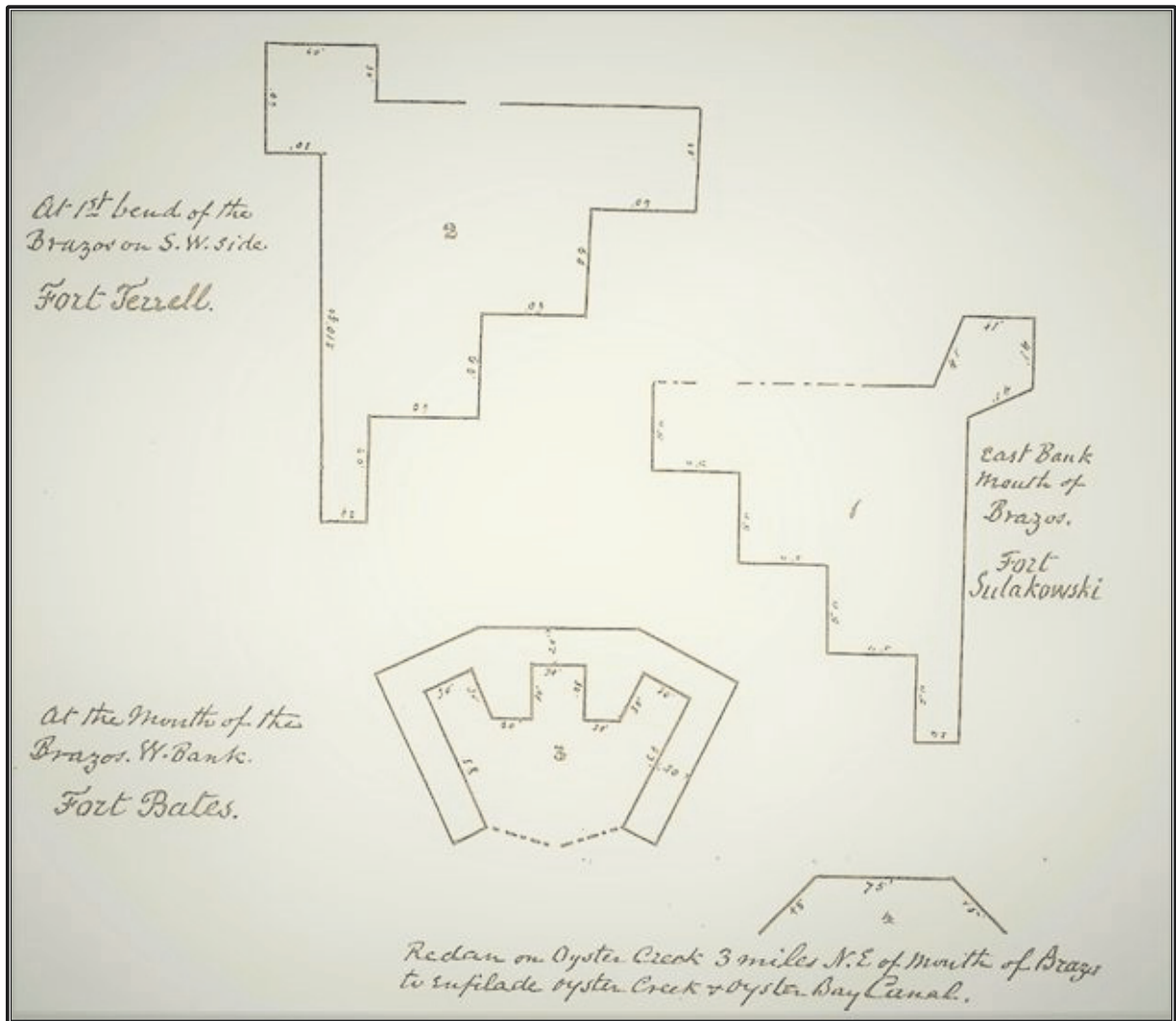


Figure 3.9. Schematic drawings of several Civil War Era forts, including Fort Sulakowski (Cross 1864), as shown in (Freeman 1995, Figure 9) (Courtesy: Prewitt & Associates, Inc.).

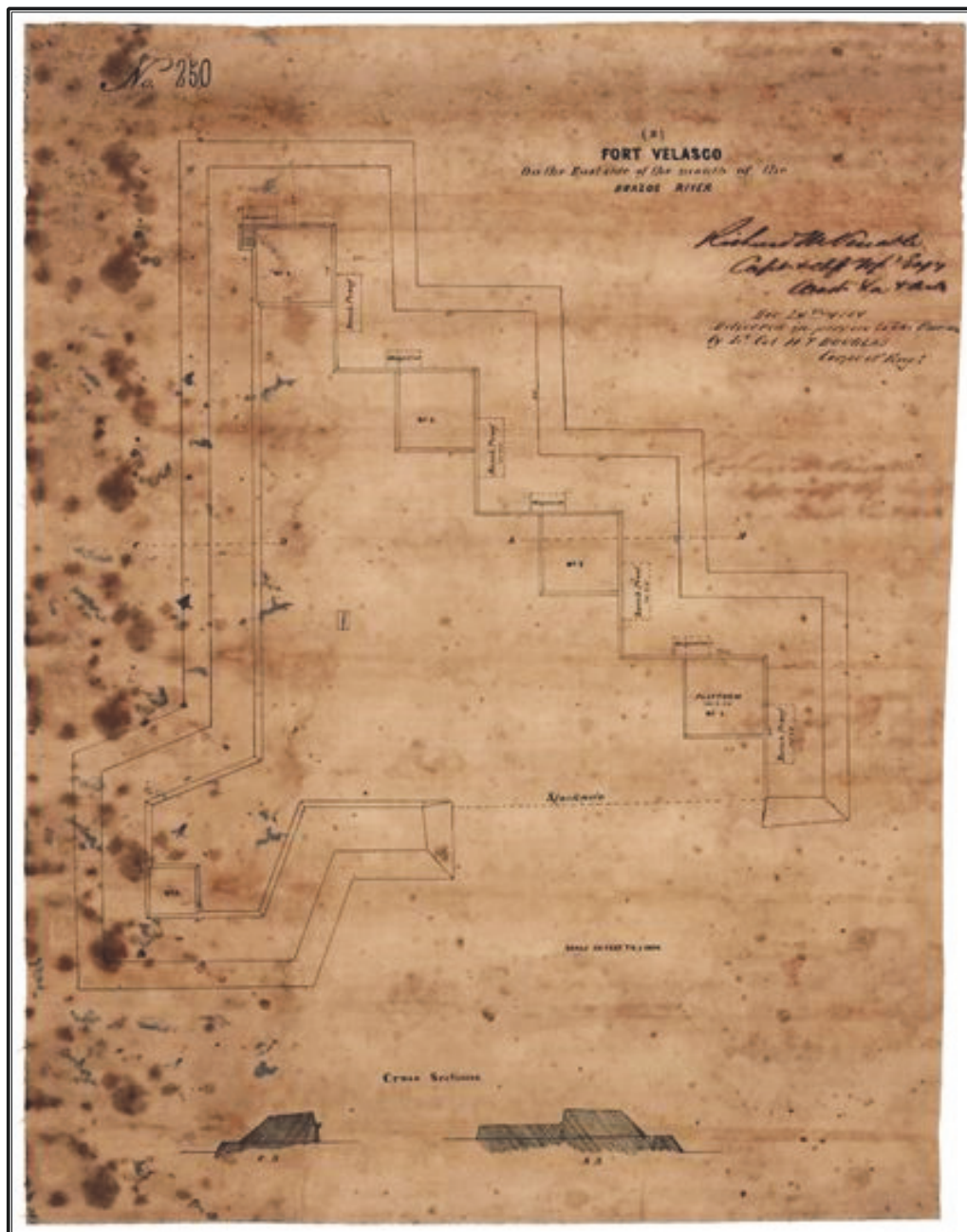


Figure 3.10. Schematic of Civil War Era Fort Velasco (Unknown 1864; Courtesy of the Brazoria County Historical Museum).



During the period of fort construction in the region, Dr. Thomas B. Grayson, a surgeon with the Army, was stationed at Velasco, and he wrote a short passage in a Christmas 1863 letter home, which states:

*During the past ten or twelve days quite a number of schooners have run the blockade at this port. A majority of them, so Madam Rumor says, are loaded with gun, ammunition and army stores for 'Old Jeff'. On Wednesday, the Yankees played quite "a trick" on our pilots. A schooner came in sight and as is usual with the 'blockade running', made a signal for a pilot. Three pilots, not thinking but what it was a vessel desiring to come into our port, jumped in a yawl and went out to them, when to their great surprise they found it was a Yankee boat. They took the pilots on board, carried them out on sea some thirty miles, when they allowed them to take the yawl and make to shore if they could, which they succeeded in doing about 12 o'clock last night. They in future, will I guess, be rather particular before they board another boat. [Grayson 1865]*

Grayson (1863) also wrote about a schooner that grounded nearby, which soldiers

had to guard from "Yankee" gunboats, while recovering its cargo of guns and powder.

On 9 January 1864, the *New York Herald* published a dispatch, dated December 20, 1863, issued by Mr. De Benneville Randolph Keim at Matagorda Peninsula, Texas, along with a rough sketch map of the area, drawn by Captain James T. Baker, Chief Engineer (*New York Herald* 1864). This sketch map is reproduced here as Figure 3.11 and shows the new forts at the mouth of the Brazos as estimated from "Yankee" warships offshore; the article stating, "...north of the river, is situated Velasco ... Here the enemy has constructed his main fort, which mounts three guns, and has also assembled here a sizeable force" (*New York Herald* 1864). Note that the Velasco fort (marked as "Main Fort") in the figure is shown to be abutting the town and on the river-side of a house labeled as "Story House Porticoed," thought to be the Archer-Herndon House. The map appears to be derivative of the 1858 Bache map, but the illustrator may have chosen an incorrect structure on the map for the "porticoed" house, as the position of this structure does not match the location of the Archer-Herndon House.

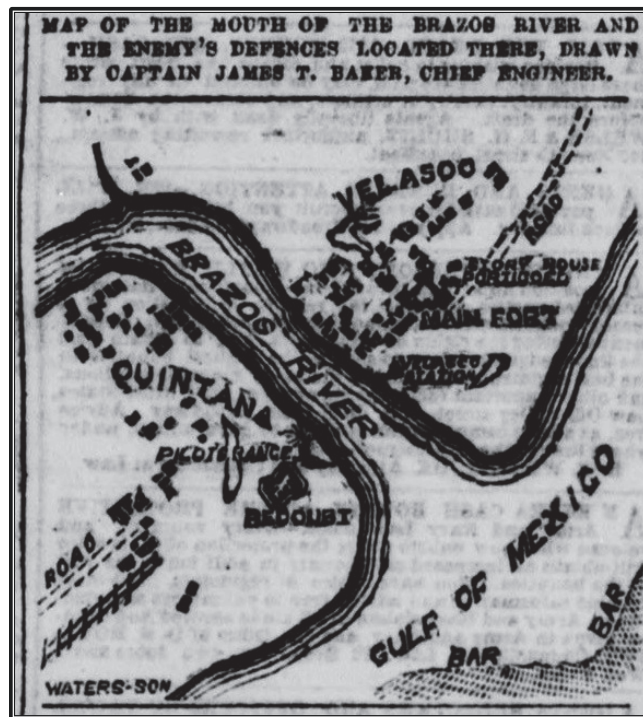


Figure 3.11. Captain James T. Baker sketch map of the Quintana and Velasco vicinity (*New York Herald* 1864).

In the years following the Civil War, hurricanes and high tides could be expected to have destroyed or covered any remains of the earlier forts, including one (Racer's Storm) as early as 1837, and others in 1875 and 1886 (Geiser 1944). Over time, the exact site of the 1832, as well as the Texas Revolution and Civil War forts and fortifications at Velasco were lost to history.

## Post-Civil War Period (1865–Present)

The town of Velasco persisted through the Civil War period and beyond, but was largely abandoned in the late 1800s due to the hazard of hurricanes at its seaside location. In 1888, an update of the original 1858 Bache map was accomplished (Figure 3.12) (Bache et al. 1888), showing that Velasco had many fewer structures (most likely due to damaging hurricanes as mentioned above). There is no evidence of any of the Velasco fortifications on this map, although the site of Fort Terrell was shown on the extreme left edge, marked as “Old Fort.”

In 1889, as the first actual jetty construction was begun by the Brazos River Channel and Dock Company, an attempt was made to finance the project with bonds on the English market, so the British harbor expert Sir John Coode was asked to evaluate the plans (Wisner 1891). After his son came to Brazoria County to collect data and measurements, they prepared a report that included four map drawings (Coode 1890). Drawing #1 (227-x-106 cm) was a “General Plan” showing the Brazos River and Oyster Creek north to about Chenango, railroads to north of Arcola, and the new jetties under construction; Drawing #2 (370.5-x-111.2 cm) was a “Plan of Brazos River” showing the last few miles of the Brazos River including many fine details and a proposed town of Brazos (soon to be the location of new Velasco); Drawing #3 (121.3-x-68.5 cm) showed seven figures of the Brazos mouth as it had changed over time. There is a fourth drawing (142.2-x-96 cm) showing the lands of the Texas Land and Immigration Company in Brazoria County. This fourth

drawing was not, apparently, made by Coode but perhaps given to him so these lands could be drawn into his other three drawings.

All originals of the Coode (1890) maps are at the Dolph Briscoe Center for American History, University of Texas at Austin, Austin, Texas, mounted on a canvas backing, and stored in a rolled condition. A framed and mounted copy of Drawing #3 was later located at the Brazoria County Historical Museum (BCHM). High-resolution photos of all four Briscoe originals were made in January of 2020 through a photo duplication request (di\_11904 through di\_11907). The author was also allowed to make cell phone photos of portions (close-ups) of the originals. The close-up photograph of the Velasco/Quintana portion from Drawing #2 is shown in Figure 3.13. Drawing #2 also shows the location of an “Old Fort” (Fort Terrell), perhaps derivative of the 1888 USCGS map.

The Coode Drawing #2 is the only known map that actually labels individual houses at Velasco and Quintana (critically, the “Shannon” and “Herndon” houses), and attests to the construction period of the first jetties; while Drawing #3 shows how the beach grew in the period of 1858 to 1889. The “Herndon house” depicted on the map seems to be an outbuilding or new structure built after the 1875 hurricane, in the west end of that property. These maps apparently were accompanied by a written report on the jetty project, although efforts to locate a copy of the report in 2019 have been unsuccessful. A small excerpt and some comments about it, though, can be found in Wisner (1891:529-530).

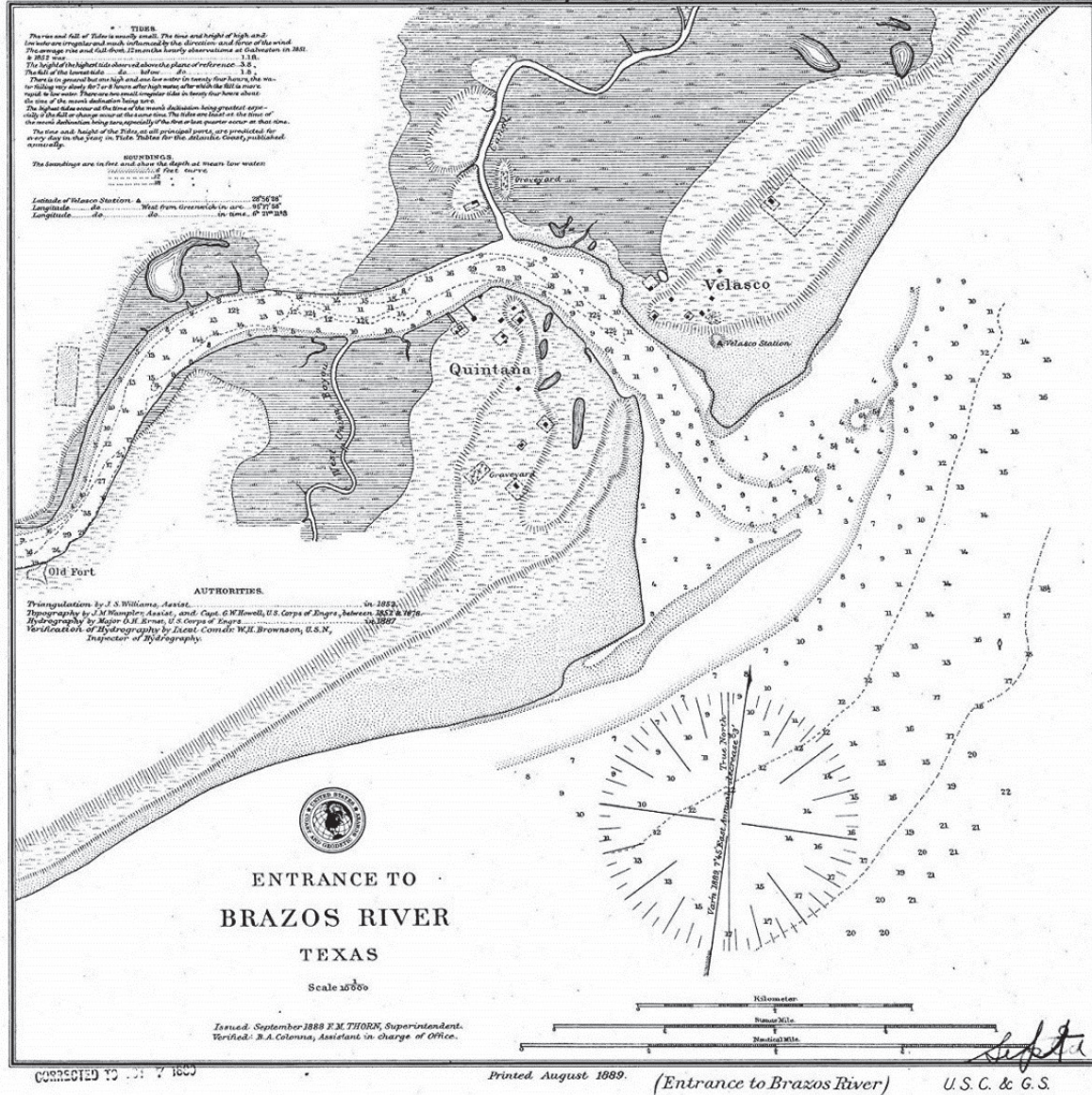


Figure 3.12a. Updated 1888 Bache et al. map of the Entrance to the Brazos River, Texas (a full size, b. detail) by United States Coast and Geodetic Survey (Courtesy of the Brazoria County Historical Museum).



Figure 3.12b. Updated 1888 Bache et al. map of the Entrance to the Brazos River, Texas (a full size, b. detail) by United States Coast and Geodetic Survey (Courtesy of the Brazoria County Historical Museum).

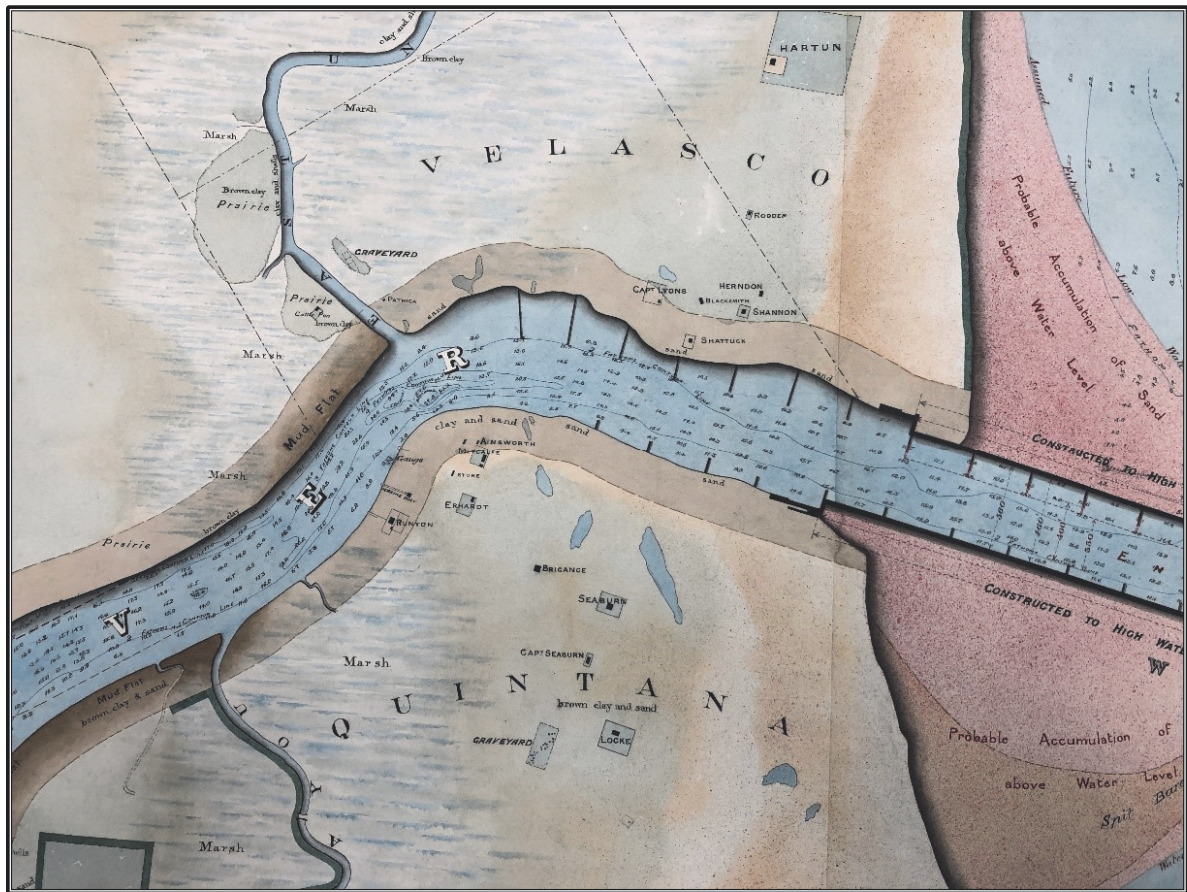


Figure 3.13. Detail of Coode Drawing #2, showing the Velasco/Quintana area (Coode 1890) (Courtesy of the Dolph Briscoe Center for American History, The University of Texas at Austin, Austin, Texas).

Although several early attempts failed to improve access for ships over the Brazos Bar by creation of jetties, the first permanent construction did not occur until 1889 (Brazos River Channel and Dock Company 1890; Kramig n.d.; and Wisner 1891). As mentioned above, Wisner (1891) provided a report on the progress of the jetty project. There was, apparently, a survey of the Brazos River area conducted by the U.S. Coast and Geodetic Survey (USCGS) in 1891 prior to the writing of the report. The map produced from the survey is entitled “Map of the Brazos River, Texas.” A portion of this map, showing the Velasco/Quintana area, as well as a close-up showing only the Velasco area are presented as Figure 3.14. It is noteworthy that this map shows some details for houses and a cistern in Velasco Block 13, remnants of which were found in later archaeological excavations. The subsequent updates of the USCGS map in 1904 and 1912 continue to show houses (presumably identified as the Shannon and Herndon houses by comparison to the Coode map), so it is assumed that they survived the 1900 hurricane, although this is unclear since both maps indicate the topography was from 1897.

Haley and Mangum (2017) discuss a series of maps and aerial images dating after 1891 through to 1974. The topographic maps in the series, which includes the 1943 Freeport, TX, 7.5-minute series quadrangle (USACE 1943) and the 1964 Freeport, TX, 7.5-minute series topographic quadrangle (USGS 1964), seem to show a mound existing in Velasco (see Figures 3.15 and 3.16). Some have hypothesized that this mound could represent the remains of the Civil War Fort Velasco. These later maps also attest to the fact that beach accretion at Velasco occurred due to storms and delta formation both before and after creation of the jetties, accumulating about 1,725 feet of total land to the seaward of the original beach in front of the 1832 fort. Further accretion mostly stopped and even reversed somewhat after 1929, when the Brazos River was diverted seven miles to the southwest, since river silt no longer nourished any further “delta” deposits. Thus, the presumed original 1832 fort location was inland from the beach by about 2,150 feet and

considered less-than-optimal for recreational use.

No fortifications are known to have been placed in the Brazos River area during World War I although troops from Company A of the 3rd Texas Militia were stationed in 1917 at nearby Bryan Mound to protect the Freeport Sulphur Company’s works. During World War II, a pair of gun mounds were placed on the Quintana side of the Brazos River channel, each mounting a single rotating 155-mm coastal artillery piece, installed in late 1942 using the Panama Mount, but these were withdrawn in February of 1944 (Creighton 1979:329).

## **Modern Archaeological/ Historical Research and Restoration Efforts**

In 1961, just upstream of old Velasco, a 9-pound cannonball was discovered during a construction excavation at Dow’s Plant-A property, and it revived interest in the 1832 fort and battle (Dow 1961). Shortly thereafter, many members of the local Gulf Coast chapter of the Texas Society of Professional Engineers (TSPE) became interested in researching, finding, and reconstructing this fort (see Kramig n.d.). By the late 1960s, property was bought piecemeal and privately in Surfside Blocks 560 and 568 by TSPE members and donated to the effort, ultimately resulting in an organization called the Texas Gulf Coast Parks and Historical Restoration Association, later changed to the Fort Velasco Restoration Association (FVRA), led by the late Messrs. Harold Singleton (1922–1978), Dale Sandlin (1913–2010), George Kramig (1919–2011) and Howard B. Fearn (1923–2012), among others.

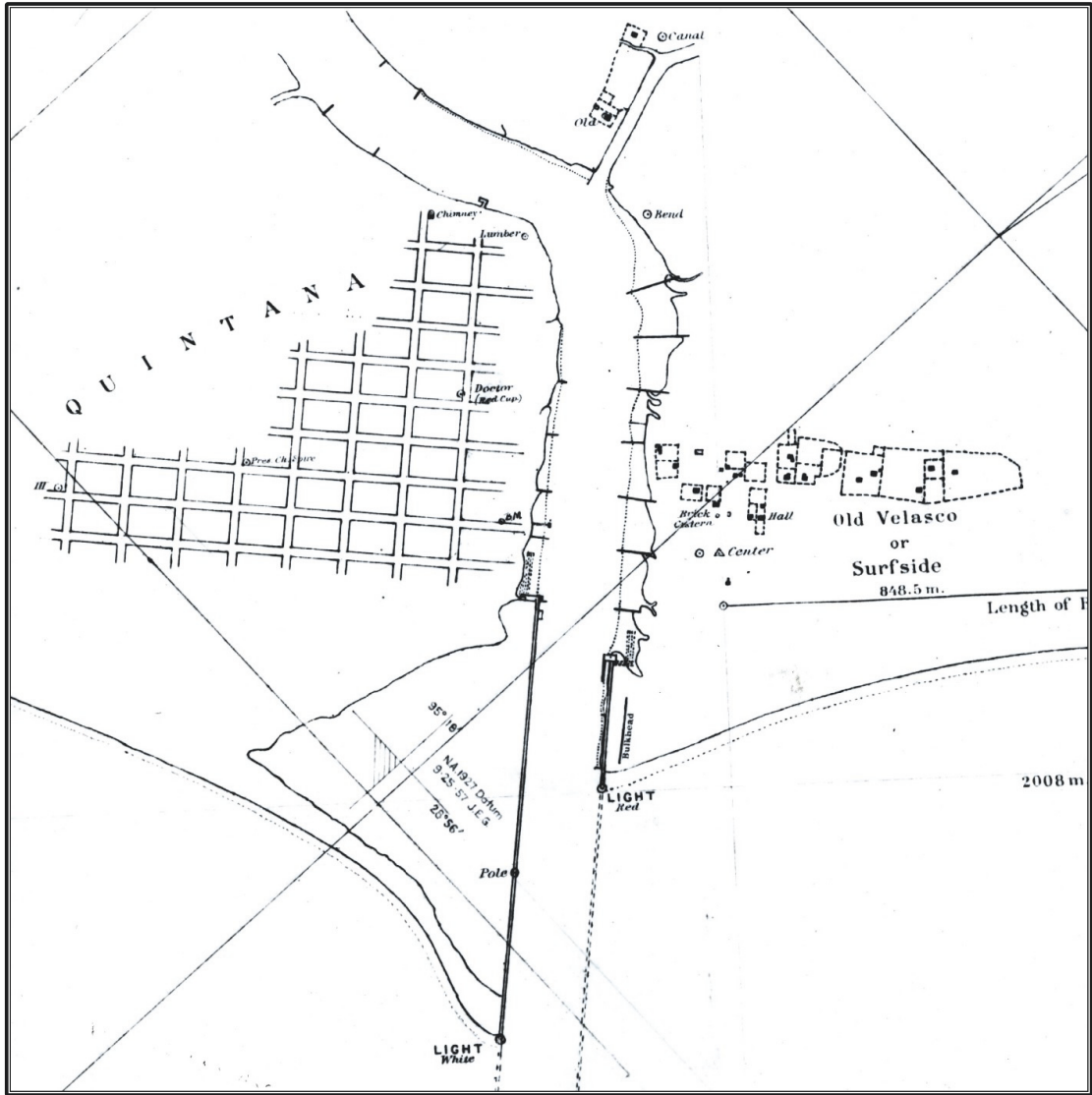


Figure 3.14a. Portion of the 1891 USCGS map (Wisner 1891) (a. full Velasco/Quintana area, and b. detail of Velasco) (Courtesy of the Brazoria County Historical Museum).

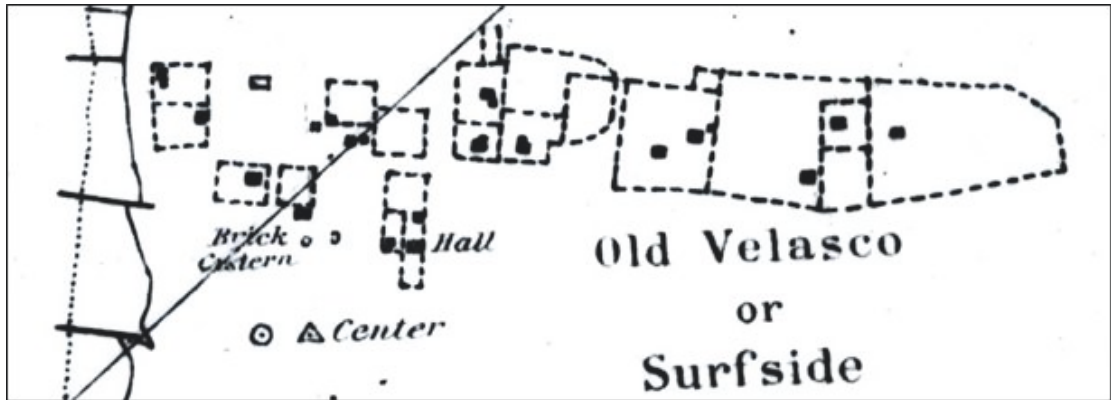


Figure 3.14b. Portion of the 1891 USCGS map (Wisner 1891) (a. full Velasco/Quintana area, and b. detail of Velasco) (Courtesy of the Brazoria County Historical Museum).

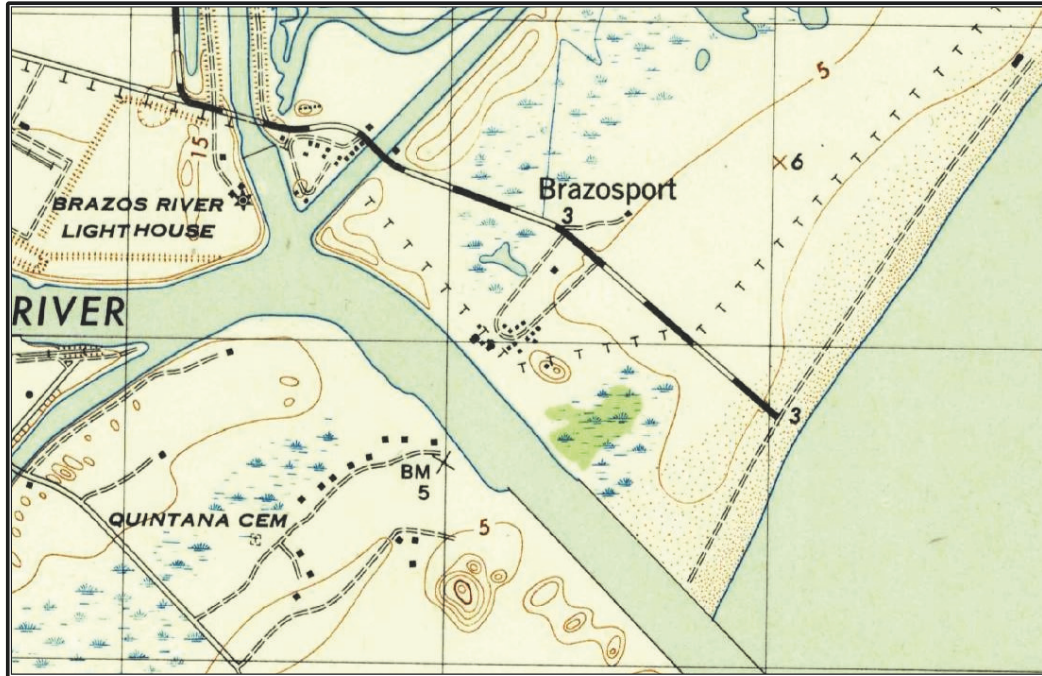


Figure 3.15. Portion of the 1943 Freeport, Texas, 7.5-minute series topographic quadrangle map (USACE 1943).

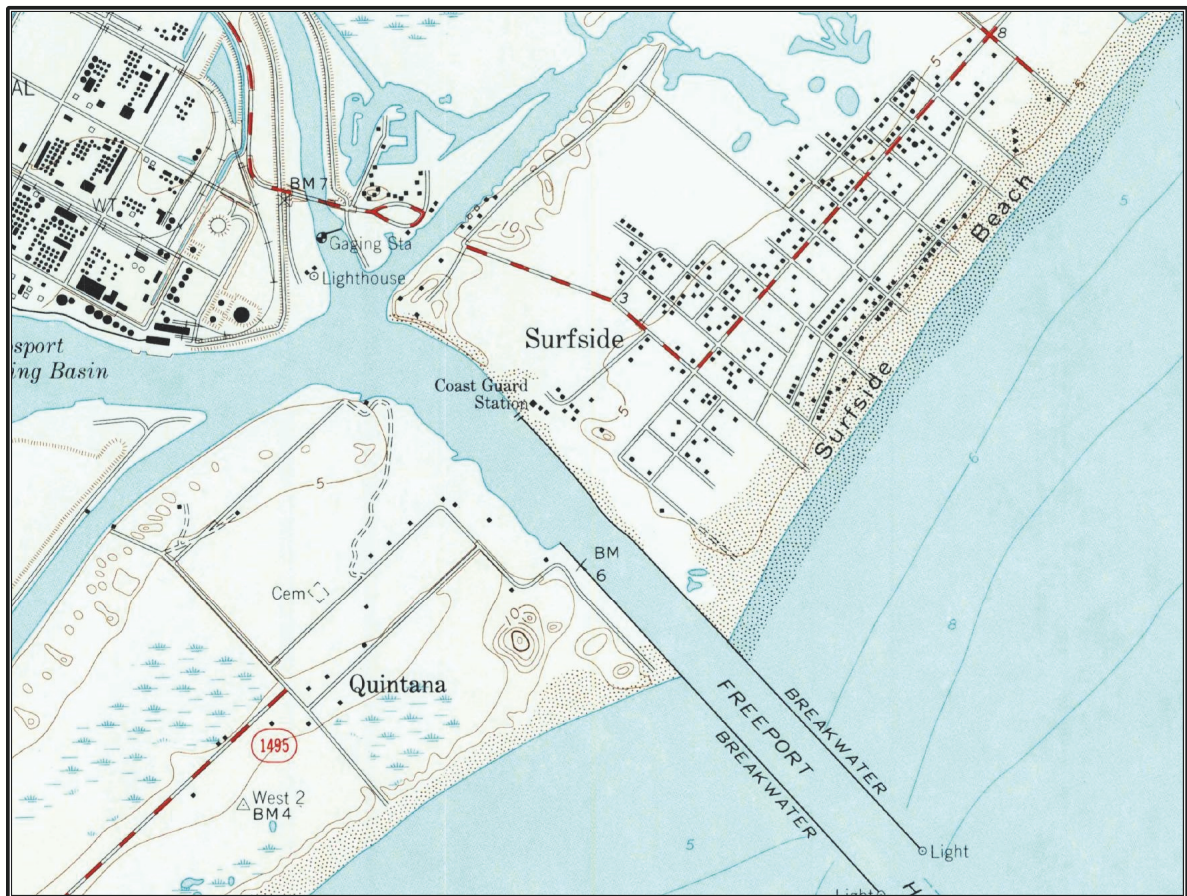


Figure 3.16. Portion of the 1964 Freeport, Texas, 7.5-minute series topographic quadrangle map (USGS 1964).

Archaeological investigations on the property began with the 1970–1971 inspection and excavations, conducted by TSPE members, who found a cistern and several brick foundations in Surfside Block 568. Between 1972 and 1973, informal excavations by Boy Scouts were conducted on property under the direction of Lagett Cleaver, Dale Sandlin and Howard B. Fearn to excavate the cistern, and also a local amateur archaeologist, Raymond Walley, who dug in other areas of Block 568. (Fox et al. 1981:4). Some of the artifacts from this work are curated at the Brazoria County Historical Museum (BCHM), some ended up at the BMNS, and some items found their way into private collections. At the time, it was the belief of the TSPE members involved in the early 1970s excavations that the archaeological features and artifacts found at the site were direct evidence of the 1832 Mexican fort.

The Brazoria County Historical Survey Committee and Adele Perry Caldwell (1895–1974) provided personal knowledge and research on the subject, and then the Brazosport Chamber of Commerce created a tourist brochure about the Battle of Velasco in about 1970; several versions were published over the next few years (Brazosport Area Chamber of Commerce 1970). Ultimately, plans were drawn up for a circular fort replica of 300-foot diameter (Figure 3.17), incorporating the archaeological remnants found in the previous investigations (Fearn 1971). While the purpose of the blueprint was to depict how the archaeological features were planned to be incorporated into the reconstruction of the 1832 fort, this never came to fruition. Nonetheless, this drawing provides information on the archaeological features found nowhere else in print, including the size (19' 9") and location of the cistern, details on an adjacent brick chimney base (width reportedly 8') and a two-room, brick-foundation structure, as well as the location of certain trenches dug during the 1970s archaeological investigations. This area of the drawing is shown in greater detail below in Figure 3.18.

In late 1975, the U.S. Army Corps of Engineers hired the Anthropology Lab at Texas A&M University to undertake a reconnaissance

survey around the harbor area. The survey was focused on prehistoric sites, primarily, but more or less affirmed the FVRA assumption that the 1832 fort was in Surfside Block 568. This work also resulted in the formal registration of the presumed site of the 1832 fort as archaeological site 41BO125 at the Texas Archeological Research Laboratory (TARL) in Austin (Baxter and Ippolito 1975; Ippolito and Baxter 1976).

Another outcome of the FVRA group was a renewed interest in the history of the area more broadly, which, due to Velasco's importance historically, inevitably focused more attention on the various incarnations of Fort Velasco and the 1832 Battle of Velasco, in particular. An excellent history of Brazoria County was written by Creighton (1975), which includes a passage about the 1832 fort and battle, and also provides a reconstructive rendition of the 1832 Fort Velasco as illustrated by Zella May McDaniel (1929–2018) (Figure 3.19). Mary Delaney Boddie (1978), a member of the FVRA, also authored a small book, entitled "Thunder On the Brazos." Boddie (1978) is an excellent summary of the precursors, order of battle and especially the political aftermath of the Battle of Velasco. Lastly, the Brazosport Chamber of Commerce and its president (from 1967 to 1988), Dan Parkinson, contributed artwork showing their rendition of the reconstructed fort for their brochures on the Battle of Velasco. Figure 3.20 shows one of the Parkinson illustrations, which was published in the Brazosport Facts on 8 February 1980, to accompany an article on the Battle of Velasco.



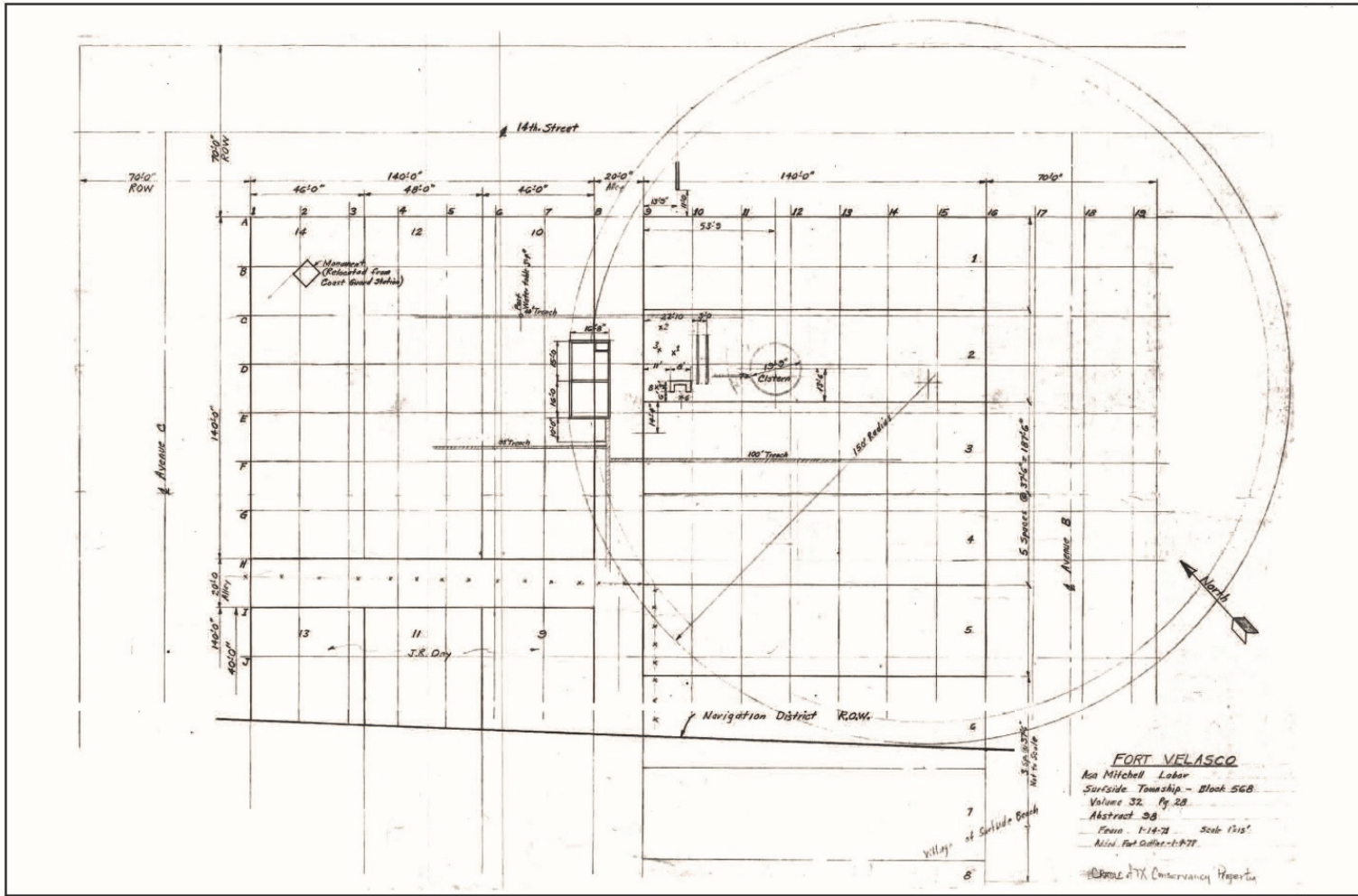


Figure 3.17. Digitized copy of 1970s Fort Velasco Restoration Association design drawing (Courtesy of the BlueLine Print Shop, Freeport TX).

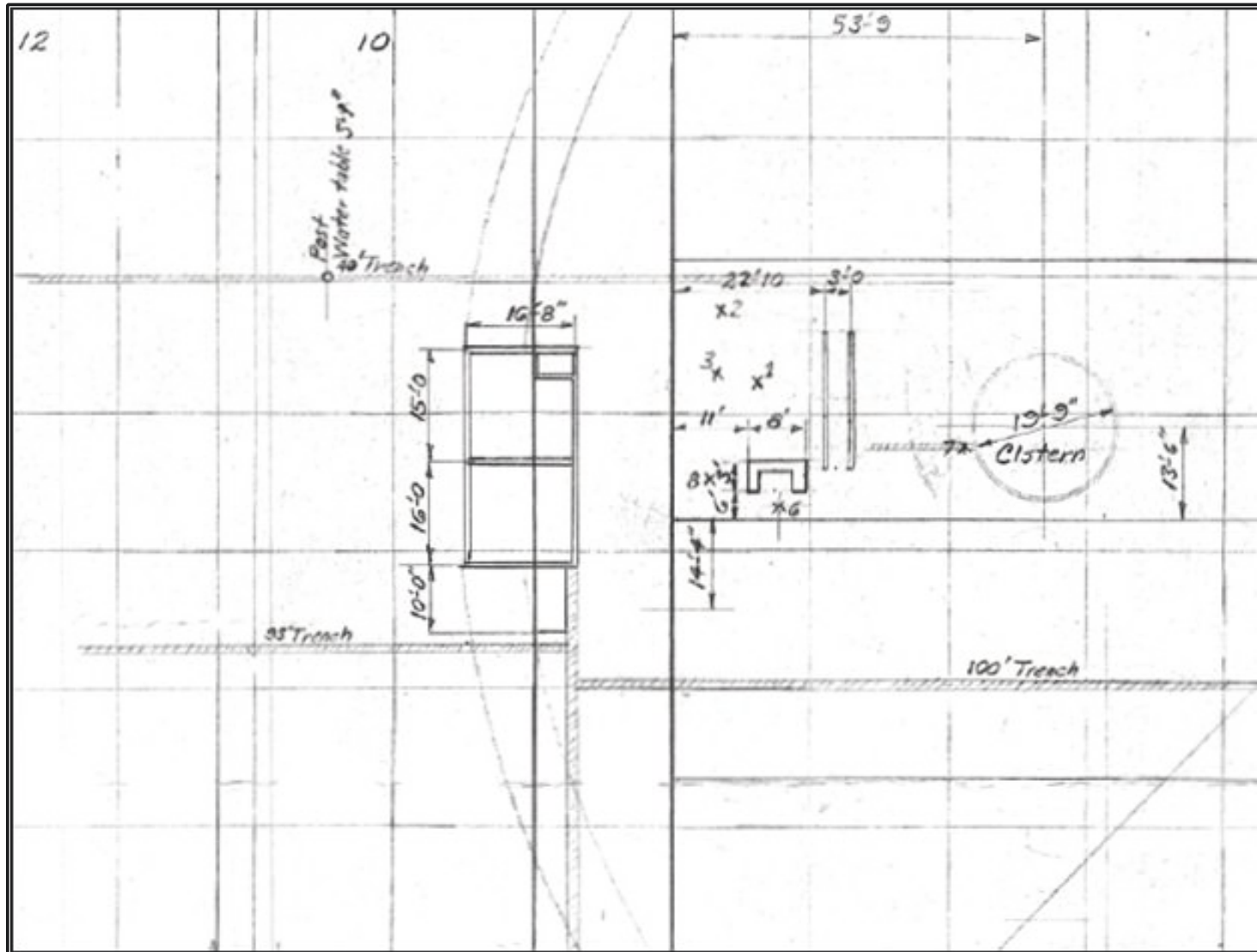


Figure 3.18. Detail from Fort Velasco Restoration Association blueprint (Courtesy of the Blueline Print Shop, Freeport TX).



In anticipation of the Freeport harbor widening, the Center for Archaeological Research (CAR) at the University of Texas at San Antonio (UTSA) was contracted to do a cultural resources survey around the harbor channel, including further minor excavations in Blocks 568 and 569 between October and November of 1980 (Fox et al. 1981). The artifacts collected have been archived at TARL in Austin. In the report of findings for the project, Fox et al. (1981) provide one key diagram (Fox et al. 1981:39, Figure 7) reproduced here as Figure 3.21 below. This figure shows an overlay of new Surfside streets and blocks on top of the old Velasco blocks, indicating that modern Avenue C/Coast Guard Road/Monument Avenue approximates the path of Old Velasco's Fort Street, and that the modern Fourteenth Street/Parkview Road intersects at an angle such that its imaginary extension to the northwest would pass into the area of the old Monument Square block. Indeed, a small dashed circle is then proposed as the probable location of the 1832 fort. Another figure from Fox et al. (1981:41, Figure 8), reproduced here as Figure 3.22 shows the locations of the CAR excavations in Surfside Blocks 568 and 569, but also shows the locations of the aforementioned cistern, chimney base, and brick foundation (Block 568). Additionally, they include their interpretation of the "most likely area for fort remains" in the corner of Block 569 formed by intersection of Avenue C/Coast Guard Road and the jetty line.

In the early 1990s, several new archaeological discoveries were made at the Velasco site (41BO125) during the Freeport Harbor widening project conducted by the USACE. McWilliams and Boyd (2007:7) report that James L. Smith of the BAS identified parts of the Confederate fortifications, exposed by erosion, at the mouth of the Brazos River in 1990. Smith reportedly submitted a modified 41BO125 site record form to TARL to officially record the identified remains as part of the site. Review of the site form, submitted by Smith, indicates that rather than archaeological materials exposed through erosion, the remains that were exposed were uncovered as a result of the excavation of a large trench by a mechanized "track hoe" for placement of large granite boulders as a landward extension of the proposed new jetty line. At the time, there remained a substantial band

of "land" between this row of granite boulders and the open water of the harbor channel, which has since eroded and sloughed-in such that the boulders now act in their intended role as a bulwark against further erosion.

The sketch map included with Smith's site record form is extremely important, although it is not drawn to scale and the orientations of the features, as drawn, are likely also rough approximations. Presented here as Figure 3.23, the sketch shows that the archaeological remains were uncovered within and stretching entirely across, the 12.2 m (40 ft) wide trench of the new jetty line to the southeast of the old U. S. Coast Guard station and Coast Guard Road/Monument Drive. The northernmost of the archaeological features was a constructed plank walkway, which measured roughly 1.8 m (6 ft) wide, ran perpendicular (about 45 degrees from north) to the new jetty trench and uncovered at a depth of roughly 3.0 m (10 ft) below ground surface (bgs). Roughly 15.2 m (50 ft) southeast of the plank walkway was a ditch feature, which ran at a north-northeast – south-southwest angle (roughly 27 degrees from north) across the new jetty trench and was interpreted as a possible moat. At an unspecified distance further southeast along the jetty line, a row of cedar posts was found also running in a north-northeast to south-southwest orientation (roughly 19 degrees from north). Immediately adjacent to the posts were clusters of 25–30 (12-pound) cannon balls. An unspecified distance southeast of the cannon balls within the jetty line trench was a platform made of oak tree trunks 0.6-0.9m (2-3 ft) in diameter buried 3.7–4.6 m (12–15 ft) bgs at an orientation of roughly 52 degrees from north. A mere 4.6 m (15 ft) further to the southeast within the new jetty trench another ditch feature was found running across the trench at a 43-degree angle. This time, a width of 16 ft was mentioned for this "possible moat." Something else about this "moat" that was more evident in the sketch of the southernmost one was that it has a bit of a curve to it. Taken together with the other "possible moat" feature, it looks like it may form a large oval. A note present at the top of the sketch map indicates that while not drawn to scale, the distance "from moat to moat" was about 22.9 m (75 ft).

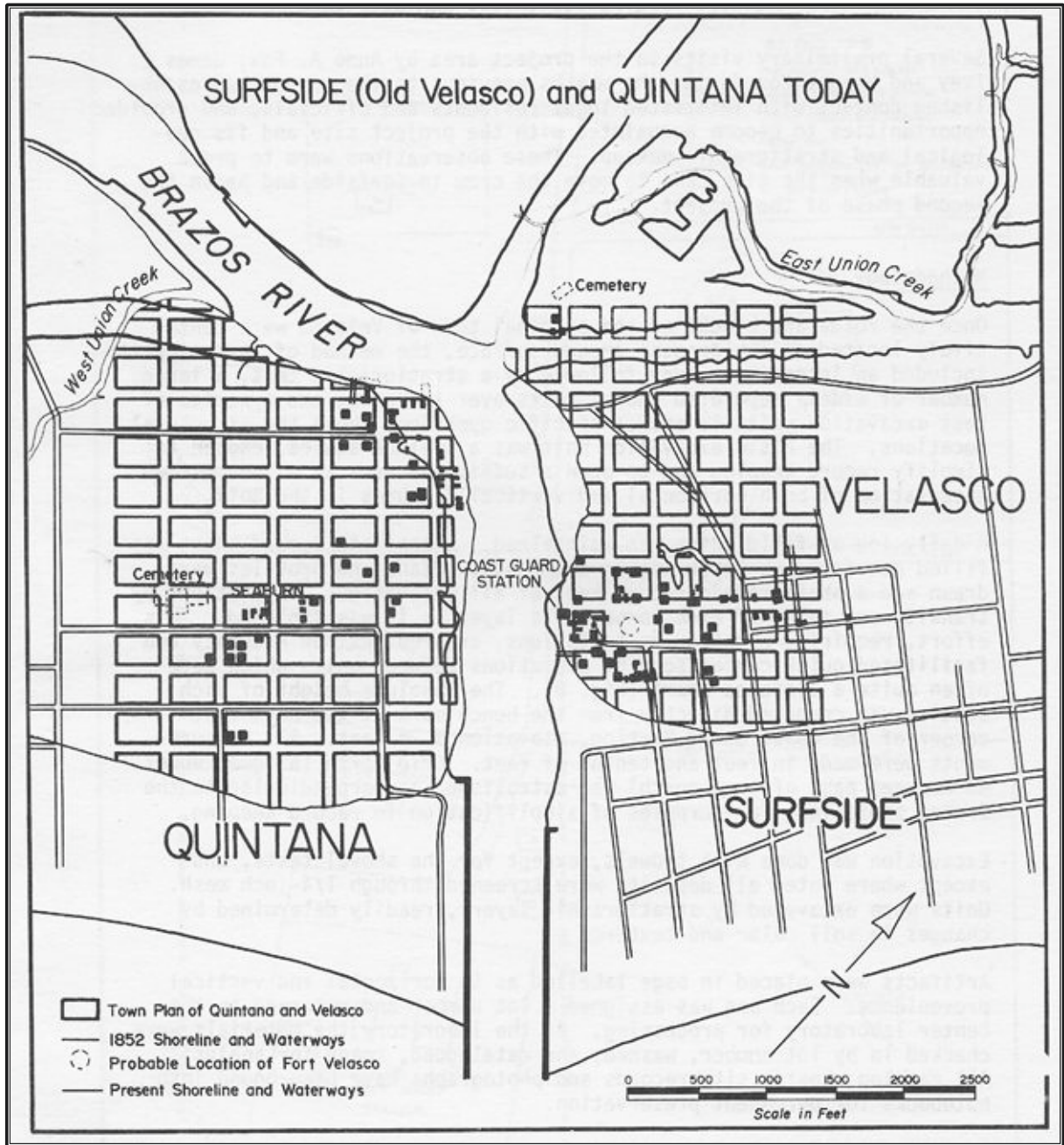


Figure 3.21. Overlay of Old Velasco map and modern Surfside and Quintana streets and blocks (Fox et al. 1981:39).

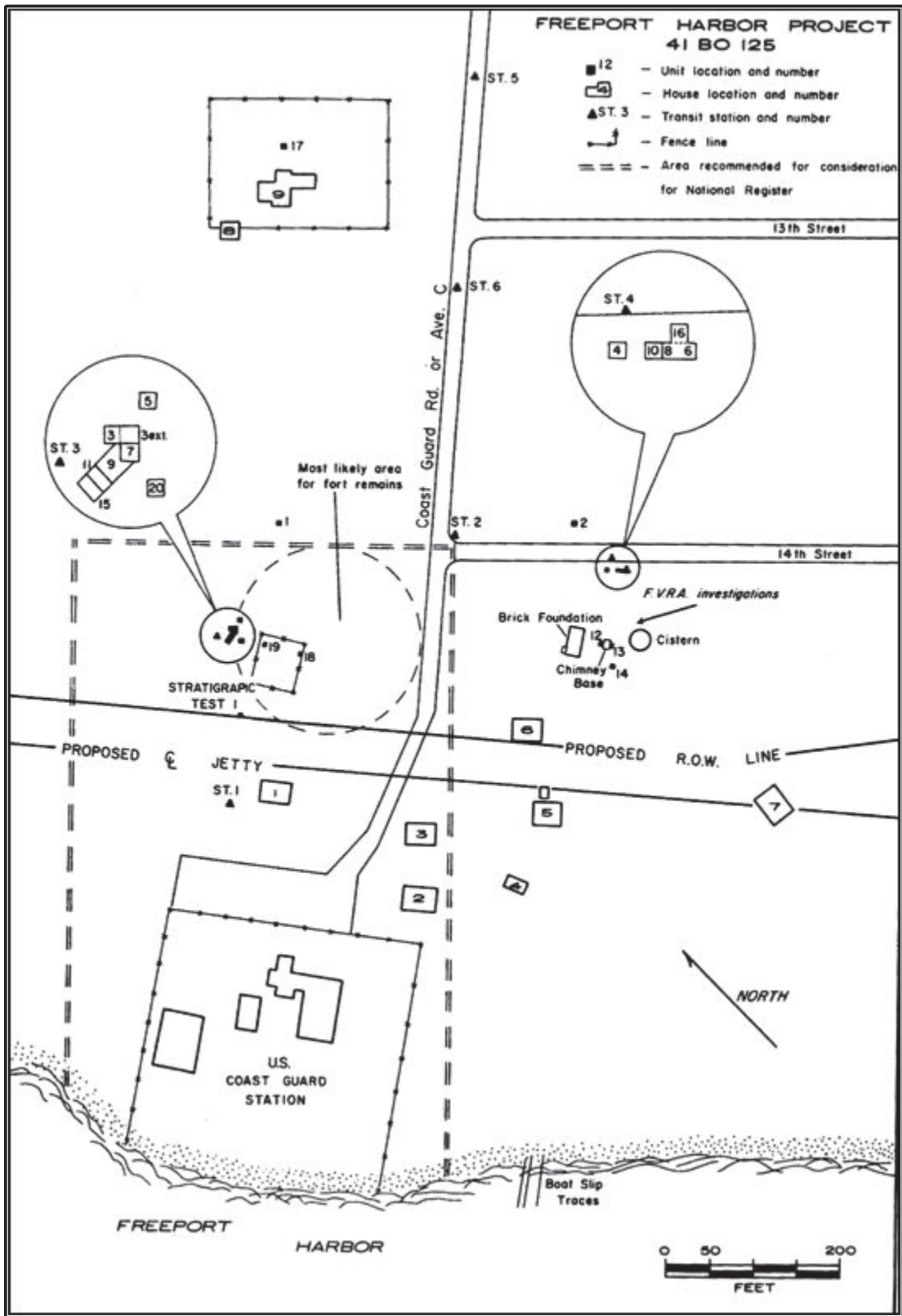


Figure 3.22. Map of Center for Archaeological Research 1980 excavations (Fox et al. 1981:41).

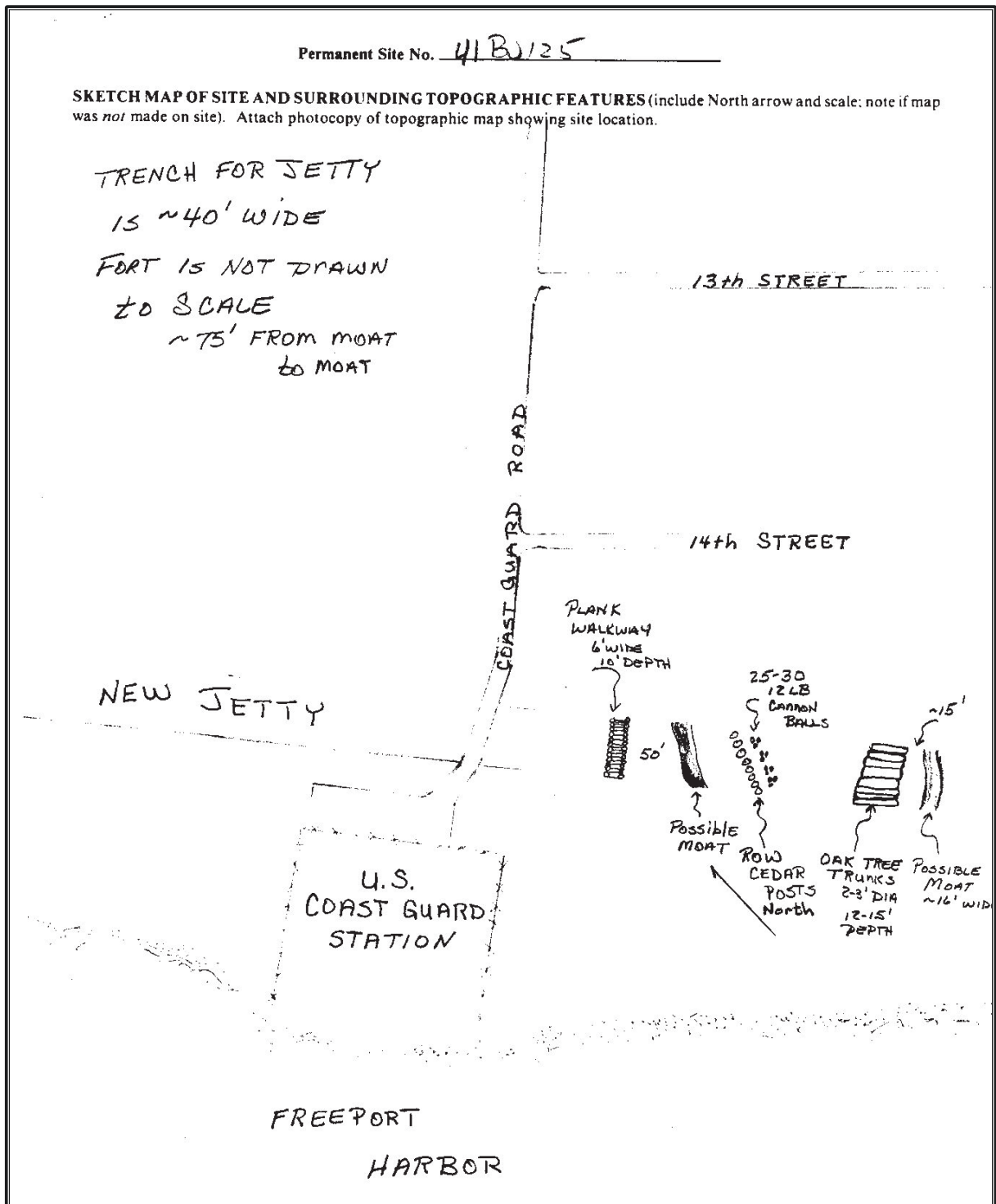


Figure 3.23. Sketch map on 41B0125 site form, showing archaeological features found in the 1990 new jetty trench, as drawn by James L. Smith (Available through the Texas Archaeological Sites Atlas, maintained by the THC).

According to Chris Kneupper (Member of CTC Board of Directors), after the excavations of the jetty trench were completed, the CTC learned that the heavy equipment operator had found a total of 27 (12-pound) cannonballs and some mortars. Smith specified in the site form that at least one 8-inch mortar was found. These artifacts were distributed among the construction crew and presumably disappeared, but they were able to see pictures of two of the cannon balls to identify the types. Eight-inch mortar rounds were in use during the Civil War period, although it is not clear from the available historical information if these rounds were in use at the Civil War Era Fort Velasco or whether they may have been used in Union attacks on Velasco. The historical record does indicate that a 12-pound canon was installed at the fort during the Civil War occupation, but 12-pound cannon have been around since the late 1700s and while 4-pound, 8-pound, and 9-pound cannon were mentioned in relation to the 1832 Mexican Fort Velasco, cannon of various sizes (though 12-pound is not specifically mentioned) were present during the Texas Revolution period.

Smith concluded on the site form that the site consisted of a sand fort with possible moat, Oak timbers were used for walkways and mounting heavy guns. It was suspected, as mentioned above, that the munitions were Civil War Era, and so Smith also added that Civil War ordinance may be scattered over the area. If the exposed archaeological features and ordinance were from the Civil War Era, then it is possible that they represent part of the Civil War Fort Sulakowski, possibly the rear magazine (see Figure 3.9).

The archaeological finds within the new jetty trench were supposedly exposed 3.0–4.6 m (10–15 ft) below the ground surface somewhere in the vicinity of where an extension of Treaty Avenue would intersect with the jetty, according to Kneupper. The UTM coordinates for the site as recorded on the site form agree with this statement as the UTM location point would have been near the intersection of Treaty Avenue and the jetty line. It is not clear, however, if the UTM coordinate was taken at the time of the discovery or is an

approximate location selected based on the interview with the equipment operator. If the finds were located further south (close to Treaty Avenue), then the position would be in greater agreement with where the CTC currently thinks the Civil War Era fort was located; however, if the finds were actually further to the north, nearer Coast Guard Road/Monument Avenue, then it would be closer to where the CTC thinks the 1832 fort might have been built.

The depth of the finds is also problematic, but possibly informative. Smith notes on the site form that the archaeological materials were found 3.0–3.7 m (10–12 ft) bgs (although sketch map suggests 3.0–4.6 m (10–15 ft)). He indicates that the present ground layer mainly consists of overburden from the dredging of the harbor channel. A mounded area does exist to the south of the current project area from historic maps dating to the late 1800s and early 1900s, as mentioned above, and an elevated hill exists to the south of the project area even today, so it is possible that this mound represents the dredging spoil pile that could have been the area dug into during the jetty trenching.

Beginning in 1991, the Brazosport Archaeological Society (BAS), an affiliate group of the BMNS, conducted salvage archaeology collections and excavations in the vicinity of Old Velasco and Quintana during the USACE channel widening activities. During this period, a dense collection of artifacts (a “trash pit”) was observed in the ground where the old Coast Guard station and its fenced-in area had stood for many years. This was excavated by emergency salvage techniques (as the dredge began its work). The artifacts from the BAS work during this period, often called the “Velasco Collection”, are archived at the BMNS. One interesting find among the artifacts in the collection was an unfused but fired 20-pound Parrott shell. Later research revealed such rounds had been fired at Velasco by the *USS Midnight* in 1862, providing further support to the possibility that the Civil War fort may have been somewhere in the vicinity (Smith 1993).

Based on these discoveries and artifacts revealed in the exposed “cut bank,” the U.S. Army Corps of Engineers halted further dredging



temporarily and hired a professional archaeology firm, Prewitt & Associates, Inc. (PAI) to conduct excavations in the area. The resultant archaeological collection is curated at TARL and the work was summarized in a preliminary report of findings produced in 1992 (Earls et al. 1992), and then a final report of findings in 1996 (Earls et al. 1996). One key figure in the final report (Earls et al. 1996:294, Figure 134) is reproduced below as Figure 3.24. This map shows the PAI excavation locations focused in Blocks 11 and 12 in the portion of the property to be consumed by the channel widening. They overlaid their map containing the modern Surfside blocks with the historic Velasco blocks much like Fox et al. (1981). It is unclear whether they used Fox et al. (1981) as a starting reference for this overlay, or whether they arrived at the overlay on their own, but the resultant position of the maps essentially concurred with the overlay by Fox et al. (1981). The overlay also agreed with the supposed positions of the structures observed in the 1858 Bache map (Bache 1858). In Block 13 of the Earls et al. (1996) figure, the structure just to the left of the numeral 13 is thought to be the original Lapolean/Shannon house (Smith 2014b), and the structures underneath the line representing Fourteenth Street are believed to represent the Archer-Herdon property (Smith 2014a).

In the same approximate time period in the early 1990s, surface artifacts (mostly ceramics) were collected gradually over several years by BAS members on the eroding beach of the harbor channel on the Quintana side (since excavations were requested but not allowed), often referred to as the “Quintana Collection” (Blake and Freeman 1998), and are housed at BMNS. One interesting discovery from these surface collections was a military coat-size button for the Republic of Texas Marines Corps (Kneupper 1996). Similar collections on the Velasco-side eroding channel bank over the following years were added to the “Velasco Collection”. The collections of nineteenth-century ceramics from the “Velasco Collection” (coming from both the initial BAS excavations and the subsequent surface collections were extensively researched and together PAI, and the BAS produced two illustrated catalogs of transfer-printed wares for the USACE (Blake and Freeman 1998; and

Pollan et al. 1996; McWilliams and Boyd 2007:7).

Some exterior portions of the brick foundations in Surfside Block 568, which had been originally documented by CAR in 1980 (Fox et al. 1981) were excavated more fully by BAS and the CTC in the period of 1996–2003; with artifacts archived at BMNS. One key finding was that the cistern and brick foundation were really of Anglo-American origin, and most likely from the early days of old Velasco (1835–1860s), since very few Mexican or military artifacts were uncovered in this excavation (or in the previous excavations of the same area). As a result of this change in interpretation, it is believed that the brick foundations represent outbuildings or a later structure associated with the Archer-Herdon property (Lots 4, 5, 6 and 7 of Velasco Block 13) (Smith 2014a). The James T. Shannon (Lots 8 and 9) and Jeremiah Brown (Lot 10) houses were nearby also (Smith 2014b) (see Figure 3.5 above to reference Velasco-platted lots).

In 2006, plans to build the boat ramp resulted in a contract with PAI to survey and test the impacted area for historical remains. Their report indicates the area involved the former Velasco Block 14 but was heavily disturbed, and intact remnants of old Velasco were no longer present (McWilliams and Boyd 2007). The project area for the 2006 PAI investigations lay a good distance away from Block 568, which is the focus of the current work.

More pertinent to the current project area was work conducted by PBS&J, a Cultural resource management firm out of Austin, Texas, in 2008. After consultation with the THC, it was determined that five trenches would be dug on the water side of the jetty line adjacent to Blocks 568 and 569 in areas determined to be of a high potential for finding archaeological materials in order to test remaining areas between the harbor channel and the jetty line, so that area could be removed (Stahman 2008). These trenches measured approximately 18.3 m (60 ft) in length and 0.6 m (2 ft) in width with spaces between the trenches ranging from 15.2 m (50 ft) to 33.5 m (110 ft).

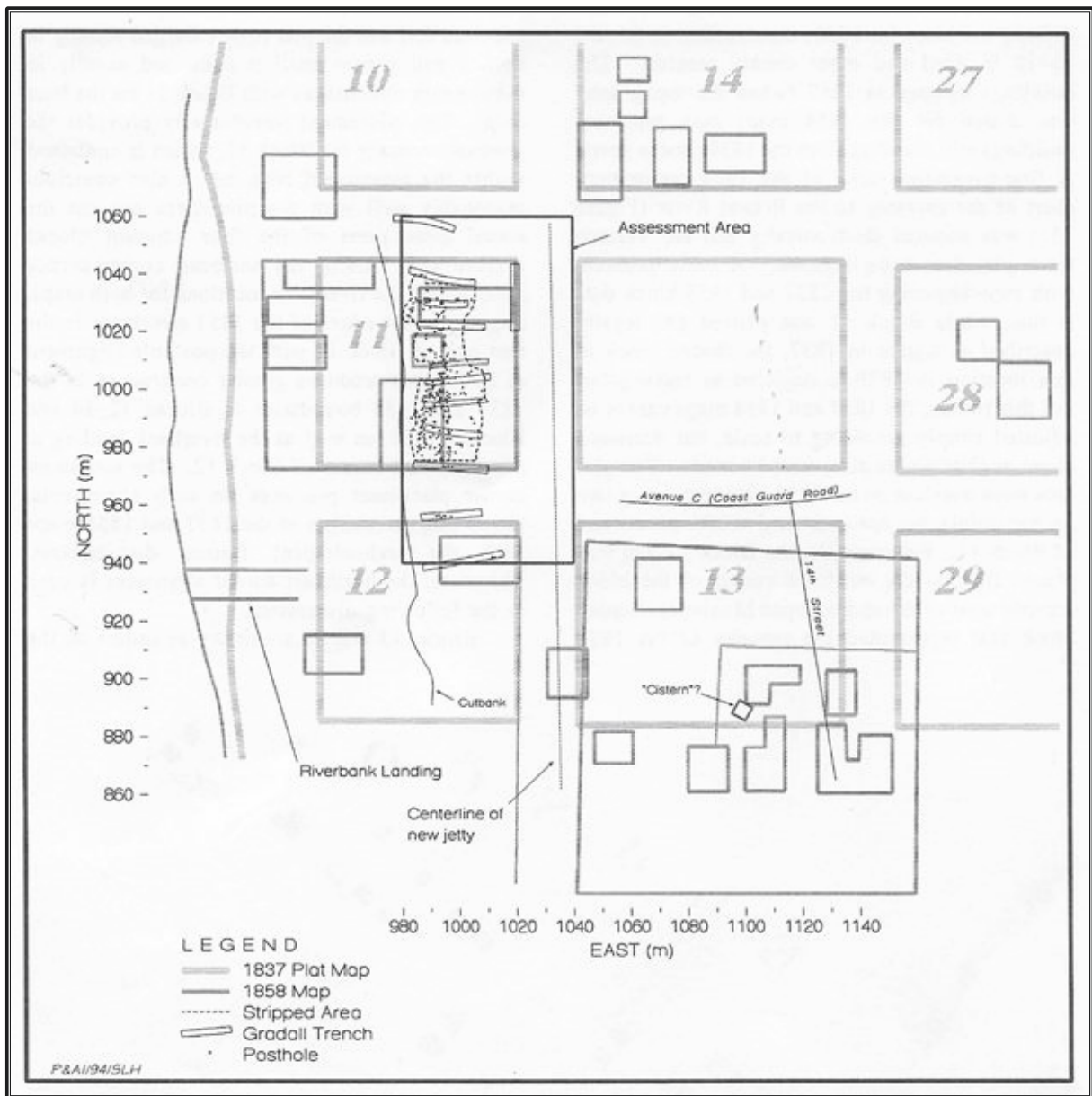


Figure 3.24. Map of the Prewitt & Associates, Inc., excavation areas (Earls et al. 1996:294, Figure 134) (Courtesy: Prewitt & Associates).

Trenches were dug to depths of approximately 2.2 m (7.2 ft) bgs until sterile clay was reached or until digging at least 0.8 m (2.6 ft) below the water table in some cases. Although some evidence of old Velasco was found in the form of artifacts, a wood post, and a horizontal wood beam in a supposed builder's trench in the location of a mapped historic structure, the authors concluded there was low potential for further investigations (Stahman 2008).

The PBS&J report (Stahman 2008) is noteworthy due to the map (Stahman 2008, Figure 2) that was provided to show the locations of their five trenches, as well as the locations of former building locations, former town blocks, former and current shorelines and/or high tide lines, the shoreline protection jetty, and the locations of the trenches and excavation units dug by PAI in 1996. Some of these items are drawn in the PAI map presented as Figure 134 in Earls et al. (1996:294) (reproduced here as Figure 3.24), but notably, some elements of the PBS&J map are new. In addition to the PBS&J trenches, Stahman (2008, Figure 2) also depicts a series of three trenches, labeled "1991 USACE Trenches." The report (Stahman 2008), however, gives no further information about these trenches. An attempt was made to contact Andrea Burden (née Stahman) about the source of the USACE trench information. She indicated that the information had come from the Earls et al. (1996) report, but review of this report did not result in the discovery of any such information. Chris Kneupper discussed the USACE trenches with James Smith and Smith did recall that at some point in 1991 after the jetty trench had been completed, a young USACE archaeologist, named Carolyn Murphy, did come out with a small crew to do some trenching. Smith was on-site during the excavation of one trench (possibly USACE Trench #2), but he did not see the excavations of the other trenches. An attempt was made by CRA to contact Carolyn Murphy to ask about documentation of the trenches, but CRA was unable to make contact. To date, no report has been found that discusses these trenches.

PBS&J Trenches 4 and 5, as well as the 1991 USACE Trenches 1, 2, and 3 are within the vicinity of the intersection of the jetty line and Treaty Avenue. As was discussed above, the extensive archaeological features discovered

during the excavation of the jetty line trench were supposedly found in this area according to the accounts from that period. While it is unknown if anything was found in the 1991 USACE trenches, there was nothing found in the PBS&J trenches except for modern debris buried as deep as 1 m (3.3 ft) bgs in Trench 5. It is worth mentioning that the water table was encountered at 1.1 m (3.6 ft) bgs in Trench 5 and excavations were terminated at approximately 2.1 m (6.9 ft) bgs. Review of the trench profile suggested that the entire exposed soil column consisted of dredged spoil. It is possible that they were not able to dig deep enough in this trench to reveal remnants of the historical occupation level.

Bid requests were issued in February of 2015 to four cultural resource management (CRM) firms for proposals for non-invasive, geophysical remote-sensing survey. The survey was to include the potential use of GPR, magnetometer and/or soil conductivity techniques to investigate Blocks 560 and 569. Bids were received from PAI and Moore Archaeological Consulting (MAC). As the Village of Surfside Beach was the primary customer, they determined the winning bid and accepted the bid and scope-of-work from MAC, who proposed using GPR and magnetometer to conduct the survey. The fieldwork was accomplished over the course of two visits on 2–3 September and 11–13 September 2015 by Moore's parent company (Coastal Environments Incorporated [CEI]) with a geophysical specialist, Bryan Haley, out of their New Orleans office. The work was done under Texas Antiquities Permit 7350, and their final report was produced in 2017 (Hadley and Mangum 2017). A number of low and medium priority anomalies were identified, but no definitive evidence of the 1832 fort or any other identifiable features were depicted in the resultant geophysical maps. No ground-truthing excavations were conducted to investigate and verify any of the geophysical anomalies identified.

Unfortunately, the area surveyed by MAC/CEI in 2015 was only a portion of Block 569, and Block 560 was not investigated at all. Following the survey, the Village of Surfside Beach spread several feet of spoil (from boat ramp channel dredging, previously inventoried in large piles on the NW end of Block 569) over the surface of Block 569, in furtherance of their plans to build

a trail system funded through a Texas Parks & Wildlife Department (TPWD) grant, thus making any future plans for additional geophysical survey of that block

more problematic. The Village of Surfside Beach then proceeded to build a circular fence-like structure of 100 feet in diameter on the spot in Block 569 presumed to be the historic location of the 1832 fort (as per previous analyses of available historic maps).

In the late Spring of 2017, the Village of Surfside Beach leased the surface area of Block 568 from the CTC to place connecting trails according to the previously obtained TPWD grant. Despite the fact that the lease agreement prohibited excavations or soil disturbance, proper instructions were not given to a bulldozer operator hired to clear the area of brush and weeds, and several inches of soil were bladed up into three piles of dirt and rubble. The well-known and exposed cistern cavity was filled in with a portion of the bladed soil. Some weeks later, the owners (CTC) discovered this fact, and observed historical artifacts crushed and scattered across the block. During the following weeks, surface collections were attempted by CTC members to recover exposed artifacts (Callahan 2017). A datum marker, placed in 1996 for the BAS excavations of 1996–2003, was apparently swept away as it could not be located. One reason for the current survey is to establish what historical remnants may remain of the known archaeological features (i.e., the cistern, chimney base, and the brick foundation), and to re-establish their locations.

In light of the fact that Monument Square may have instead commemorated the graves of the Texian dead from the Battle of Velasco (perhaps where John Austin's division took many casualties), the exact location of the 1832 fort might be just adjacent (south) of this area. Again, Ellen Shannon claimed her 1887 residence (in Lots 8 and 9 of Velasco Block 13, fronting on the southeast side of Fort Street) as the sight of the Mexican fort, which was agreed with by Mr. Alexander Glass Follett, Sr. (Looscan 1898). Since both were long-time Velasco residents in the period when remnants of the 1832 fort remained visible, their accounts should be accorded substantial authority. Also, the 1845 MacGreal-

O'Connor deed mentions that the Archer-Herndon property was near the "Old Fort" (Brazoria County 1845). The assumption that Monument Square was the location of the 1832 fort does not share similar first-hand accounts. In 1931, Mrs. T. A. Humphries described the location thusly:

*For many years, a cedar post marked the site of the old Mexican fort captured by the Texans in the Battle of Velasco in 1832. It was finally washed away and the location forgotten.*  
[Humphries 1931]

This area today is thought to exist in the west corner of Surfside Block 568, very close to the current jetty right-of-way. The 1887 Shannon house is shown in the 1888 map (see Figure 3.12), 1890 Goode Drawing #2 (see Figure 3.13) and 1891 map (see Figure 3.14) surrounded by a fence, and along Fort Street (which is approximated today by Monument Avenue). This last map even presumably shows the brick cistern thought to be the same one found in previous archaeological examinations of the area. Thus, it seems the area of the old fort lies beachward from the current Monument Avenue, not northward of this street.

## Summary of the Historical and Archaeological Research

The "port of Galvezton" was officially established in 1825, but effectively operated at the mouth of the Brazos River until about 1831, when it was transferred to Anahuac. Premature and unsuccessful efforts by George Fisher were made as early as the summer of 1830 to establish a customs post at the mouth of the Brazos, but did include many plans and the seizure of at least one schooner for smuggling tobacco. However, actual creation of the first customs post was delayed until early 1831, built by soldiers under the command of Juan Davis Bradburn, using Anahuac as a base of operations.

Although some sort of customs house or post existed for about a year prior, the construction of the palisaded Fort Velasco occurred over a rather short period of about four weeks in April and May 1832, under the direction of Domingo de Ugartechea. The Battle of Velasco occurred only a month later, so the occupation period by the Mexican garrison of the fort was very short.

The 1832 fort built by the Mexican soldiers was about 100 feet in diameter, and some, if not most, of the buildings, such as customs house, barracks, stables, offices and warehouses were probably built outside of the fort given that it was so small. Many of these structures were burnt just prior to the Battle of Velasco. Strategically important items such as a cistern or well, as well as armory, magazines, or powder room were probably inside the fort walls.

Various artists' renditions of the 1832 fort have been done as small dioramas (one by museum volunteer Elmer Kerls is shown in Figure 3.25 below), that were once used at the BCHM in Angleton, now no longer in existence. Most historical descriptions of the fort describe two concentric sharpened wood-pole palisades, with sand filling the annular space in between (for an elevated walkway), and a sand mound in the center where a single long eight or 9-pounder (naval) cannon was mounted on a pivot surrounded by a parapet, to engage ships in the harbor channel or nearby Gulf waters. A smaller swivel gun was apparently mounted on the north wall, intended mostly for anti-personnel use.

Recent research, as described in this report, reveals that graves from the Battle of Velasco existed in the immediate vicinity of the 1832 fort. The fort's exact location has not yet been confirmed, but is thought to be somewhere in Surfside Blocks 568 or 569. The potential presence of graves at the site provides an additional important reason to continue archaeological efforts to positively identify the location of the 1832 fort.

In a larger sense, Brazoria County seems to have been in the center of early and growing dissent in this period among the Texian colonists leading to the Texas Revolution, catalyzed by the "Law of April 6, 1830." and its zealous implementation by characters like George Fisher, Juan Davis Bradburn, Thomas M. Thompson and later Santa Anna. Mexican leaders, such as Jose Antonio Mexía, Domingo de Ugartechea, Lorenzo de Zavala and perhaps even Manuel Mier y Terán were more liberal and diplomatic with the Texians and, if their policies had prevailed, the Texas Revolution might never have happened.

Additional forts and fortifications were at the site of Velasco and were also called Fort Velasco, including during the Texas Revolution and the American Civil War. The Republic of Texas battery and the original Civil War fort known as the "Town Fort" existed in areas now lost to modern harbor widening; however, near the current jetty line may be remains of the Civil War Fort Velasco, also referred to as Fort Sulakowski.

Old Velasco played a more significant role in early Texas history than is generally recognized today, and efforts should be made to redress the situation by historical interpretation of the area, to teach locals the power and importance of the past and to promote heritage tourism for visitors. Ongoing research will be promoted by the members of the Cradle of Texas Conservancy and will be posted at <https://velascohistoryarchaeology.weebly.com>.



Figure 3.25. Image of diorama by Elmer Kerls formerly at the Brazoria County Historical Museum (Courtesy of the Brazoria County Historical Museum).

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## Chapter 4. Methods

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The geophysical investigation completed for the current work consisted of geophysical survey using GPR, magnetic gradiometry, and electrical resistivity. This chapter describes the field research methods used during the geophysical data collection, as well as a brief description of the data processing methods. The discussion is divided into three main sections describing the GPS data collection and processing methods, geophysical survey and data processing methods, and then lastly, the ground-truthing methods.

### **Global Positioning System Data Collection and Processing Methods**

During this project, Universal Transverse Mercator (UTM) coordinates were recorded using ESRI ArcPad 11 software on a GeoExplorer 3000 Series GeoXT handheld global positioning system (GPS) unit manufactured by Trimble to verify locations within the project area with less than 1.0 m (3.3 ft) accuracy. GPS data was collected using the North American Datum (NAD) 1983 projection. The locations of all geophysical survey grid corners were recorded in this manner to allow for the relocation of the grid point. The survey area was a clear field, with trees only potentially affecting the GPS signal and accuracy of nearby individual grid points through a variable effect. In general, between 5 and 7 satellites were being tracked at any given time.

### **Geophysical Field and Data Processing Methods and Background**

The geophysical survey area for the current project measures approximately 0.79 ha (1.95 acres) in size and encompasses the project area defined by the CTC. Geophysical investigations were conducted in all portions of

the survey area that were clear enough of vegetation to allow for an unimpeded traverse of each data collection transect. As mentioned above, the geophysical survey technique used at the site included GPR, magnetometry, and electrical resistivity. The following paragraphs will provide some information about CRA's approach to the establishment of the survey grid in addition to presenting a brief discussion of the principals and limitations of the geophysical techniques used in the survey. Lastly, information about the specific instrumentation, settings, and methods used during the current geophysical survey is also provided.

### **Grid Establishment Methods**

Prior to the initiation of the geophysical survey, Chris Kneupper, member of the CTC Board of Directors, coordinated the removal of a series of metal fence posts that lined the eastern edge of the project area. He also mowed the tall grasses/weeds present within the project area and clipped back some of the larger branches and bushes that were growing up in the southwestern corner of the property. Kneupper also provided CRA field personnel with a tour and historical introduction to the site after CRA's arrival on the scene.

After CRA field personnel initiated fieldwork, they established a survey grid over the entire accessible portion of the project area using pull-tapes. During the tour of the site, Kneupper indicated that there had once been a historic structure present in the area of the road (Parkview Road) running along the northeastern boundary of the project area. In an effort to possibly identify evidence of this structure, it was decided to include the roadway within the survey area and so the grid origin was placed immediately adjacent to the roadway just north of the intersection of Parkview Road and the graveled alley marking the right-of-way of Treaty Avenue. A baseline was then stretched out along the edge of the roadway at an approximately 310-degree angle to the northwest. Using this baseline, the first

20-x-20 m (66-x-66 ft) grid block was triangulated and the geophysical survey grid was extended across the survey area, which resulted into the establishment of 22 grid blocks, 16 of which were full, standard 20-x-20 m (66-x-66 ft), and 6 of which were only partial blocks along the vegetated southwestern boundary of the property (Figure 4.1).

All unobstructed grid corners within the survey area were marked using wooden stakes tied with pink flagging tape for visibility. The UTM locations of each of the grid corners was recorded using the handheld GPS unit as described above and the grid was also drawn on a field sketch map. All of the UTM coordinates for the geophysical survey grid are presented in Table 4.1. Photographs of the project area were taken with a digital camera and all observable features, obstacles, and topographic changes

present within the survey area that had the potential to impact the geophysical survey results were recorded on a field sketch map for reference during data processing and analysis.

## Geophysical Data Collection Methods

Geophysical investigations were conducted in all portions of the project area that were unobstructed. As mentioned above, the geophysical techniques used within the project area included GPR, magnetometry, and electrical resistivity. The following paragraphs will provide some information about the specific instrumentation, settings, and methods used during the geophysical survey, as well as provide a brief discussion of the principals and limitations of each of the techniques mentioned above.

**Table 4.1. UTM coordinates for all geophysical survey grid corner stakes placed Plan view of proposed project area and geophysical survey grids overlaid on aerial imagery.**

Survey Grid Coordinate (m)		UTM Coordinates (Zone 15, NAD 1983)(m)	
Grid X (North)	Grid Y (West)	Northing	Easting
0	0	275910.55	3203684.20
0	20	275898.10	3203669.24
0	40	275884.77	3203654.39
0	60	275871.57	3203639.28
20	60	275856.64	3203652.61
20	40	275869.61	3203667.46
20	20	275882.62	3203682.81
20	0	275896.31	3203697.73
40	0	275881.30	3203711.12
40	20	275868.18	3203695.86
40	40	275855.11	3203680.91
40	60	275842.38	3203665.66
60	60	275826.66	3203679.38
60	40	275840.34	3203694.16
60	20	275854.17	3203709.91
60	0	275867.66	3203724.56
80	0	275852.84	3203737.86
80	20	275838.87	3203723.04
80	40	275825.90	3203708.15
80	60	275812.33	3203693.52
100	60	275797.92	3203706.85
100	40	275811.23	3203721.33
100	20	275824.19	3203736.48
100	0	275837.12	3203751.68
120	60	275783.01	3203720.33
120	40	275796.41	3203735.19





Figure 4.1. Plan view of proposed project area and geophysical survey grids overlaid on aerial imagery.

## **Ground Penetrating Radar**

GPR is one of several geophysical technologies “borrowed” for archaeological use. It was first employed in 1929 to map the thickness of a glacier (Olhoeft 1996:1) and was later used to search for tunnels, bunkers, and unexploded ordinance (UXO), and for the reconnaissance of building sites (Wynn 1986:251). GPR has been used to map “soil layers, depth of bedrock, cavities, voids, rock fractures, ice thicknesses...buried stream channels, burial sites, buried structures, detection of metallic objects and other related anthropogenic features” (Heimmer 1992:38).

### **Background**

Newer computerized versions of the GPR, such as the SIR-3000 system owned by CRA, have the ability to record the radar traces and present them in both two and three dimensions. They also allow the operator to filter out much of the background noise and random scatter that occurs during a survey. GPR has become “an extremely useful archaeological investigative method, where subsurface conditions permit its usage...[GPR’s] relatively shallow investigative depth, high resolution, sensitivity to soil disturbances, and...ease of data acquisition overshadow its relatively high cost” (Heimmer 1992:43). GPR is an active geophysical method that injects a relatively low frequency electromagnetic signal or high frequency radio (radar) waves, generally from 80 MHz to 1000 MHz, into the ground and measures the reflected waves (Heimmer 1992:37; Wynn 1986:252). As the radar signals travel through the ground, they encounter objects and soil horizons that alter the speed and direction of the radar waves through varying electrical and physical properties. The signals can be either reflected or attenuated—dissipated or weakened—by these subsurface interfaces, hence the name of the GSSI radar owned by CRA: Subsurface Interface Radar System, or SIR-3000.

Figure 4.2 presents an illustration of the collection of GPR data over some subsurface reflectors and the resulting GPR data profile. The reflections in the profiles represent

changes in amplitude of the electromagnetic signal at a point of contrast/reflection (Rx) as a function of the horizontal distance (from some starting point on a survey line to the center of the Tx [time]-Rx pair) and the two-way travel time of the signal. The two-way travel time refers to the time that it takes for the radar signal to penetrate into the ground, reflect off of an object or surface, and then return to the antenna. The GPR data profile, therefore, is an illustration of the manner in which the electromagnetic signal ([reflection] amplitude versus time) is converted into a graphic record (Butler et al. 1994).

What is actually being reflected in the GPR data are “conductivity contrasts caused by objects or disturbed soil horizons” (Wynn 1986:252), such as archaeological features, which “often affect water saturation in the subsurface [and] may be excellent radar targets” (Heimmer 1992:42). The greater the contrast between the electrical and magnetic properties of two sedimentary layers, the stronger the reflection (Conyers and Goodman 1997:27). Air-filled voids and layers of saturated sediment also make strong reflectors (Chamberlain 2000:958). Examples of possible radar representations of archaeological pit features, specifically historic grave pits, were described by Bevan (1991), and include the following as shown in Figure 4.3: (A) “burial contrast”, which results in the standard hyperbolic reflections; (B) “subsidence strata”, which is represented by settling or slumping of the grave fill; (C) “fill scattering” cause by rubble or unconsolidated clay nodules within the grave fill; (D) “strata break”, or soil substrate truncation; and (E) “surficial subsoil”, or superficial soil truncations or disturbances. In Illustrations B, D, and E, the reflections of the features in the GPR data are indirect, and the actual contents of the features are not reflected. In contrast, Illustrations A and C present cases where the radar waves are directly reflecting variable properties of the feature fill (Bevan 1991). As mentioned above, direct reflections of buried objects manifest as hyperbolas within the radar profile, or radargram, such as shown in Figure 4.4.

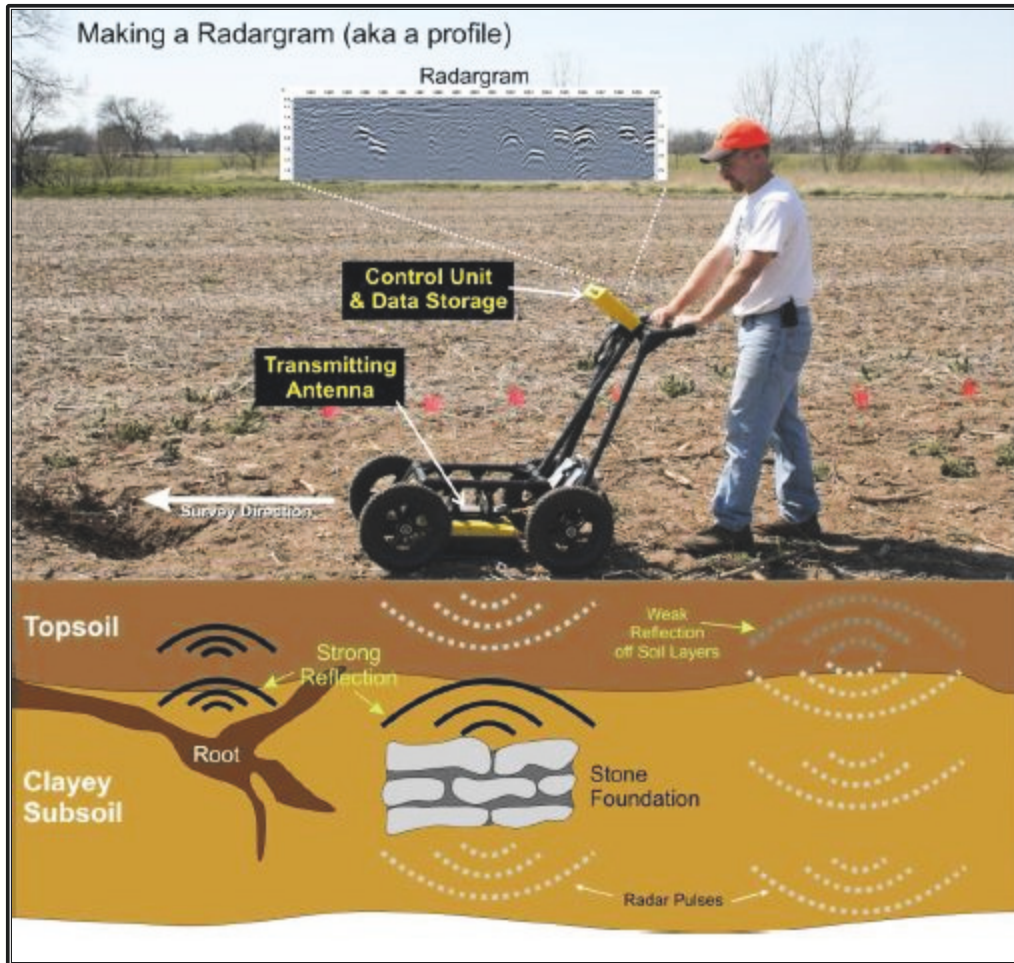


Figure 4.2. Illustration of GPR survey and how the GPR signal reflects off of buried surfaces and builds a radargram/profile (Burks et al. 2015).

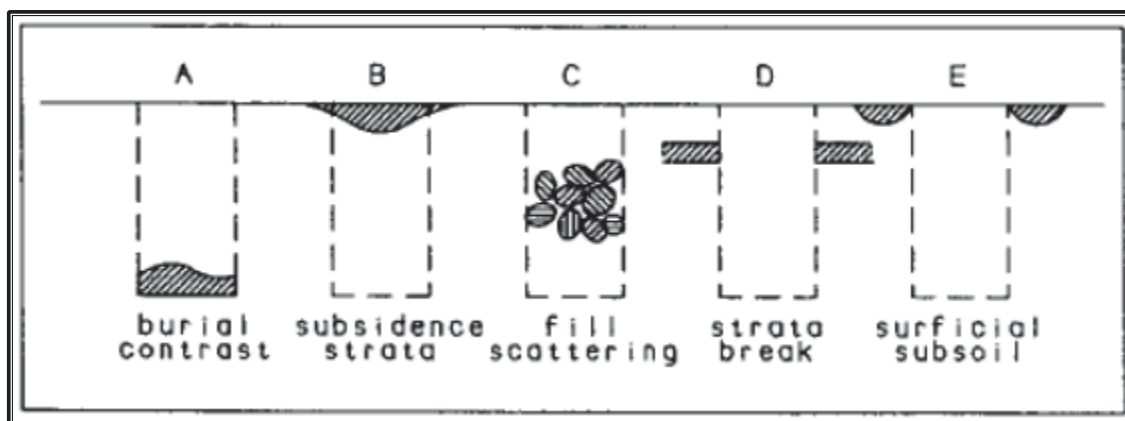


Figure 4.3. Variable responses of GPR signals to archaeological features as seen in radargrams (Bevan 1991).

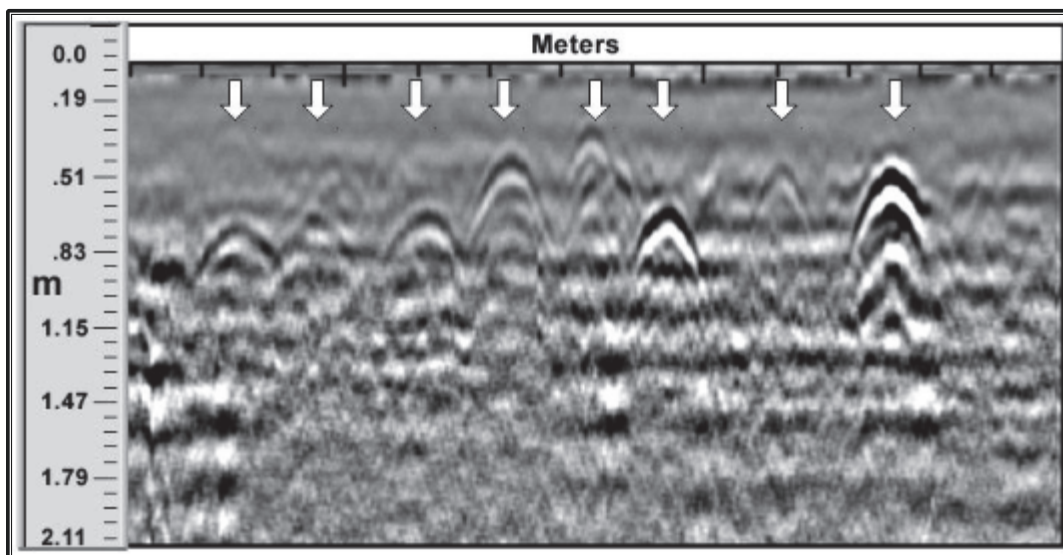


Figure 4.4. GPR profile showing hyperbolic reflections of grave features at Blackberry Cemetery in Elburn, Illinois.

GPR data can be collected nearly continuously across a site, and unlike all other remote sensing techniques, GPR “not only detects subtle changes in the soil and sediment properties, including the presence of buried archaeological features, but it also measures the depth at which those changes occur” (Conyers and Goodman 1997:2). The computer control unit of the GPR is capable of converting the time elapsed between the emission of the radar pulse and the reception of reflected pulses off of different subsurface discontinuities into a measurement of depth (Appel et al. 1997:220; Chamberlain 2000:958; Dabas et al. 1999:510; Heimmer 1992:37). Because different mediums have different electrical and physical properties, specifically reflected in the relative dielectric permittivity (RDP), radar waves will pass through at different velocities. Therefore, observation of the two-way travel times allows a calculation of subsurface velocities and depth given the RDP is known (Heimmer 1992:113, 37; Nishimura and Goodman 2000:102; Olhoeft 1996:2; Schmidt 2002:6).

GPR is most effective in an archaeological setting when looking for highly reflective “hard” targets, such as buried structures, middens, and pits or trenches with a fill that has different electrical properties than the surrounding undisturbed soil as mentioned above (Conyers and Goodman 1997:27). It was

first employed on an archaeological site by Vickers and Dolphin in Chaco Canyon in 1974 (Vickers and Dolphin 1975:6; Wynn 1986:251). The Vickers and Dolphin team had remarkable success mapping subsurface archaeological features, such as buried kivas. More recently, surveys conducted at the Cahokia Mounds State Historic Park in southern Illinois utilizing a 400 MHz center frequency antenna documented a large subsurface anomaly, and possibly a platform mound in the northeastern plaza adjacent to Monk’s Mound. The northern limit of the initial palisade surrounding the central plaza may also have been discovered during this survey (Keeley et al. 2001). CRA has successfully utilized GPR to locate unmarked burials and to map subsurface foundations at various historic sites and cemeteries throughout the eastern United States, as well as in Midwestern and Great Plains states (Pye 2016; Pye et al. 2015; Quick and Clay 2009).

One of the most important choices regarding the use of ground penetrating radar for archaeological geophysics is the center frequency. The choice of frequency determines both the depth of penetration of the signals and the ability of the radar to resolve features (Chamberlain 2000:958; Heimmer 1992:39; Wynn 1986:252). The “subsurface resolution [is] dependent on antenna frequency [and]

ranges from centimeters to several meters” (Heimmer 1992:41). In order to be successful, the wavelength has to be short enough to resolve subsurface interfaces (Conyers and Goodman 1997:47). Lower frequency radars, from 80 to 200 MHz, are not very effective for archaeological use because although their depth of penetration can be tens of meters, their resolution is fairly low (Heimmer 1992:39; Sternberg and McGill 1995:209; Wynn 1986:252). Radar tests in Arizona found that “low-frequency [100 MHz] GPR records seldom showed any features of interest” even when the radar was towed above known subsurface structures (Sternberg and McGill 1995:218). The wavelength was simply too long to resolve the features of interest (e.g., adobe walls). However, tests with a higher frequency 500 MHz GPR were able to resolve the same features. This was because although the depth of penetration with a 500 MHz GPR is more than five times less than that of a 100 MHz GPR, its shorter wavelength means that the resolution is over five times better (Heimmer 1992:39; Sternberg and McGill 1995:218–219; Wynn 1986:252). Experiments show that antennae of “300 MHz or higher provide excellent resolution, but limit the depth of investigation to 5 m or less” (Chamberlain 2000:958), which is sufficient for most archaeological sites. Very high frequency GPRs, in the 900–1000 MHz range, have only limited application in archaeological surveys because although their resolution is excellent, their depth of penetration is too shallow. The frequency choice is a compromise between depth of investigation and resolution (Chamberlain 2000:959). GPRs with a center frequency between 270 and 600 MHz seem best suited for archaeological surveys because they provide good depth (1–5 m) and acceptable resolution (Conyers and Goodman 1997:40–45).

Two other factors that affect the ability of GPR to resolve subsurface features are the beam width and subsurface “clutter.” As the radar signal propagates through the ground, “signal loss or dissipation increases with depth. Random noise also increases with depth, often obscuring reflectors of interest” (Heimmer

1992:40), especially in previously disturbed urban soils. The disturbances caused by rocky soils and high concentrations of magnetite “underlying a site frequently exceeds the anthropogenic anomalies by an order of magnitude or more,” but this kind of high frequency noise can sometimes be filtered out during post-processing (Wynn 1986:254).

The beam width also effects resolution, because the “radar beam is not collimated and reflections are obtained from a broad cone below [and slightly in front of] each recording station” (Chamberlain 2000:958). Therefore, the size of hyperbolic reflections caused by “point” targets, such as buried pipes or walls (when crossed perpendicular to the direction of travel), depends on their size (width and thickness), depth, the velocity of the radar waves, and the wavelength of the GPR (Butler et al. 1994:455). For these reasons, antenna orientation is important because narrow features may be missed by transects perpendicular to them but not by transects running parallel to them (Olhoeft 1996:1).

There are a number of materials found within the ground that can cause difficulties during data processing and interpretation. A significant quantity of clay rich soils, salts, and other materials resulting in attenuation of the GPR signal can cause interference with near surface sensing methods. By far the greatest hindrance to the use of GPR for archaeological surveys is the presence of high Cation Exchange Capacity (CEC) clays (Conyers and Goodman 1997:46; Sternberg and McGill 1995:216), which effectively absorb radar energy, although it will detect gaps in one readily enough (Sternberg and McGill 1995:215; Wynn 1986:252; Catt 2001:217). Thus, “the applicability of GPR is extremely site-specific, with very limited depths of investigation in soils with high electrical conductivity (e.g. soils with high clay contents and/or high water contents) (Butler et al. 1994, 443; Appel et al. 1997:220). GPR signal loss can be increased by the presence of certain types of salts in the matrix. Under the very unfavorable conditions of wet, calcareous, or clay-rich soils, the maximum depth of GPR

penetration can be less than a meter” (Conyers and Goodman 1997:53).

GPR is also susceptible to being fooled by natural structures as well. Non-anthropogenic sources for geophysical anomalies are a major problem (Wynn 1986:254) because the operator is not always sure that the feature they are looking at is man-made (Conyers and Goodman 1997:3). Radar “reflections, or their absence, can often be related to natural hydrogeologic conditions such as bedding planes, mineral cementation, moisture changes, clay content, voids, fractures, and intrusions” (Heimmer 1992:40). Features such as “tree roots, bedrock, and the water table ... make good reflectors and can be confused with reflections from” desired targets (Ambos and Larson 2002:34). It is therefore sometimes difficult to interpret radargrams (Clark 1990:118).

Proper interpretation of GPR transects can overcome these problems, because it “involves observation of anomalies within...horizontally layered radar interface events. Plotting of these features from profile to profile may allow recognition of archaeological related features” (Heimmer 1992:42). Through the function of horizontally stacking, interpolation, and then slicing one can take the individual radargrams and create amplitude time slices, which are essentially plan view maps of the GPR data at a given depth range. Figure 4.5 provides an illustration of this process.

### **Current Survey**

The geophysical fieldwork conducted for the current project consisted of a high resolution GPR survey of the project area utilizing a GSSI SIR-3000 GPR coupled with a 400 MHz center frequency antenna set up on a cart system (Figure 4.6). According to the GSSI Antennas Manual (GSSI 2017), the 400 MHz antenna has a pulse duration of 3.6 nS and a nominal depth of penetration of 2–5 m (6.6–16.5 ft) depending on the dielectric permittivity of the materials through which the radar waves pass. This antenna can resolve features around 15 cm (6 in) across at a depth of 1 m (3 ft), which provides enough depth and resolution for a variety of shallow archaeological sites, as

well as sites with deeper or larger archaeological features, such as historic burials. The manual recommended setup for standard profiling using this antenna includes setting a time window range of 50.0 nS for the full depth potential, 512 samples per scan, 16 bits per sample, and 120 scans for second. It is further recommended that the gain be adjusted so that the surface pulse is no more than two-thirds the width of the wiggle trace window and that there be five gain points. The first gain point is never to be set higher than 10 dB, while the last gain point should never exceed 65 dB. Lastly, for this frequency of antenna, GSSI recommends the use of conservative IIR filters (i.e., vertical low pass filter of 800 MHz and a vertical high pass filter of 100 MHz) for the elimination of high and low frequency noise outside of the usable range of the antenna.

At the onset of the current fieldwork, the nature of the project area ground conditions were investigated through the test scanning of several areas within the project area, primarily along a small drive and trail running along the southeastern edge of the project area. A small diameter PVC pipe was buried an observable distance below the surface, providing for a good reference for optimization of the instrument settings. As a result of these initial scans, and in consideration of the recommended default settings for the chosen antenna, the GPR control unit was set to a transmission rate of 100 KHz for rapid data collection, 16 bits per sample, 512 samples per scan, and 60 scans per meter over time window of 60 nS. The recommended IIR filters of 800 MHz and 100 MHz were applied during the initial scanning, but these filters were later removed for data collection as the SIR-3000 saves filters set in the control unit in the data files and thus affect the integrity of the raw data. A dielectric of 8, which is a middle ground value for the material conditions encountered during fieldwork, was set in the control unit at the beginning of fieldwork and was not varied.

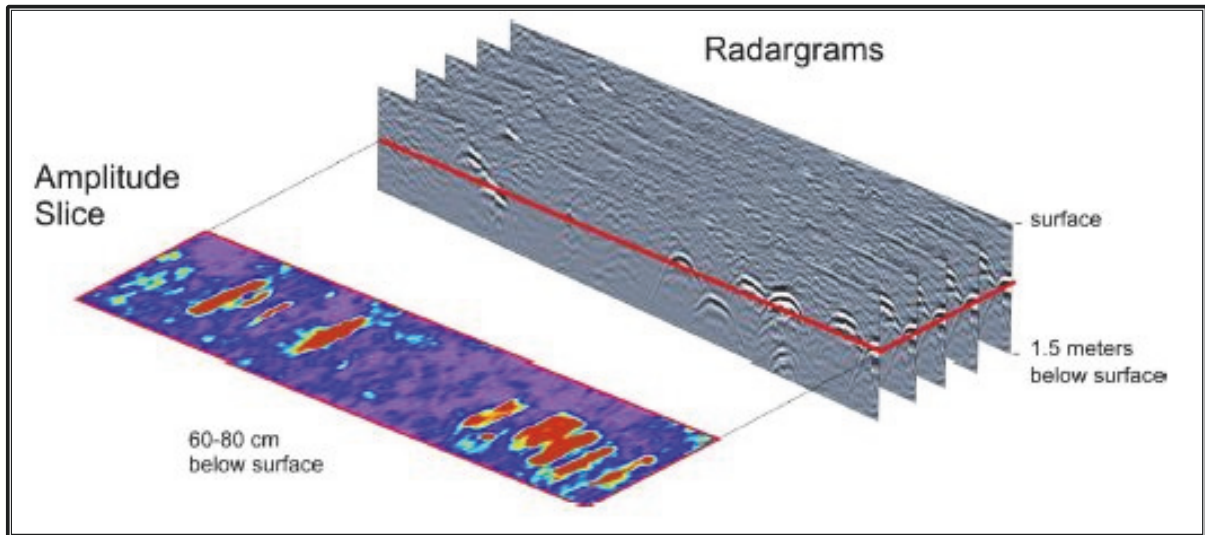


Figure 4.5 Illustration of the creation of amplitude time slices from GPR radargrams (Burks et al. 2015).



Figure 4.6. Jeremy Pye using the GSSI SIR-3000 GPR, antenna, and survey cart during the current geophysical survey, view north in the northeastern portion of the project area near the intersection of Parkview Road and Monument Avenue.

GPR data were collected in transects spaced at intervals of 0.5 m (1.6 ft) and running perpendicularly to the baseline set along the northeastern edge of Parkview Road. For survey blocks where the starting and ending points of each transect were open and accessible, transects were collected in a zig-zag pattern starting in the lower left (east) corner of each survey block. If the starting baseline (northeast) of a survey block was accessible, but the ending baseline (southwest) was not, transects were collected in a single direction with each transect beginning on the northeastern baseline. This was the case in all blocks (Blocks 4, 5, 12, 13, 20, and 21) along the southwestern side of the project area, where vegetation did not permit collection of full blocks. Appropriate notes recording such inconsistencies were taken in the field so that data could be properly combined during post-processing.

The GPR profiles collected during the current project were processed using RADAN v.6, and manually viewed looking for evidence of archaeological features. Graphical plan-view plots, or “time slices,” of the data were produced using GPR Slice v.7 and ArcGIS. Profiles were first batch truncated to time zero to even out any inconsistencies in depth of reading, which could produce striping in the data. The individual radar files were then assessed for needed adjustments to the range curve so that the high and low peaks of the radar wave were roughly equivalent. Once a good balance in the range curve was achieved, a batch range gain was applied to all of the radar files.

In order to facilitate the production of time slices, or plan view images, of the GPR data, it was first necessary to make a master grid that would encompass each survey block within a given survey tract. The origin for this master grid started at the grid origin for the survey grid in the eastern corner of the project area. The individual radar profiles from each survey grid were first imported into the GPR Slice software, a grid number identifier was appended to each of the file names, and an information file was created for every survey block. Field notes, which documented the sizes

of each survey block, number of transects, direction of data collection, and grid origin were reviewed and the coordinates of the ends of each of the transects were then adjusted so that they were positioned in the proper location with respect to the master grid. This same process continued until information files recording the positions of all radar files for all of the survey blocks had been created. The information files for each survey block were then appended to one another to form the master grid for the entire survey area.

Once the master grid was created, the data was resampled and cut to form plan view time slice maps. During this process, the data was resampled to 4 cuts per mark, thus 0.25 m (0.82 ft), and interpolated using an inverse distance value of 2, a 0.75 x/y search radius, a 0.75 blanking radius, and a fine grid cell size of 0.2. The resultant maps were reviewed and appropriate adjustments were made to improve the quality of the images. Basic filters applied to the data include a bandpass filter with a hi-cut of 800 MHz and a low cut of 100 MHz, as well as a zero-mean grid and a zero-mean line background filter. These filters eliminated the majority of mowing effects in the data. It was also necessary to apply a minor destagger factor of 0.1-0.25 m (1.6 ft) to some of the radar files to correct for the variable starting positions in some of the transects usually caused by movement of the starting tapes. Time slices were then cut starting at sample 32 (calculated time zero) and ending at sample 512. Each slice measured 4.1 nS, or 35 samples, thick with a 5 percent overlap. The effective time window of the data was calculated to be 56.25 nS or approximately 4.1 m (13.4 ft).

Presentation graphics were produced using GPR Slice and ArcGIS. Manual mosaic corrections to the gain values of certain portions of survey blocks were then made to make the color scale of all of the survey blocks more consistent across the entire project area. The processed GPR data were viewed in both 2-d (vertical cross-section) and 3-d (horizontal time-slice/plan-view) in order to find anomalies consistent with archaeological features.



## **Magnetometry**

Magnetometers were originally developed to search for the metallic signatures of submerged submarines. They were later adapted for oil exploration and soil studies (Wynn 1986:245). Tabbagh et al. (2000:394) states that “magnetic properties play a very important part in archaeological prospecting,” Magnetometry works on the principle of measuring minute variations in the magnetic field of subsurface features. The sensors are directionally responsive, meaning that if a single sensor unit is employed, any tilting of the mechanism changes the magnetic field and presents itself as an anomaly (Clark 1990:69). As a result, fluxgate sensors are typically paired to create a gradiometer (Clark 1990:70). A properly aligned system provides (near) continuous data across a site because its charge/read time is only 1/1000 of a second (compared with the 6 seconds of a proton-precession unit) and it has a resolution of 0.1 nanoTeslas (nT), making it ideal for archaeological survey (Clark 1990:70).

### **Background**

In order to use a magnetometer, there must be a magnetic contrast between the target and the undisturbed background matrix. There must “be a clear contrast in magnetic susceptibility between subsoil or bedrock and topsoil, so that silted archaeological features are readily detectable” (Clark 1990:87, 92). Magnetometry can find not only fired kilns and ferrous objects but also soil features, such as ditches and pits (Schmidt 2002:7). Alternatively, the features being targeted must have a contrasting magnetic signature from the background matrix. This is dictated by the principle of remanent magnetism.

Remanent magnetism is tied to variations in the location of the magnetic North Pole. The earth’s magnetic pole is not stationary; it wanders around as the earth spins on its axis. When certain substances, like clays that contain iron particles, are heated above the Curie point, their ferrous particles realign to magnetic north and are then “frozen” in place when the substance cools. This process is known as

thermoremnance (Clark 1990:64). The clay “donut” hearths of Southeastern Woodland period sites are excellent examples of this process in relation to an archaeological feature. Artifacts that have significant and distinctive remanent magnetism are bricks, kilns, and pottery. The principle of remanent magnetism is often employed to take magnetic dates by comparing the orientation of a sample taken from a hearth or kiln to a chart of the pole’s meanderings over the centuries. For the purposes of magnetometry, however, it is not necessary to take a sample back to the lab to have its magnetic properties analyzed. It is enough that the magnetic properties of the hearth contrast with those of the unheated soils around them. The principle applies equally well to pits filled with ceramics—even though their magnetic signatures are all different from each other, they are also different from the surrounding undisturbed soil matrix.

Magnetometers also measure the magnetic susceptibility of materials. Magnetic susceptibility is a more general effect, literally “susceptible to being magnetized.” Iron objects that are not, in themselves, permanent magnets, possess magnetic susceptibility (i.e., they are susceptible to being magnetized), as do certain types of igneous rocks. Humic soil, for example in the A horizon of a typical profile, possesses magnetic susceptibility in proportion to the weathering and decomposition that has been involved in its formation. Buried A soil horizons are distinctive in contrast to the horizons above and below that lack magnetic susceptibility for this reason. Of interest to archaeology, remnant magnetism is produced by soil processes involved with a combination of burning and decomposition, often called the burning and rotting factor. A magnetometer survey records the magnetic effects of remnant magnetism and magnetic susceptibility measured in nT. Areas of elevated magnetic susceptibility (approximately 2–10 nT) can indicate general areas of midden. Concentrated, tightly bounded magnetic susceptibility anomalies (approximately 2–20 nT) can indicate the location of pits and other features filled with concentrated midden and the

products of either burning or organic decomposition.

There are several problems with using magnetometry on archaeological sites, particularly historic sites, and sites in urban contexts. Success with this method will entirely depend on the amount of metallic debris within the survey area and the level of interference that might be caused by any metal features, such as railroad tracks or metal fencing. Near-surface readings of nT can be wildly distorted by the presence of small bits of modern metal (Ambos and Larson 2002:34). These can range from small objects, for example agricultural machine parts, to much larger items. Despite their size, all can create significant distortions of the local magnetic field with their individual magnetic susceptibility. For this reason, it is generally difficult to use magnetometers in the survey of urban properties, beyond using them to identify areas of magnetic disturbance created by iron objects, large and small.

Readings are also disturbed by surface modification processes. For example, plowing and disking redistribute and concentrate remnant magnetism generally associated with the topsoil, as can the excavation and refilling of test pits, trenches, and other sorts of archaeological explorations. At times this redistribution of magnetic materials may mask in situ archaeological features. Also, car motors, electrical power lines, and metal sewer pipes may confuse magnetometer readings. Magnetometers are omni-directional—they receive data from all directions, so above-surface variations in the magnetic field caused by a passing car or, in extreme cases, by diesel-electric trains operating 16 km from a survey site (Clark 1990:67) are recorded just like the subsurface ones caused by archaeological features.

Magnetometry is limited in some soils, particularly those that contain high levels of magnetite or those that have been “gleyed,” or so saturated with water that their iron particles have been converted to a reduced state (Waters 1992:48). In gleyed soils, magnetic susceptibility is decreased because of the iron shifting from a ferric to a ferrous state (Clark

1990:114). Butler points out that “in the shallow subsurface, the only objects which will typically produce localized magnetic anomalies will be cultural features and artifacts” such as bits of iron, fired clay, and rocks (Butler et al. 1994:461).

The main problem with magnetometry is the nature of the magnetic field itself. Much of the field is generated from within the earth (95 percent), but electromagnetic radiation from the sun and other sources causes fluctuations from 5 to 50 nT in the primary field (Clark 1990:67). To counter this, it is often necessary to use another magnetometer set up as a base station to record this “diurnal variation.” The two readings can then be subtracted, leaving only the variations recorded by the magnetometer used for conducting the survey (Clark 1990:67; Chavez et al. 2001:1268). This technique can increase a magnetometer’s resolution to below 0.1 nT. Another way to control diurnal variation of the earth’s magnetic field is to use two magnetometers aligned with each other on the same staff with a typical vertical separation of 1–2 m (Clark 1990:68). This configuration is known as a gradiometer because it measures the slight differences, or gradients, measured by the two magnetometers (Breiner 1965:188). Figure 4.7 presents an illustration of how a magnetic gradiometer picks up on a sample of buried objects or features at an archaeological site.

The shape, size, intensity, and polarity (negative or positive) of magnetic anomalies is determined in varying degrees by the characteristics of an anomaly’s cause, include the object or feature’s shape, material composition, mass, orientation, and depth. Examples of types of possible magnetic anomalies that can be seen in the results of magnetic gradiometer surveys at archaeological sites are discussed in detail by Burks (2018) and are shown in Figure 4.8. These anomalies include monopolar positive, dipolar simple, dipolar complex, dipolar simple-concentric, and dipolar complex anomalies (Burks 2018).

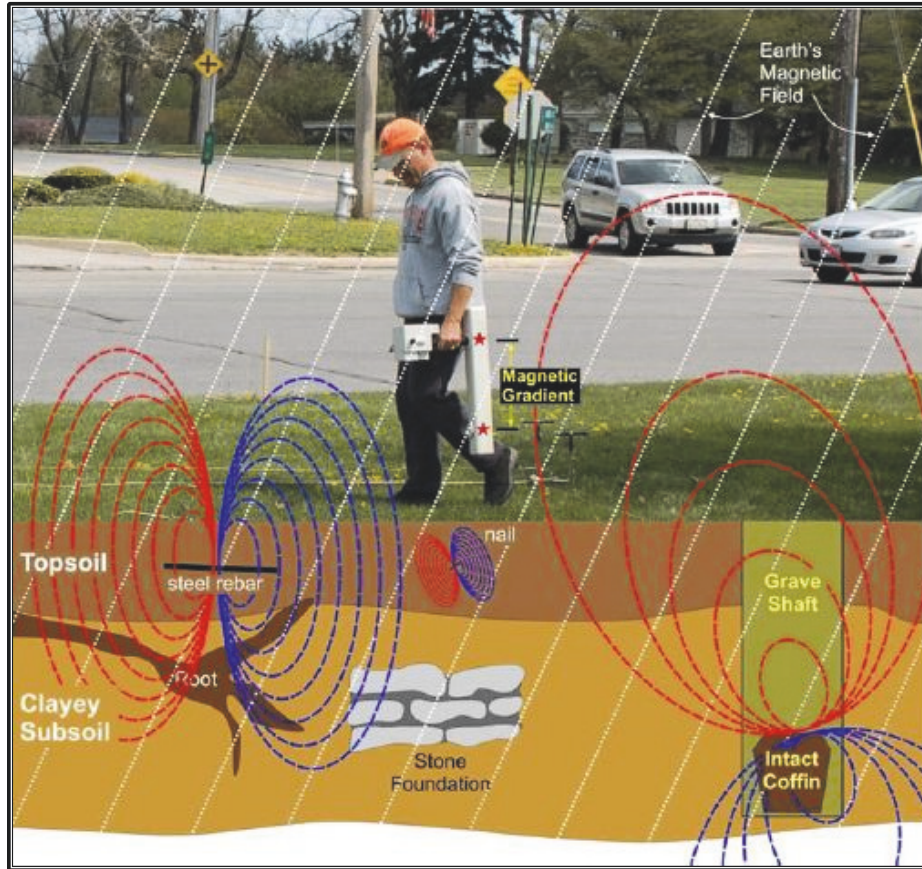


Figure 4.7. Illustration of magnetic gradiometer survey and how objects and features buried at an archaeological site influence the magnetic field (Burks et al. 2015).

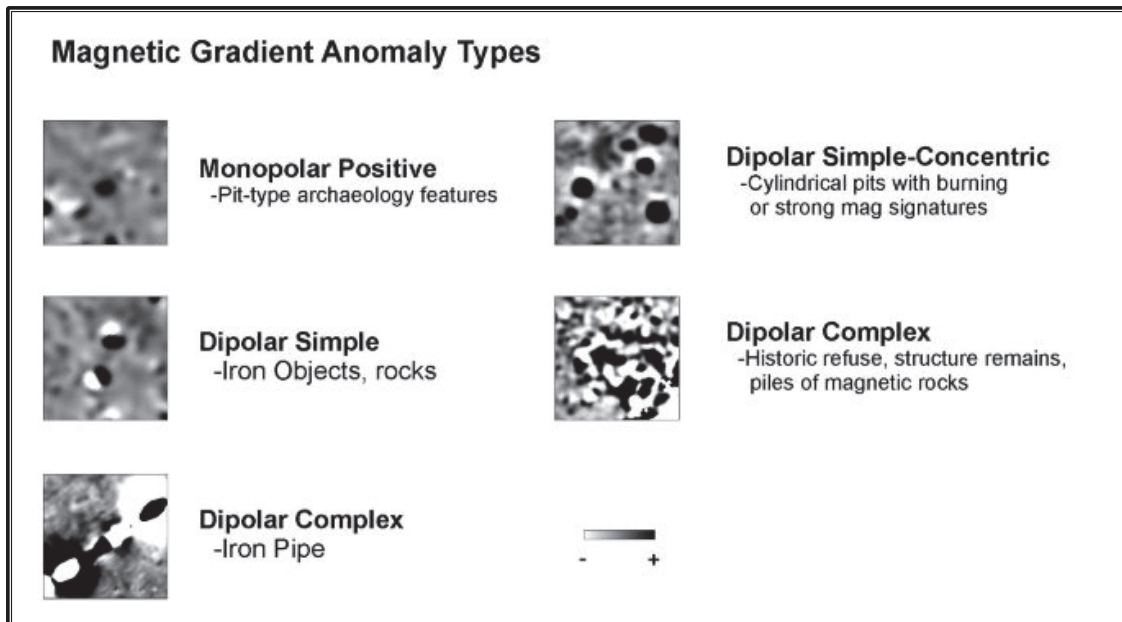


Figure 4.8. Examples of possible magnetic anomaly types seen commonly in magnetic gradient surveys of archaeological sites (Burks 2018).

“Monopolar Positive” anomalies are localized, positive (nT) data peaks that appear as dark grey to black areas in grayscale data maps. These anomalies are created by localized areas of soil with increased magnetic susceptibility (e.g., pit features, large tree root casts, somewhat burned surfaces, or possibly deeply buried dipolar objects, particularly objects where one of the magnetic poles is pointing downward away from the magnetometer (Burks 2018).

“Dipolar Simple” anomalies are characterized by one negative and one positive peak that are immediately adjacent to one another. These peaks can be similar in size and intensity or may be highly asymmetrical. Iron objects and magnetic rocks usually produce this effect with the size (mass) and depth of the target affecting the magnetic intensity and the area that will be affected by its magnetic signature/influence. Magnetic thermal features, such as hearths or earth ovens, can also produce dipolar simple anomalies usually taking the form of strong positive values surrounded by a weak ring of negative values. These features are labeled as “Dipolar Simple-Concetric” by Burks (2018).

“Dipolar Complex” anomalies are typically associated with burned areas or features/disturbed area filled with magnetically mixed sediments or objects. They are represented by clusters of multiple positive and negative peaks of varying intensities and different shapes and sizes depending on the object(s) or feature(s) causing the magnetic anomaly. A large metal pipeline, for instance usually results in a long band of negative and positive segments with each segment having a halo of the opposite polar value. Historic foundations or cellars, where the fill contains high numbers of magnetic objects, such as bricks, nails, screws, wire, etc., on the other hand results in clusters of so many dipolar simple anomalies that they anomalies merge together into a complex patter of positive and negative values (Burks 2018).

## Current Survey

For the magnetic survey undertaken as part of the current project, CRA personnel used a single Geoscan FM-256 fluxgate gradiometer (Figure 4.9) following accepted geophysical methods within the survey area as described above. The magnetic gradiometer data was collected within one 20-x-20 m survey block at a time due to grid size limitations of the instrument. Within each block, pull tapes were extended along the x-axis to guide geophysical data collection. Because a consistent and uninterrupted pacing is important in magnetic data collection, guidelines with each meter marked were stretched along the y-axis of the survey block at every 2 m (6.6 ft) mark.

The machine was calibrated to a resolution of 0.1 nT on both the east–west and north–south axes and the balance control was adjusted to within 1 nT. These calibrations were conducted every day of the data collection at the base station point set up at Grid Point 60x, 20y. Following calibration, the device was zeroed in the orientation of the first survey transect at the base station. The machine was re-zeroed at this point routinely during the day to reduce the impact of any data drift that might have occurred over the course of the survey.

Data collection began in the lower left corner of each of the blocks, which would be the eastern corner of the block as mentioned in the discussion of the GPR survey. Data was collected in a zig-zag fashion meaning that the first transect was collected in a southwesterly direction, while the second transect was collected in a northeasterly direction. Traverses were spaced at intervals of 0.5 m (1.6 ft) with a sample interval of 0.25 m (1.6 ft), resulting in the collection of eight readings per square meter.

The magnetic survey data were downloaded from the instrument following data acquisition each day using a mini-laptop computer and each grid was viewed in its raw form using Geoplot v.3 for quality assurance. Once all data was downloaded at the end of the survey, Geoplot was used to mosaic all of the block data into a single plan view map. The



**Figure 4.9. Jeremy Pye using the Geoscan FM-256 fluxgate gradiometer during the current geophysical survey, view East (Grid Southeast) in one of the grids in the middle of the field.**

data was then post-processed to remove any survey errors, emphasize the results for interpretation, and smooth the results. Normal data processing generally involves the procedures known as clipping and value replacement, zero-mean grid, zero-mean traverse, destagger, despiking, interpolation, and low-pass filtering. No major errors were present in this data set, so very little processing was necessary. Graphics were prepared in Geoplot and ArcGIS. Report graphics were prepared in Geoplot and ArcGIS. Because prominent and irregular plow scars were present in this data, an attempt was made to reduce their impact in the data.

### ***Electrical Resistivity***

Electrical resistivity was the first geophysical method to be employed on an archaeological site. This occurred at Dorchester-on-Thames in 1946 (Clark 1990:12; Wynn 1986:245). Prior to this, electrical resistivity had been employed by civil

engineers who needed to test the stability of soils for supporting large structures, like dams (Beck 1997:1.1; Clark 1990:12). It is well-suited to archaeological prospecting because it is non-destructive, easy to use, and the basic equipment cost is low (Ellwood et al. 1993:221). Although somewhat slower than modern magnetometry, soil resistivity is one of the least expensive geophysical methods available for archaeological surveying. Due to its low cost and archaeological utility, electrical resistivity is employed extensively in Europe for archaeological survey (Ellwood and Harrold 1993:157; Wynn 1986:249). Resistivity has been used for broad scale basin analysis (the search for sites), close interval site surveys (the search for features), the identification of historic and prehistoric burials, and the optimization of excavation potential in open and closed sites (Ellwood and Harrold 1993:157; Ellwood et al. 1993:217).

## Background

Soil resistivity is an active contacting geophysical method that works on the principle of measuring the resistance of the earth to an electrical charge (Wynn 1986:249; Tubbs et al. 1989:9). Materials in the ground “behave like electrical resistors, impeding current flow through the ground. The ability of soils and rocks to conduct currents is controlled by a number of factors, including the moisture content, clay content, porosity, presence of free ions, and other factors” (Ellwood and Harrold 1993:157). Resistivity can be affected by changes in the conductivity of materials, variations in soil moisture content and ionization can dramatically affect the results (Ellwood and Harrold 1993:159). For example, “resistance to current flow decreases with increasing ionized water or salt content” (Ellwood and Harrold 1993:158).

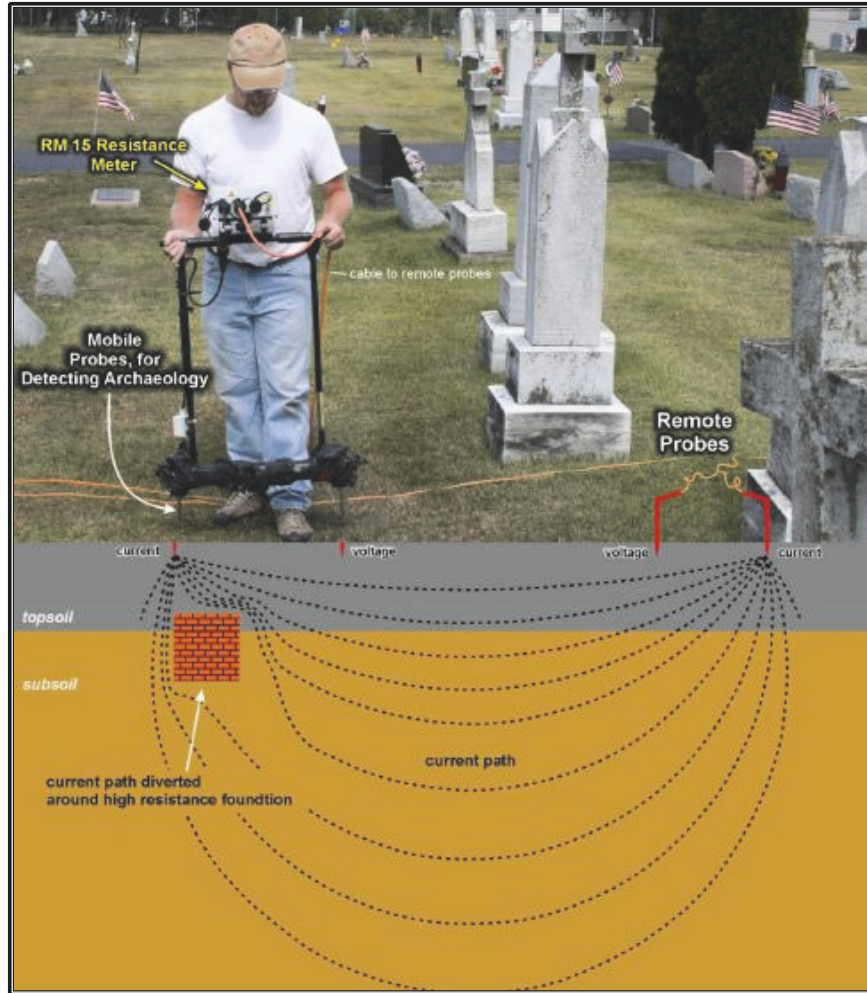
To use a traditional probe resistivity meter, electrodes are spaced at a particular interval on mobile frame, usually 0.5–2 m (1.6–6.6 ft), and remote probes are positioned at least 30 m (98 ft) away from the area of data collection, and at least 1.0 m (3.3 ft) apart from each other. A current is initiated by the machine, passing through one of the mobile probes and the potential difference is measured at the current remote probe (Ellwood and Harrold 1993:158) (Figure 4.10). The resistance between the two electrodes is measured and recorded (Clark 1990:37). Then the whole unit is moved forward one interval and the process is repeated across the survey area. Because archaeological features are often chemically and physically distinct from the surrounding matrix, they will exhibit different resistive characteristics than undisturbed soil (Ellwood and Harrold 1993:157). This is partly because “cultural disturbance often disrupts the natural layering of accumulating sediments, thus increasing porosity and facilitating increased moisture retention within the site” (Ellwood et al. 1993:223). When all the readings for a site are entered into a surface mapping program, like Golden Software’s SURFER or even Microsoft Excel, contour maps of the soil resistivity across the entire site can be generated. Areas with higher or lower values than the

surrounding soils often correspond to disturbed areas, or archaeological features.

The optimal soil conditions for electrical resistivity surveys are slightly damp, cohesive soils. Resistivity has proven useful for conducting surveys in chalk, clay, loam, loess, and other close textured materials (Clark 1990:124). For once, the presence of clay is a good thing, because it is highly conductive (Clark 1990:53) while most other soils and archaeological features are not, providing an excellent background contrast for a resistivity survey (Clark 1990:124). The types of features most likely to be discovered by electrical resistivity surveys are trenches and other types of pit features, walls, as well as areas where the soil has undergone modification by high heat sources, such as clay hearths and kiln sites. Each of these features modifies the resistive properties of soil in a certain way (although often not in the way that might be expected from laboratory studies). Compaction of certain types of soils also greatly impacts resistivity. The “combined resistivity of soil and any included material is termed the apparent resistivity. If we measure the resistivity across an area of ground that has a stone block buried in it, the apparent resistivity will increase at that particular point. Similarly, if we cross the site of a silted up ditch, the reading will decrease” (Beck 1997:1.1). In some cases, however, the reading from a ditch can increase, especially if it is dry, because the fill in the ditch is not as tightly packed as the undisturbed matrix around it.

## Current Survey

The resistivity survey within the current project area was conducted using a GeoScan RM-85 resistivity meter with a PA20 remote probe system and an internal MPX-15 multiplexer card (Figure 4.11) using accepted geophysical methods. The device was set to a gain of x10, a current of 1 mA, a frequency of 122.5, an auto-log delay of 300, and an insertion delay of 50. Resistance data were collected using a transect spacing of 1.0 m (3.3 ft), technically, and a sample interval of 0.5 m (1.6 ft); however, the device was outfitted with a 1 m beam, three mobile probes, and was wired



**Figure 4.10. Illustration of an electrical resistivity survey and how objects and features buried at an archaeological site influence the electrical current (Burks et al. 2015).**

for a parallel twin probe array. By using a parallel twin probe array, essentially two parallel transects of 0.5 m (1.6 ft) data can be collected at the same time, thus reducing survey time. Therefore, a total of 4 readings were collected per square meter. The two remote probes were placed at least 30 m away from a given survey block and were separated from each other by at least 1.0 m (3.3 ft).

Data collection began in the lower left (east) corner of each survey block. Transects were traversed using a zig-zag survey pattern. As was the case with the magnetometer, the finish line, mirror line, and finish grid functions on the machine, as well as guide ropes marked every meter, which had been stretched out

across each grid, were used to contend with incomplete grids with lines of variable length.

Following completion of data collection within each grid block, the resistivity data were downloaded from the instrument to a mini laptop computer and viewed in its raw form using Geoplot v.3 for in-field quality assurance. Once all data was collected within the project area, Geoplot was also used to mosaic all of the block data into a single plan-view map. The purpose of the post-processing of the data was to remove survey errors, emphasize the results for interpretation, and smooth the results. Processing generally involved the same procedures as were conducted with the processing of the magnetic data, and included clipping and value replacement, zero-mean



**Figure 4.11. Jim Baldwin using the GeoScan RM-85 resistivity meter during the current geophysical survey, view south in one of the grids in the middle of the field.**

traverse, destagger, despiking, interpolation, and edge matching. No uncommon problems were encountered with the current data set and so processing needs were low.

The resultant data map had a relatively wide range (-53 – 116 ohms) in data values, so there was a stark contrast between the highs and lows, but very little visual differentiation in more subtle value changes was very little contrast in the plan view map to aid in the identification of potential anomalies. Therefore, it was necessary to apply a high-pass filter using a 5x5 matrix with uniform scaling to improve the contrast and institute a shrink the range to between -26 and 26 ohms. This procedure was followed by two low-pass filters using a 1x1 matrix with Gaussian scaling to smooth the data. This did aid in clarifying the data map somewhat. Report graphics were prepared in Geoplot and ArcGIS.



## Chapter 5. Results

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The current field investigation within the project area consisted of geophysical survey using GPR, magnetic gradiometry, and electrical resistivity. These techniques were employed in an effort to determine whether archaeological features associated with Site 41BO125 are present within the survey area. There was particular interest on the part of the CTC to use a collaborative approach, combining recent in-depth historical research with CRA's modern remote-sensing techniques, to find any remaining evidence of the 1832 fort, old town Velasco, or the Civil War forts. A total of 22 geophysical survey blocks were investigated using the three techniques mentioned above, covering a total approximate area of 0.79 hectare (1.95 acre). Although the survey grid blocks measured a standard 20-x-20 m (66-x-66 ft) in size, it was not possible to survey all of the area encompassed by each grid due to the presence of trees and dense brush and grasses along the southwestern boundary of the survey area.

Each of the geophysical techniques used during the survey identified data anomalies consistent with potential archaeological features. The results of the surveys for each of the geophysical techniques will be briefly introduced below, which will be followed by a more detailed combined description of the geophysical anomaly interpretations from all three of the geophysical methods. Following the discussion of the geophysical results, a brief discussion is included of some limited ground-truthing investigations conducted to confirm the presence of the brick foundation, chimney base, and cistern identified by Fox et al. (1981) and investigated further by BAS/CTC in the 1990s.

### Ground Penetrating Radar

**Instrumentation:** GSSI SIR-3000 GPR with 400 mHz antenna and survey cart system

**Standard block dimension(s):** 20-x-20 m (66-x-66 ft) \*It was not possible to get full blocks of

data in all instances due to vegetation and/or slope.

**Blocks Surveyed:** 22

**Transect spacing:** 0.5 m (1.6 ft)

**Sample Spacing:** 60 samples/meter

**Initial transect orientation:** southwest

**Transect patterning:** zig-zag in full blocks, normal in blocks with irregular or inaccessible margin

**Survey origin:** east corner of each block

**Visible disturbance:** road/ditch construction, trail building, construction of planting beds, fort reconstruction, construction of palapa, and land leveling.

**Topography:** mostly flat (minor north-northwestward downward slope) barrier island

**Ground Cover:** short grasses (cut prior to fieldwork), small to medium sized trees, brush, and tall grasses

The GPR survey of the project area covered a total of 0.79 ha (1.95 acres) made up of portions of 22 grid blocks. Data collection was accomplished through the use of the GSSI SIR-3000 GPR unit coupled with a 400 mHz antenna and set up on a survey cart system. The collection of the GPR data was straightforward, with relatively few obstacles overall. The pavement of Parkview Road was an obstruction, but did not physically impair data collection. Signs, wood slats/rebar, and small trees were worked around. It was much more challenging to work around the series of larger trees in the southern corner of the project area, but it was possible to collect data up to one side of the tree, finish collecting data on the other side, and then interpolate between them. The palapa in the northwestern portion of the site was problematic, but was possible to work around with one member of the field crew holding up the heavy swing while the other pushed the GPR through the space for the swing and around the posts of the palapa. The planting bed in the northern portion of the site was an obstacle, necessitating loss of contact with the ground surface when popping up onto the rock edge. It was also not always possible to maintain straight transects through the

planting bed due to the presence of stout plants, rocks, or tree stakes. The most persistent obstacle in survey area was the vegetated southwestern perimeter. As mentioned in the methods chapter, it was necessary to cut blocks short and use single direction data collection methods to work up to the edge of the vegetation.

Although relatively few physical obstacles were present in the survey area that affected the data collection, the quality of the data was influenced by a number of cultural and natural factors. As mentioned above, the lot within which the survey area is located has been subject to extensive historical and modern disturbance from the time of the 1832 fort through to the present day. While no structures were present within the project area during fieldwork, a number of structures were present in the area in the nineteenth and twentieth centuries and could have very well been built atop earlier constructions. There is the potential, therefore, that earlier features could have been destroyed, or if they are overlapping, there would be an increased level of complexity in the data. The construction of the modern roadways and trails, the installation of utilities, land clearing activities, and the building of the fort reconstruction, palapa, and planting beds had an unknown effect on archaeological deposits and created further disturbance or destruction and increasing the complexity of the data. The historic dredging of the harbor channel, as well as the excavation of the shoreline protection jetty and the widening of the harbor channel had a significant impact on the project area. It is known that fill materials were spread out over the northern portion of the project area during the reconstruction of the fort. GPR data also suggests that stone is common in the northern portion of the project area especially, and it is suspected that this stone was distributed across the site during the construction of the jetty, or during the spreading of the fill materials. Deeper features, such as pits and burials should have retained some integrity and should appear in the GPR data.

Natural factors limiting, or affecting the quality of the GPR data included the presence

of clay subsoils, possible natural stone, and to some degree, tree roots, in the project area, as well as the moisture level in the soil. The project area has been mostly clear of large trees for many years, so tree roots were only a factor in the southwest corner of the survey area. Clays, which act to attenuate GPR signal in soil columns, are present in the Ijam clay soil unit mapped within a portion of the project area, and have also reportedly been redeposited throughout the area in the form of dredged materials from the harbor channel. Rock seems to be common throughout the project area, but most of this is likely cultural in origin and associated with the creation of the shoreline protection jetty. Natural stone in the area seems unlikely given the physiographic setting of the project area, but the presence of natural stone may be possible. Lastly, prior to geophysical fieldwork, the area had received rains. The soils of the project area are well drained and the majority of the project area seemed fairly dry. The exception was the ditch running along Parkview Road. There was no standing water in the ditch, but the ground was wet and soft near the lowest point of the ditch near the eastern corner of the survey area.

Even though both natural and cultural factors conspired to reduce the effectiveness and clarity of the GPR data, the GPR survey did identify a number of anomalies that may be associated with confirmed archaeological features at the site, as well as a plethora of additional possible archaeological features. The results of the GPR survey are presented in Figures 5.1–5.8 as a series of 15 time slices corresponding to depths between 0 and 4.14 m (0 and 13.58 ft) below ground surface (bgs). A combined discussion of the identified anomalies is provided in the Interpretive Analysis section below.

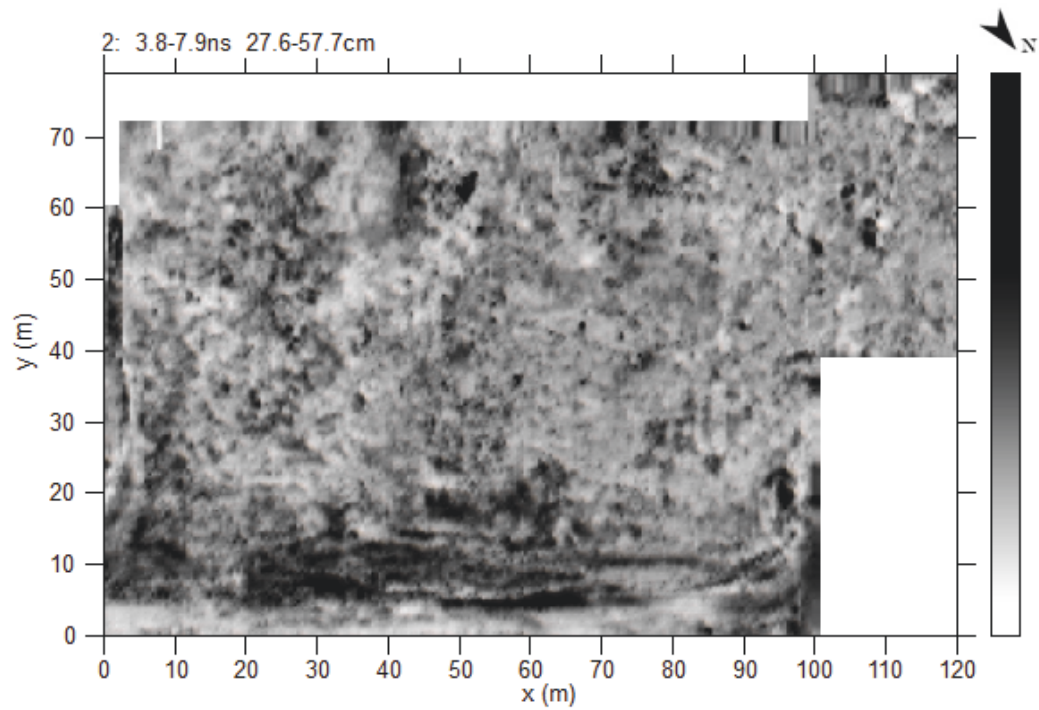
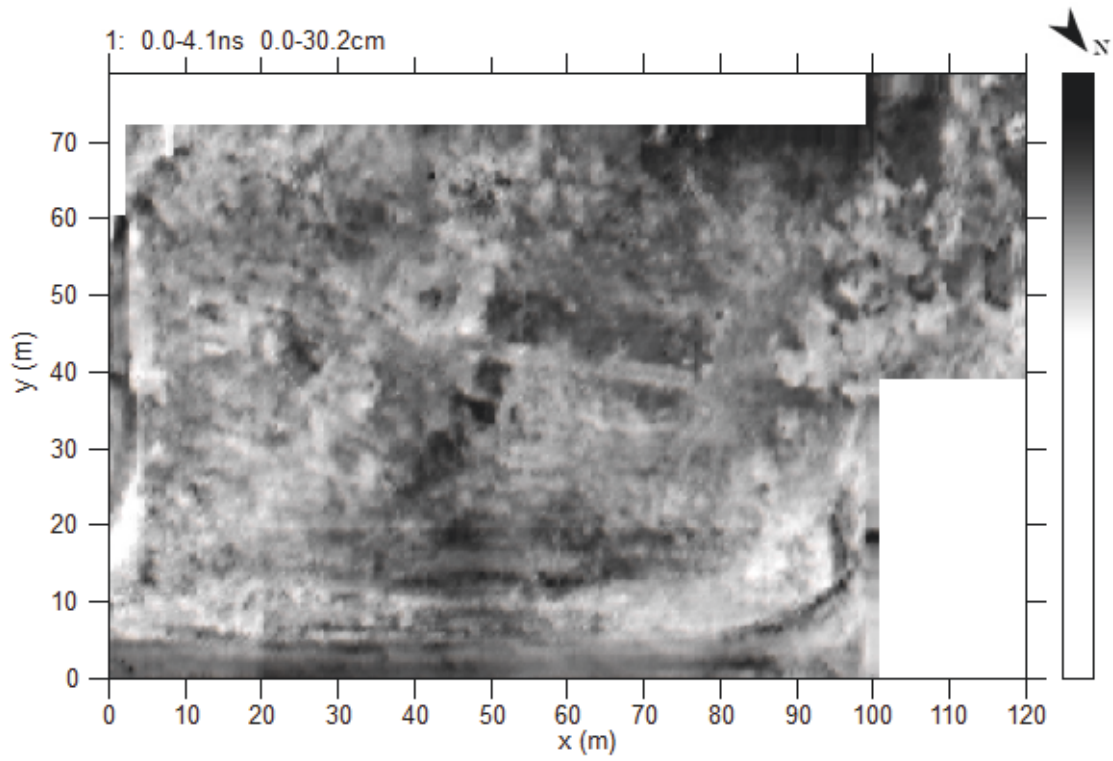


Figure 5.1b. Time-slices 1 (top) and 2 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

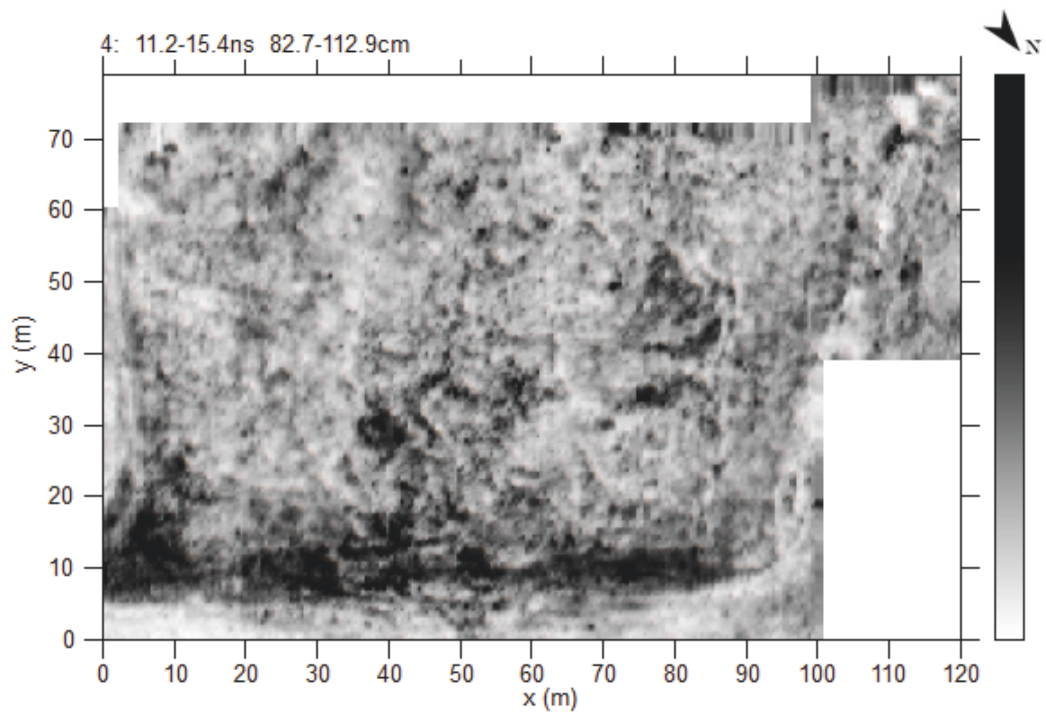
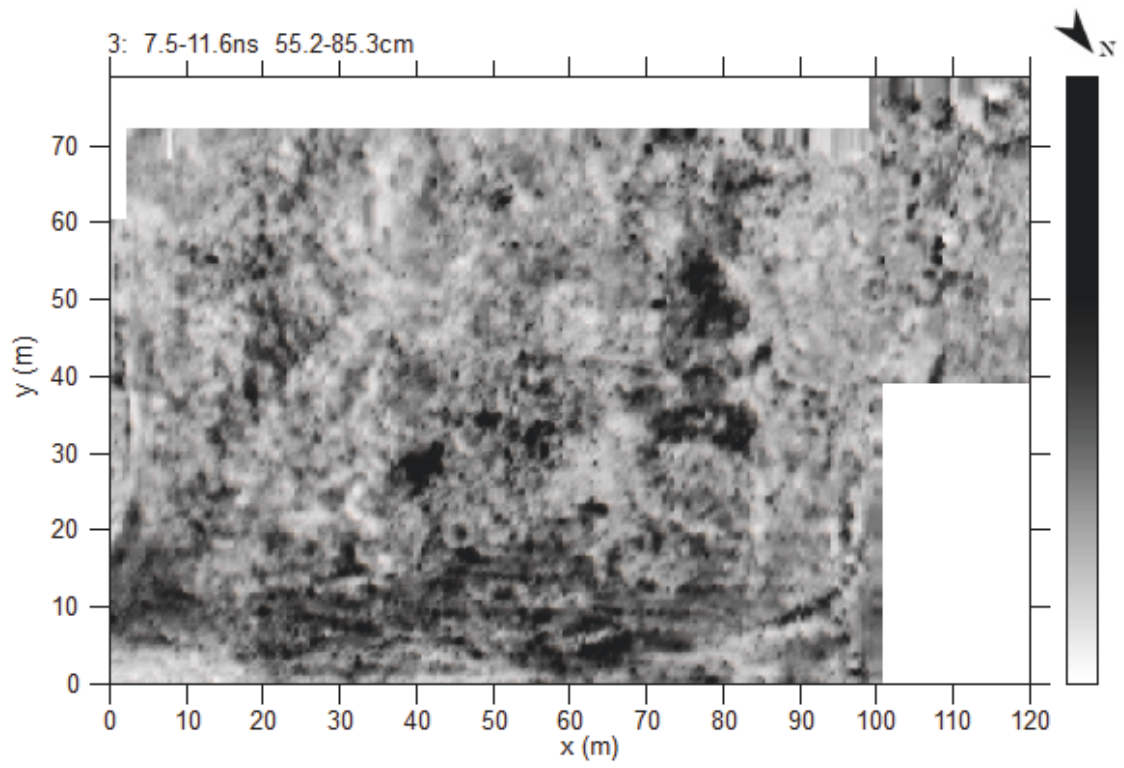


Figure 5.2. Time-slices 3 (top) and 4 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

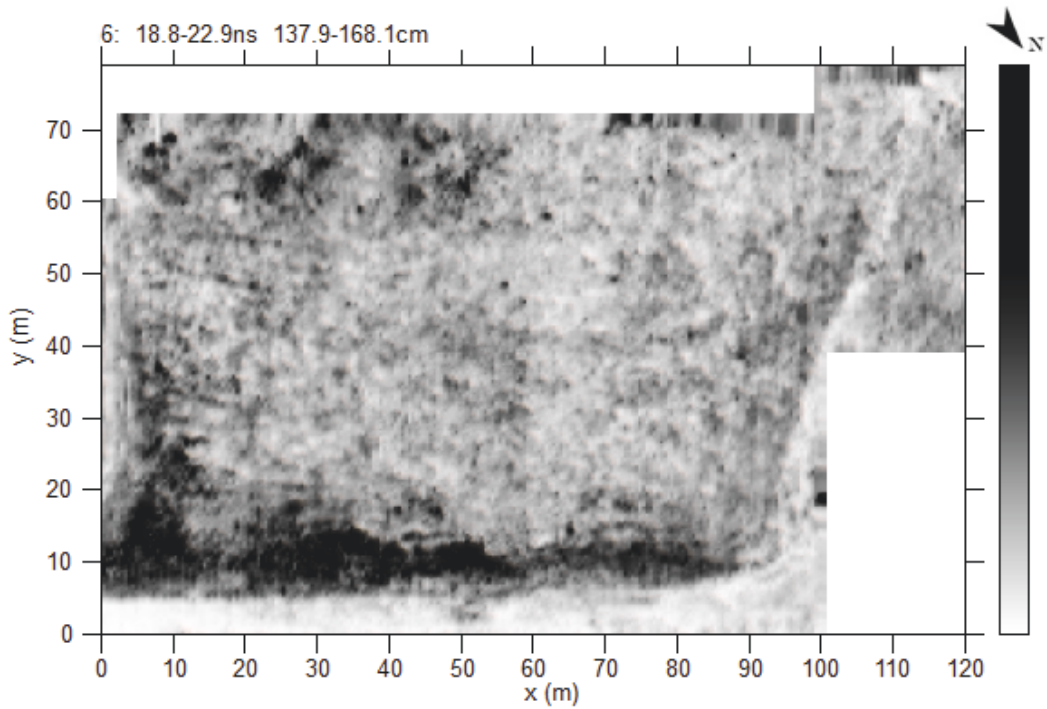
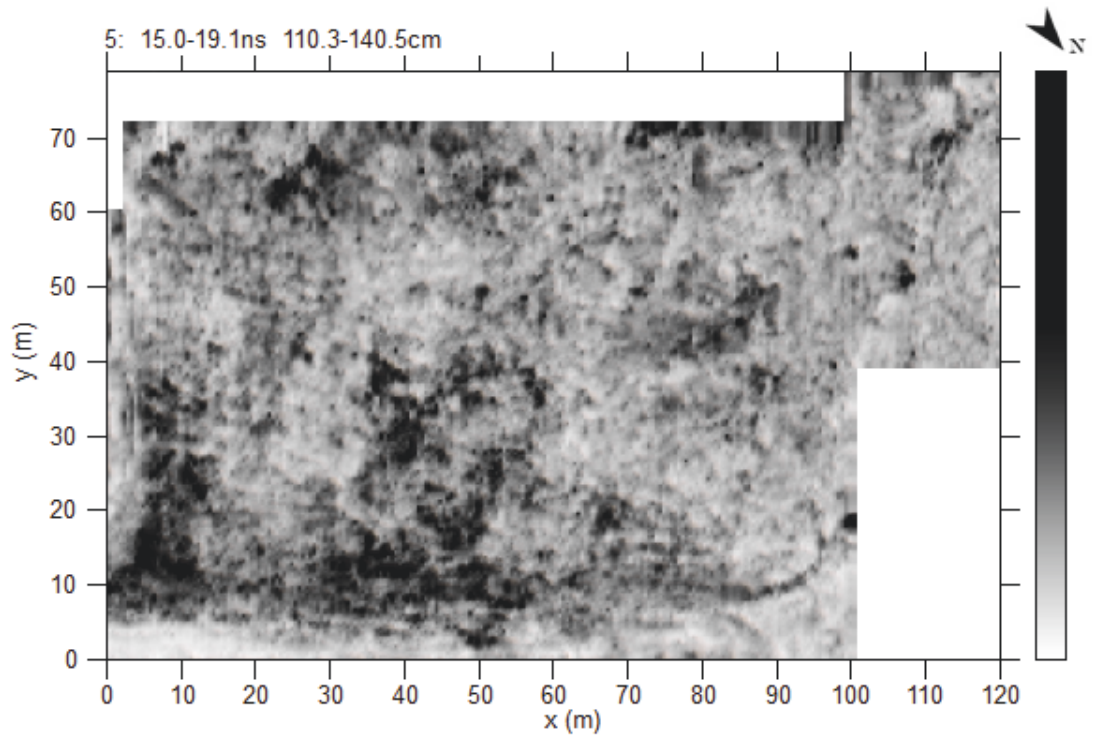


Figure 5.3. Time-slices 5 (top) and 6 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

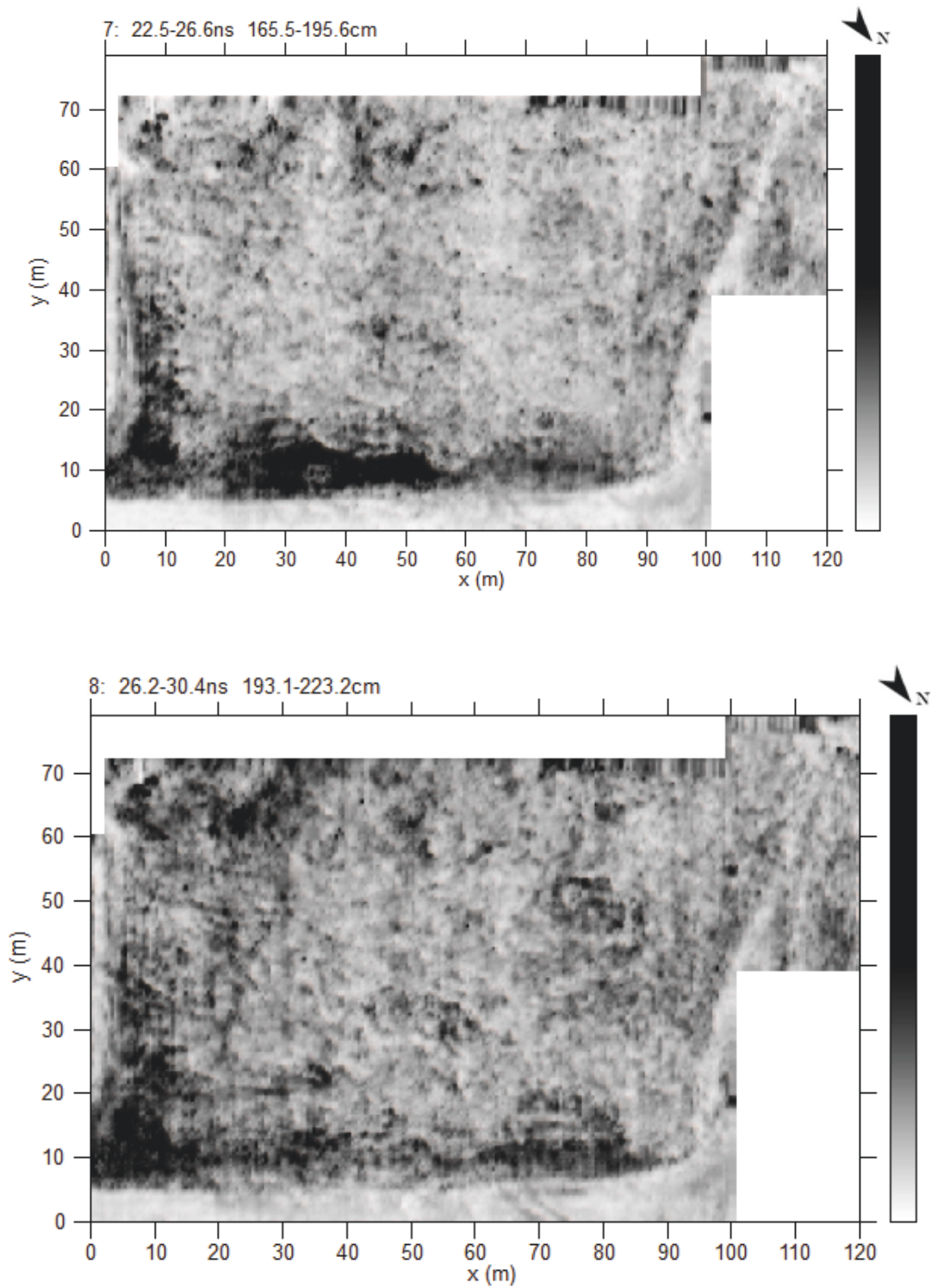


Figure 5.4. Time-slices 7 (top) and 8 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

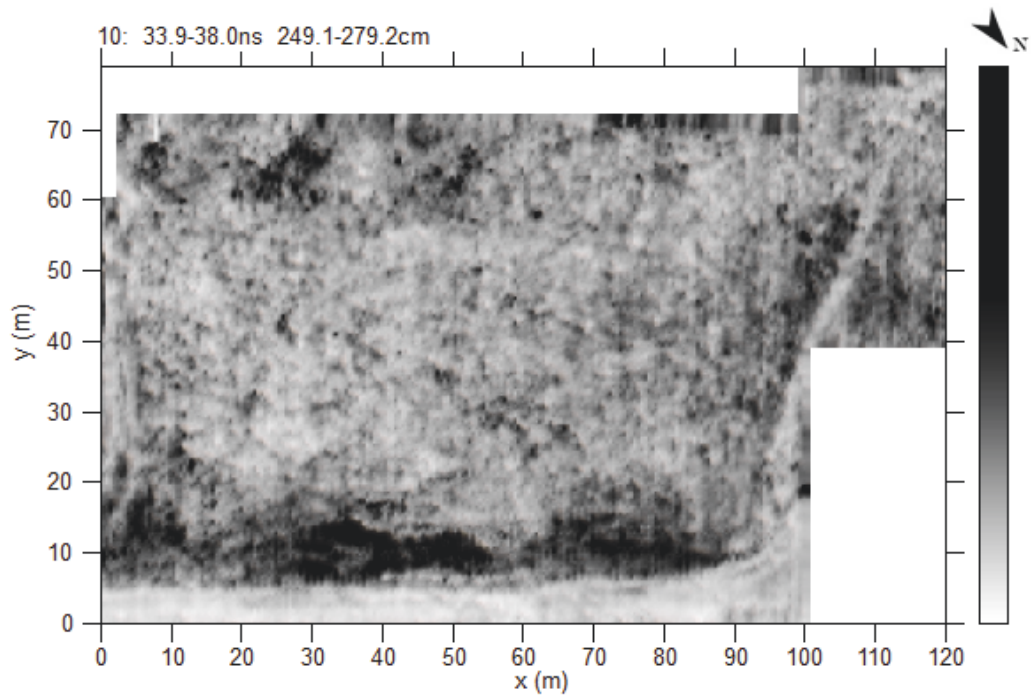
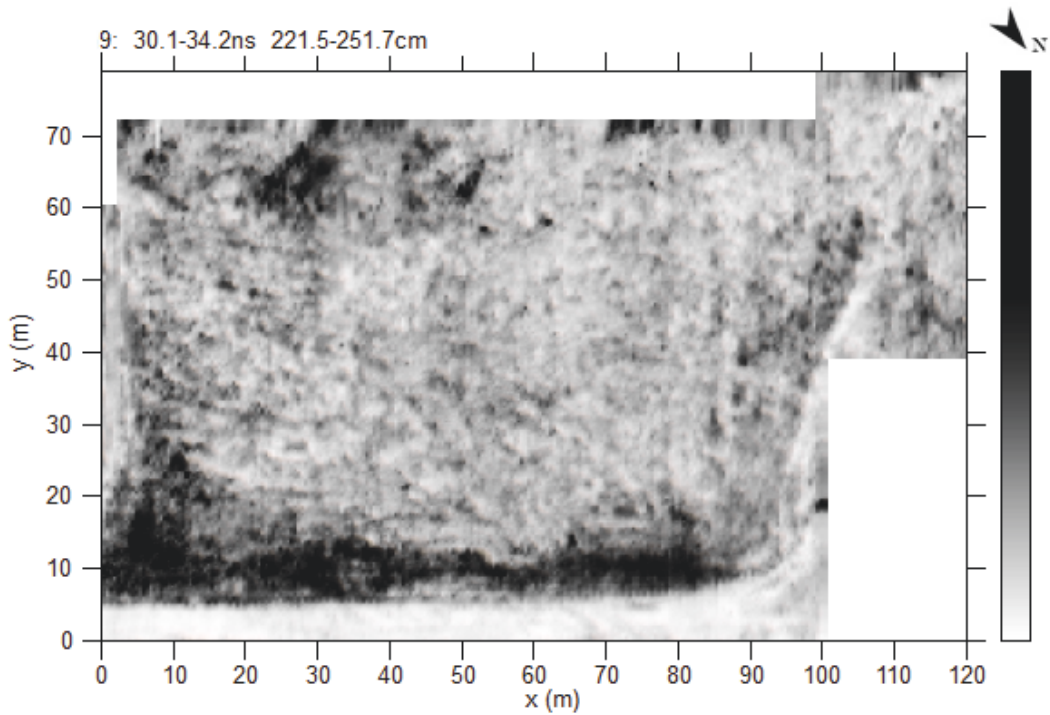


Figure 5.5. Time-slices 9 (top) and 10 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

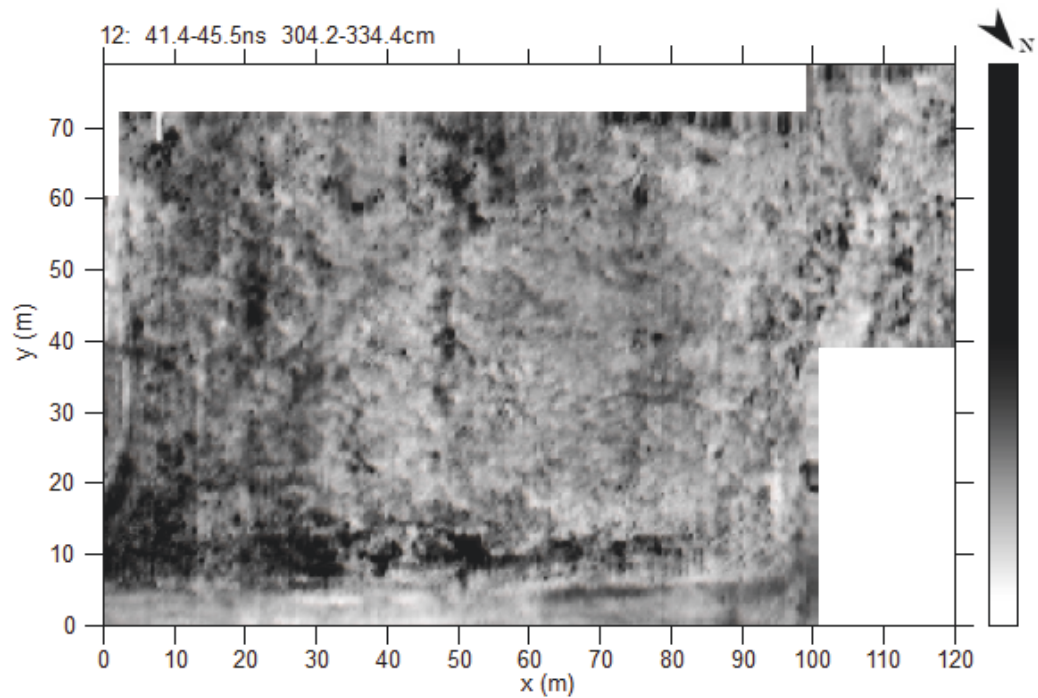
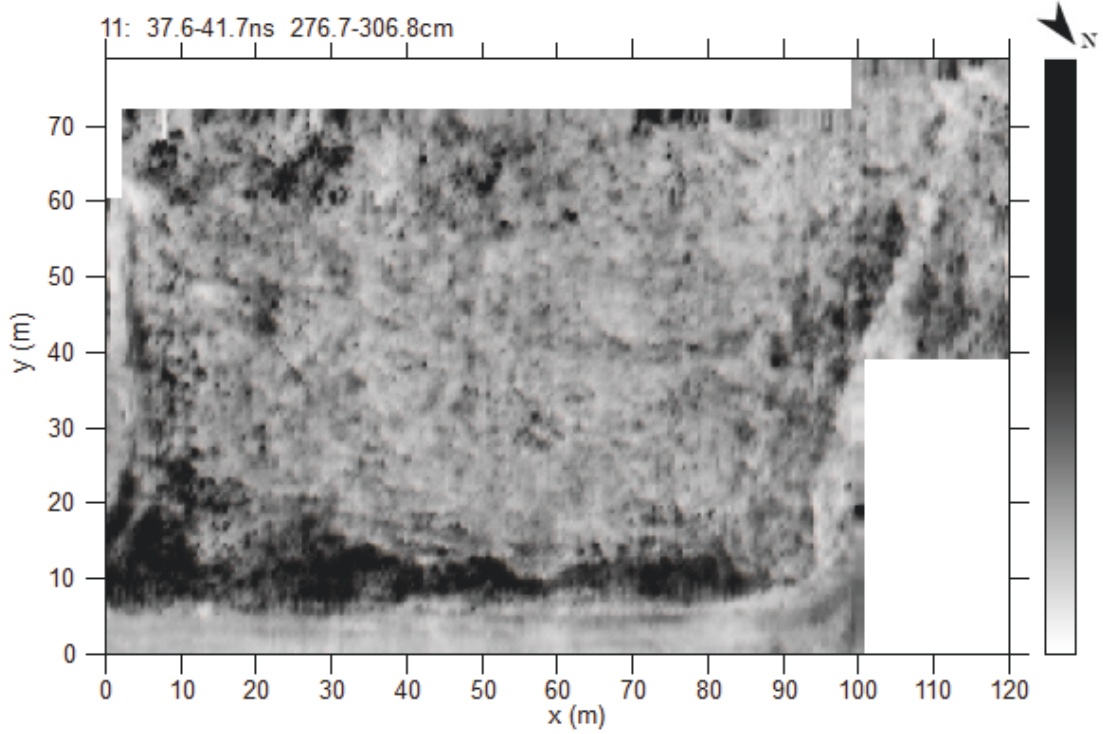


Figure 5.6. Time-slices 11 (top) and 12 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.



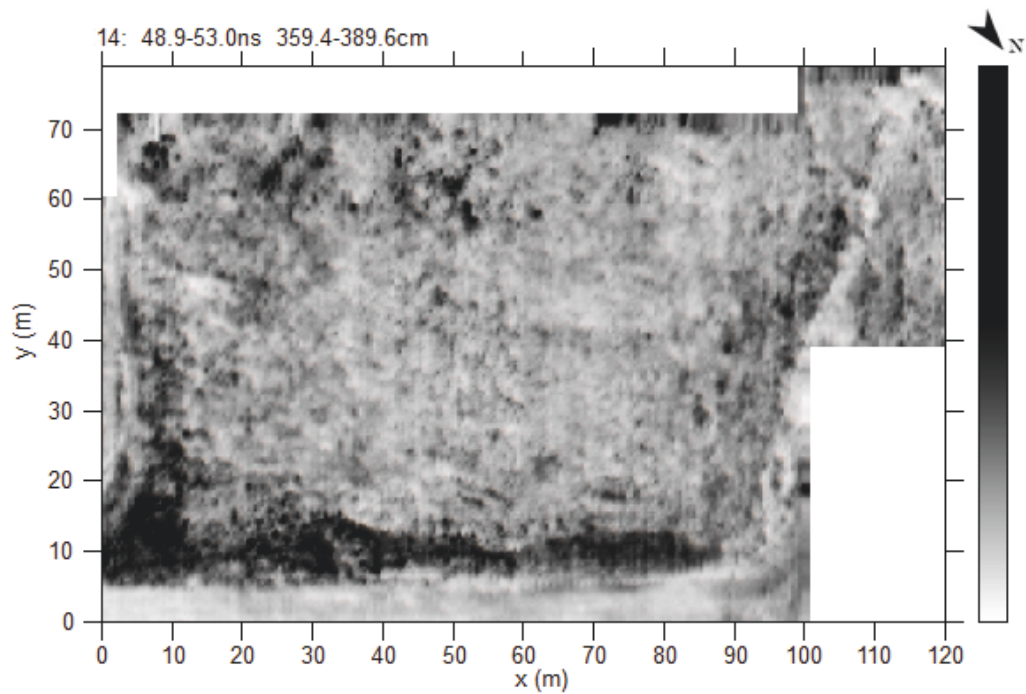
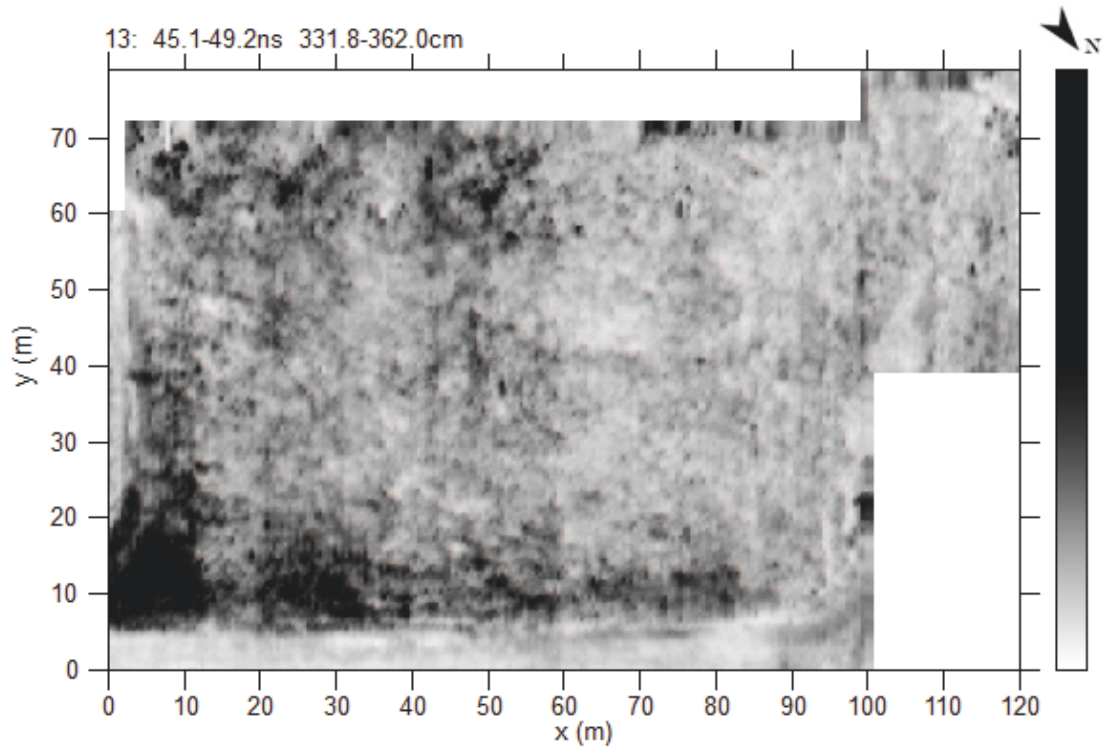


Figure 5.7. Time-slices 13 (top) and 14 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

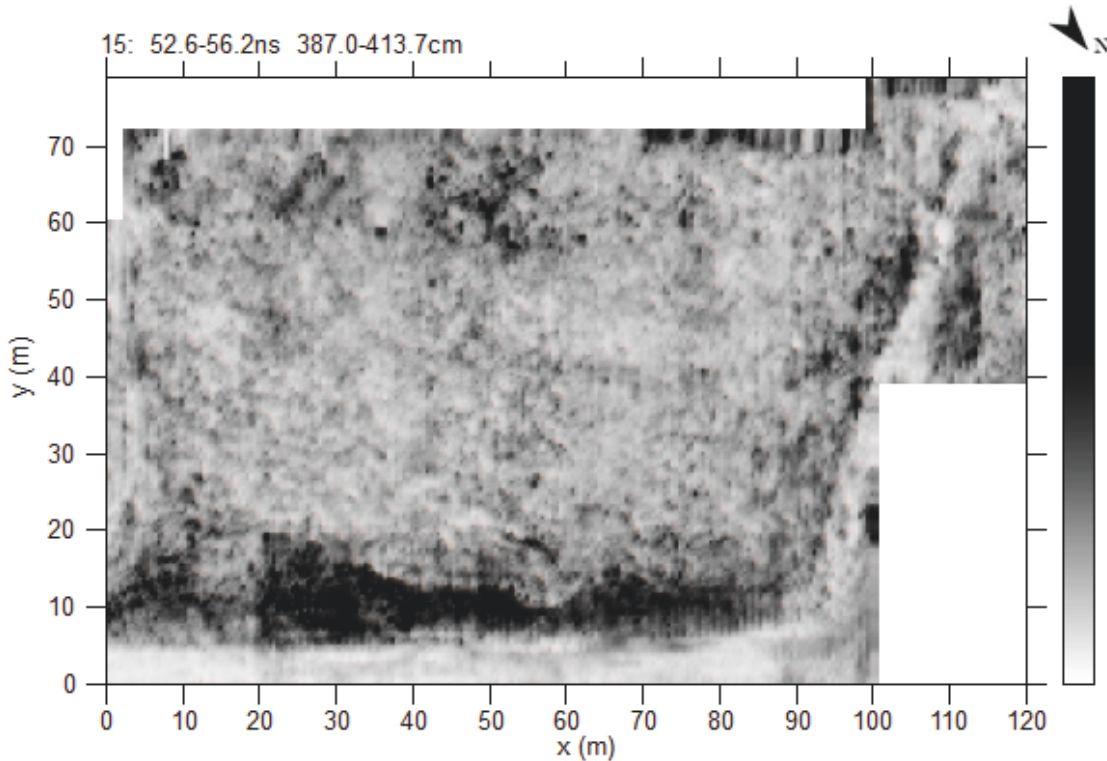


Figure 5.8. Time-slice 15 in a series 15 slices showing the results of the ground-penetrating radar survey of the current survey area.

## Magnetometry

**Survey Method:** Fluxgate Gradiometry

**Instrumentation:** Geoscan FM-256 fluxgate gradiometer

**Standard block dimension(s):** 20-x-20 m (66-x-66 ft) \*It was not possible to get full blocks of data in all instances due to vegetation and/or slope.

**Blocks Surveyed:** 22

**Transect spacing:** 0.5 m (1.6 ft)

**Sample spacing:** 0.25 m (0.82 ft)

**Initial transect orientation:** southwest

**Transect patterning:** zig-zag

**Survey origin:** east corner of each block

**Visible disturbance:** road/ditch construction, trail building, construction of planting beds, fort reconstruction, construction of palapa, and land leveling.

**Topography:** mostly flat (minor north-northwestward downward slope) barrier island

**Ground Cover:** short grasses (cut prior to fieldwork), small to medium sized trees, brush, and tall grasses

The magnetic gradiometer survey of the project area covered a total of 0.79 ha (1.95 acres) made up of portions of 22 grid blocks. Data collection was accomplished through the use of the Geoscan FM-256 fluxgate gradiometer. The collection of the magnetic data was relatively straightforward with few physical obstacles that were difficult to work around other than the presence of the aforementioned wooded margin along the southwestern boundary of the project area, and the several larger trees in the southern corner of the project area. The topography of the survey area and the wetter condition of the ditch area had little to no impact on the collection of the magnetic data.

Although relatively few physical obstacles were present in the survey area that affected the data collection, the quality of the data was influenced by a number of cultural and natural factors. As mentioned above, the lot within which the survey area is located has been subject to extensive historical and modern, cultural disturbance from the time of the 1832 fort through to the present day. While no structures were present within the project area during fieldwork, a number of structures were present in the area in the nineteenth and twentieth centuries and could have very well been built atop earlier constructions. There is the potential, therefore, that earlier features could have been destroyed, or if they are overlapping, there would be an increased level of complexity in the data. The construction of the modern roadways and trails, the installation of utilities, land clearing activities, and the building of the fort reconstruction, palapa, and planting beds had an unknown effect on archaeological deposits and created further disturbance or destruction, increasing the complexity of the data. The historic dredging of the harbor channel, as well as the excavation of the shoreline protection jetty and the widening of the harbor channel had a significant impact on the project area. It is known that fill materials were spread out over the northern portion of the project area during the reconstruction of the fort. The evidence of the cultural disturbances is clear in the magnetic data. Numerous linear anomalies related to metal pipes/utilities are present in the northern portion of the project area; numerous magnetic anomalies corresponding with metal rebar/stakes marking lot corners are present throughout the area. Lastly, both modern and historical metal objects scatter the project area causing additional magnetic anomalies. Many of these anomalies reflect archaeological features or concentrations of archaeological materials, which is desired, but strong modern magnetic anomalies (e.g. the linear anomalies associated with the utilities) are likely masking archaeological anomalies in their vicinities.

Natural factors limiting, or affecting the quality of the magnetic data included the ambient temperature and sunlight during the data collection, as well as the magnetic properties of the rocks and soils within the project area. While

most of the rock present is a cultural introduction, the possibility that some natural rock could be present may be reflected in the data, but this influence is believed to be negligible. The presence of the drainage ditch also had a very minor effect on the magnetic data, as saturation and water movement through a channel does affect magnetism over time. What had a greater influence on the quality of the data was the fluctuation in temperature and degree of direct sunlight throughout the day and over the course of the survey. Temperatures fluctuated between 26.6 and 33.8 degrees C (80 and 93 degrees F) over the course of the fieldwork. Ambient temperatures in this range, particularly where the FM-256 is in direct intense sunlight for long periods, can result in heat drift and increased pixilation and errors in the data. A Styrofoam shield was used around the sensor tube and when not in use, the instrument was placed in the shade. This procedure resulted in a low instance of heat drift, which did require routine rezeroing at the reference station, and low introduction of heat related error in the data.

Even though both natural and cultural factors conspired to reduce the effectiveness and clarity of the magnetic data, the magnetometer survey did identify a number of anomalies that may be associated with confirmed archaeological features at the site, as well as a plethora of additional possible archaeological features. The results of the magnetometer survey are presented with no grid lines in Figure 5.9 and with the black 20 m (66 ft) survey grid blocks and orange 5 m (16.4 ft) crosshairs in Figure 5.10. One should note that the magnetometer result map presents a palimpsest of readings from various depths. The depth of reading for this instrument is generally 1 m (3.3 ft); however, whether something shows up in the data depends on the nature and intensity of the magnetic field of a given feature or object. For example, a nail buried 0.5 m (1.6 ft) will not leave much of an impact on the data, but a large cast iron pipeline even 3.6 m (12 ft) underground will still result in a major anomaly. A combined discussion of the identified anomalies is provided in the Interpretive Analysis section below.

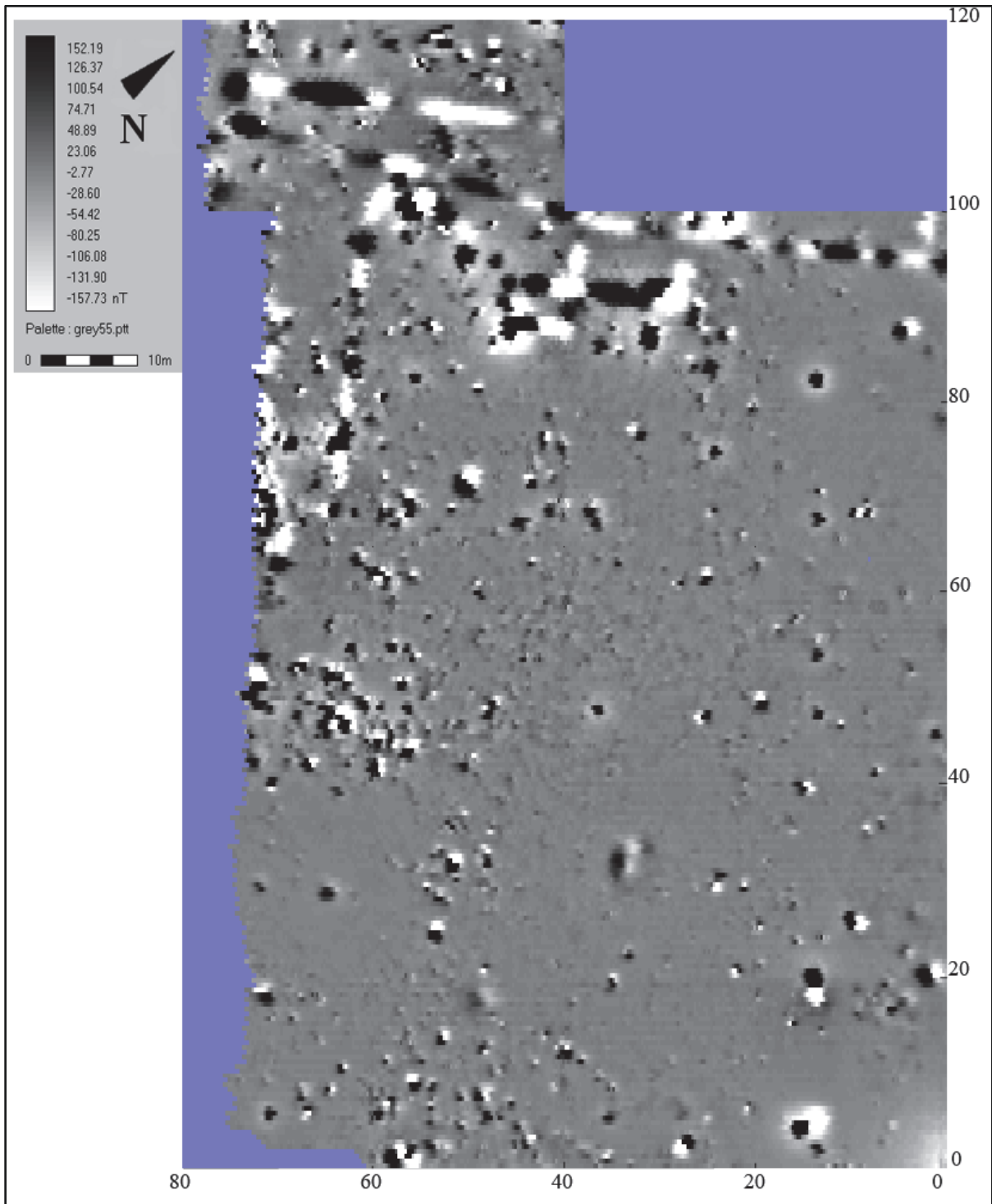


Figure 5.9. Plan view map of the magnetic gradiometer survey results.

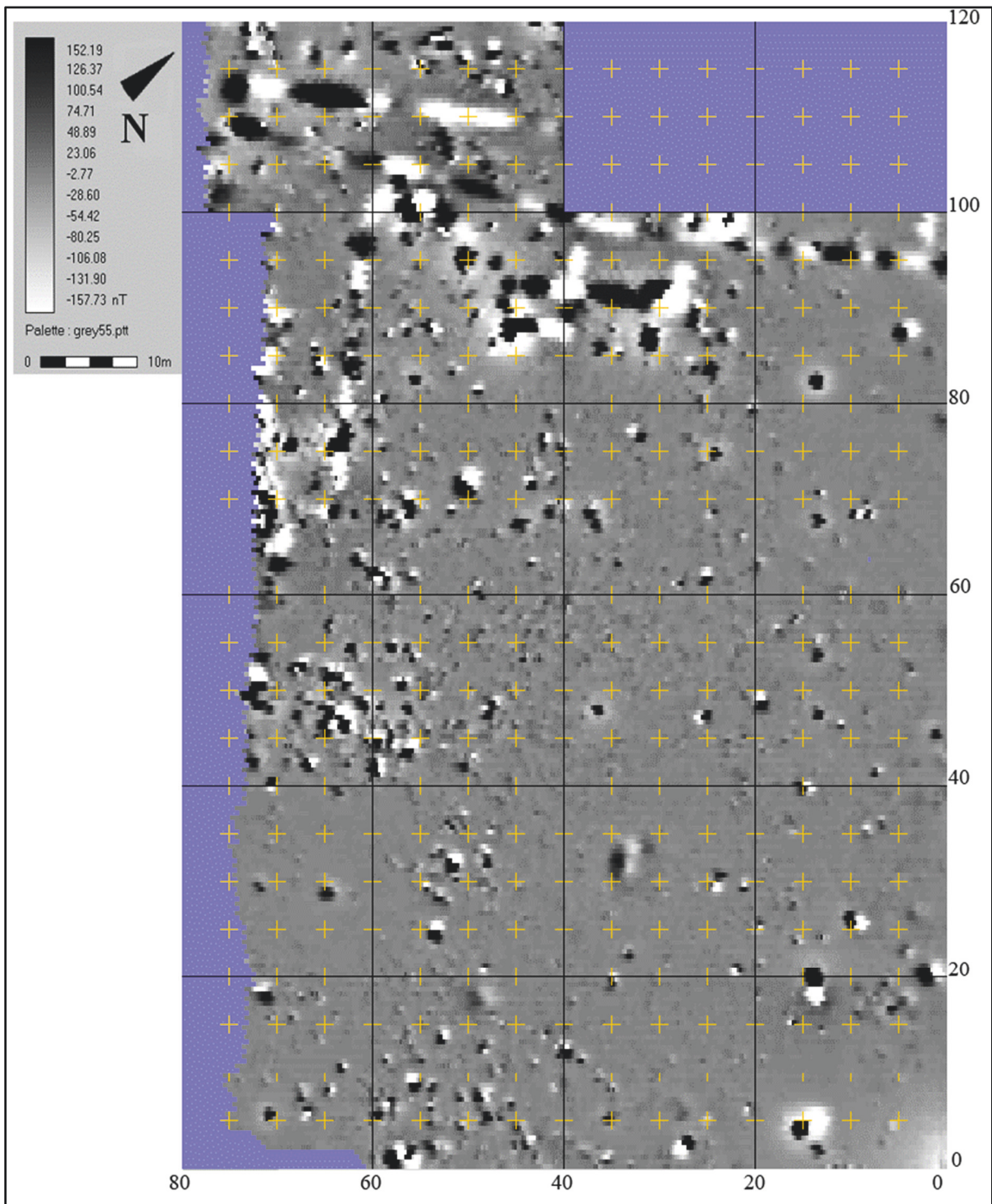


Figure 5.10. Plan view map of the magnetic gradiometer survey results with the 20 m (66 ft) survey grid blocks in black and 5 m (16.4 ft) crosshairs in yellow.

## Electrical Resistivity

**Survey Method:** Electrical resistivity

**Instrumentation:** Geoscan RM-85 resistivity meter with a PA20 remote probe system and a MPX-15 internal multiplexor

**Standard block dimension(s):** 20-x-20 m (66-x-66 ft) \*It was not possible to get full blocks of data in all instances due to vegetation and/or slope.

**Blocks Surveyed:** 22

**Transect spacing:** 1.0 m (3.3 ft), but array set up as parallel twin, so data recording occurred on 0.5 m (1.6 ft) spacing

**Sample spacing:** 0.5 m (1.6 ft)

**Initial transect orientation:** southwest

**Transect patterning:** zig-zag

**Survey origin:** east corner of each block

**Visible disturbance:** road/ditch construction, trail building, construction of planting beds, fort reconstruction, construction of palapa, and land leveling.

**Topography:** mostly flat (minor north-northwestward downward slope) barrier island

**Ground Cover:** short grasses (cut prior to fieldwork), small to medium sized trees, brush, and tall grasses

The resistivity survey of the project area covered a total of 0.79 ha (1.95 acres) made up of portions of 22 grid blocks. Data collection was accomplished through the use of the Geoscan RM-85 resistivity meter with a PA20 remote probe system and a MPX-15 internal multiplexer. The probe array was set up with three mobile probes positioned 0.5 m (1.6 ft) apart on a 1 m (3.3 ft) beam. The collection of the resistance data was relatively straightforward with few physical obstacles that were difficult to work around other than the presence of the aforementioned wooded margin along the southwestern boundary of the project area, and the several larger trees in the southern corner of the project area. The topography of the survey area and the wetter condition of the ditch area had little to no impact on the collection of the resistivity data.

Although few physical obstacles were present in the survey area that could have affected the quality of the data, the data was influenced by a number of cultural and natural

factors. As mentioned above, the lot within which the survey area is located has been subject to extensive historical and modern, cultural disturbance from the time of the 1832 fort through to the present day. While no structures were present within the project area during fieldwork, a number of structures were present in the area in the nineteenth and twentieth centuries and could have very well been built atop earlier constructions. There is the potential, therefore, that earlier features could have been destroyed, or if they are overlapping, there would be an increased level of complexity in the data. The construction of the modern roadways and trails, the installation of utilities, land clearing activities, and the building of the fort reconstruction, palapa, and planting beds had an unknown effect on archaeological deposits and created further disturbance or destruction, increasing the complexity of the data. The historic dredging of the harbor channel, as well as the excavation of the shoreline protection jetty and the widening of the harbor channel had the greatest potential impact on portion of the project area. It is known that fill materials were spread out over the northern portion of the project area during the reconstruction of the fort. The evidence of the cultural disturbances in resistivity data is clear. Paved roadways, hard packed trails, and locations of other obstructions did not permit the collection of data, and therefore, there are “no data” areas in the result maps in these locations. The drainage ditch is fairly evident in the data. Other cultural anomalies are present but indistinct, covering mostly the northern two-thirds of the survey area. Many of these anomalies likely reflect archaeological features or concentrations of archaeological materials, but may also mask other archaeological anomalies in their vicinities.

Natural factors limiting, or affecting, the quality of the resistivity data included variation in material types and soil moisture (and possibly to the presence of features) during the data collection. As mentioned above, the drainage ditch is indicated in the data due to differential moisture retention. Other natural factors may be present, but are not very outstanding. One thing that seems to have had

some influence is the presence of tree roots in the southern corner and along the southwestern border of the survey area.

Even though both natural and cultural factors negatively influenced the results of the resistivity survey, the survey did identify a number of anomalies that may be associated with archaeological features. The results of the resistivity survey are presented with no grid lines in Figure 5.11 and with black 20 m (66 ft) grid lines and orange 5 m (16.4 ft) grid crosshairs in Figure 5.12. One should note that the resistivity result map presents a palimpsest of readings from various depths. The depth of reading for this instrument is generally 1 m (3.3 ft) when data is collected in the Parallel Twin Probe array. A combined discussion of the identified anomalies is provided in the Interpretive Analysis section below.

## Interpretive Analysis

Following the completion of the geophysical data processing, the resultant data maps were georeferenced in ArcGIS by CRA CAD personnel and then were put in a Google Earth KMZ for the data analyst to review and interpret, allowing for easy referencing between datasets, historic maps, and aerial imagery, and allowing CRA's geophysical specialist to mark identified anomalies. Field notes and the field sketch map were reviewed to discount any anomalies that may have been caused by changes in topography or modern landscape elements. The analysis and interpretation of the results of this geophysical survey were challenging as the nature of the site is extremely complex.

Numerous anomalies were identified during the analysis of the geophysical data. Anomalies picked up by one or more of the three survey methods were added into a combined Google Earth KMZ file. This KMZ file was later imported into ArcGIS for the preparation of final report mapping. The anomalies identified during analysis of the geophysical results are shown overlain on each of the 15 GPR time slices (Figures 5.13–5.20), as well as in the magnetometry result map (Figure 5.21) and the resistivity result map

(Figure 5.22). Anomalies across these figures were color coded to indicate the class of anomaly. Classes of anomalies present included modern/historical surface features (dark orange), modern ditch (dark blue), modern paved roads and old graveled/paved roads, dirt two-tracks, and possible trails (maroon), previously identified near-surface archaeological features (i.e., brick-lined cistern, brick chimney base, and brick structure foundation) (red), possible pit features (dark red), archaeological trenches (light blue), possible trenches (blue), possible utilities (dark purple), rebar lot corner markers (green), unknown grid lines (light green), linear anomalies of various possible origins (yellow), possible enclosures (orange), possible structure footprints (peach), and finally, possible elements of the 1832 Fort Velasco (shades of pink to purple) and the Civil War Fort Velasco (shades of Army green).

Because there are numerous anomalies present in the geophysical data, for brevity's sake, not all will be discussed in great detail. Instead, focus will be given to discussions of anomalies related, potentially, to the 1832 Fort Velasco and the Civil War Fort Velasco, as well as anomalies associated with the previously identified brick-lined cistern, brick chimney base, and brick foundation. These three previously identified features were also the subjects of the limited ground-truthing investigations that were conducted following the geophysical survey. Prior to discussing these things, however, there are some minor points of discussion about some of the other classes of anomalies that should be mentioned.

Represented in the various geophysical results maps are several classes of anomalies that represent modern landscape or surface archaeological features. Many of these have no archaeological importance except in as much as they might have contributed to the destruction or obscuring of archaeological features. In this category would be features like the modern paved road (depicted in maroon in Figures 5.13–5.22), the modern drainage ditch (dark blue), buried utilities (dark purple), planting bed (dark orange), palapa (dark orange), and the walking trails (dark orange).

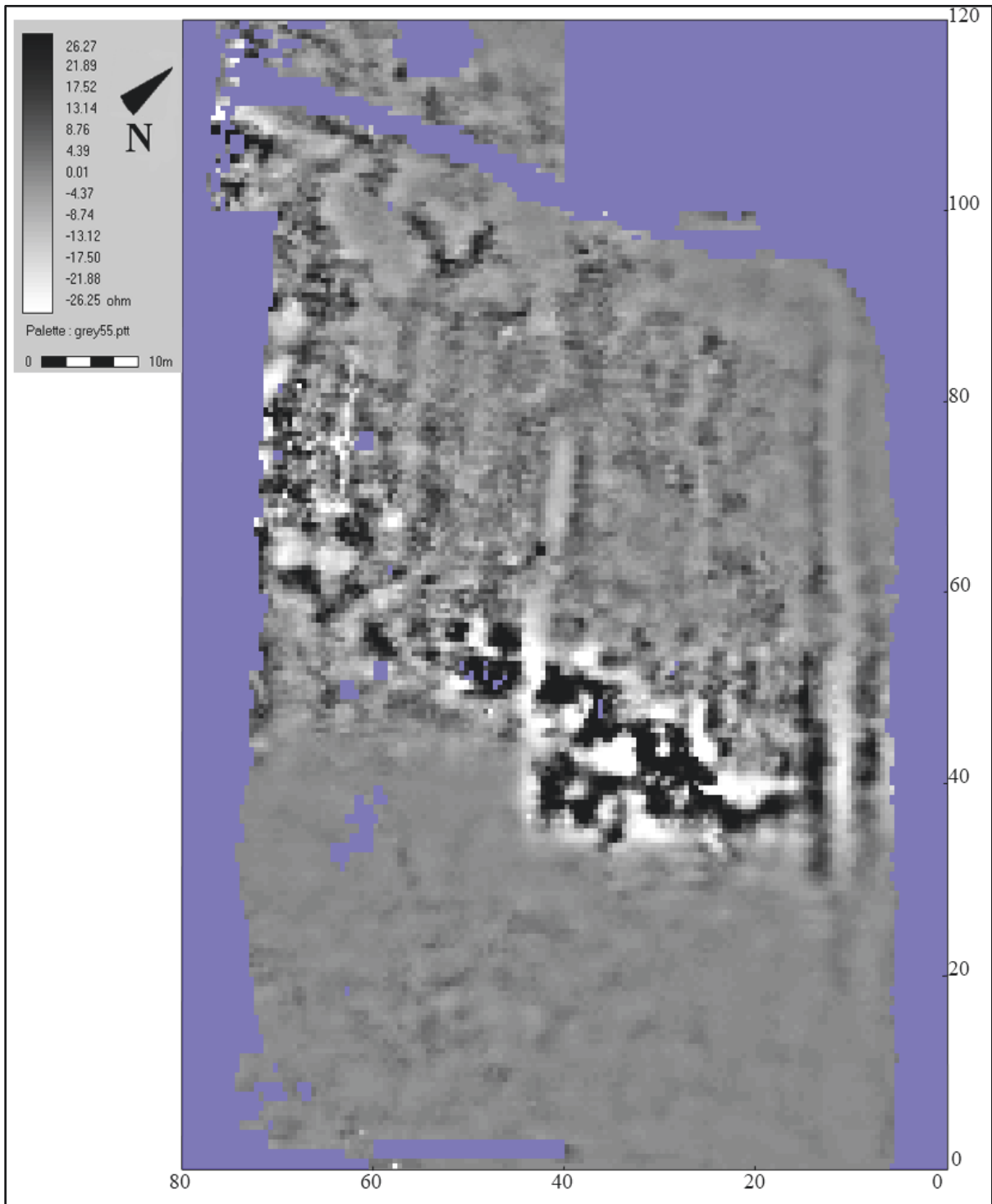


Figure 5.11. Plan view map of the resistivity survey results.



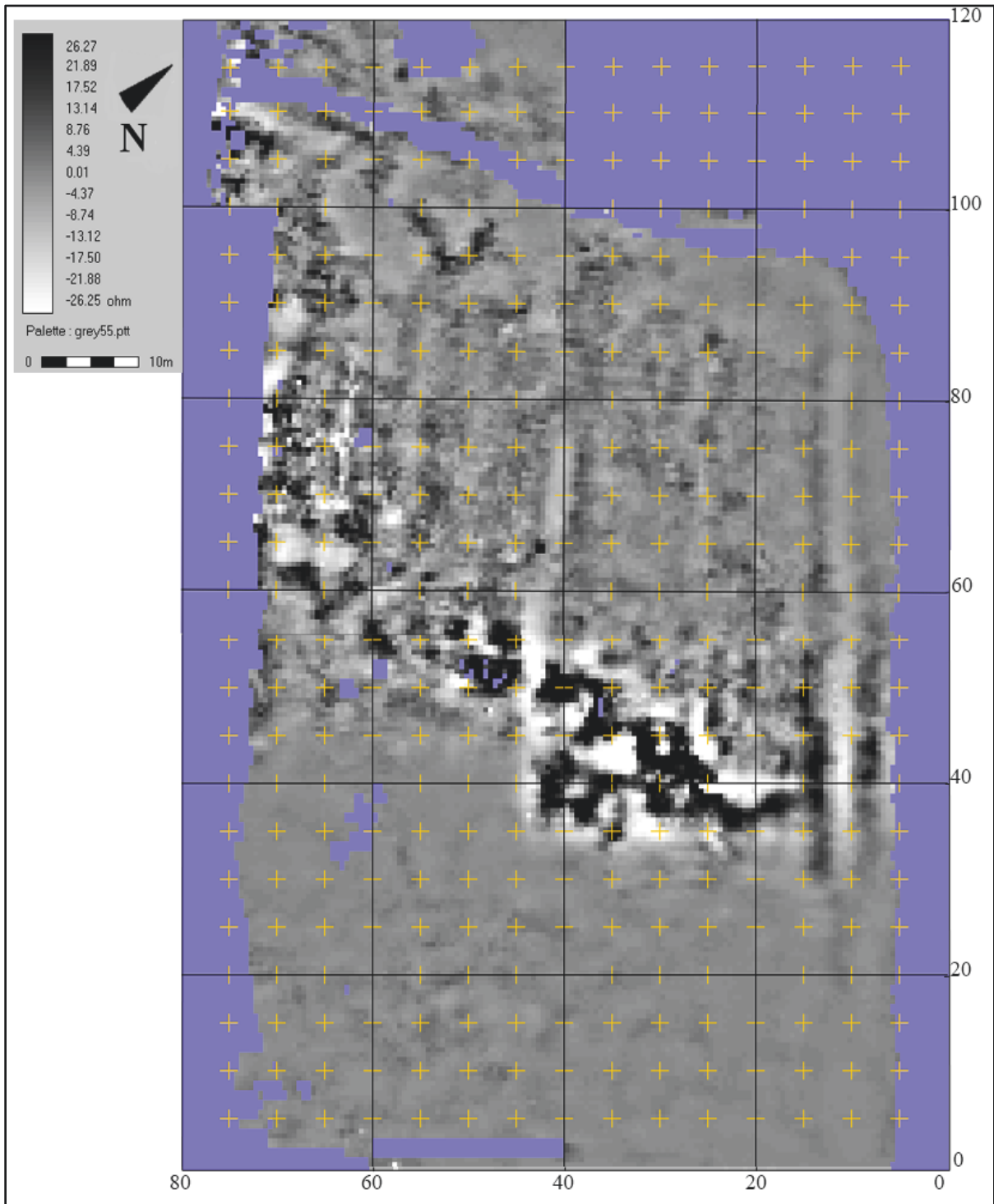


Figure 5.12. Plan view map of the resistivity survey results with the 20 m (66 ft) survey grid blocks in black and 5 m (16.4 ft) crosshairs in yellow.

There are additional old roadways and possible roadways indicated in the data (maroon anomalies in Figures 5.13–5.22). Some are believed to be associated with the extension of Monument Avenue along the old roadway that ran to the old Coast Guard Station, while others are believed to be a mix of old roads and drives associated with structures present in the area, as well as possibly heavy machinery, roads and cut associated with previous clearing activities in the area.

Two historical anomalies were included in this category of surface features: a historic square wood post and a historic artifact scatter. In the center of the artifact scatter is an anomaly that appears from the data to be a deep pit feature. It is indicated in the magnetic data (Figure 5.21) the resistivity data (Figure 5.22), as well as all GPR time slices (Figures 5.13–5.20). Given the location of this feature at the rear of an enclosure behind a historic structure footprint, it is possible that this may represent a privy or a cistern.

The most common class of anomaly present in the datasets was unknown linear anomalies, which are drawn in yellow on the result maps. The exact origin of these anomalies is unknown, which is why they are lumped together in this category and not included in another class of feature, such as roads or structures. Some of these linear anomalies are distinct and narrow and may even turn at right angles suggesting they might represent fences or enclosures. Other anomalies are curvilinear, wider, and have irregular margins. These types of anomalies may relate to foot paths (animal or human), indistinct vehicles tracks, or areas/swaths of land disturbance.

A noteworthy class of anomalies, present in the magnetic data, is the lot corner marker. Prior to geophysical fieldwork, Chris Kneupper indicated that the lots within Block 568 were marked with rebar at the corners as had been confirmed by a 2018 land survey that had been commissioned by the CTC. Randy Stroud (2018) produced a map of this survey, which is presented here as Figure 5.23, showing the survey area (red) and the corner rebar markers

that were indicated in the magnetic data (green). Some of the corners were not identified in the magnetic data either because they were no longer present for some reason at the time of the current survey, or they were obscured by or mixed up with other magnetic anomalies. While these lot markers do not represent archaeological features, they are important as they permit the precise referencing of the modern plat to the ground, which has some correlation to future ability to georeference historical maps as well.

As has been discussed previously, there are three archaeological features present at the site that were investigated during past research (see Fox et al. 1981). These three features included a brick-lined cistern, a brick chimney base, and a brick foundation, all of which are depicted on the FVRA diagram of the site (see Figures 3.17 and 3.18). The cistern was very clearly indicated as a circular anomaly in the magnetic data (Figure 5.21) because the fill, which seems to have contained some degree of metal, contrasted nicely with the surrounding soils. The location of the anomaly corresponded precisely with the location of the cistern as mapped on the FVRA diagram. The cistern was less obvious in the resistivity data (Figure 5.22), but was still indicated by a slight contrast in values, likely resulting from variation in moisture retained by the brick and feature fill as opposed to the surrounding soils. Reflections from the cistern were seen in all 15 of the GPR time slices (Figures 5.13–5.20), but was far less noticeable by Slice 15, suggesting that the bottom of the cistern may be around 4.1 m (13.5 ft) below the current ground surface, which is the bottom depth of the GPR penetration during the current survey based on the instrumentation and settings described in the methods section above.

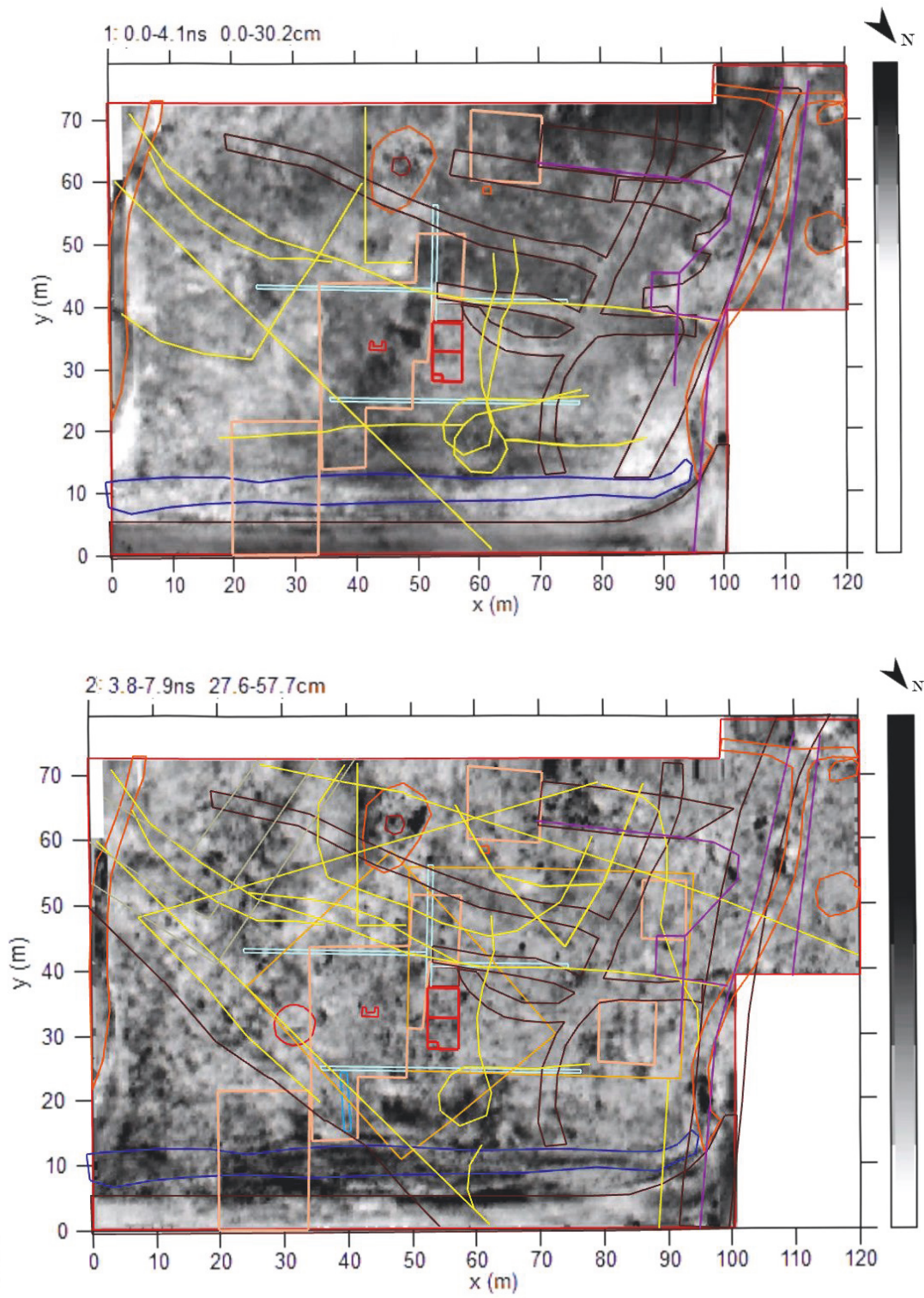


Figure 5.13. Time-slices 1 (top) and 2 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

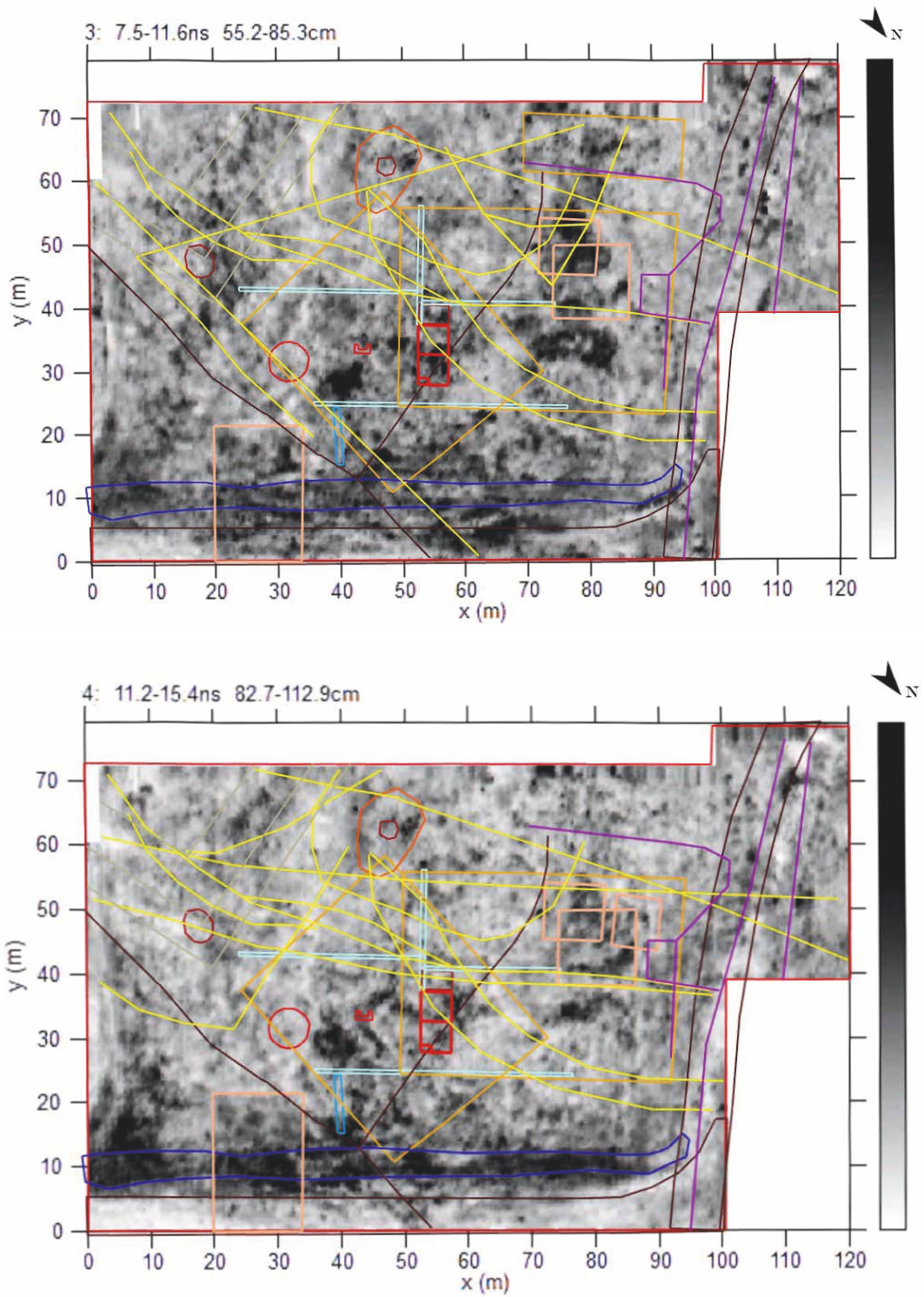


Figure 5.14. Time-slices 3 (top) and 4 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

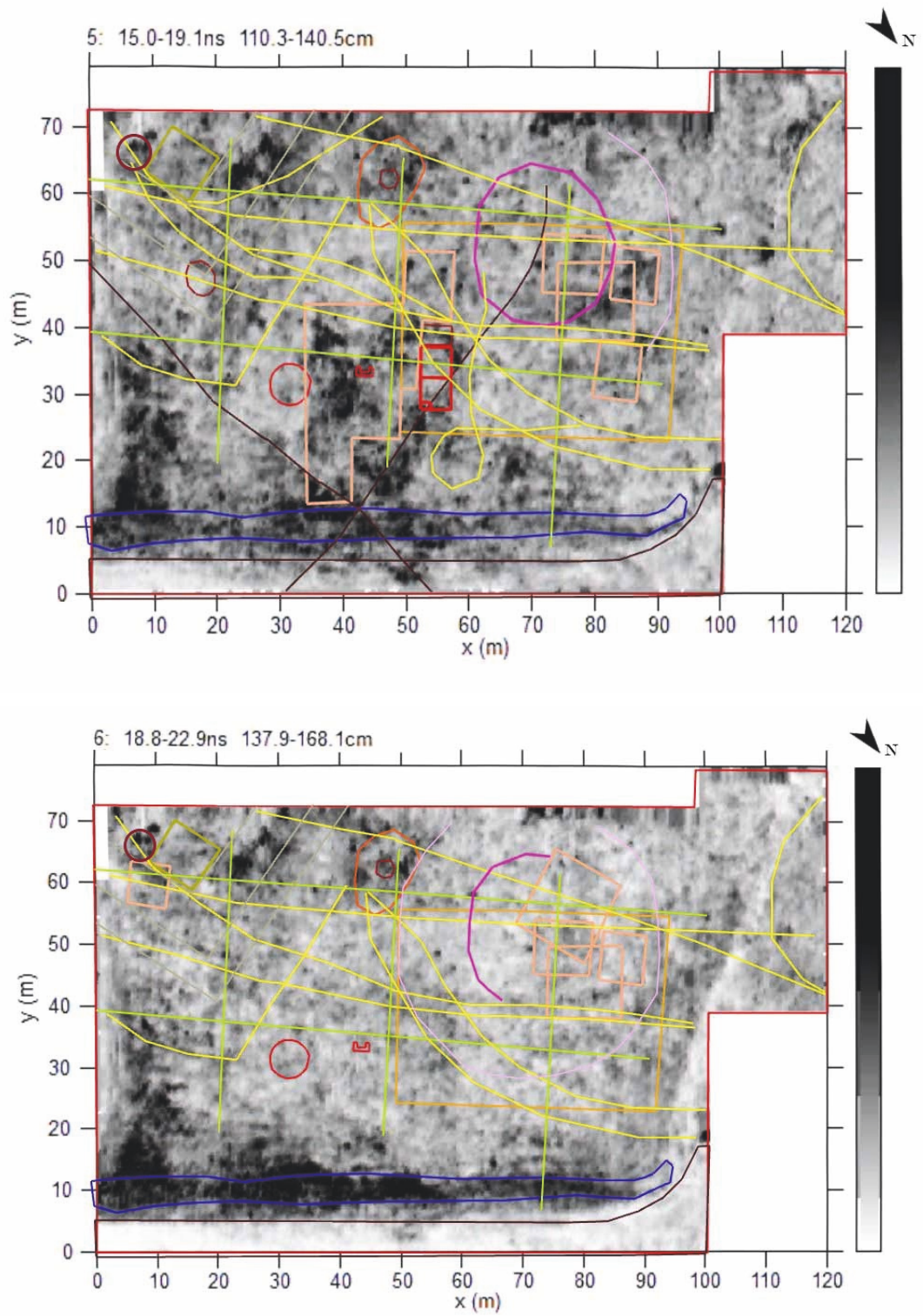


Figure 5.15. Time-slices 5 (top) and 6 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

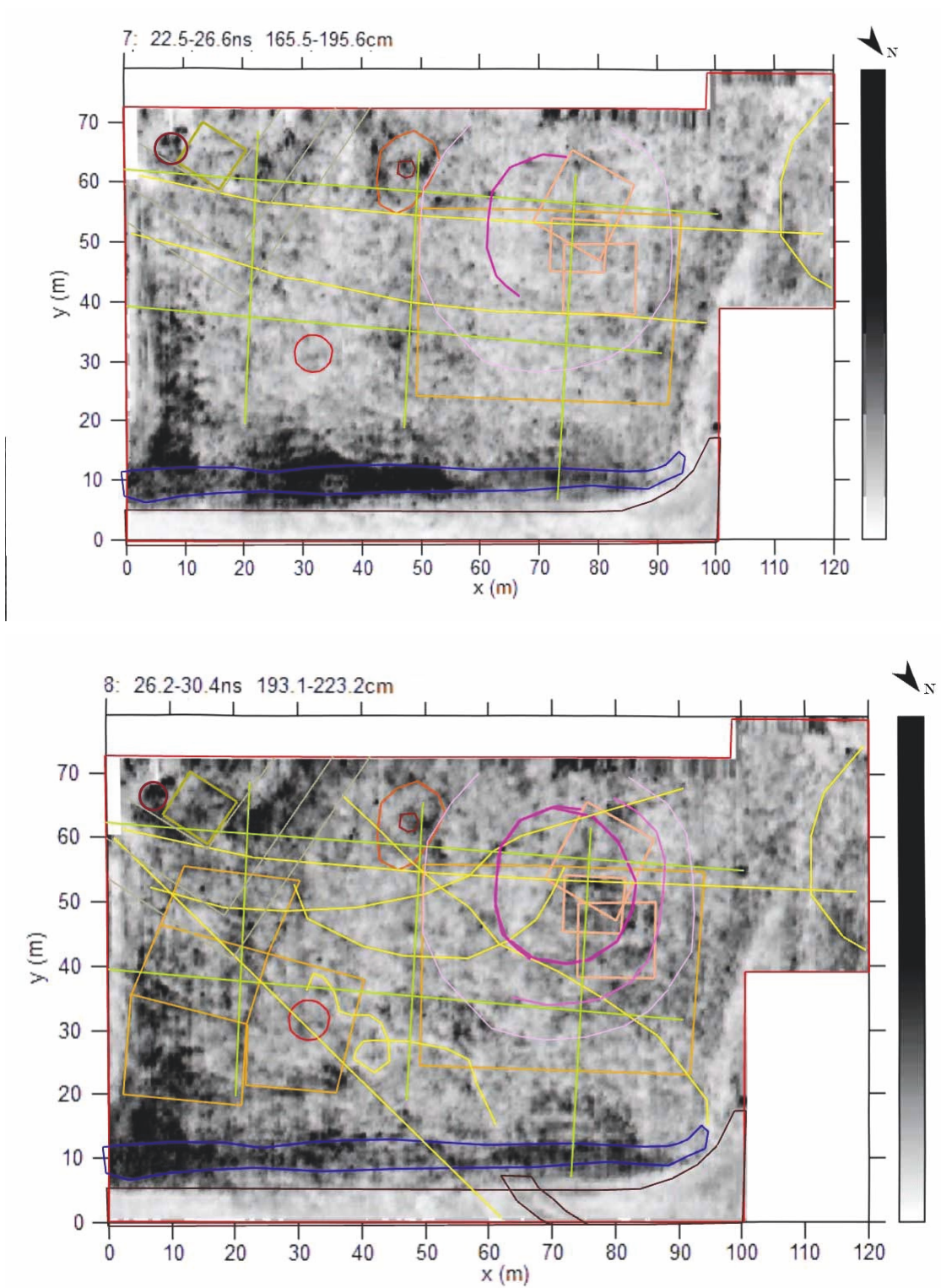


Figure 5.16. Time-slices 7 (top) and 8 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

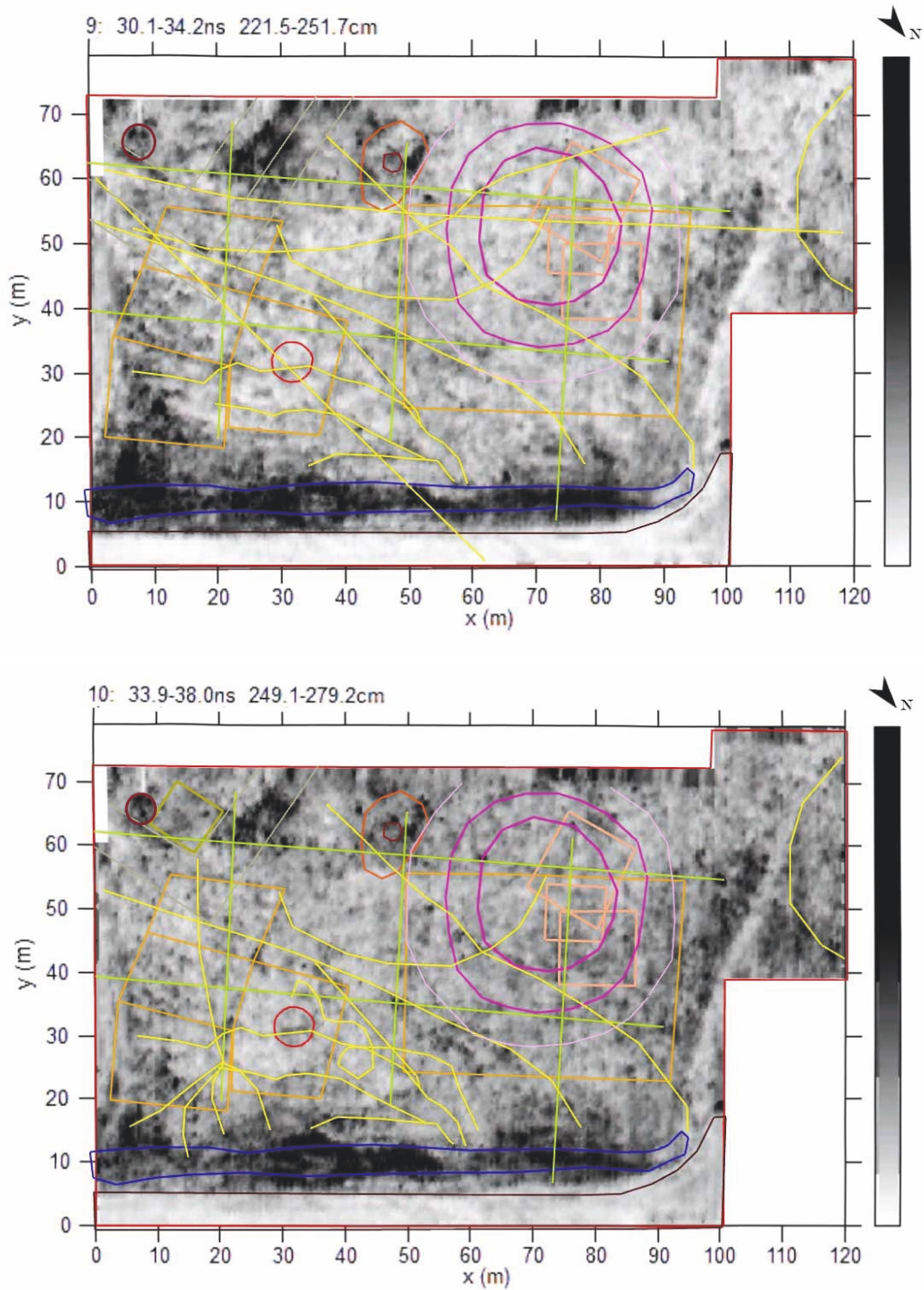


Figure 5.17. Time-slices 9 (top) and 10 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

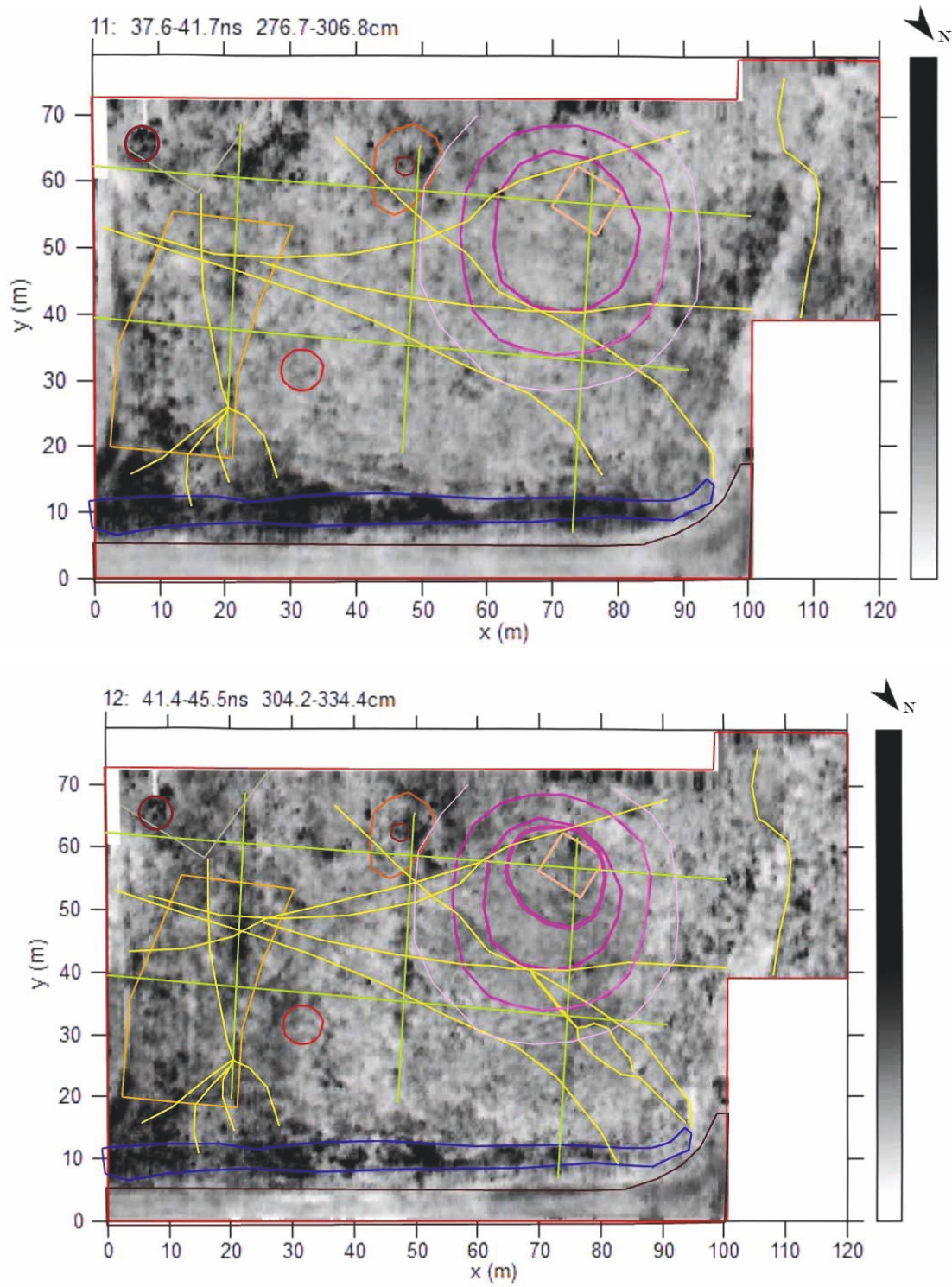


Figure 5.18. Time-slices 11 (top) and 12 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.



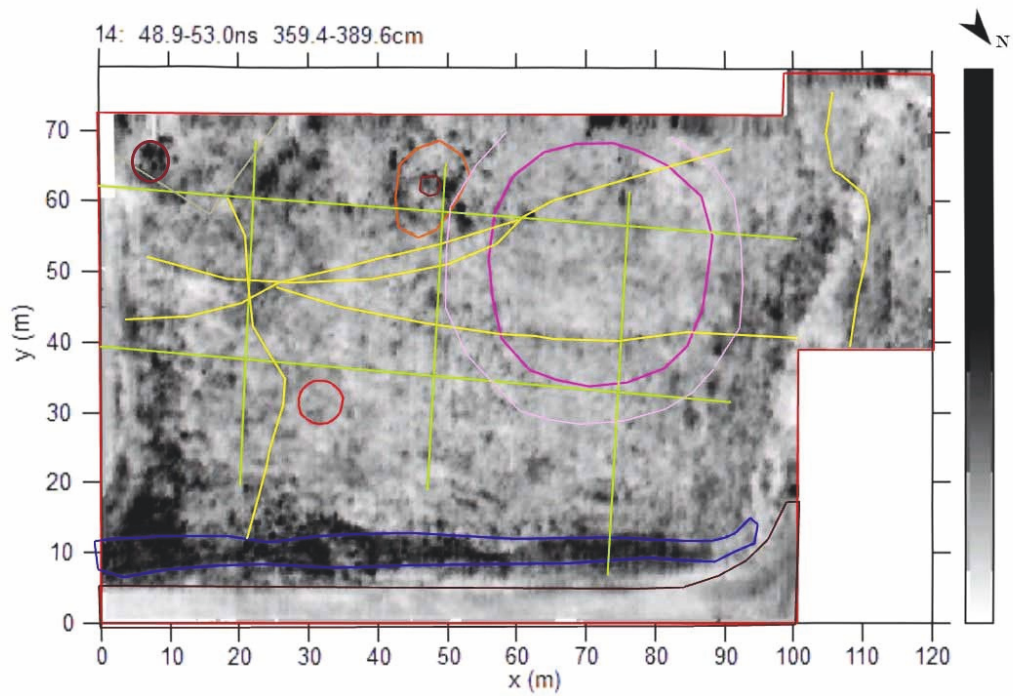
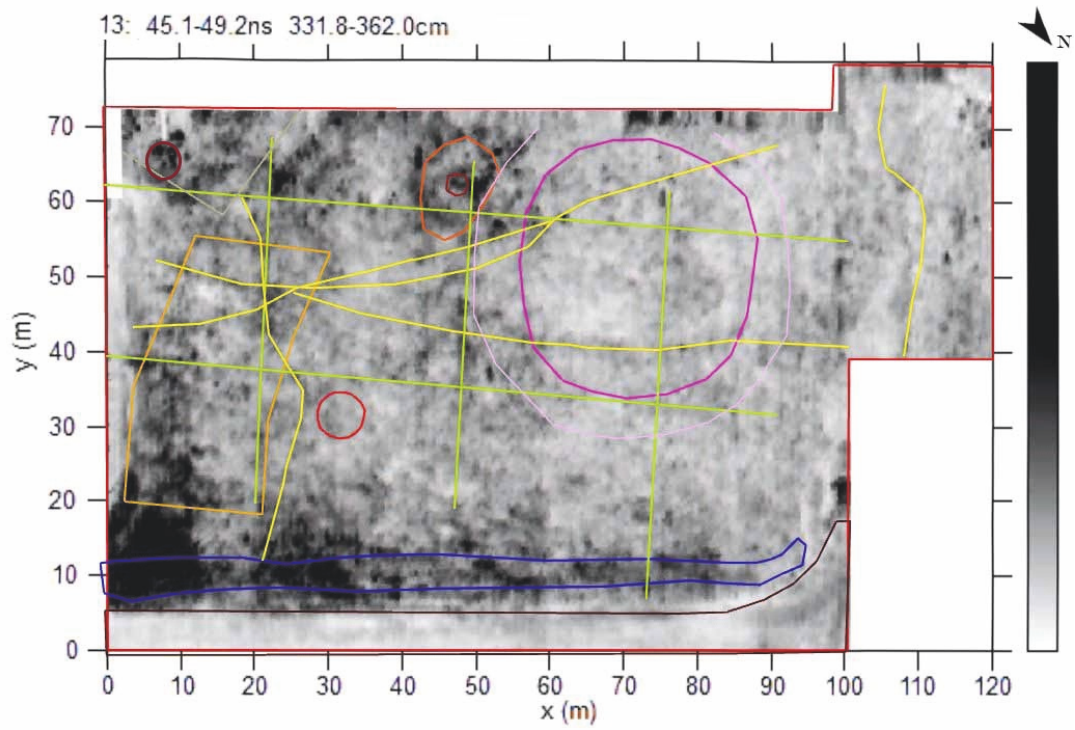


Figure 5.19. Time-slices 13 (top) and 14 (bottom) in a series of 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

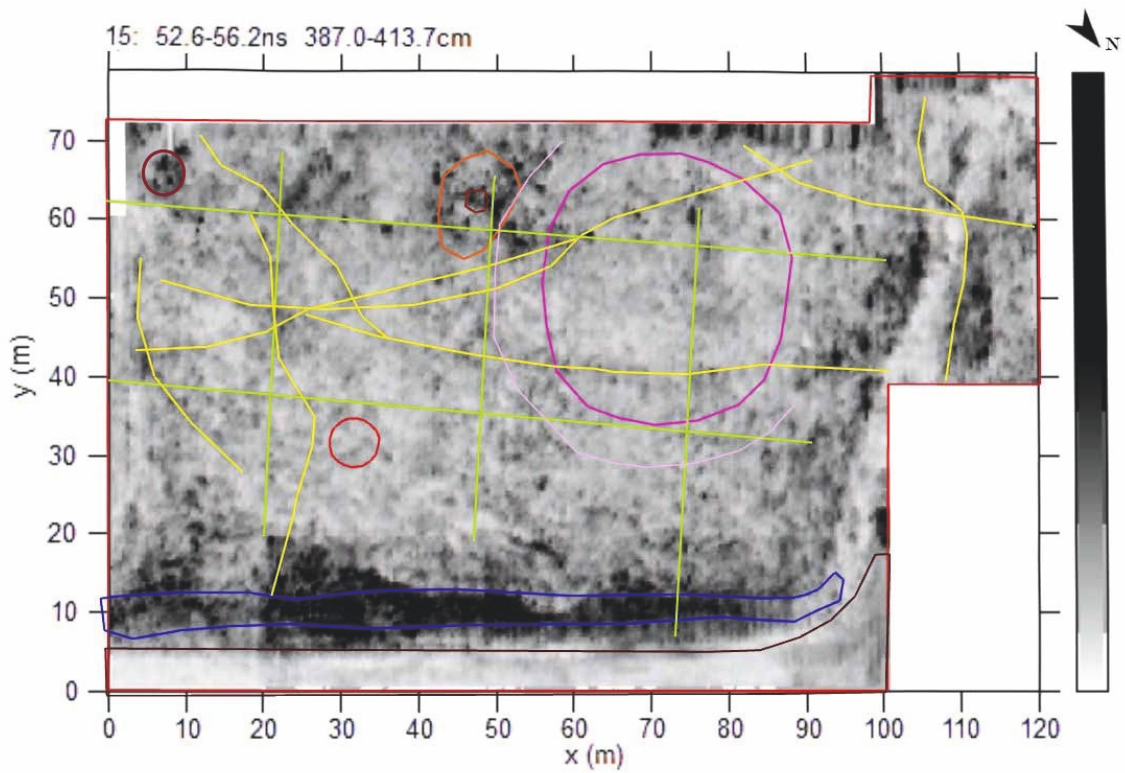


Figure 5.20. Time-slice 15 in a series 15 slices showing the results of the ground-penetrating radar survey of the current survey area with interpretive overlays.

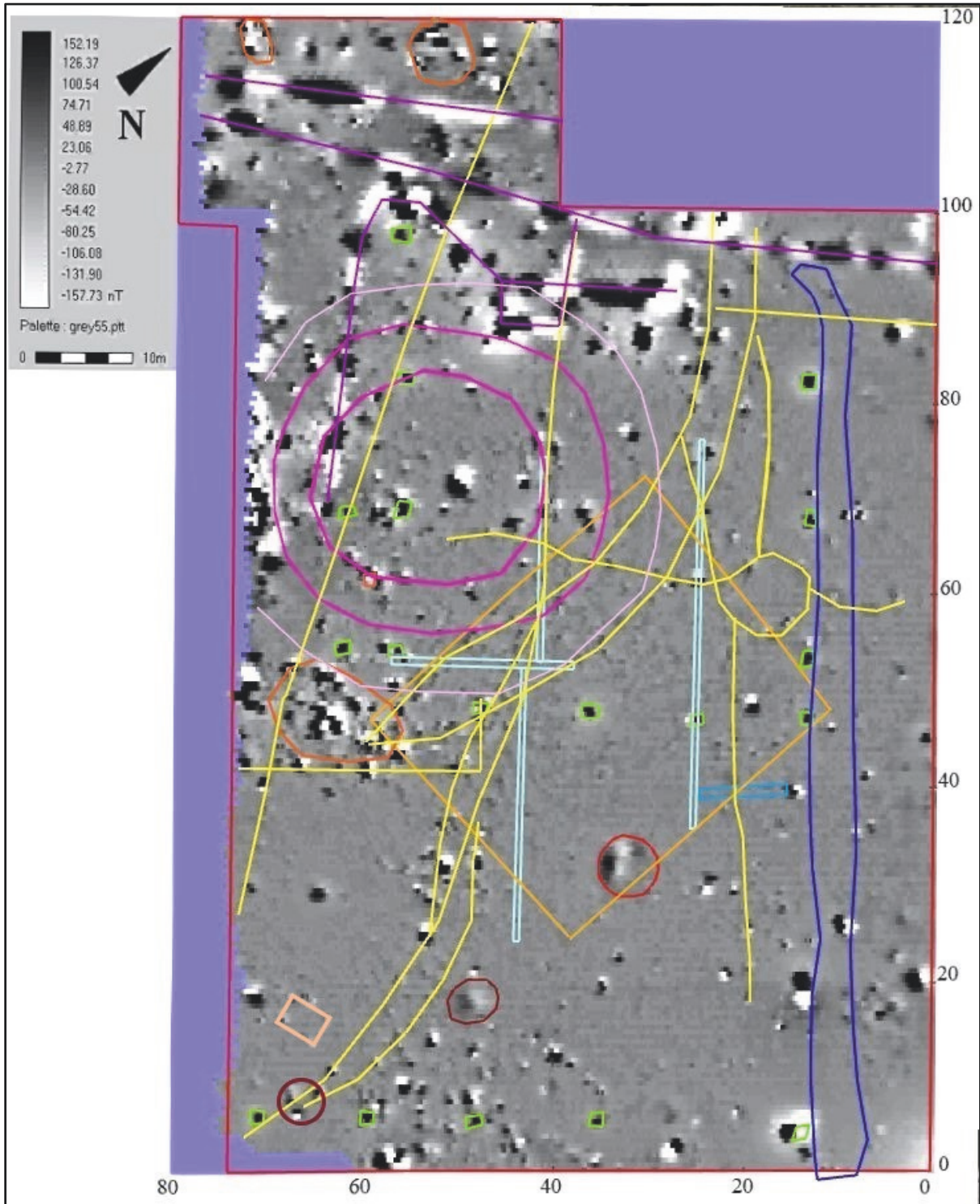


Figure 5.21. Plan view map of the magnetic gradiometer survey results with overlays of the identified geophysical anomalies.

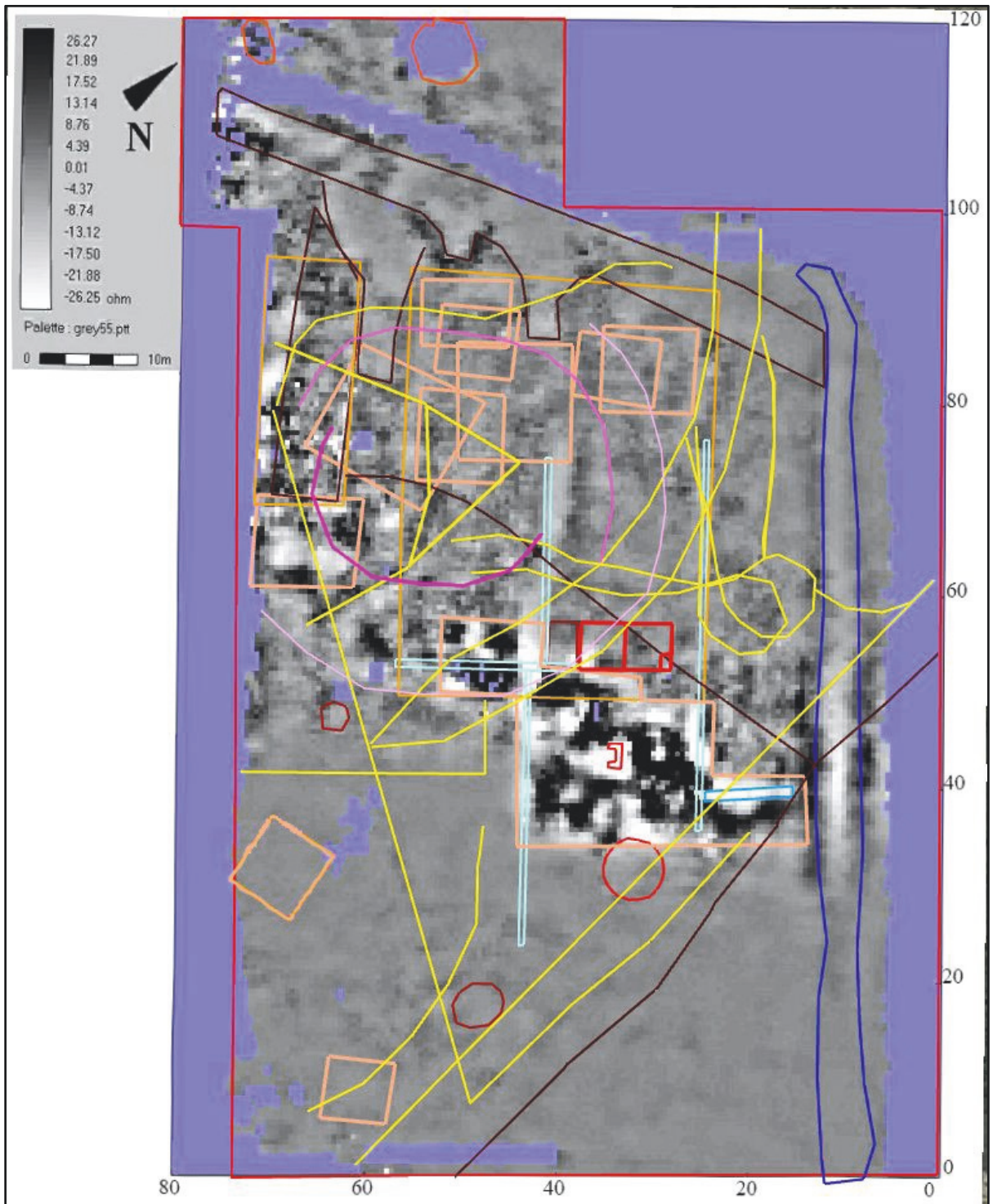


Figure 5.22. Plan view map of the resistivity survey results with overlays of the identified geophysical anomalies.

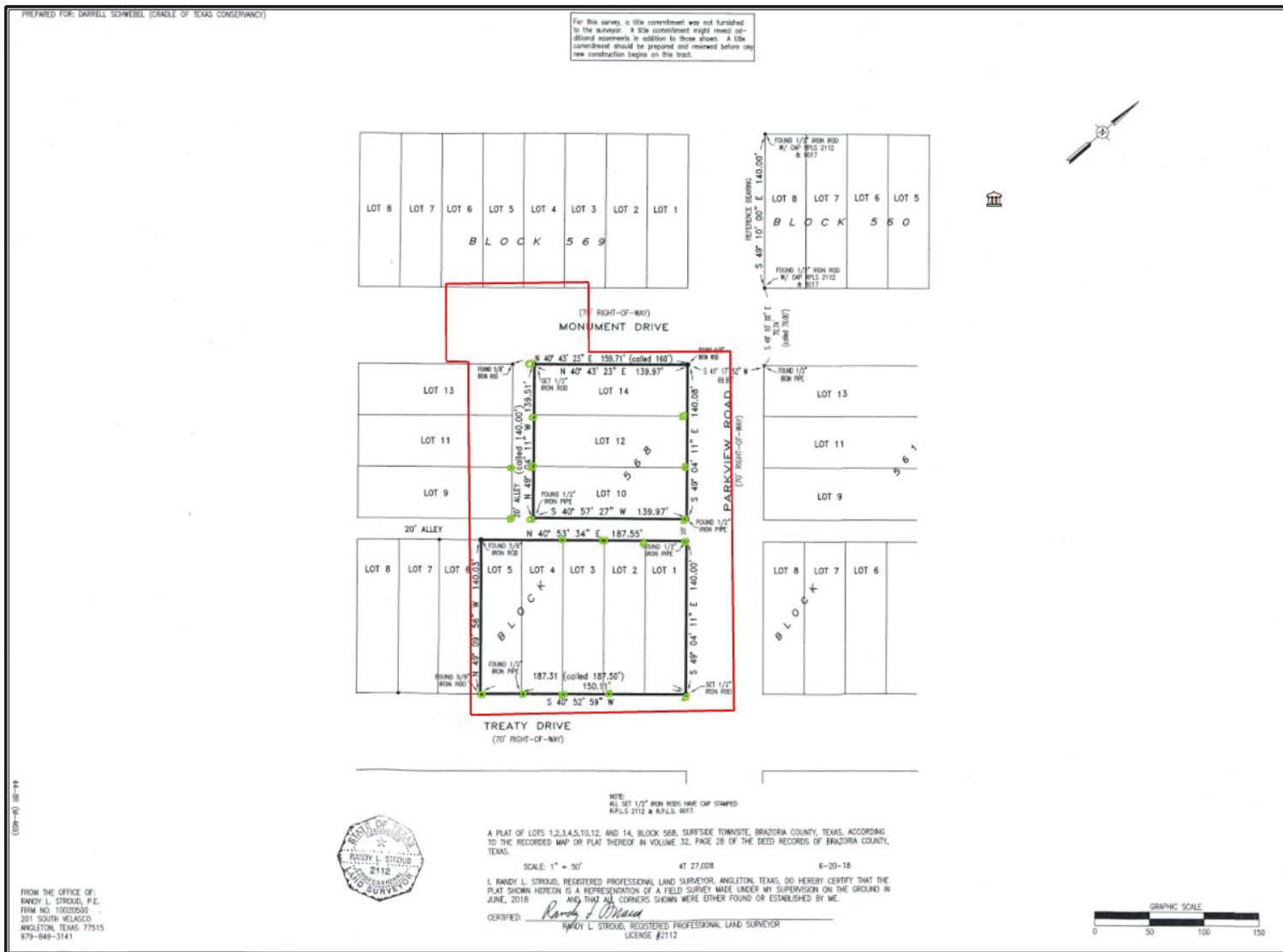


Figure 5.23. Stroud (2018) survey plat map of Lots 1, 2, 3, 4, 5, 10, 12, and 14 of Surfside Block 568 with overlay of survey area (red) and lot corner rebar markers from magnetic survey results (green).

The chimney base is not indicated in the magnetic data (see Figure 5.21), but is indicated as a blown out white area with very low resistance values in the middle of a large potential structure footprint depicted on the resistivity data result map (see Figure 5.22). The chimney is present in the GPR dataset as well, being represented by a medium reflectivity anomaly that shows up in Slices 1 through 6 (see Figures 5.13–5.15). The bottom depth of Slice 6 is 168.1 cm (66.2 in). Footings for chimneys are not typically buried that deep, so either there is soil deposition on top of the chimney base, causing the increased depth to the bottom of the feature, or the materials and geometry of the feature have scattered the GPR signal to a degree where there is ringing, or repeating, of the pattern in lower portions of the profile.

The brick foundation, similarly, was not indicated at all in the magnetic data (see Figure 5.21), but was indicated in the resistivity data (see Figure 5.22), being depicted as a medium resistance value rectangle with a cross bar running across the center. A small, rectangle with slightly higher resistance corresponds with the location of a plaster floor noted by BAS excavators as having been completely removed at that time. The brick foundation is very close to the surface and is evident in the surface wave in the GPR profiles passing over the feature. Much like the chimney, the brick foundation is represented by a medium reflectivity and shows up in Slices 1 through 5 (see Figures 5.13–5.15). The bottom depth of Slice 5 is 140.5 cm (55.3 in). The footings of the foundation are not likely to extend that far into the soil, but it is possible that a builder's trench of some sort may be present at deeper levels, or the GPR signal may be ringing at deeper levels as mentioned above.

During initial review of the geophysical data, Chris Kneupper noted that a square anomaly, roughly 7.6 m (25 ft) across was present in GPR Slice 5 (see Figure 5.15) and in many subsequent slices. This square was encompassed by a narrow linear anomaly also forming a right angle and running past the square's northern and eastern sides. Kneupper hypothesized that this could be the rear platform (Platform No. 5) of the Civil War Era Fort Velasco (see Figures 3.9 and 3.10). More

detailed examination of the GPR data suggested that there were actually two more thin linear anomalies, paralleling the first at 7.6 m (25 ft) and 12.2 m (40 ft) out. These lines were much more evident on the northern side rather than the eastern side and showed up in the data as shallowly as GPR Slice 2 (see Figure 5.13). All remnants of the platform and flanking lines are gone by Slice 15, suggesting that some elements of these anomalies may extend to depths as much as 3.89 m (12.8 ft).

While the magnetometer and the resistivity results (see Figures 5.21 and 5.22) do not appear to show either the possible platform or the linear features, the magnetic data does show a small rectangular anomaly marked by magnetic signatures at each corner directly on top of and oriented in the same direction as the possible platform. Additionally, there appears to be a pit feature located immediately to the south of the southeastern corner of the possible platform within the adjacent linear anomaly. This pit feature is present in the magnetic data set (see Figure 5.21), suggesting a large amount of metal present, but is also evident in the GPR data in Slices 5-15 (see Figures 5.15–5.20), suggesting possibly great depth, much like the cistern described above.

While there is no historic map, reviewed as part of this work, that shows the precise location of the Civil War Fort Velasco and its exact orientation, the cover letter of the Cross diagram (Cross 1884) notes the following about the orientation and armament of the fort:

*At the Mouth of the Brazos on East bank, a work has been thrown up cremaline front, facing, about South West, flanked by a bastion in North East corner, enclosed in rear by stockade and mounting five guns, en barbette, to wit; one 30 pounder Parrot gun, one 32 pounder Navy gun, one 24 and one 18 pounders Sea coast guns and one 12 pounder; containing four Bombproofs, four Magazines, (bombproofs 6 x 20) and a hot shot furnace...[Cross 1864]*

This note would suggest that the front of the fort faced to the southwest and the rear bastion was in the northeast corner. It is suspected that the geophysical anomalies seen in the southwest corner of the survey area might have been

associated with the rear bastion and platform of the Civil War Fort Velasco.

The 1864 schematic of the fort (Unknown 1864), presented here as Figure 3.10, provides an excellent reference to see if any element of the fort design corresponds to the identified anomalies. In Google Earth, the fort schematic was overlaid on aerial imagery along with the survey boundary and the geophysical anomalies in question. The square anomaly was used as a point of reference to scale and orient the figure as there is no discernable scale or north arrow on the schematic. This overlay is presented here as Figure 5.24 and shows that the geophysical anomalies line up almost exactly with the fort schematic. It is highly suggested, therefore, that remnants of the rear platform of the Civil War fort are present within the project area.

As can be seen in Figure 5.24, the fort schematic was made somewhat transparent so that the ground surface can be seen. The line of rock marking the previously discussed shoreline protection jetty is clearly depicted in Based on the available evidence, it is believed that the plank walkway was likely in the middle interior of the neck of the rear fort bastion. As indicated on the 41BO125 site form, it was 15.2 m (50 ft) between the plank walkway and the westernmost “possible moat,” which is the rough distance between the middle of the neck and the interior edge of the fortification bank south of the rear bastion (see Figure 5.24). No width is given on the site form for this first moat and no distance is given between the moat and the row of cedar posts. It is conceivable that this moat was a drainage ditch or a builder’s trench that ran around the interior edge of the fortification. If it was actually a ditch, that would explain the need for the plank walkway, which may have acted as a bridge for equipment to be moved across the ditch into the bastion and onto the platform. The row of cedar posts from the Site 41BO125 sketch map would have been part of the retaining wall holding up the interior of the fortification bank. The 0.6–0.9 m (2–3 ft) diameter oak tree trunks would then be lining the outer slope of the bank forming an extra layer of armor on the embankment. The second moat was supposedly 4.6 m (15 ft) from the oak tree trunks, which is the approximate distance between the bottom of the fortification bank and the lower

outer step as the schematic is currently referenced.

The jetty line would have overlapped two sections of the fort embankment near the neck of the rear bastion. In fact, it was supposedly in this vicinity that Civil War Era materials and features, believed to be associated with the Civil War fort, were discovered during the excavation of the jetty trench. The 41BO125 site form sketch map (Figure 3.23) and the information presented in the site form were reviewed with the possible fort positioning in mind to see if the findings in the trench might fit. As mentioned previously, the site form indicated that from west to east were found a plank walkway, a possible moat, a row of cedar posts, clusters of cannon balls, a series of oak tree trunks, and a second possible moat, all buried approximately 3–4.6 m (10–15 ft) bgs. It was estimated in the site form that the measurement from moat to moat was about 22.9 m (75 ft).

The schematic of the fort provides two profiles of the fortification, one across a portion of the fortification bank at the back side of the fort, and the other across the front fortification bank and one of the platforms. The profiles indicate that the fortification bank at the rear of the fort had a basic trapezoidal shape. The base of the fortification bank measured roughly 13.7 m (45 ft) across and the bank was approximately 4.6 m (15 ft) tall. The interior of the bank was steeply sloped at approximately 85 degrees, while the outside of the bank was sloped at roughly 40 degrees. The top of the bank was flat, or very mildly sloped toward the outside and measured roughly 7.6 m (25 ft) across. On the interior of the bank in the profile there is what appears to be a small step, or possibly a retaining wall of some kind holding up the steeply sloped side of the bank. At the location of the cross-section, the ground outside of the fort appears to be somewhat uneven and another step roughly 3.0 m (10 ft) across extended from the bottom of the bank and then dropped to the actual ground surface at a roughly 45-degree angle. With this additional step, the total width of the fortification





bank was approximately 18.2 m (60 ft) at the base. There are no moats indicated in the fort schematic (see Figures 3.23 and 5.24).

Although no moat is depicted on the schematic, it is possible that a moat was present below the outside of the fortification bank and it is possible that a drainage channel wrapped around the inside of the fortification. The approximate distance between the “possible moats” is mentioned as being 22.9 m (75 ft) on the previous site form. This size difference is the main element of the previous site form description of the findings that may not fit with the current interpretation. Where the jetty trench intersects the northern fortification bank in the current referenced scale is only 15.8 m (52 ft), while the southern fortification bank of the bastion measured approximately 30.4 m (100 ft) across. Neither of these measurements matches the 22.9 m (75 ft) description, but as the moats are not on the schematic, it is impossible to come up with a more precise measurement. The interior distance between the two fortification banks does measure roughly 22.9 m (75 ft) across, but it would not make sense for all of the observed features in the trench to be found within the neck of the bastion.

As described above, the archaeological features identified in the jetty trench correlate with a reasonable sequence of elements if associated with the fortification bank on the south side of the neck of the rear bastion. This location is indicated with a black box in Figure 5.25 along with the locations of the 1991 USACE trenches and the 2008 PBS&J trenches as derived from Stahman (2008, Figure 2). Coincidentally, this area corresponds partially with the area of higher elevation mentioned previously to the south-southeast of the current survey area. It has been hypothesized that greater amounts of dredged spoil soils were deposited in this area, possibly giving explanation for why the Civil War remains were found so deeply buried during the trenching for the jetty. It is noteworthy that PBS&J Trench #5 and a portion of the USACE Trench #1 fell within this portion of the jetty trench. While it is not known what was found in the USACE trench, nothing but dredge spoil and modern debris was found in PBS&J Trench #5. It is likely that the area of PBS&J Trench #5 was disturbed by jetty trenching activities. USACE Trenches #1 and #2, as well as

PBS&J Trench #4 would have partially overlapped the fortification banks. It is now known whether anything was found by the USACE in these trenches, but nothing of note was found by PBS&J in Trench #4. Given that PBS&J conducted their investigations after the widening of the harbor channel and reshaping of the shoreline, it is likely that any evidence of the fort in the location of PBS&J Trench #4 might have already been destroyed.

Unlike the Civil War Fort Velasco, which has the schematics that can provide many details about the nature of the fort, no document is known to exist that presents a detailed depiction of the 1832 Fort Velasco. As described above, the available historic records describe the fort as having been circular in form with two parallel rows of wood posts approximately 1.8 m (6 ft) apart, which were filled between with sand, soils, and shell. Between the walls was an embankment that soldiers could stand on to shoot over the wall. A large mound, bounded in the same fashion by posts, was present in the center of the enclosure (Brown 1970 [1892]). The center mound was described by Russell (1872) as a “bastion” surrounded by a 0.6 m (2 ft) tall parapet made of wood. Harkort (1836) is the only known historical reference from which a size of the fort can be derived. Based on the scale of the Harkort (1836) map (see Figure 3.2) the fort is believed to have been a little less than 30.5m (100 ft) in diameter. Surrounding the fort, reportedly, was a ditch, “perhaps something intended for chevaux de frize or abattis” (Peareson 1901).

As can be seen in the depictions of the geophysical results (see Figures 5.13–5.22), all three geophysical techniques picked up on aspects of circular anomalies in the northern portion of the survey area, which are interpreted as possibly being associated with the 1832 Fort Velasco. Taken together, the geophysical results point to the presence of three concentric circles with approximate diameters of 46.7 m (140 ft), 30.5 m (100 ft), and 22.9 m (75 ft). A smaller fourth circle, with an approximate diameter of 15.2 m (50 ft) was offset to the southwest within the third circle. Offset to the southwest within the fourth circle was a square anomaly measuring roughly 7.6 m (25 ft) across. All of these anomalies are shown in Figure 5.26 along with the anomalies believed to be associated with the possible Civil War fort as well.

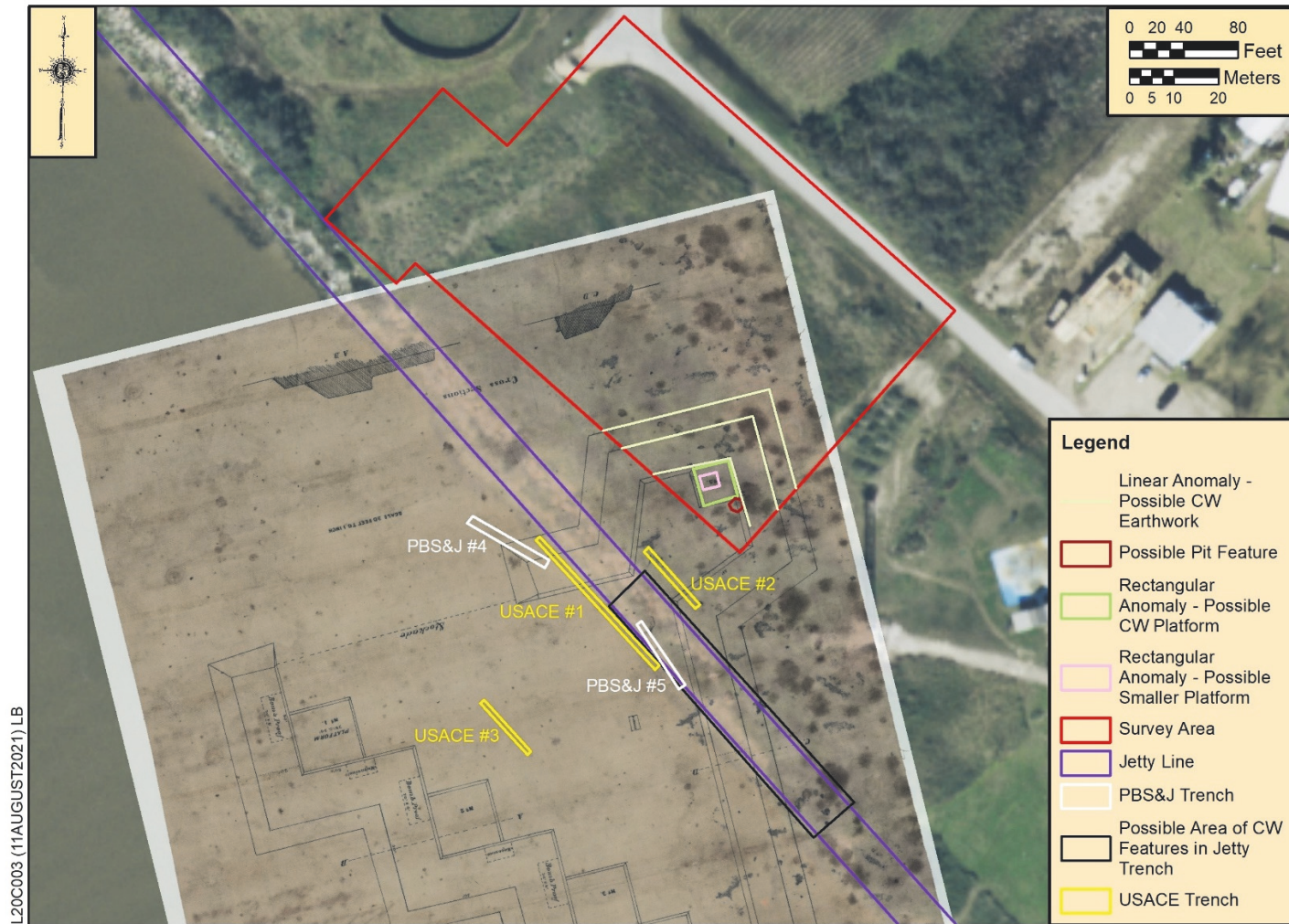


Figure 5.25. Schematic of Civil War Era Fort Velasco (Unknown 1864; Courtesy of the Brazoria County Historical Museum) overlain on modern aerial imagery, also showing the survey boundary, geophysical anomalies believed to be associated with the Civil War Era fort, as well as the USACE and PBS&J trenches from Stahman (2008, Figure 2) and the possible approximate area of the Civil War Era archaeological features and artifacts discovered during the excavation of the Shoreline Protection Jetty trench.



Figure 5.26. Aerial imagery showing the current survey area, as well as anomalies believed to be associated with the Civil War Era Fort Velasco (left) and the 1832 Fort Velasco (right).

The GPR was, by far the most telling of the three methods as it has a much deeper range of penetration and provides for a greater ability to distinguish between overlapping features. The first indication of these circular anomalies was in Slice 5 (see Figure 5.15) (110.3–140.5 cm [43.4–55.3 in] bgs), where a portion of the first circle is evident as is largely the entire third circle. The entire first circle is present in Slice 6 (see Figure 5.15) (137.9–168.1 cm [54.3–66.1 in] bgs). A portion of the second circle starts to become evident in Slice 8 (see Figure 5.16) (193.1–223.2 cm [76.0–87.9 in] bgs). The full second circle is present in Slice 9 (see Figure 5.17) (221.5–251.7 cm [87.2–99.1 in] bgs). The square anomaly shows up in Slice 11 (see Figure 5.18) (276.7–306.8 cm [108.9–120.7 in] bgs) and then the fourth circle appears in Slice 12 (see Figure 5.18) (304.2–334.4 cm [119.8–131.7 in] bgs). The square anomaly, as well as the fourth and third circles, are no longer present in Slice 13 (see Figure 5.19) (331.8–362.0 cm [130.6–142.5 in]).

There are a number of reasons pointing to the possibility that this set of anomalies may represent the 1832 fort. In the GPR data, the first circle appears to be reminiscent of a ditch roughly 2–3.7 m (7–12 ft) wide and about 1.5–2 m (4.9–6.6 ft) deep. This is consistent with the report that a ditch ran around the outside of the 1832 fort. In contrast, the second, third, and even fourth circles are more narrow in impact, which would be consistent lines of vertical wood post used to make the outside of the fortification bank as described in historical accounts. There do not appear to be bands of different values suggesting different material properties for the soils between the second and third circles, or within the fourth circle. However, one would not really expect to see a difference in material properties assuming the fill within the embankments would have been locally sourced materials. The fourth circle is interpreted as being the central mound referenced in the historical documents. The square anomaly on the top of the fourth circle is believed to be a defensive platform, although it could be a structure footprint. It is believed to be a defensive platform, however, because of its position on the central mound, the size of it

is the same as the aforementioned possible Civil War fort platform, and it is oriented toward the river at exactly the same angle as the possible Civil War fort platform. One final piece of supporting evidence is the size. The second circle, which is interpreted as the outside of the fortification bank has a diameter of approximately 30.5 m (100 ft), which is the rough size of the 1832 fort according to the Harkort (1836) map (see Figure 3.2).

## Ground-Truthing Investigations

During BAS excavations of 1996–2003, three permanent datum points were established within Surfside Block 568 in the form of ceramic sewer pipes filled with concrete and topped with embossed brass markers, mounted vertically with the top flush with the ground surface. These were installed on 8 September 1996 and were located at grid points that were an extension of the PAI grid system (Earls et al. 1996), at N950/E1050, N950/E1000 and N870/E1100. The first two of these were along the southern margin of the roadside swale on the southern side of Monument Avenue, and were inadvertently destroyed in 2003 by heavy equipment working on that roadside ditch. The third one was located in the southern portion of the current survey area, but was not found after the 2017 bulldozing incident. Consequently, a new grid system was reestablished by CRA for the current work.

In the immediate aftermath of the 2017 bulldozing incident, it was readily observed that small amounts of articulated brick features were observed flush with the ground surface, thought to be some portion of the brick foundation, and it was feared some portion may have been scraped away. The exposed brick had become covered with vegetation and were hard to find by 2020, despite the area being closely mowed with a belly mower in preparation for the 2020 survey. One desired outcome, therefore, for the 2020 geophysical survey was that the data might be able to show the locations and current condition of the major prior-known features, such as the rectangular brick foundation, brick chimney base, and

cistern, thus reorienting the locations of previous archaeological investigations and features within the current CRA grid.

As was discussed above, the geophysical survey results did show evidence of the chimney base, cistern, and brick foundation, but this was not immediately clear in the preliminary review of the data. CTC decided, therefore, that it would be worthwhile to conduct some ground-truthing to determine the current condition and precise location of the features. An initial visit to the site was made on 12 December 2020, during which Chris Kneupper mowed the property and reestablished the CRA grid corners with large wooden stakes. On three other dates, return trips to the site were made to expose the brick foundation and chimney base, as well as to investigate the location of the cistern. These field visits were made on the following dates by the indicated persons: 17 December 2020 (Chris Kneupper), 24 December 2020 (Chris and Carl Kneupper), and 6 January 2021 (Sue Gross, Chris Kneupper, and Clint Lacy). The locations the three features that were investigated during the limited ground-truthing efforts are shown in Figure 5.27 below.

A portion of exposed brick was found on the ground surface during the revisit to the site and so starting with the exposed brick section, the vegetation was slowly removed using hoes or adzes, and then the extant foundation walls were more thoroughly exposed using trowels and hand brushes. No formal excavations or artifact collection was conducted as it was necessary to remove very little soil from atop these features. The two features were found largely intact, although the walls of the brick foundation were damaged in places, being hardly more than rubble. The south wall was seemingly out of alignment, and a great deal of brick rubble (wall fall) was found around the walls. A cross wall was also revealed within the brick foundation, as is shown in the FVRA diagram (see Figures 3.17 and 3.18), dividing the structure into two rooms approximately 16-x-16 ft (inside dimensions).

The outside corners of the two features were plotted using the CRA grid and

measurements were collected on each of the walls. These numbers are presented below.

**Northeast Corner:** N57.0/W27.7

**Northwest Corner:** N58.1/W37.6

**Southeast Corner:** N51.2/W28.4

**Southwest Corner:** N52.7/W38.1

**North Wall:** Length = 10 m (33 ft), Width = 2 bricks, lengthwise

**West Wall:** Length = 5.5 m (18 ft), Width = 1 brick, lengthwise

**South Wall:** Length = 9.75 m (32 ft), Width = 2 bricks, lengthwise

**East Wall:** Length = 5.79 m (19 ft), Width = 2 bricks, lengthwise

**Cross Wall:** Inside Length = 4.87 m (16 ft), Width = 1 brick, lengthwise + 1 brick widthwise

Photos of the exposed brick foundation were taken on 14 January 2021 by Chris Kneupper, using a step ladder to gain an overall view for some photos (Figure 5.28a and 5.28b). Orange metal pin flags were placed at the outside corners of the feature for visual reference. Photos of corners were taken while standing at ground level, from a point just outside of the walls (Figures 5.29–5.33).

Once the brick foundation was exposed, the position of the brick chimney base was estimated from the FVRA diagram (see Figures 3.17 and 3.18), and it was found by probing, and then removing of vegetation and overburden as described in the relocation of the brick foundation. In this case, however, it was necessary to remove 15.2–20.3 cm (6–8 in) of soil from atop the feature. This feature was found to be largely intact as well with the eastern side of the feature measuring approximately 2.54 m (100 in) in length. It is three sided and is represented by two exposed courses of brick. The more disturbed upper course consists only of a portion of three rows of lengthwise bricks in the northwestern corner of the feature. The lower course is more complete, although the southeastern corner has been damaged. Two rows of lengthwise bricks

form the firebox side of all three sides of the chimney, while the outside is formed by a row of bricks oriented perpendicularly to the interior two rows. The two courses of brick were cemented together with a lime mortar. Below are the CRA grid coordinates of the northeastern and southeastern corners of the chimney base:

**Northeast Corner:** N44.7/W33.2

**Southeast Corner:** N42.1/W33.4

Photos of the chimney base were taken from the east side of the feature, looking west (Figures 5.34 and 5.35).

The location of the cistern was also estimated from the FVRA diagram (see Figures 3.17 and 3.18). The cistern's center point was reckoned to be at around N32/W33 on the CRA grid. Probing and hand trenching were attempted by Chris Kneupper and Clint Lacy on 27 and 29 January 2021, as well as on 1 February 2021. The result of the efforts was the ultimate relocation of the northern and eastern walls of the cistern (Figures 3.36a and 3.36b). Large amounts of brick and mortar rubble and "wall fall" were observed as the trenches were dug, in and around the cistern walls. Mortar or plaster surfaces were observed on both the outside and inside vertical faces of the brickwork. A rough chord bisection method was used to estimate the center point of the cistern (approximately confirming the 19 ft 9 inch diameter on FVRA blueprint), which was then plotted on the CRA grid at N31.6/W32.1. Some dimensions were measured for the two cistern wall sections that were uncovered:

**North Wall of Cistern:** Width = 27.9 cm (11 in), Depth = 38.1 cm (15 in)

**East Wall of Cistern:** Width = 24.1 cm (9.5 in), Depth = 48.2 cm (19 in)



Figure 5.27. Aerial imagery showing the current survey area, as well as the locations of the historic features (cistern, chimney, and brick foundation) that were the subject of the limited ground-truthing investigations.



Figure 5.28a. Photo of exposed rectangular brick foundation (from atop ladder) – East side, - looking south; cross wall is shown in photo.



Figure 5.28b. Photo of exposed rectangular brick foundation (from atop ladder) –West side - looking south; cross wall is shown in photo.





Figure 5.29a. Northeast corner of foundation, looking south.



Figure 5.29b. Northwest corner of foundation, looking south.



Figure 5.30a. Detail of North wall at Northeast corner of foundation, looking south.



Figure 5.30b. North wall at Northwest corner of foundation, looking south.



**Figure 5.31a. Southwest corner of foundation, looking north.**



**Figure 5.31b. Southeast corner of foundation, looking north.**



Figure 5.32a. Detail of South wall at Southwest corner of foundation, looking north.



Figure 5.32b. East wall at Southeast corner of foundation, looking west.



**Figure 5.33. North end of cross wall, looking South (this section of brick was right at surface, was where articulated bricks were first seen, and from which other sections were unearthed).**



**Figure 5.34. Photo of exposed brick chimney base (from atop ladder), from East side of chimney base, looking west.**



Figure 5.35a. Detail of brick chimney base, Southeast corner.



Figure 5.35b. Detail of brick chimney base, Northeast corner.



Figure 5.36a. Photograph of the cistern wall: North wall.



Figure 5.36b. Photograph of the cistern wall: East wall.



## Chapter 6. Conclusions and Recommendations

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Cultural Resource Analysts, Inc., personnel completed geophysical investigations of an approximately 0.79 ha (1.95 acres) portion of the Old Velasco Site (41BO125), Village of Surfside Beach, Brazoria County, Texas. The project area consists of the platted Surfside Block 568, which is owned by the CTC, as well as adjacent rights-of-way areas, which are controlled either by the Village of Surfside Beach or by the Brazos River Harbor Navigation District. The project area overlaps the townsite of Old Velasco (41BO125) and is in the vicinity of the suspected location of the 1832 Mexican fort, Fort Velasco, as well as subsequent fortifications dating through the Civil War. Historical research suggests that it is possible that the land surrounding the 1832 fort may contain informal graves associated with casualties of the Battle of Velasco, which took place June 25 and 26, 1832, and was one of the first military conflicts between Mexican and Texan forces leading up to the Texas Revolution.

The geophysical survey was conducted on behalf of the CTC. to determine the type and possible extent of archaeological features on the property and guide future actions at the site. The project is being conducted for research purposes only and the project area is not currently slated for sale or development. Therefore, the project does not require federal permits, licenses, or funding, and is not subject to Section 106 of the National Historic Preservation Act. Due to the fact that portions of the project area are controlled by subdivisions of the State of Texas, however, it was necessary to obtain a Texas Antiquities Permit (No. 9419) for the project, and so the THC has oversight and serves as lead agency.

Fieldwork for the geophysical survey was conducted by CRA geophysical specialists and occurred between June 3 and 7, 2020. Fieldwork began with the establishment of the survey grid to permit geophysical data collection over the survey area. The geophysical survey was conducted using three

techniques: GPR, magnetometry, and resistivity.

Analysis of the collected geophysical data confirmed the presence of numerous geophysical anomalies related to modern features and modern disturbance of the property, as well as probable historic occupation of the site, including possible footprints of a number of structures, indications of enclosures, and pit features. Previously identified historic archaeological features, including a brick foundation, brick chimney base, and a brick-lined cistern were also identified in the geophysical data and limited ground-truthing efforts, conducted by the BAS, confirmed their locations and condition.

Based on the geophysical results, it is thought that the data shows strong evidence for the presence of the rear bastion of the Civil War Era Fort Velasco in the southwestern portion of the survey area, as well as almost the entirety of the 1832 Fort Velasco in the northwestern portion of the survey area. No definitive geophysical evidence was found within the survey area to suggest that grave features, possibly associated with casualties of the 1832 Battle of Velasco, were present. It is probable that the graves in question are located elsewhere in the vicinity, perhaps in the area formerly known as "Monument Square," which lay beyond the northern boundary of the current geophysical survey area. That said, geophysical survey is not infallible and there has been a lot of post-1832 disturbance to the project area that could obscure the signatures of grave features, if present within the project area.

The geophysical survey results, combined with the historical research presented in this report, are promising and research potential at the site seems high. The limited ground-truthing, conducted by members of the Brazosport Archaeological Society following the geophysical survey, was helpful in confirming the exact position and condition of the brick foundation, cistern, and chimney base, all of which were previously known

archaeological features on the property. It is CRA's recommendation that additional ground-truthing and deep testing should take place in order to investigate the nature of some of the other geophysical anomalies that were identified. In particular, deep testing should be pursued in order to confirm the presence of the Civil War Era Fort Velasco and the 1832 Fort Velasco. Ideally, trenches would be excavated from one side of each of the possible forts to the other straight across the center of the possible gun platforms. Moreover, if possible, additional trenching should take place on the landward side of the shoreline protection jetty adjacent to where it is estimated that the Civil War Era features were found during the construction of the jetty. The recommended locations of these potential future investigatory trenches are shown in Figure 6.1

Prior to the initiation of any intensive ground-truthing efforts, CRA recommends consultation with the THC to ask advice about the appropriate actions to be taken and to make sure that all involved parties are in agreement about the approach to ground-truthing. It would also be wise to have an Inadvertent Discoveries Plan (IDP), based on the guidance and requirements from THC, drawn up and agreed upon by all involved parties in case human remains or mortuary artifacts (either historic or prehistoric), are discovered during archaeological fieldwork. If human remains or associated funerary artifacts are encountered, the procedure laid out in the IDP should be followed.



Figure 6.1. Aerial imagery showing the current survey area, the anomalies believed to be associated with the Civil War Era Fort Velasco (left) and the 1832 Fort Velasco (right), as well as the recommended locations for future investigatory trenching.

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## **APPENDIX A. RESUMES OF KEY PERSONNEL**

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<b>Jeremy W. Pye, PhD, RPA</b>		<b>Principal Investigator – Historical Archaeology/Bioarchaeology/ Archaeological Geophysics/Archaeoparasitology</b>	
<b>Availability:</b> Immediate  <b>Email:</b> <a href="mailto:jwpye@crai-ky.com" style="color: white;">jwpye@crai-ky.com</a>  <b>Personal Professional Website:</b> <a href="http://www.requiesaeterna.com/" style="color: white;">http://www.requiesaeterna.com/</a>  <b>RPA Registration ID:</b> 989943	<b>Specific Duties:</b> <ul style="list-style-type: none"> <li>Project management</li> <li>Preparation of budgets and proposals</li> <li>Report writing</li> <li>Historic materials analysis</li> <li>Bioarchaeological analysis</li> <li>Archaeoparasitological analysis</li> <li>Geophysical survey and data analysis</li> </ul>	<b>Education and Training:</b> <ul style="list-style-type: none"> <li>Ph.D. Anthropology, University of Florida, Gainesville, Florida</li> <li>M.A., Anthropology, University of Arkansas, Fayetteville, Arkansas</li> <li>B.A., Anthropology, University of Oklahoma, Norman, Oklahoma</li> </ul>	
<b>Experience Summary Information</b>			
<b>Principal Investigator/ Project Archaeologist</b>  Cultural Resource Analysts, Inc., Shreveport, Louisiana  2017 - present	<b>Staff Archaeologist/ Field Supervisor</b>  Cultural Resource Analysts, Inc., Shreveport, Louisiana  2013 - 2016	<b>Principal Investigator/ Consultant/Crew Chief/Field Tech/Lab Tech</b>  Various companies/organizations/institutions throughout the United States 2003 – 2012	
<p>Dr. Pye serves as a Principal Investigator in the Shreveport, Louisiana, office of Cultural Resource Analysts, Inc. He is responsible for the coordination with state and federal agencies and private sector clients; technical writing of project reports; preparation of project budgets and proposals; as well as management of field personnel and daily project operations. Dr. Pye has 17 years of experience in archaeology, and during that time has organized, supervised, or contributed to large and small-scale archaeological, bioarchaeological, and geophysical projects in 22 states in the United States in regions including the Southeast, Southwest, Midwest, and Great Plains. His primary research interests are historical archaeology, bioarchaeology, burial container construction techniques and mortuary material culture, archaeoparasitology, public health and epidemiology, cemetery landscapes, and terrestrial remote sensing. Dr. Pye has presented papers at state, regional, and national meetings, and has authored or co-authored a number of publications, including technical reports, journal articles, book chapters, and academic volumes.</p> <p><b>Geophysical Experience:</b></p> <p>Dr. Pye has organized and participated in numerous geophysical survey projects throughout the United States. Examples include the following:</p> <ul style="list-style-type: none"> <li><i>Principal Investigator:</i> Upper Delaware Roebling’s Aqueduct GPR Survey, Lackawaxen, Pike County, PA (CRA L20N001). November 11-25, 2020. National Park Service, Interior Region 1 North Atlantic-Appalachian, Lowell, MA.</li> <li><i>Principal Investigator:</i> Site 15Ta173 Geophysical Survey, Taylor County, KY (CRA K20K010). August 17-21, 2020. Kentucky Transportation Cabinet, Frankfurt, KY.</li> <li><i>Principal Investigator:</i> Camp Butler Geophysical Survey, Camp Butler National Cemetery, Sangamon County, IL. (CRA I20G001). August 5-14, 2020. Gordon – The LA Group Joint</li> </ul>			

- Venture, LLC, Martinsburg, WV. Department of Veteran's Affairs, Washington, D. C.
- *Principal Investigator:* Site 22TA622 Data Recovery for SR3 Improvements and Bridge 184.2 Replacement, Tate County, MS (Contract No. 00005660) (CRA L20M001). June 12-19, 2020. Mississippi Department of Transportation, Jackson, MS.
- *Principal Investigator:* Old Velasco (41BO125) Geophysical Survey, Surfside Beach, Brazoria County, TX (L20C003). June 3-7, 2020. Cradle of Texas Conservancy, Brazoria, TX.
- *Principal Investigator:* Waldron Cemetery Geophysical Survey, Nashville, Davidson County, TN (CRA L19D001). January 21-23, 2020. Regent Homes, LLC, Nashville, TN.
- *Principal Investigator:* Geophysical Survey of Site 46MG333 and Possible Historic Cemetery, Wana, Monongalia County, WV (CRA L19C002). October 16-26, 2019. CNX Resources Corporation, Canonsburg, PA.
- *Principal Investigator:* GPR Survey for the National Air and Space Intelligence Center Expansion, Wright-Patterson Air Force Base, Dayton, Greene County, OH (CRA L19B001). February 14-March 8, 2019. Black & Vaetch Special Projects Corp., Overland Park, KS.
- *Principal Investigator:* Geophysical and Archaeological Investigations within the Trail of Tears Commemorative Park, Hopkinsville, Christian County, KY (CRA L18S004). October 17-December 6, 2018. Stantec, Nashville, TN.
- *Principal Investigator:* Westbrook Development Geophysical Survey Beech Cumberland Presbyterian Church Cemetery, Sumner County, TN (CRA L18T002). March 20-22, 2018. Grow Environmental Services, Memphis, TN.
- *Principal Investigator:* Cedar Creek Battlefield Geophysical Survey, Cedar Creek and Belle Grove National Historical Park, Warren and Frederick Counties, VA (CRA V17GN02). October 17-28, 2017. National Park Service, Washington, D. C.
- *Principal Investigator:* Riggs Cemetery Geophysical Survey, Chapel Hill, Marshall County, TN (CRA L17B002). August 29-30, 2017. Brown Construction, Fayetteville, TN.
- *Principal Investigator:* Yeager Airport Runway Expansion Project, Site 46KS681, Kanawha County, WV (CRA W17L002). April 25-May 6, 2017. L. R. Kimball – A CDI Company, Pittsburgh, PA.
- *Principal Investigator:* Mars Hill Cemetery Geophysical Survey, Knoxville, Knox County, TN. (CRA L16A002). Alley Realty and Auction, Inc., Knoxville, TN.
- *Principal Investigator:* Wabash and Erie Canal Geophysical Survey, Evansville, IN (CRA I16I005). July 5-7, 2016. Indiana Department of Transportation and the City of Evansville, IN.
- *Principal Investigator:* Diamond Cemetery Recording and Geophysical Survey, Stephens County, OK. March 23-25, 2007. Gary Bell, Caretaker - Diamond Cemetery, Weatherford, OK.

**Construction Monitoring Experience:**

Dr. Pye has participated in the monitoring of construction activities on a number of projects in the United States. Examples where construction monitoring was a primary element of the project include the following:

- *Principal Investigator:* Monitoring of Roadway and Drainage Improvements at the Little Rock National Cemetery, Little Rock, Pulaski County, AR (CRA L200007). November 15-17, December 8, 2020. Gordon, Martinsburg, WV. Department of Veteran's Affairs, Washington, D.C.
- *Principal Investigator:* Mitchell Cemetery Investigations, Tarrant County, Texas (CRA L15C001, L17C001). July 15, 2015 – August 24, 2018. CH2M Hill, Houston, TX, and the Fort Worth Transportation Authority, Fort Worth, TX.
- Staff Archaeologist: Cheatham Dam Waterline Monitoring Project, Cheatham County, TN (CRA T14D001). June 9-11, 2014. Dakota Myer Enterprises, Inc., and the USACE, Nashville District.

**Phase III Experience:**

Dr. Pye has organized, supervised, and/or participated in a number of Phase III mitigations, including both mortuary and non-mortuary projects throughout the United States. Examples include the following:

***Mortuary Relocation/Cemetery Delineation***

- *Principal Investigator:* Mitchell Cemetery Investigations, TEXRail Commuter Line Project, Fort Worth, Tarrant County, Texas (CRA L15C001, L17C001). July 15, 2015 –August 24, 2018 present. CH2M Hill, Houston, TX, and the Fort Worth Transportation Authority, Fort Worth, TX.
- *Principal Investigator:* Allentown Cemetery Delineation, Bossier Parish, LA (CRA L16GW01).

Delineation of historic cemetery on the ground of the Camp Minden Training Site. February 1-2, 2017. Louisiana National Guard, Camp Beauregard, Pineville, LA.

- *Staff Archaeologist*: Williams Cemetery Relocation, Boone County, KY (CRA K16G001). June 19-30, 2016. Grand Communities, Ltd., Erlanger, KY.
- *Staff Archaeologist*: Cheatham Dam Waterline Monitoring Project, Cheatham County, TN (CRA T14D001). June 9-11, 2014. Dakota Myer Enterprises, Inc., and the USACE, Nashville District.
- *Archaeological Field Tech/Mortuary Archaeologist*: McArthur Cemetery (9BI164), Byron, GA. May – June, 2010. New South Associates, Stone Mountain, GA.
- *Archaeological Field Tech/Osteological Field Tech/Material Cultures Consultant*: Joint Courts Complex Cemetery Excavation, Tucson, Arizona. May – July, 2007 and April-August, 2008. Statistical Research Inc., Tucson, AZ
- *Crew Supervisor/Monitor/Researcher/Illustrator*: Meadowlark Hills Retirement Community Abandoned Cemetery Project, Manhattan, Kansas. July 13-August 15, 2004. Dr. Donna Roper, Manhattan, KS.

#### **Non-Mortuary Projects**

- *Crew Chief/Waterscreen and Flot Supervisor*: Little River Archaeological Project. Little River, Kansas. Phase III mitigation of a proto-Historic Wichita Village Site (14RC410). June 1-August 14, 2005. Dr. Donna Roper, Manhattan, KS.
- *Grid Supervisor / Undergraduate Intern*: University of Oklahoma Archaeological Fieldschool. June 1-July 2, 2004. Phase III mitigation of Bryson-Paddock Site (34Ka5), a late Eighteenth century Wichita Village/ French Contact site. Oklahoma Archaeological Survey, Norman, OK, University of Oklahoma, Norman, OK, and Oklahoma State University, Stillwater, OK.
- *Archaeological Fieldschool*: Cimarron Archaeological Project, New Mexico, Phase III mitigation of a Vermejo Phase structure site. June-July 2003. University of Oklahoma, Norman, OK

#### **Phase II Experience:**

Dr. Pye has participated in several Phase II archaeological projects in different areas of the United States. Examples include the following:

- *Principal Investigator*: Archaeological Investigations of a Frontland Property of the Austerlitz Plantation, Pointe Coupee Parish, LA (CRA L17S003). November 1-3, 2017. Succession of Floerl Rougon, Oscar, LA.
- *Field Technician*: Phase II field work for pipeline in Wyoming. May -June 2006. Metcalf Archaeological Consultants, Inc., Golden, CO.
- *Crew Member*: Van Winkle's Mill Exploratory Phase II Testing. Van Winkle Hollow, Little Clifty Creek, Benton County, Arkansas. October 3-7, 2005. University of Arkansas, Fayetteville, AR.

#### **Phase I Experience**

Dr. Pye has organized, supervised numerous large and small-scale Phase I archaeological survey projects throughout the United States. Examples include the following:

- *Principal Investigator*: Year 6 Toledo Bend Reservoir Cultural Resource Studies, Louisiana and Texas (CRA L20T0011-L20T019). Phase I survey, site delineation, and site monitoring. September-December 2020. Toledo Bend Project Joint Operations and the Sabine River Authority, Orange, TX.
- *Principal Investigator*: Year 5 Toledo Bend Reservoir Cultural Resource Studies, Louisiana and Texas (CRA L19T001-L19T009). Phase I survey, site delineation, and site monitoring. September, 2019-January 2020. Toledo Bend Project Joint Operations and the Sabine River Authority, Orange, TX.
- *Principal Investigator*: Phase I Cultural Resource Survey for the Proposed Six Mile Boat Ramp Expansion Project (CRA L19S002). October 18, 2019. Sabine River Authority of Texas, Orange, TX.
- *Principal Investigator*: Phase I Cultural Resource Survey for a Proposed Ditch Rehabilitation Project at the Winnsboro Readiness Center, Franklin Parish, Louisiana (L19L001). Louisiana National Guard, Pineville, Louisiana.
- *Principal Investigator*: Phase I Cultural Resource Survey for a Proposed Ditch Rehabilitation Project at the Winnsboro Readiness Center, Franklin Parish, Louisiana (L19L001). Louisiana National Guard, Pineville, Louisiana.

- *Principal Investigator:* Johnny Breaux Road Phase I Survey, Calcasieu Parish, LA. (CRA L17A003). January 6, 2018. Arabie Environmental Solutions, LLC., Lake Charles, LA.
- *Principal Investigator:* Strand Woodbranch Survey (CRA L17S002), Phase I survey of 5.4 acres in Montgomery County, TX. September 18, 2017. O'Malley Strand Associates, Inc., Brenham, TX.
- *Principal Investigator:* JC Homes Development Survey (CRA L17J001), Phase I Survey of 13 acres in Calcasieu Parish, LA. January 11, 2017. JC Homes & Development, LLC, Lake Charles, LA.
- *Field Supervisor:* Year 2 Toledo Bend Reservoir Cultural Resource Studies, Louisiana and Texas (CRA L16T002-L16T010). Phase I survey, site delineation, and site monitoring. January 2017. Toledo Bend Project Joint Operations and the Sabine River Authority, Orange, TX.
- *Field Supervisor:* MS Solar 3 LLC, Lamar County, MS (CRA L16P001, L16P002), Phase I survey of a total of 564 acres in Lamar County, MS. September 16-29, 2016 and October 28 – November 9, 2016. Power Services, Inc., Raleigh, NC.
- *Field Supervisor:* Cane River Mitigation Bank Survey (CRA L16D001), Phase I survey of 322 acres in Natchitoches Parish, LA. May 11-19, 2016. Delta Land Services, LLC., Port Allen, LA.
- *Field Supervisor:* Year 1 Toledo Bend Reservoir Cultural Resource Studies, Louisiana and Texas (CRA L15T001-L15T009). Phase I survey, site delineation, and site monitoring. October 2015 – January 2016. Toledo Bend Project Joint Operations and the Sabine River Authority, Orange, TX.
- *Field Supervisor:* Louisiana Army National Guard, 46 Properties (CRA L14L001, L13I003), Phase I of 48 LANG properties throughout Louisiana, consisting of 267 acres, October 7, 2014-December 19, 2014, May 8-July 11, 2014. Louisiana Army National Guard, Camp Beauregard, Pineville, Louisiana.
- *Field Supervisor:* Kisatchie National Forest Task Order 3 - Catahoula (L13K003), 770 acre Phase I survey in Grant Parish, Louisiana, January, 2014. Kisatchie National Forest, Pineville, LA.
- *Field Supervisor:* Fort Polk Task Order 1 and 2 (L13N001, L13N002), 3,282 acre Phase I survey in Vernon Parish, Louisiana, August 12, 2013 – January 17, 2014. National Park Service.

#### **Specialized Laboratory Experience:**

##### ***Mortuary Material Culture Studies***

- *Independent Consultant:* Mortuary hardware analysis, Herrin Cemetery, Williamson County, Illinois. August 2014. East Illinois University, Charleston, IL.
- *Independent Consultant:* Mortuary hardware analysis, Brewton Cemetery, Escambia County, Alabama. July 2014. The University of Alabama Museums, Office of Archaeological Research, Moundville, AL.
- *Analyst:* Mortuary hardware analysis, Moseley Cemetery, Floyd County, Kentucky (CRA K14K003). May – June 2014. Cultural Resource Analysts, Inc., Lexington, KY
- *Analyst:* Mortuary hardware analysis, Calvin Cemetery, Boyd County, Kentucky. (CRA K13K007) July 2014 – August 2014. Cultural Resources Analysts, Inc., Lexington, KY.
- *Analyst:* Mortuary hardware analysis, Ignacio Cemetery, Durango, Colorado. (CRA L14P006) July 2014. Powderhorn Research, LLC, Durango, CO.
- *Independent Consultant:* Mortuary hardware analysis, Roberts Cemetery, Bell County, Texas. December 2012-January 2013. Prewitt & Associates, Inc., 2105 Donley Dr., Suite 400, Austin, TX.
- *Independent Consultant:* Mortuary hardware analysis, Court Street Cemetery, Tucson, Arizona. December 2012. Desert Archaeology, Inc., 3975 North Tucson Boulevard, Tucson, AZ.
- *Independent Consultant:* Mortuary hardware analysis, Richland-Chambers Reservoir, Navarro County, Texas. October 2012. AmaTerra Environmental, Austin, TX.
- *Independent Consultant:* Mortuary hardware analysis, Immanuel Lutheran Church, Hoxie, Kansas. August 2012. Viktorija Briggs, Hoxie, KS.
- *Independent Consultant:* Mortuary hardware analysis, St. Michaels Cemetery, Pensacola, Florida. November 2011. Department of Anthropology, University of West Florida, Pensacola, FL.
- *Independent Consultant:* Mortuary hardware analysis, New Home Cemetery, Sugarland, Texas. March-August 2011, October 2012. Geo-Marine, Inc., Plano, TX.
- *Independent Consultant:* Mortuary hardware analysis. March 2011. Prewitt & Associates, Inc.,

Austin, TX.

- *Independent Consultant*: Mortuary hardware analysis. July 15-19, 2010. Brockington & Associates, Norcross, GA
- *Material Culture Consultant*: Mortuary hardware analysis. January-August 2009. Statistical Research, Inc., Tucson, AZ,

**Archaeoparasitological Analyses:**

- *Parasite Analyst*: ELISA testing, Calvin Cemetery, Boyd County, Kentucky. (CRA K13K007) September 2014. Cultural Resources Analysts, Inc., Lexington, Kentucky.
- *Parasite Consultant*: ELISA testing, MacArthur Cemetery burials. January 2012. New South Associates, Inc., Stone Mountain, GA.
- *Parasite Consultant*: ELISA testing, Dead Man's Island burials. January 2012. Department of Anthropology, University of West Florida, Pensacola, FL.
- *Parasite Consultant*: ELISA testing, St. Michael's Cemetery burial. November 2011-January 2012. Department of Anthropology, University of West Florida, Pensacola, FL.
- *Parasite Analyst*: ELISA and traditional testing, Alameda-Stone Cemetery burials. November 2011-January 2012. University of Florida (PhD Research) on behalf of Statistical Research, Inc., Tucson, AZ, and Pima County, AZ.
- *Parasite Consultant*: Louse testing from comb sediment, MacArthur Cemetery burial. March-August 2011. New South Associates, Inc., Stone Mountain, GA.

**Select Technical Publications:**

Pye, Jeremy W., Jenifer M. Haney, and Jay W. Gray

2021 Year 5 Cultural Resources Field Investigations for the Toledo Bend Project, Newton and Sabine Counties, Texas. Contract Publication Series 20-094. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L19T001-L19T009. Prepared for Toledo Bend Project Joint Operations, Orange, Texas.

Pye, Jeremy W., Jenifer M. Haney, and Jay W. Gray

2021 Year 5 Cultural Resources Field Investigations for the Toledo Bend Project, Sabine and De Soto Parish, Louisiana. Contract Publication Series 19-665. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L19T001-L19T009. Prepared for Toledo Bend Project Joint Operations, Orange, Texas.

Pye, Jeremy W.

2020 A Geophysical Survey of Approximately 0.6 HA (1.5 Acres) Covering Site 15Ta173 Associated with the Heartland Parkway Project, Campbellsville, Taylor County, Kentucky (Item No. 4-142.3). Contract Publication Series 20-422. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. K20K010. Prepared for the Kentucky Transportation Cabinet, Frankfort, Kentucky.

Pye, Jeremy W., Jason A. Kennedy, and Jay W. Gray

2019 Final Report of Findings: Archaeological and Geophysical Investigations of the Eastern Boundary of Mitchell Cemetery and Construction Monitoring for the TexRail Commuter Rail Project, Tarrant County, Texas. Contract Publication Series 18-412. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L15C001, L17C001. Prepared for Jacobs Engineering Group, Inc., Houston, Texas, on behalf of the Fort Worth Transportation Authority, Fort Worth, Texas.

Pye, Jeremy W.

2019 A Ground-Penetrating Radar Survey of Approximately 16 Acres of Land Associated with the National Air and Space Intelligence Center Expansion, Wright-Patterson Air Force Base, Greene County, Ohio. Contract Publication Series 19-132. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L19B001. Prepared for Black & Vaetch Special Projects Corp, Overland Park, Kansas.

2019 A Negative Findings Phase I Archaeological Survey of a 7.77-acre Parcel for the Proposed Madison Parish Critical Access Hospital Replacement Project, Tallulah, Madison Parish, Louisiana. Contract Publication Series 19-562. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L19I001. Prepared for Intertek-PSI, Baton Rouge, Louisiana.

2018 Archaeological Investigations of a Late Nineteenth to Early Twentieth Century (Early Rougon

Period) Austerlitz Plantation Frontland Tenant House Property (16PC129), Pointe Coupee Parish, Louisiana. Contract Publication Series 17-408. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L17S003. Prepared for the Succession of Floerl Martin Christie Rougon, c/o Jen Aubin "J. A." Rummier, P. G., Independent Executor, Oscar, Louisiana.

2017 An Archaeological and Geophysical Survey of Riggs Cemetery, Chapel Hill, Marshall County, Tennessee. Contract Publication Series 17-357. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L17B002. Prepared for Barry Brown, Brown Construction, Fayetteville, Tennessee.

Pye, Jeremy W., and Jay W. Gray

2016 Cultural Resource Survey of 464 Acres for the Proposed MS Solar 3 Project in Lamar County, Mississippi. Contract Publication Series 16-314. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L16P001. Prepared for Michael Noh, PLS, Power Services, Inc., Raleigh, North Carolina.

Gray, Jay W., Jeremy W. Pye, and Benjamin J. Bilgri

2016 Year 1 Cultural Resources Field Investigations for the Toledo Bend Project, Sabine Parish, Louisiana. Contract Publication Series 16-078. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L15T001. Prepared for Toledo Bend Project Joint Operations, Orange, Texas.

Pye, Jeremy W., Russell S. Quick, and Jay W. Gray

2016 Interim Report of Findings: An Archaeological and Geophysical Investigation of the Eastern Boundary of Mitchell Cemetery for the TexRail Commuter Rail Project, Tarrant County, Texas. Texas Antiquities Permit #7308. Contract Publication Series 15-091. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L15C001. Prepared for CH2M HILL, Houston, Texas, on behalf of Fort Worth Transportation Authority, Fort Worth, Texas.

Pye, Jeremy W., and Holly Higgins

2015 A Phase I Cultural Resources Survey of 26 Louisiana National Guard Properties Throughout Louisiana. Contract Publication Series 14-503. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L14L001. Prepared for Louisiana National Guard, Pineville, Louisiana,

Gray, Jay W., Jeremy W. Pye, and Sarah Bourget

2014 A Cultural Resource Survey of 2,129 Acres of the Fort Polk Land Purchase Program, Vernon Parish, Louisiana. Contract Publication Series 13-281. Cultural Resource Analysts, Inc., Shreveport, Louisiana. CRA Project No. L13N001. Prepared for Celinda Hicks, Contracting Officer, Southeast Archaeological Center, National Parks Services, Tallahassee, Florida, and Bradley Lafitte, Fort Polk Lead Archaeologist, DPW-ENRMD, Fort Polk, Louisiana.

#### **Academic and Journal Publications:**

Pye, Jeremy W.

2020 "Unwanted Guests": Evidence of Parasitic Infections in Archaeological Mortuary Contexts. *Historical Archaeology* < <https://doi.org/10.1007/s41636-020-00271-3>>.

2018 "Making a Box Worthy of a Sleeping Beauty": Burial Container Surface Treatments in the United States During the Nineteenth and Early Twentieth Centuries. Chapter 11, pp. 177-226. In *Death Across Oceans: Archaeology of Coffins and Vaults in Britain, America, and Australia*. Harold Mytum and Laurie E. Burgess, eds. Smithsonian Institution Scholarly Press, Washington, D. C.

2013 *Living on the Border: Health, Environment, and Multiculturalism in 19<sup>th</sup> Century Tucson*. Ph.D. dissertation, Department of Anthropology, University of Florida, Gainesville, FL.

2007 A Look Through the Viewing Glass: Social Status and Grave Analysis of a 19<sup>th</sup> Century Kansas Cemetery. MA thesis, Department of Anthropology, University of Arkansas, Fayetteville, AR.

Pye, Jeremy W., Donna C. Roper, and Holly C. Smith

2007 With No Stillman Among Them: Reburial of the Stillman Family Cemetery, Manhattan, Kansas. *Current Archaeology in Kansas* 7:20-34.

Le Bailly, Matthieu, Marcelo Luiz Carvalho Goncalves, Christine Lefèvre, Donna C. Roper, Jeremy W. Pye, Adauto Araujo, and Francoise Bouchet

2006 Parasitism in Kansas in the 1800s – A Glimpse to the Past through the Analysis of Grave

Sediments from Meadowlark Cemetery. *Memórias do Instituto Oswaldo Cruz, Rio de Janeiro* 101(Suppl. II):53-56.

Pye, Jeremy W., Donna C. Roper, and Holly C. Smith  
2004 Excavations at the Meadowlark Cemetery, Manhattan, Kansas. *Current Archaeology in Kansas* 5:77-92.

**Recent Professional Conference Presentations:**

**2020**

- Pye, Jeremy W. "Making a Box Worthy of a Sleeping Beauty": Burial Container Surface Treatments in the 19th and Early 20th Centuries." Poster Presentation. Society for Historical Archaeology Conference, Boston, Massachusetts.

**2019**

- Pye, Jeremy W. "Soiled Doves and Fighting Men: Sexually Transmitted Diseases in 19th Century Tucson, Arizona." Poster Presentation. Society for Historical Archaeology Conference, Saint Charles, Missouri.
- Pye, Jeremy W. "The Dreaded Pox": Agent-Based Simulation of the 1870 Smallpox Epidemic in Tucson, Arizona." Poster Presentation. Society for American Archaeology Conference, Albuquerque, New Mexico.

**2018**

- Pye, Jeremy W., and Tanya A. Faberson, "Geophysical Survey and Phase II Archaeological Evaluations of Site 46KA681, Charleston, Kanawha County, West Virginia." Poster Presentation. Society for Historical Archaeology Conference, New Orleans, Louisiana.
- Pye, Jeremy W. Assessing Malaria Risk in 19<sup>th</sup> Century Tucson, Arizona. Poster Presentation. Society for American Archaeology Conference, Washington, D. C.

**2017**

- Pye, Jeremy W., "Unwanted Guests: Evidence of Parasites in Archaeological Mortuary Contexts." Paper presented at the Society for Historical Archaeology Conference, Fort Worth, Texas.

**2016**

- Pye, Jeremy W., "Guidelines for Creating a Typology for Mass-Produced 19<sup>th</sup> and 20<sup>th</sup> Century Burial Container Hardware." Poster Presentation. Society for Historical Archaeology Conference, Washington, D. C.
- Pye, Jeremy W., "Parasites and Their Impact on Human Behavior and Society. Poster Presentation. Society for American Archaeology Conference, Orlando, Florida.

**2015**

- Bybee, Alexandra D., and Jeremy W. Pye, "Bioarchaeological Investigation of the Calvin Cemetery (15Bd85), Boyd County, Kentucky. Paper presented at the 32nd Annual Kentucky Heritage Council Conference, Cadiz, Kentucky.
- Pye, Jeremy W., "The History and Archaeology of the American Drive-In Theater." Poster Presentation. Society for Historical Archaeology Conference, Seattle, Washington.
- Pye, Jeremy W. Laboratory Techniques for the Detection of Human Parasites in Archaeological Samples. Poster Presentation. Society for American Archaeology Conference, San Francisco, California.

**2014**

- Pye, Jeremy W., "Secret in the Bell Tower": Analysis of a Child's Casket from the Immanuel Lutheran Church, Hoxie, Kansas. Poster Presentation. Plains Anthropological Conference, Fayetteville, Arkansas.
- Pye, Jeremy W., "Unwelcome Guests": Malaria and Other Parasites in 19<sup>th</sup> Century Tucson, Arizona. Paper Presented at the Society for American Archaeology Conference, Austin, Texas.

**2012**

- Pye, Jeremy W., "Don't Drink the Water": ELISA Testing for Enteric Protozoa in 19th Century Macon, Georgia. Poster Presentation. Southeastern Archaeological Conference Annual Meeting, Baton Rouge, Louisiana.

- Pye, Jeremy W., "Lice, Lice Combs, and Human History." Poster Presentation. Society for American Archaeology Conference, Memphis, Tennessee.
- "Constructing an Image of the Dead Through Consumer Choice: Ceramic Memorial Portraits on Grave-Markers." Paper Presented at the Society for Historical Archaeology Conference, Baltimore, Maryland.

**2011**

- Hill, M. Cassandra, Jeremy W. Pye, and Duane Peter, "At Rest: Bioarchaeology of New Home Cemetery, Sugarland, Texas." Paper presented at the Southeastern Archaeological Conference Annual Meeting, Jacksonville, Florida.
- Pye, Jeremy W., "Chinese Tombs and Hanging Coffins." Paper presented at the Association for Gravestone Studies Annual Meeting, Waterville, Maine.
- Pye, Jeremy W., "Faces from the Past: History of Ceramic Memorial Portraits on Grave-Markers." Poster Presentation. Society for American Archaeology Conference, Sacramento, California.
- Pye, Jeremy W. "Factors in Calculating Costs of Gravemarkers: Lessons for Cemetery Surveyors." Poster Presentation. Society for Historical Archaeology Conference, Austin, Texas.

**2010**

- Pye, Jeremy W., "'Silent Whispers of Death Through a Broken Fence': Maintenance of an Ideology of Racism in the Cemetery." Paper presented at the Society for Historical Archaeology Conference, Amelia Island, Florida.
- Pye, Jeremy W., "Faithful to Their Trust, Even Unto Death: Expressions of Identity and Change in an Oklahoma Cemetery Landscape." Poster Presentation. Society for American Archaeology Conference, St. Louis, Missouri.

**Affiliations:**

- Member of Society for Historical Archaeology (SHA)
- Member of Society for American Archaeology (SAA)
- Member of the Association for Gravestone Studies (AGS)
- Member of Plains Anthropological Society (PAS)
- Member of the Oklahoma Anthropological Society (OAS)

**Additional Training:**

- Basic and Advanced Gravestone Conservation Workshops, AGS, 2010-2011
- Trimble Certification (ProXR)–*GPS Mapping for GIS with TerraSync* Training Course, 2010
- Level 1 Anti-Terrorism Awareness Training (JS-US007-14), 2015
- 10 Hour OSHA Certification Training for Construction, 2014
- Roadway Worker Protection (RWP) – Archer Western (AWH) Safety, Environmental, & Quality Orientation, AWH, 2017-2018
- National Railroad Safety Service Contractor Safety Training, NRSS, 2015-2016
- Native American Graves Protection and Repatriation Act Workshop, NCPTT, 2017.
- Roadway Worker Protection (RWP) – Archer Western (AWH) Safety, Environmental, & Quality Orientation, AWH, 2017-2018
- Advanced GPR for Archaeologists Workshop, NCPTT, 2018.
- Basic Orientation Plus (11 BOP) – National Safety Council, 2020. Expires 2/2021.
- Federal Emergency Management Agency, FEMA Badge Holder, 2020. Expires 1/1/2026.
- Transportation Worker Identification Credential, TWIC Card Holder, 2020. Expires 2/2025.
- Adult CPR, First Aid, and Bloodborne Pathogens, Red Cross, 2013-present