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A Phase I Cultural Resources Survey of the 8-Mile Project, Brazoria County, Texas

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A PHASE I CULTURAL RESOURCES SURVEY OF THE 8-MILE PROJECT, BRAZORIA COUNTY, TEXAS

Prepared for

Phillips 66 Pipeline LLC

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ABSTRACT

Perennial Environmental Services, LLC (Perennial), on behalf of Phillips 66 Pipeline LLC (P66), conducted an intensive cultural resources survey of the proposed 8-Mile Project located in Brazoria County, Texas . The proposed Project will consist of an approximately 1,275.3-acre (ac) (516.1-hectare [ha]) facility designed to service the transportation of Natural Gas Liquids (NGLs) and will include a railroad track loop, storage, railcar offloading tracks, an administrative building, and other structures necessary for operation of the facility.

The proposed Project is located within the jurisdictional boundary of the U.S. Army Corps of Engineers (USACE) Galveston District. The Project may require the usage of a Nationwide Permit (NWP) issued by the USACE, and as such, a cultural resources survey was conducted for the 1275.3 ac (516.1 ha) Project area in accordance with Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800). The survey was designed to inventory and assess cultural resources across the Project. These efforts involved both surface and subsurface archaeological survey.

The area of potential effect (APE) is considered the entirety of the Project area. The APE measures approximately 1275.3 ac (516.1 ha). Perennial conducted the intensive Phase I cultural resources survey within the boundary of the Project APE. Zachary Overfield served as the Principal Investigator (PI) for the Project and supervised all aspects of the cultural resources survey. The fieldwork was conducted by Tessa Noble, Mary Noell, Jacob Cumberland, Patrick Gainey, Anne Marie Fraley, and Allyson Walsh on December 4-12, 2014 and Amy Goldstein, Kirsten Atwood, and Zachary Overfield on February 22-24, 2016.

The background review identified two National Register listed properties (Marmion's gazebo and Palapa table) northwest of the Project area. Both properties are located upon the historic James Richard Marmion Estate, which has not been evaluated in its entirety for its NRHP eligibility (Atlas 2016). The gazebo and Palapa table were created by noted sculptor Dionicio Rodriguez and qualify under criterion C as the work of a master. The gazebo is located 0.4 mi (0.7 km) northwest of the Project area and the table is located 0.6 mi (1.0 km) northwest of the Project area. The properties do not lie in the Project viewshed as bottomland hardwood forest obscures the northwestern boundary. Additionally, rail facilities will not drastically alter the character of the viewshed due to the prior establishment of a railroad and rail facilities in the immediate area. These properties are a sufficient distance outside of the Project APE and will not be impacted by Project construction activities.

The field survey resulted in entirely negative findings with no cultural resources observed along the ground surface or within any of the 395 shovel tests excavated across the Project. Overall, the Project area was found to be dominated by cleared pastureland that was once bottomland hardwood forests. Multiple pipeline corridors bisect the property, and inundation was widespread during the 2014 and 2016 investigations. Based on the extent of the survey efforts and the entirely negative results of the investigation, it is the professional opinion of the Principal Investigator that the Project will have no adverse effect on significant cultural resources listed on or considered eligible for listing on the NRHP. No further work is recommended for the Project.

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INTRODUCTION

Perennial Environmental Services, LLC (Perennial), on behalf of Phillips 66 Pipeline LLC (P66), conducted an intensive cultural resources survey of the proposed 8-Mile Project located in Brazoria County, Texas (Figures 1 and 2). The proposed Project will consist of a facility designed to service the transportation of Natural Gas Liquids (NGLs) and will comprise a railroad track loop, storage, railcar offloading tracks, an administrative building, and other structures necessary for operation of the facility.

The proposed Project is located within the jurisdictional boundary of the U.S. Army Corps of Engineers (USACE) Galveston District. The Project may require the usage of a Nationwide Permit (NWP) issued by the USACE, and as such, a cultural resources survey was conducted for the 1275.3 acre (ac) (516.1 hectare [ha]) Project area in accordance with Section 106 of the National Historic Preservation Act (NHPA) (36 CFR Part 800). The survey was designed to inventory and assess cultural resources across the Project. These efforts involved both surface and subsurface archaeological survey.

The area of potential effect (APE) is considered the entirety of the Project area. The APE measures approximately 1275.3 ac (516.1 ha). Depth of impact will not exceed 6.0 feet (ft) (1.8 m) across the majority of the Project area. However, depths of impact will be variable and construction activities will extend up to 20.0 ft (6.1 m) in select locations. At this point the Project engineering design has not been finalized and the exact depths of impact for the various project components has not been defined. Perennial conducted the intensive Phase I cultural resources survey within the boundary of the Project APE. Zachary Overfield served as the Principal Investigator (PI) for the Project and supervised all aspects of the cultural resources survey. The fieldwork was conducted by Tessa Noble, Mary Noell, Jacob Cumberland, Patrick Gainey, Anne Marie Fraley, and Allyson Walsh on December 4-12, 2014. A second field mobilization was completed by Amy Goldstein, Kirsten Atwood, and Zachary Overfield on February 22-24, 2016.

PROJECT AREA DESCRIPTION

The Project area is located approximately 2.0 mi (3.2 km) southeast of Sweeny, Texas, 3.2 mi (5.2 km) southwest of the town of Brazoria, and 0.2 mi (0.3 km) west of the San Bernard River. The northeastern portion of the Project abuts the intersection of Riverbend Road and CR 489 to the north. The Project is located within the USGS 7.5-minute Sweeny and Brazoria, Texas

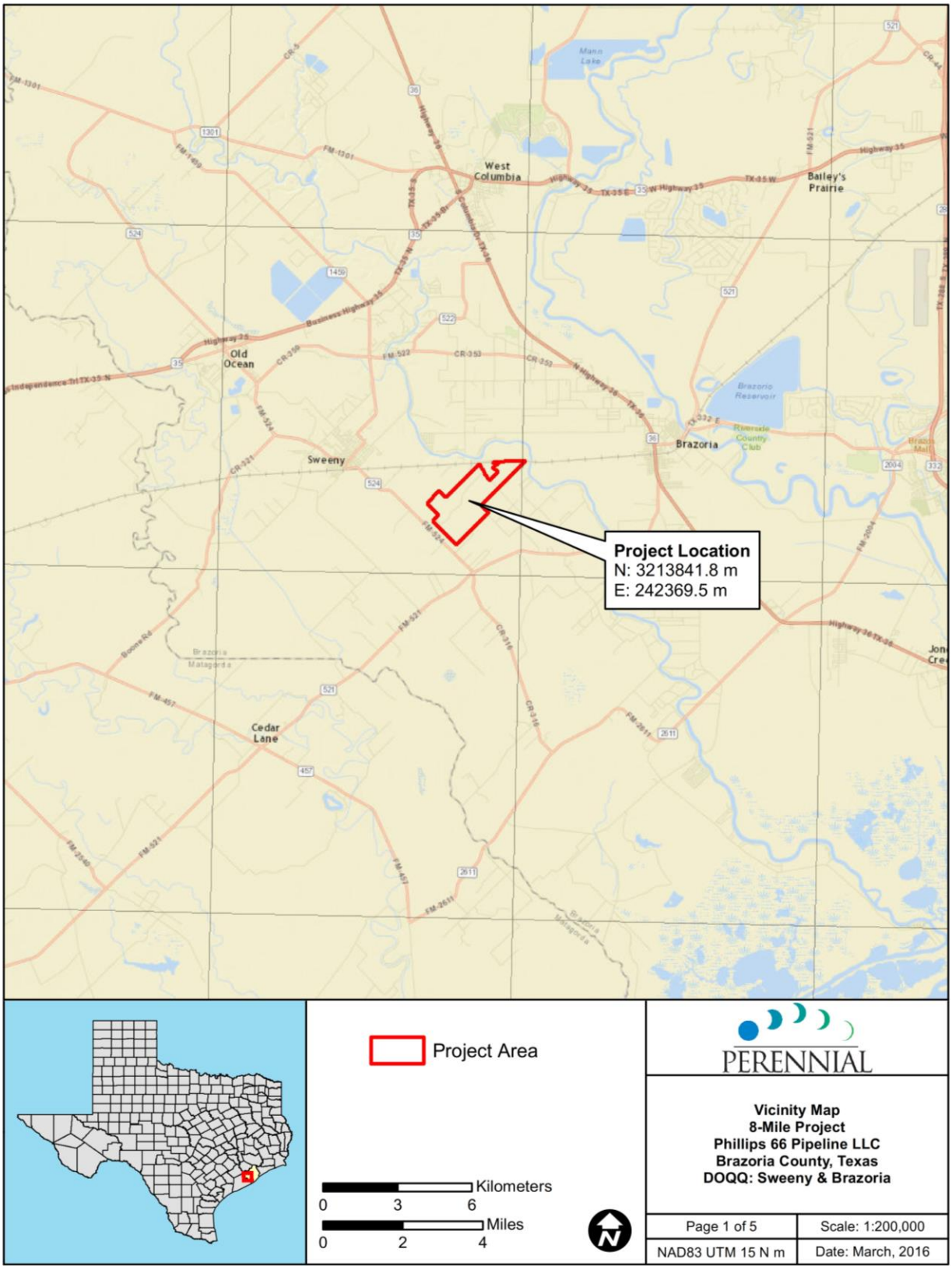

Figure 1. Project vicinity map.

topographic quadrangles. The surrounding region is characterized by expansive pasturelands and dense bottomland hardwood forest. Two pipeline rights of way (ROW) traverse the pastureland.

The Project is located within the Floodplains and Low Terraces of the Western Gulf Coastal Plain. The Western Gulf Coastal Plain ecoregion is represented by relatively flat topography and savanna vegetation. Fertile soils in this region are widely used for soybean, cotton, and rice production (Griffith et al. 2004). In the Floodplains and Low Terraces subregion, Holocene-age alluvial deposits represent large streams with wetland deciduous forests (EPA 2016). Bottomland forests in this subregion include pecan, water oak, live oak, elm, and bald cypress along larger streams and rivers.

The Project area is located approximately 0.5 mi (0.8 km) south and 0.2 mi (0.3 km) west of the San Bernard River. The San Bernard River flows in a south-southeast direction before discharging into the Gulf of Mexico approximately 17.1 mi (27.6 km) south of the Project.

Geologically, the Project area is underlain by Alluvium (Qal). Alluvium deposits consist of gray to brownish-gray clay and silty clay with some sand and gravels locally. These deposits are present in all alluvial valley deposits except along natural levees of major streams (USGS 2016).

Two soils series are mapped within the Project area, Asa silty clay loam and Pledger clay. The Asa series is a mollisol, while the Pledger series belongs to the vertisol order (NRCS 2016). These two soil series are described in detail in Table 1. According to Abbott (2001), the Pledger soil series has a moderate-high geoarchaeological potential, while the Asa soil series has a high geoarchaeological potential. A higher geoarchaeological potential increases the likelihood that buried paleosols exist beneath the B horizon (Abbott 2001).

Table 1. Soil series mapped within the Project area.

Mapping Unit	Texture and Drainage	General Location	NRCS Hydric Rating
Asa silty clay loam (3)	The Asa series consists of very deep, well drained, moderately permeable soils. Slopes range from 0 to 3 percent.	Floodplains	Not Hydric
Pledger clay (36)	The Pledger series consists of very deep, moderately well drained, very slowly permeable soils. Slopes range from 0 to 1 percent.	Floodplains	Not Hydric

METHODS

BACKGROUND REVIEW

Prior to initiating fieldwork, Perennial conducted a records and literature review of the Texas Historical Commission (THC)'s Texas Archeological Sites Atlas (Atlas) online database and the NRHP database to identify previously recorded cultural resource sites, historic structures, properties listed in the NRHP, designated historic districts, or State Antiquities Landmarks (SAL) which could potentially be affected by the proposed undertaking. Previously recorded cultural resource site forms, reports of archaeological investigations, general historical documents, and secondary sources concerning the background of the area were reviewed. The records search included a review of all previously recorded site forms, cemetery data, and surveys on file within a 1.0-mi (1.6-km) review radius of the Project.

In addition to a records and literature search, archaeologists gathered information from secondary sources concerning the prehistoric and historic background of the area. National Resources Conservation Service (NRCS) soil data, US Geological Survey (USGS) 7.5-minute topographic quadrangles, aerial photographs, and contemporary geologic and physiographic features were also examined.

FIELD METHODS

Perennial's investigations consisted of an intensive pedestrian survey and shovel testing efforts within the Project APE. A Perennial staff archeologist examined the ground surface as well as erosional profiles and exposures for cultural resources. Subsurface investigations involved the excavation of a series of shovel tests across the Project area. In addition to the shovel testing, the staff archeologist completed a series of pedestrian survey transects across the Project.

Shovel tests measured approximately 11.8 inches (in) (30 centimeters [cm]) in diameter and were excavated to a maximum depth of 3.3 feet (ft) (1.0 meters [m]). In some cases, shovel tests were terminated at shallower depths due to the presence of compact clays encountered within the shovel tests. The matrix from each shovel test was screened through 0.25-in (6.0-millimeter [mm]) mesh. If dense clays were encountered and could not be successfully screened, the clay matrix was trowel-sorted and visually inspected. For each shovel test, Perennial recorded the following information on standardized shovel test forms: location, maximum depth, and the number of soil strata. For each soil stratum, thickness, texture, color, and the presence or absence and nature of cultural materials were recorded. During field survey, the archaeologist was equipped with a handheld sub-meter GeoXT Trimble Global Positioning System (GPS) device, topographic maps and aerial photographs of the workspace, a digital camera, as well as shovel test and photographic logs, and daily journal forms.

The Texas State Minimum Archeological Survey Standards (TSMASS) do not outline a minimum shovel test density for projects larger than 200.0 ac (80.9 ha). The archaeological survey crew excavated one shovel test for every 328.1 ft^2 (100.0 m^2) across the majority of the Project area. Along the southern extent of the Project area, one shovel test was placed for every 656.2 ft^2 (200.0 m^2). The shovel testing interval was expanded within the southern extent due to the decreased likelihood of buried archaeological resources with the increased distance from the San Bernard River. In addition to the subsurface testing, staff archeologists traversed the entire Project in order to observe the modern ground surface for cultural materials between shovel test intervals. Pedestrian survey transects were intended to provide adequate coverage of the space between shovel tests.

RESULTS

BACKGROUND REVIEW

Background research conducted on the THC's Atlas website indicated that there are five previously recorded sites (41BO103, 41BO104, 41BO105, 41BO106, 41BO165) and two National Register properties (Gazebo for Richard James Marmion and Palapa Table for Richard James Marmion) within a 1.0-mi (1.6-km) radius of the Project area (Atlas 2016). There are no previously recorded sites within the boundaries of the Project APE. Additionally, based upon the results of the background review, the Project area has not been previously surveyed for cultural resources.

Four sites within a 1.0-mi (1.6-km) radius of the Project were identified during the 1974 Vickers Site Project, a reconnaissance survey investigating shell middens along the San Bernard River (Atlas 2016). Each site is mapped on the bank of the San Bernard River and has an undetermined NRHP eligibility. The Vickers Site Project examined the banks of the San Bernard River, but the survey did not extend to the adjacent landforms. During the 1974 investigation, observed artifacts were collected from surficial contexts, however no formal subsurface investigations were conducted.

Site 41BO103 is located 0.5 mi (0.9 km) northeast of the Project area on the eastern bank of the San Bernard River and consists of a rangia shell midden. The midden extends approximately 98.4 ft (30.0 m) along the river and the deposit is 7.9-19.7 in (20.0-50.0 cm) thick. The midden is overlain by 7.9-19.7 in (20.0-50.0 cm) of sandy loam overburden. Samples of ceramic sherds, bone, and rangia shell were collected from the cut bank at the time of the Vickers Site Project in 1974.

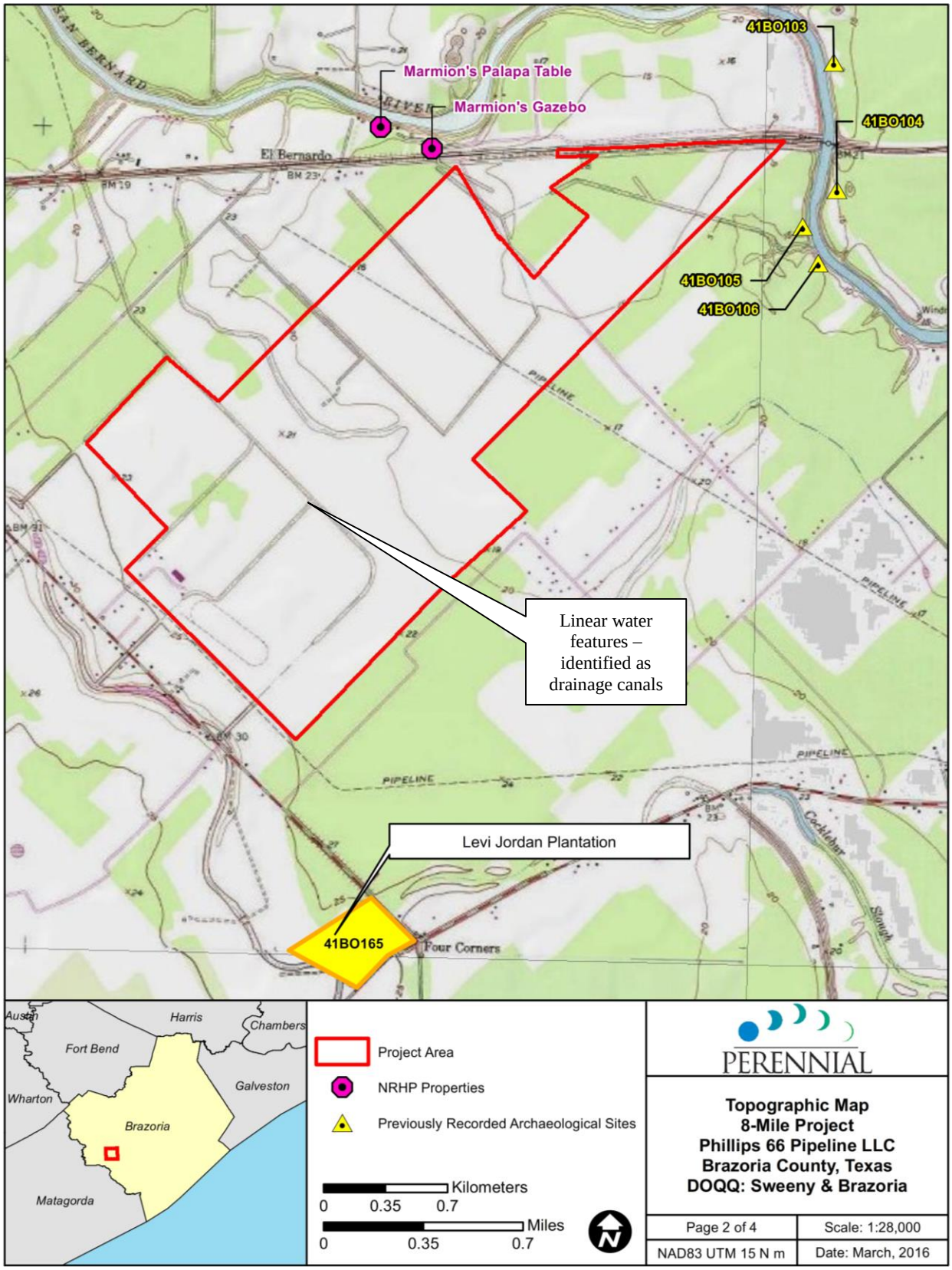

Figure 2. Topographic overview of the Project area illustrating the results of the background review.

Site 41BO104 is located 0.5 mi (0.7 km) east of the Project area and consists of a rangia shell midden on the western bank of the San Bernard River. The midden is entirely composed of rangia shell and consists of two 3.9-in (10.0-cm) thick deposits separated by 19.7 in (50.0) cm of sandy loam over orange clay. The site is described as badly eroded and at the time of the 1974 investigation could only be identified at low tide. Samples of rangia shell were collected at the time of the 1974 investigation (Atlas 2016).

Site 41BO105 is located 0.4 mi (0.6 km) southeast of the Project area and consists of a rangia shell midden on the western bank of the San Bernard River. The midden is composed of rangia shell and charcoal and consists of one lens of undetermined thickness under 19.7 ft (6.0 m) of overburden. The site is described as badly eroded and at the time of the 1974 investigation could only be identified at low tide. Samples of rangia shell were also collected from site 41BO105 at the time of the 1974 investigation.

Site 41BO106 is another rangia shell midden located 0.5 mi (0.9 km) southeast of the Project area on the western bank of the San Bernard River. The midden is composed of one 2.0-in (5.0-cm) thick deposit of rangia shell overlain by 7.9 in (20.0 cm) of overburden. Like 41BO105, site 41BO106 is badly eroded.

The Levi Jordan plantation (site 41BO165) is located 0.6 mi (1.0 km) southeast of the Project area. The Levi Jordan plantation is a State Antiquities Landmark and State Historic Site dating to the antebellum and reconstruction periods in Texas history (Atlas 2016). Site 41BO165 has been the subject of numerous academic and professional studies (*e.g.* Black et al. 2014, Brown 1994, Brown and Cooper 1990, Leezer 2006, McWilliams et al. 2013). The main house still stands at the site in addition to buried features associated with the enslaved and tenant communities of the plantation. Excavations and surveys at the site have revealed dense deposits of nineteenth and early-twentieth century material culture. The work completed at the plantation has enabled archaeologists and historians to gain a unique insight into the lives and households of peoples, free and enslaved, living within the sugar and rice belt of coastal Texas before and after the Civil War (McWilliams et al. 2013).

In addition to the four sites of undetermined NRHP eligibility, the background review also identified two National Register listed properties northwest of the Project area. Both properties are located upon the historic James Richard Marmion Estate, which has not been evaluated in its entirety for its NRHP eligibility (Atlas 2016). The gazebo and Palapa table were created by noted sculptor Dionicio Rodriguez and qualify under criterion C as the work of a master. The gazebo is located 0.4 mi (0.7 km) to the northwest, and the table is located 0.6 mi (1.0 km) northwest of the Project area. The properties do not lie in the Project viewshed due to bottomland hardwood forest obscuring the northwestern boundary. Additional rail facilities will not drastically alter the character of the area due to the prior establishment of a railroad and rail facilities in the immediate

area. These properties are a sufficient distance outside of the Project APE and will not be impacted by Project construction activities.

Archaeological site pattering across the region exhibits an obvious preference for riverine settings such as the Brazos River, San Bernard River, Oyster Creek, Bastrop Bayou and Peach Creek. Prehistoric archaeological sites throughout Brazoria County are almost exclusively mapped along these major waterways and consist of shell middens of various size and density. There is little evidence of substantial inland prehistoric occupations, as demonstrated by numerous survey investigations conducted across this region by Perennial (Peyton et al. 2014a; Overfield and Trein 2014; Peyton et al. 2014b; Overfield 2014a; Overfield 2014b; Overfield 2014c; Overfield 2014d; and Peyton et al. 2015).

Brazoria County also has a high density of significant historic resources, including plantations associated with the early settlement of Texas. The well-known Levi Jordan plantation is in close proximity to the Project area, and other similar properties contributed to the changes in land-use across the county from marshy lowlands, to cleared agricultural fields.

FIELD SURVEY

Perennial field archaeologists conducted an intensive surface and subsurface Phase I cultural resources survey of the proposed Project on December 4-12, 2014 and February 23-24, 2016 (Figures 3-4). The purpose of the investigation was to identify and evaluate all cultural resources within the Project area. The majority of the Project environment is characterized by pastureland with sparse stands of hardwoods with the northern extent consisting of bottomland hardwood forests with a dense understory (Figures 5-7). The general region in which the Project area is situated is predominantly rural in nature.

Multiple field crews surveyed the properties that comprise the Project area during two separate mobilizations. The proposed rail terminal facility would connect with the existing railroad that traverses the northern Project area boundary (Figure 8). The remainder of the survey area is currently being used as a cleared cattle pasture with constructed stock tanks and a pipeline corridor bisecting the property northwest-southeast. A second pipeline was being constructed during the original survey effort in 2014.

Survey methodology was guided by Abbott's work in the greater Houston area (Abbott 2001). Abbott (2001: 21) indicates that there is a high potential for buried sites in the Asa Series soils and a moderate-high potential in the Pledger series. Based upon the increased likelihood for buried A horizons, field archaeologists excavated shovel tests to a minimum of 3.3 ft (1.0 m) within the mapped boundary of the Asa soil series in order to identify any buried paleosols within the anticipated depth of impact.

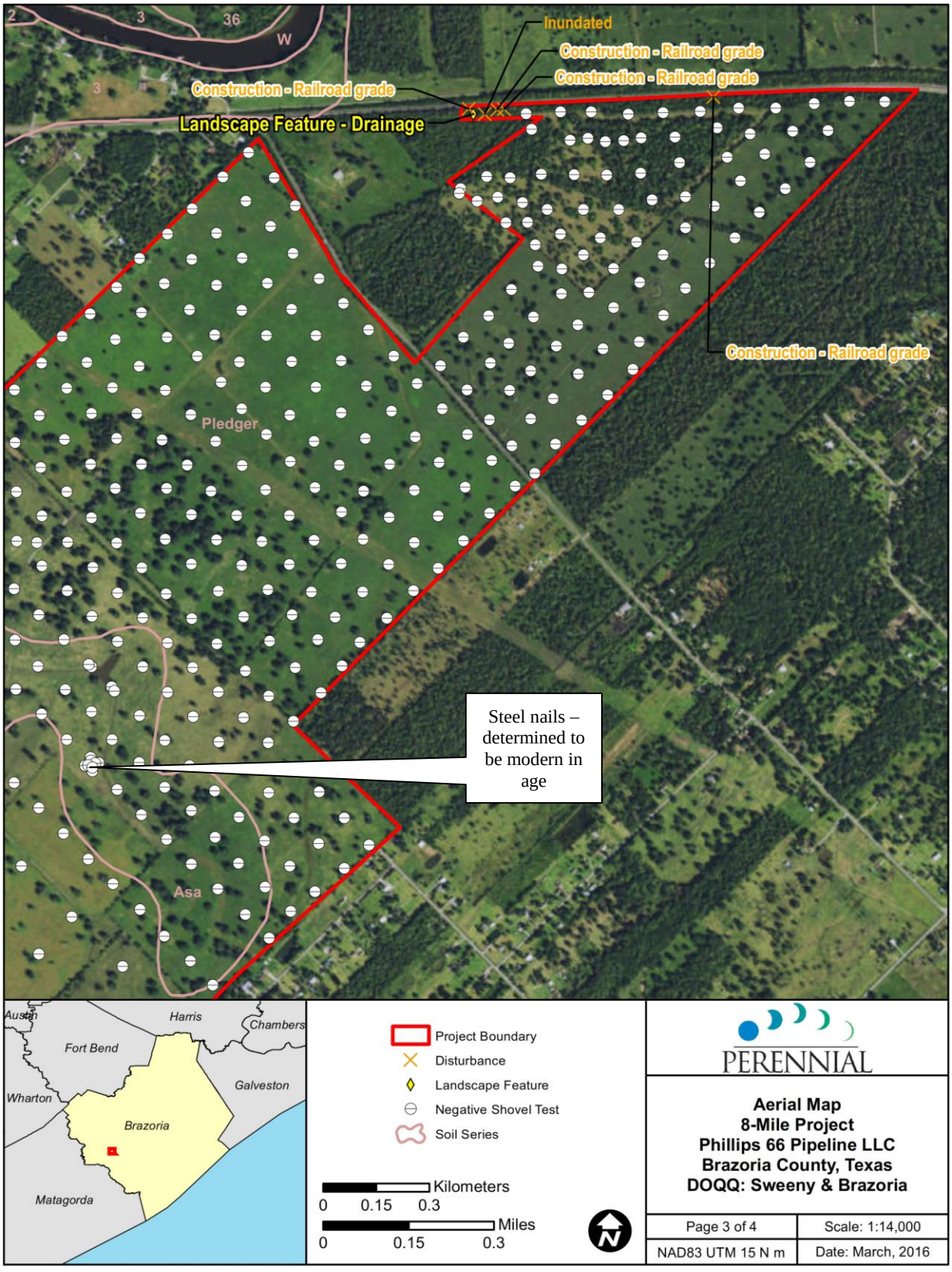

Figure 3. Survey results map northern extent of the Project.

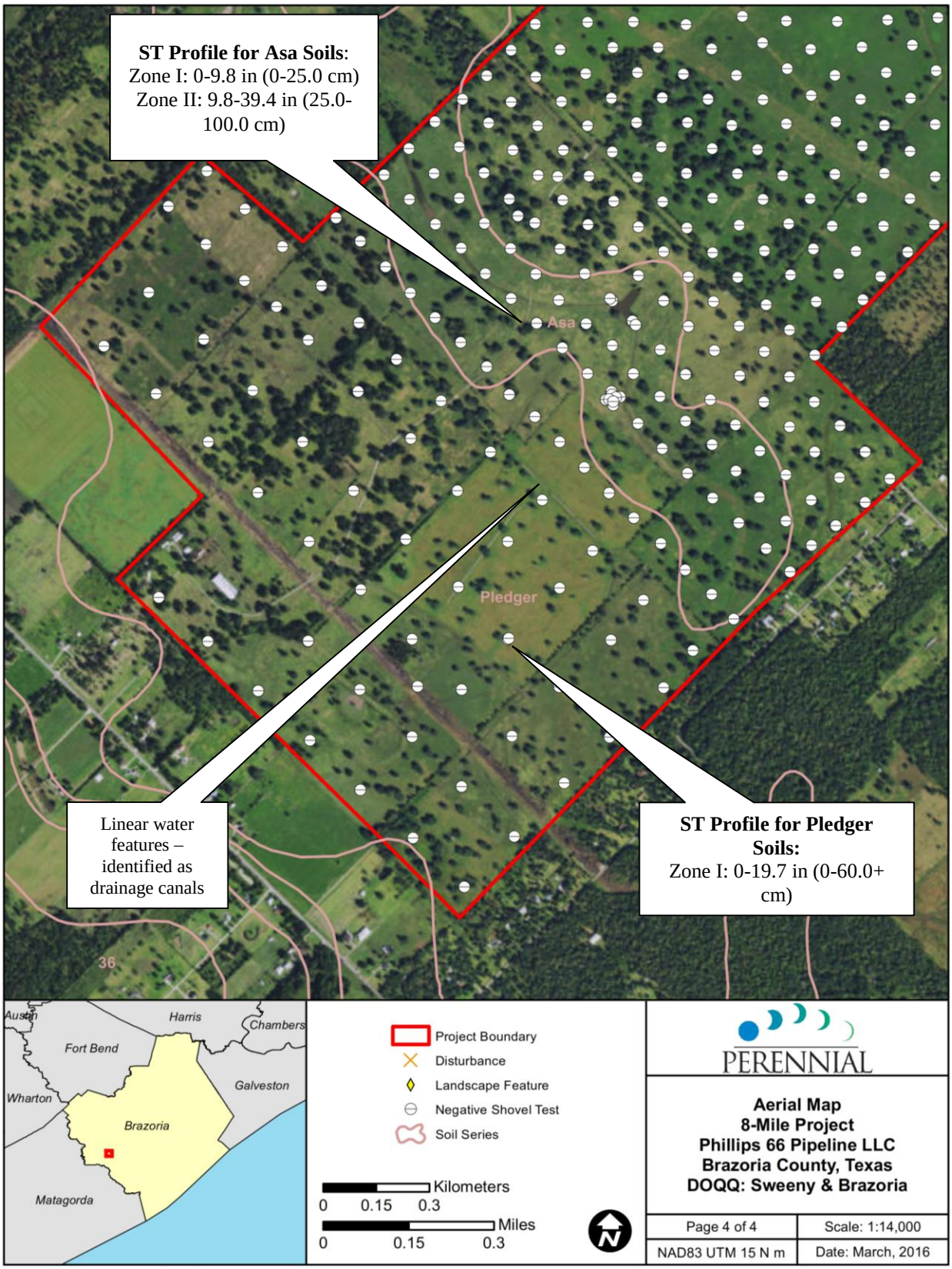

Figure 4. Survey results map southern extent of the Project.

Figure 5. General view of Project area, facing south.

Figure 6. Representative view of inundation common across the Project area, facing east.

Figure 7. Overview of forested region of the Project area, facing north.

Figure 8. Overview of the existing railroad along the northern boundary, facing east.

The Texas State Minimum Archeological Survey Standards (TSMASS) do not outline a minimum shovel test density for projects larger than 200.0 ac (80.9 ha). The archaeological survey crew excavated one shovel test for every 328.1 ft^2 (100.0 m^2) across the majority of the Project area. Along the southern extent of the Project area, one shovel test was placed for every 656.2 ft^2 (200.0 m^2). The shovel testing interval was expanded within the southern extent due to the decreased likelihood of buried archaeological resources with the increased distance from the San Bernard River.

Across the Project in multiple locations, man-made linear water features were identified by field personnel (see Figure 4). These features were also identified during a review of the available historical topographic maps and aerial imagery and are most likely drainage canals associated with early to mid-twentieth century drainage district construction activity (William Long 2016, personal communication). The canals lead to the San Bernard River and other waterways and served to manage water levels in the county (Bernard 2014). These canals are ubiquitous across the landscape and are not known to be associated with any historic properties.

A total of 395 shovel tests were completed across the Project area. Shovel tests within the borders of the Pledger soil series, as mapped by the NRCS, typically revealed an upper stratigraphic zone characterized by a black clay from the surface to the depth of termination. Shovel tests within the Pledger series were excavated to 19.7 – 23.6 in (50.0 – 60.0 cm) below surface until dense impassable clays were encountered. Approximately 63 shovel tests were excavated within the portion of the Project mapped as the Asa soil series. The typical shovel test within the Asa soil series consisted of two identified stratigraphic zones. The first zone was composed of a very dark brown (10YR 2/2) silty loam to 9.8 in (25.0 cm) below surface. The second observed stratigraphic zone was composed of a yellowish brown (10YR 5/4) sandy clay loam with strong brown (7.5YR 4/6) inclusions from 9.8 in (25.0 cm) to 39.4 in (100.0 cm) below surface. Across the landscape numerous shovel tests were terminated early due to a shallow water table. These shovel tests flooded immediately during excavation (Figure 9). Recent weather contributed to the extent of the inundation across the landscape (Figure 10). When necessary, shovel test locations were relocated in order to avoid areas of standing water, and tests were placed along higher topographic formations. However, in select locations the inundated areas were too extensive to relocate the position of the planned shovel test. All shovel tests in both the Pledger and Asa soil series were entirely negative for cultural resources.

While Abbott (2001) indicates that these soil units have an increased likelihood for harboring buried cultural resources, current and previous investigations support the presumption that prehistoric sites in this region are more likely to be located along major waterways, and not in inland marshy settings away from primary resource procurement areas. Changes in land-use over time from bottomland hardwood forests, to cleared agricultural fields with ubiquitous oil and gas development have also contributed the changes in soil character and water run-off patterns.

Figure 9. Example of flooding witnessed during shovel test excavation, facing east.

Figure 10. Overview of drainage within the forested region at the northern extent of the Project area, facing south.

CONCLUSIONS AND RECOMMENDATIONS

Perennial, on behalf of P66, conducted an intensive Phase I cultural resources survey of the proposed 8-Mile Project located in Brazoria County, Texas. The proposed Project will consist of a facility designed to service the transportation of Natural Gas Liquids (NGLs) and a railroad track loop, storage, and railcar offloading track, an administrative building, and other structures necessary for operation of the facility. Additionally the Project will require the construction of approximately 6.0 mi (9.7 km) of new railway, a foundation for the railway, and other features essential to day-to-day operation of the terminal. The survey was designed to inventory and assess cultural resources across the Project APE. These efforts involved both surface and subsurface archaeological survey and were conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA).

The APE measures approximately 1275.3 ac (516.1 ha). Zachary Overfield served as the Principal Investigator (PI) for the Project and supervised all aspects of the cultural resources survey. The fieldwork was conducted by Tessa Noble, Mary Noell, Jacob Cumberland, Patrick Gainey, Anne Marie Fraley, and Allyson Walsh on December 4-12, 2014, and Amy Goldstein, Kirsten Atwood, and Zachary Overfield on February 22-24, 2016.

The background review identified two National Register listed properties associated with the James Richard Marmion Estate. A gazebo and Palapa table crafted by sculptor Dionicio Rodriguez are located at the estate approximately 0.5 mi (0.8 km) northwest of the proposed Project. The properties do not lie in the Project viewshed due to dense bottomland hardwood forest obscuring the northwestern Project area boundary. A railroad and rail facilities are already located in the region and will not alter the character of the area. Additionally, these properties are well outside of the Project APE and will not be negatively impacted by Project construction activities.

The survey investigations resulted in entirely negative findings with no cultural resources observed along the ground surface or within any of the 395 shovel tests excavated across the Project. Overall, the Project area was found to be dominated by cleared pastureland that was once bottomland hardwood forests. Multiple pipeline corridors bisect the property and inundation was widespread during the 2014 and 2016 investigations. Based on the extent of the survey efforts and the entirely negative results of the investigation, it is the professional opinion of the Principal Investigator that the Project will have no adverse effect on significant cultural resources listed on or considered eligible for listing on the NRHP. No further work is recommended for the Project.

Should historic properties and/or human remains be encountered during construction, work in the immediate area will cease and a qualified archaeologist will be called to evaluate the finding(s) and provide recommendations for how to manage the resource under the appropriate state's Historic Preservation Plan. All findings will be reported to, and activities coordinated with, the USACE as well as the THC. In the event that human remains are encountered, all activity that

might disturb the remains shall cease, and may not resume until authorized by appropriate law enforcement, the USACE and/or the THC.

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