A Phase I Archaeological Investigation for Site 11, Port Bienville Industrial Park, Hancock County, Mississippi

Submitted to:

Hancock County Port and Harbor Commission
and
Neel-Schaffer, Inc.

Technical Report 17-139
June 2017

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A PHASE I ARCHAEOLOGICAL INVESTIGATION FOR SITE 11, PORT BIENVILLE INDUSTRIAL PARK, HANCOCK COUNTY, MISSISSIPPI

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MANAGEMENT SUMMARY

Project Name: Environmental Due Diligence for Site 11, Port Bienville Industrial Park

PaleoWest Project Number: 17-098

Phase of Survey: Phase 1 Archaeological Investigation

Location: Hancock County, Mississippi

Survey Area: 45 acres (18.2 hectares)

USGS 7.5-minute Topographic Quadrangle: English Lookout, MS (1993)

Section, Township, Range: S35 T9S R16W

Results: A search of the Mississippi Department of Archives and History (MDAH) Historic Resources Inventory Database for a 1-mile radius of the project area found a total of 18 previously identified sites and 15 previously conducted surveys. There are no National Historic Register (NHR) eligible sites or properties, or historic cemeteries recorded within the direct area of potential effect (APE). Pedestrian survey and subsurface testing of the project area found no archaeological sites or significant cultural remains.

Fieldwork (subsurface testing) revealed extensive disturbance from previous development within the current project area. There was no evidence of intact cultural material, and all previously recorded sites within the APE were deemed ineligible for inclusion in the National Register of Historic Places (NRHP). This report finds that the proposed undertaking will have no effect on the historic resources of the project area.

Report Author(s): T. Roberts, H. Juergens, K. McMahon

Date of Report: June 30, 2017

INTRODUCTION

This report presents the results of a Phase I Archaeological Investigation for Environmental Due Diligence at Site 11, Port Bienville Industrial Park in Hancock County, Mississippi, completed at the request of Neel-Schaffer, Inc. of Biloxi, Mississippi. The impact area is owned and operated by the Hancock County Port and Harbor Commission.

Site 11 is located within Hancock County in the Port Bienville Industrial Park. The Port Bienville Industrial Park is located south of the town of Pearlington, Mississippi, near the Louisiana state line. This 3,600-acre industrial park is owned and operated by the Hancock County Port and Harbor Commission. Site 11 falls within Sections 35, Township 9S, and Range 16W, as shown on the 1993 English Lookout, MS USGS 7.5-minute topographic quadrangle map (Figure 1). Site 11 measures approximately 525 m (1,722 ft) long and 378 m (1,240 ft) wide, with an area of 45 acres (18.2 hectares) (Figure 1).

Fieldwork was conducted from May 3 to May 9, 2017.

The context of the archaeological investigations for the proposed Port Bienville Industrial Park project is derived from the statutory requirements outlined in Section 106 of the National Historic Preservation Act (NHPA). Section 106 of the NHPA requires a federal agency with jurisdiction over a federal, federally funded, or federally licensed undertaking to take into account the effects of the agency's undertakings on properties included in, or eligible for listing on the National Register of Historic Places (NRHP).

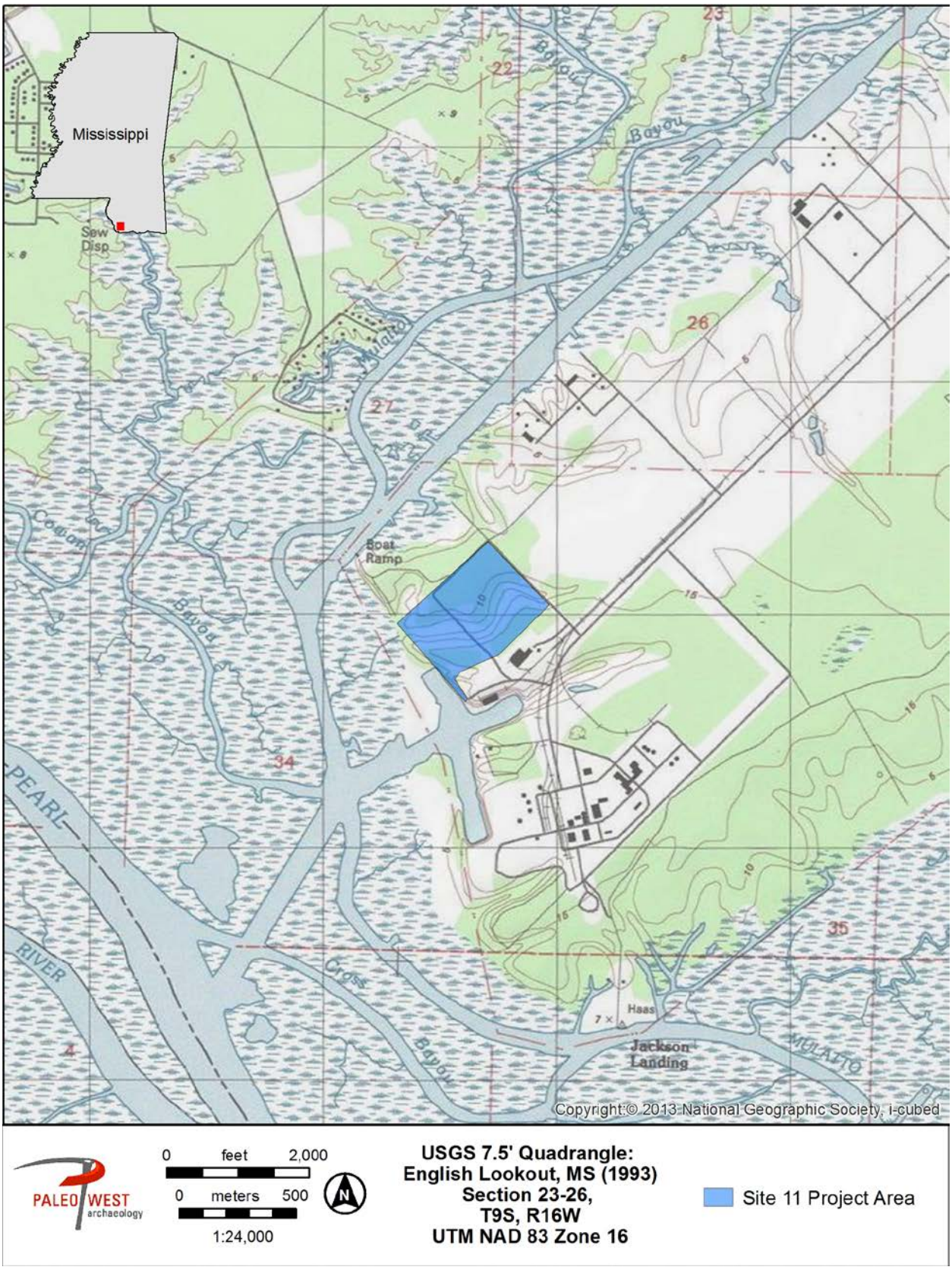

Figure 1. Map showing the vicinity of Site 11.

ENVIRONMENTAL SETTING

PHYSIOGRAPHY

The project area is located in the East Gulf Coastal Plain physiographic zone of south Mississippi. The physiographic zone stretches from the Mississippi River to the Florida Panhandle and from western Tennessee to the Gulf of Mexico. The topography in this region typically ranges from rolling prairie to rugged hills and is characterized by loess bluffs in the west and distinctive lower coastal plain flora.

The project area is situated in the Southern Rolling Plains Physiographic Province of the Mississippi Valley Loess Plains. The Piney Woods region is a high rolling land that was once part of a dense longleaf pine forest that stretched nearly unbroken from Georgia to Texas. According to the MDAH Mississippi Archaeology Trails website, the project area is located in the Pine Hills ecoregion of Mississippi, described as follows:

> Today, almost all of the southern mixed forest and longleaf pine forests are gone, replaced mostly by slash and loblolly pine plantations. The longleaf pine forest provided habitat for now rare or endangered species such as the red-cockaded woodpecker, gopher tortoise, eastern indigo snake, and black pine snake. Wet savannas and bogs contained an array of colorful wildflowers: red lillies, orange milkweeds, yellow pitcher plants, lavender butterworts, and purple sundews. Subsurface materials of the region are composed mostly of the clays and sands of the Hattiesburg and Pascagoula Formations, with some Catahoula Sandstone in the north. Hill summits and higher elevations are composed of Pleistocene and Pliocene-age deposits such as the Citronelle Formation that are generally sandy, gravelly, and porous, and more resistant to erosion than the older underlying Miocene clays and sands.

PALEOENVIRONMENTAL SETTING

Geologically, the project area sits on the Citronelle formation, which consists of tertiary-aged sediments (Omernik and Griffith 2008). Saucier and Sneed (1989) classify the geology as a tertiary upland complex derived from "fluvial sediments from both glacial and non-glacial sources." However, some debate still exists on the origin of these sediments. Though marine fossils are rare throughout the majority of the Citronelle (Isphording and Lamb 1971), a few studies note that certain sections may have been formed, or partially formed, from marine sediments (Means 2009). The Citronelle formation now represents a significant segment of the USGS-defined Gulf Coastal Plain in southern Mississippi, where the project area is located.

Over the last glacial/interglacial cycle, the vegetation in the area has remained largely unchanged. Paleoenvironmental reconstructions conducted with pollen analysis have shown that the vegetation of the region, during the last glacial maximum (ca. 20,000 B.P.), was dominated by southern Diploxylon pines (*Pinus* sp.) (20 to 40 percent), oaks (*Quercus* sp.) (20 percent), and hickories (*Carya* sp.) (20 percent) (Delcourt and Delcourt 1987a). The glacial conditions and the expansion of the Laurentide ice sheet did drive some cold-hearty species like the poplars (*Populus* sp.) and ash (*Fraxinus* sp.) into the region, but these remained minor components (Delcourt and Delcourt 1987b). As the last glacial cycle ended and climate began to warm, these

more northerly vegetation components began to advance back toward the retreating ice sheet. Although there have been several changes in dominance over the last 20,000 years (notably around 8000 B.P., when the percentages of oak pollen briefly surpassed the pines), the major taxa on the landscape have been pines, oaks, and hickories (Delcourt and Delcourt 1987a). In fact, this same study by the Delcourts show that the beta diversity standard deviation (a proxy for species turnover) for the region has remained remarkably low. Today the area falls within Braun's (1950) Southeastern Evergreen region, which once again is dominated by pines, oaks, hickories. Magnolia (*Magnolia* sp.) and hollies (*Ilex* sp.) are also prevalent forest components in this region.

At the local scale, the project area falls within the historic longleaf pine savannah ecosystem (Varner et al. 2005). This ecosystem corresponds with the United States Environmental Protection Agency's Southern Pine Plains and Hills ecoregion (ecoregion #65f) (Omernik and Griffith 2008). A longleaf savannah is an open, fire-dependent forest dominated by longleaf pine (*Pinus palustris*) with a biologically-diverse understory of primarily grasses (*Poaceae* sp.). Varner et al. (2005) and others claim that less than 3 percent of the original longleaf savannah remains today, with logging and fire-suppression being the main sources of loss. In the absence of regular fire, mixed hardwoods and understory shrubs can outcompete the grasses and eventually overtake the landscape (Heuberger and Putz 2003). However, several studies (e.g., Varner et al. 2005) have shown that the reintroduction of fire in these areas can restore the longleaf savannah in a matter of years. In fact, biologists at the University of Southern Mississippi have found similar results on burned test plots of previously fire-suppressed longleaf pine savannah at the Lake Thoreau Environmental Center (Mike Davis, USM biologist, personal communication).

GEOLOGY

Native sedimentary surface rocks such as chert, quartzite and iron stone occur naturally in the region of current study area. Citronelle gravel chert was formed during the Pleistocene and is found in the bluffs above the Mississippi River. Ocola chert is a Gulf Coast Plain agitate that occurs naturally in areas east of the subject property. Tallahatta quartzite is derived from bedrock and commonly found in southeast Mississippi. Prehistoric Native Americans used these surface rocks to manufacture stone tools such as scrapers, knives, and projectile points.

SOILS

Site 11 is primarily made up of Smithton fine sandy loam (SU), with components of Sulfaquepts (Sx), Eustis loamy fine sand (EuB) and Saucier fine sandy loam (SaA). As described above, Smithton fine sandy loam is poorly drained and prone to frequent flooding. Sulfaquepts (Sx) is described as a shoulder formed from dredge spoil, typically composed of sand, and poorly drained. Eustis loamy fine sand (EuB) is formed as hillslopes from sandy marine deposits. The typical soil profile consists of loamy fine sand atop sand above loamy sand and sand, with a slope of 2 to 5 percent. Saucier fine sandy loam (SaA) is formed as fluviomarine terraces by loamy over clayey fluviomarine deposits derived from sedimentary rock. Its typical profile is fine sandy loam over loam atop silty clay loam.

CULTURE HISTORY

Archaeologists have identified several periods of cultural development throughout the prehistoric southeastern United States. These large-scale horizons are commonly known as Paleoindian, Archaic, Woodland, Mississippi, and Protohistoric or Contact periods, in addition to the region-specific Gulf Formational phase. These periods are often subdivided, temporally and spatially, into smaller regional cultural manifestations. Archaeological cultures are based on a number of characteristics, including technological typologies, settlement patterns, subsistence practices, and other diagnostic attributes such as earthen mound building.

PALEOINDIAN

The Paleoindian period refers to the first people that migrated into North America during the Terminal Pleistocene, at least 12,000 B.P. Paleoindians developed the first culture in the Southeastern United States and are believed to have lived as bands of hunter-gatherers. Paleoindian bands practiced extensive, far-ranging mobility and hunted now-extinct species of megafauna (Bonnichsen and Turnmire 1999). Southeastern Paleoindians used chert to manufacture lanceolate hunting tools such as Clovis (Early Paleoindian) and Dalton (Late Paleoindian) points that have been recovered throughout the state of Mississippi. Other Paleoindian projectile point types found in Mississippi included Suwannee and Simpson point types (McGahey 1992). In fact, more Paleoindian projectile points have been recovered in the Southeast than in any other region of the United States (Bense 1994: 42). While the Clovis complex or culture is well-documented across North America, the Dalton complex is largely confined to the Southeastern United States. Although the Dalton type site is located east of Jefferson City, Missouri (Morse 1997:124), numerous Dalton sites have been identified in Mississippi.

ARCHAIC

The Archaic period represents the most successful and enduring lifeway ever practiced in the Southeast. Archaic cultures date from roughly 10,000 B.P. until 3000 B.P. During this time, Archaic peoples increased the variety of regional point types as foraging territories became smaller through time. This decrease in far-ranging mobility led to an increase in seasonal sedentism, although residential and logistic mobility continued throughout the period (Anderson and Hansen 1988). In turn, such increased sedentism eventually led to a diversification of material culture, represented by the first mound and earthen constructions in the southeast and base camp settlements.

GULF FORMATIONAL

The Gulf Formational period dates from 4500 B.P. through 2100 B.P. Walthall and Jenkins (1976) presented this transitional period between the Late Archaic and Middle Woodland cultures at the 1975 Southeastern Archaeological Conference. In their research, they defined the southern Coastal Plain in Eastern and Western geographic sub-regions. Delineation between the sub-regions begins at the intersection of the Alabama and Florida border, at approximately 31° latitude, and runs north and east to the Tombigbee Waterway drainage (Walthall 1980:78–79). The current study area is situated in the Western Gulf Coastal Plain as defined by Walthall. The

appearance of fiber-tempered pottery in the Eastern Coastal Plain along the Atlantic Seaboard marks the beginning of the Gulf Formational stage at approximately 4500 B.P. (Walthall 1980:78) Stallings Island pottery, tempered with vegetable fibers, is considered the earliest ceramics in North America (Walthall 1980:80).

Mineral temper pottery became popular in ceramic manufacturing in the Eastern Coastal Plains during the Middle Gulf Formational period (3200–2500 B.P.). Sand-tempering succeeded the fiber-tempering techniques of the Early Gulf Formational period. The Middle Gulf Formational period experienced advancements, evidenced by the Wheeler Culture, Pickwick Burial Complex, and Bayou La Batre cultures. Archaeologists have characterized this cultural period as a time of interregional trade, population growth, localized environmental adaptations, and developed burial practices (Walthall 1980:91–92).

The Late Gulf Formational period (2500 B.P.–2100 B.P.) is marked by advances in ceramic production including the disappearance of fiber-tempered pottery and the appearance of early Woodland Deptford pottery in the east (Walthall 1980:98).

WOODLAND

The Woodland period dates from 2500 B.P. through 1000 B.P. Native Americans of this time increased earthen mound construction, such as the Bynum Mound Center near Tupelo, Mississippi (Bense 1994:154). In addition, Woodland peoples organized themselves into increasingly complex sociopolitical tribes while intensifying the reliance on maize agriculture. Ceramic production during the Woodland period became more sophisticated as indicated by the Gulf pottery tradition. Pottery designs recovered across Mississippi during the Woodland period include punctuated, brushed, incised, dentate stamped, and rocker stamped, among others (Bense 1994:115). One of the more noteworthy innovations of the Late Woodland period (1500 B.P.–1000 B.P.) was the introduction of the bow and arrow.

MISSISSIPPIAN

The Mississippi period dates from 1000 B.P. until European contact, approximately 500 years ago. Mississippian societies are known for the large platform mound centers such as those seen today at sites in Moundville, Alabama, and Cahokia, Illinois. Native Americans during this time organized themselves into larger, more complex groups known as chiefdoms.

Between 1,000 and 500 years ago, Mississippian cultural traits diffused across the Southeast. Mississippian culture is typically recognized in the archaeological record through the presence of a series of traits, including but not limited to intensive maize cultivation, settlement in the floodplains of major rivers, shell-tempered pottery, rectangular wall-trench structures, pyramidal earthen mounds, and the long-distance circulation of well-crafted prestige objects. The principle trait that defines Mississippian culture beyond all those previously listed is the emergence of a true ranked society. According to Fried (1967:109), rank societies are those in which positions of elevated status are typically inherited within a single group of elites. In Mississippian society, these ranked social groups were politically integrated at the level of chiefdom. According to Bense (1994: 191), “Chiefdoms usually have two general social classes or ranks: elite and

commoner." Mississippian culture, therefore, exhibited a level of social stratification unknown in previous eras.

In addition to the mobilization of material goods and commodities, the chief had the power to mobilize labor, which is then put toward the construction of public works, such as earthen mounds. Between approximately A.D. 900 and 1600, the Southeast was populated by a series of Mississippian chiefdoms that arose and declined across the region at various times. This time period is of particular significance for the cultural continuity of the southeastern United States as much of the inherited trade networks, cultural ties, and technology seen by the European vanguards of exploration were cultivated during this period.

CONTACT PERIOD

Native American culture after European contact and before the Historic period is referred to as the Protohistoric or Contact period. During the Contact period, numerous European inventions were introduced across the Southeastern United States. These items included guns, domesticated livestock, foreign ideas, and catastrophic diseases. The Contact period represents the beginning of a written Southeastern history and the first time European and African influences were felt in South Mississippi.

With the arrival of Spanish explorers on the coasts of Florida, Georgia and South Carolina in the 1520s, expeditions were launched from the Spanish supply base of Cuba to investigate the Gulf Coast. The ill-fated Narvaez expedition of 1527 is believed to have been the first landfall of Europeans in the vicinity of mouth of the Mississippi River. Much of our knowledge of the expedition has been passed down to us through Cabeza de Vaca, a lieutenant of Narvaez who published an account of his experiences following his return to Spain (Covey 1983). Hearing of the "vast riches" found in the interior of southeastern North America, Hernan de Soto sought to capitalize on the wealth identified but not exploited by, Cabeza de Vaca. De Soto was an experienced soldier and veteran of the Pizzaro expedition in South America, an enterprise that provided him with a great deal of personal wealth. He mounted an expedition that would be the first to penetrate the dense woods of North America and would eventually take him through the northern portion of what is now Mississippi. Although de Soto would not return to Spain (he died en route through the Mississippi River Valley), his legacy of contact would continue well into the coming scrabble for territory in the Gulf. By 1600, either directly or indirectly, disease, war, and the introduction of European trade goods rapidly affected traditional regional societies throughout the area (Clayton et al. 1995).

During the seventeenth century, the Muskogean-speaking Choctaw had emerged as a dominant cultural group in Mississippi. The traditional Choctaw territory extended, at the height of their influence, east of the Tombigbee River, and likely as far east as present-day Paulding County, Georgia. The first known historical reference to the Choctaw appears in a 1675 Spanish text, which warns would-be settlers of the "Chata," depicting the group as "fearsome." It is believed that this depiction of the Choctaw in early Spanish texts was intended to dissuade settlement in the area in favor of established missions in Florida. By the time René-Robert Cavelier descended the Mississippi River Valley in 1682, the Choctaw had developed the cultural and political organization that would be in place for the next 150 years.

During the historic period, the Choctaw Nation was divided into three primary groups, Eastern, Western and Southern, each with their own political leader and, at times, allegiances to European powers. Although La Salle was the first French citizen, along with Italian-born Henri de Tonti, to enter the traditional Choctaw territory in 1682, according to his successor Pierre LeMoyne Sieur D'Iberville he apparently made no attempts to contact the group for diplomatic purposes (Weddle 1991).

HISTORIC PERIOD

Choctaw contact with the French in 1699 established a long-standing relationship with the European power, which was largely based on their allegiance against the English during the Wars of Succession (French and Indian Wars). This relationship lasted 65 years until the end of the Seven Years War (1763) when the French were forced to cede all territory east of the Mississippi River to the English (Bense 1994).

Following the Seven Years War, France ceded Louisiana to Spain. Taking advantage of their newly inherited colony, Spain concerned itself with establishing this portion of the Gulf as a military buffer between British Florida and its own flagship colony of Mexico. Fearing a possible disruption in the flow of trade goods from Mexico, the Spanish government actively recruited colonist from the Canary Islands (known as Islenos) to establish four settlements east of New Orleans to protect the area from potential British invasion. The Islenos were well suited to establish farms and plantations in the area due to their experience with raising sugar cane on the Canary Islands since they were colonized in the fifteenth century. The first Islenos arrived in 1778 and settled La Concepcion, to the southwest of the current project area, opposite the mouth of the Pearl River. The settlement was later renamed San Bernado (St. Bernard) after the patron saint of Louisiana's governor Bernardo de Galvez (Chavez 2002). Also at this time, the Choctaw began a migration to the west in order to better establish themselves as a trading conduit between the Spanish and English settlements. By the 1760s the Choctaws had moved further south and established settlements on the north shore of Lake Pontchartrain, where they found ready allies among French colonists who were resistant to English and Spanish authority. Spanish documents of the time refer to these Choctaws as "wandering Indians" (Usner 1992).

Following repeated attempts by Great Britain to cease Spain's financial support of the Whig cause during the American Revolution, Spain declared war on Great Britain in 1779. As part of the global Anglo-Spanish conflict, Governor Galvez led an expeditionary force against British-held territories along the gulf coast. This offensive, known as the Galvez expedition, led to the successful capture of Mobile in 1780 and Pensacola in 1781. Among Galvez's troops was a large contingent of Islenos. Governor Galvez took a keen interest in the success of the Islenos' settlements after the war and ensured their subsidization from the Spanish treasury until 1785 when they were declared self-sufficient (Chavez 2002). Choctaw warriors were largely divided among the East, West and Six Towns during the Anglo-Spanish Conflict, with some taking part in the British defense of Pensacola and the remainder siding with the French, Spanish and Whig forces. It is likely, given the French influence on their part of the nation that the Choctaws in the vicinity of the project area would have sided with the Spanish (Coker and Rea 1981). The capture of Mobile and Pensacola ensured Spanish dominance of the gulf coast until Louisiana was sold to the United States following the territories brief transfer to France in 1803.

After the Treaty of Paris (1783), ending the American Revolution, the English were forced to cede all lands east of the Mississippi River to the newly formed United States. With the no other European powers to compete for land, the young nation set its sights on the vast interior of the continent. As was commonly experienced among native tribes in the southeast following the American Revolution, the Choctaw were forced to fight for their lands and sovereignty. A treaty signed in 1786 affirmed the boundaries of the Choctaw and established them as a sovereign nation. However, the largely sympathetic policies of the Washington administration were replaced with those more conducive to expansion and settlement by white interests (Haynes 2010).

Beginning with the Treaty of Fort Adams in 1801, when the land supporting the proposed project area is located, the Choctaw ceded over 23 million acres of land to the United States. The final land cession took place in 1830 at Dancing Rabbit Creek, which also outlined the terms of the Choctaws removal west to the Oklahoma Territory (Brown 2007). On the agreement that they would become United States citizens, the treaty provided a land allotment for any Choctaws that wished to remain in Mississippi. However, among the roughly 4,000 Choctaws that decided to remain in the state, many never received the land, or were forced to sell their allotment in order to survive. The descendants of these people formed the core of the Mississippi Band of Choctaw Indians, which became a federally recognized tribe in 1945.

LOCAL HISTORY

Hancock County is the southernmost county in Mississippi. Founded in 1812, the county is named for John Hancock, the wealthy American merchant and statesman. Bay Saint Louis is the county seat. Bay Saint Louis was claimed in the name of France by Iberville in 1699 as part of an expedition to find the mouth of the Mississippi River. Hancock County has relied on this major water transport point as part of its economy ever since. During the Civil War, Abraham Lincoln strategically blockaded the Mississippi Sound, severing this high traffic channel.

Railroad service came to Mississippi when the New Orleans, Jackson and Great Northern were constructed through the western edge of Pike County. The Great Northern was chartered in 1851 and construction was completed prior to the Civil War. It connected New Orleans, Louisiana to Canton, Mississippi (Estaville 1973). In Canton, it linked with the Mississippi Central, bringing it into Tennessee, and from there it linked with the Illinois Central, bringing service north to Chicago (Wilson and Rehberg 2014). Following the Civil War, the rail line between New Orleans and Mobile, Alabama was completed. In 1870, daily commuter service to New Orleans was available to residents of Bay Saint Louis. An automobile bridge was built across the Bay of Saint Louis in 1928.

Through the nineteenth and early-twentieth centuries, the local economy of Hancock County relied heavily on the sawmill industry. Timber was brought from miles away to the Weston, Poitevent, Eads mill at Logtown. Rail lines served to support the industry. Port Bienville Industrial Park, located in Bay St. Louis, supplies multi-modal warehouse and trans-load facilities to the Port Bienville Railroad, which operates across Mississippi. The Industrial Park can store up to 429 rail cars at one time, serving a variety of industries that make shipments across the Gulf Coast.

In 1963, NASA established the Stennis Space Center in Hancock County bringing with it a significant source of employment and income for the region. The space center serves as the largest rocket engine test complex in the U.S. The Stennis International Airport, which is included in the current project, was originally called the Hancock County airport until it was renamed for Mississippi Senator John C. Stennis.

In recent history, the Mississippi Gulf Coast was impacted by two major hurricanes that severely damaged private property and public infrastructure: Hurricane Camille in 1969 and Hurricane Katrina in 2005.

METHODS

Phase IA investigations included a records review conducted through the Mississippi Department of Archives and History (MDAH) Historic Resources Inventory Map GIS online mapping database for cultural resources within a 1-mile radius of the project area. The GIS data include information about known archaeological sites and surveys and architectural properties. Archaeological sites, historic structures, and cemeteries were provided as point locations and polygons that were digitized into PaleoWest's ArcGIS-based maps. Associated attribute tabular data for the resources and projects derived from the GIS analysis, desktop review, and site file search were incorporated into the following Results section of the report. Soil data were gathered using the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS 2017). The Culture History and Environmental Setting sections were produced using a combination of scholarly, grey, and online resources (see References Cited).

Phase IB investigations consisted of pedestrian survey and subsurface testing in the project area. The interval between shovel test pits (STPs) was not to exceed 30 m (98 ft.). STPs were round and measured no more than 30 cm (12 in.) in size. All excavated soil was screened through ¼ in. hardware cloth to facilitate the recovery of artifacts. STPs were excavated in natural stratigraphic layers to culturally sterile subsoils or to a maximum 1 m (ca. 3 ft.) in depth. Soil texture was recorded using standardized terminology and soil colors were recorded using Munsell© soil color charts. STP locations were recorded using a GPS unit with differential corrections applied.

PaleoWest employed a fully digital data collection workflow during field investigations. All images and data were collected digitally using iPad tablets and smartphones connected to office servers over high-speed cellular data networks. Collecting data in the field over cellular networks allowed data to be available to all members of the crew on-site, as well as all off-site PaleoWest staff, in real time. As data were entered in the field, a PaleoWest data manager was concurrently checking and cleaning records, allowing us to address potential issues in the datasets while excavations were open, and before crews left the field. The database system used for data collection in the field was used to provide the platform for data collection and management through analysis and reporting. No artifacts were recovered during this survey. Therefore, no laboratory methods were necessary.

RESULTS

SITE FILE RESEARCH

The Phase IA search of the Mississippi Department of Archives and History (MDAH) found 18 previously identified archaeological sites and 15 prior surveys located within a 1-mile radius of the project area (Figure 2). There are no National Historic Register (NHR) eligible sites or properties, or historic cemeteries recorded within the direct APE. Pedestrian survey and subsurface testing of the project area found no intact cultural material, no archaeological sites or significant cultural remains.

Surveys

All 15 prior surveys are outlined in the table below (Table 1). The area of Site 11 includes two overlapping prior surveys (02-130 and 83-096) (Figure 2). These surveys are described in detail below.

Survey 83-096, entitled Archaeological Survey of Selected Areas of the Port Bienville Industrial Park, was conducted by Heisler in 1982 and 1983. The large survey consisted of Lots 1, 2, 3A, 4B, 5B, 6 and 7 (Lots 2 and 3A correlate to Site 11). At the time of the survey, prehistoric cultural remains were found in a number of locations; however, due to land clearing, dredging, and other operations that have taken place in the Industrial Park, most could not be considered to be in their original sites of deposition and were, therefore, not considered sites. The entire project area had been subjected to at least one land clearance episode. Additionally, the barge channel was dredged, with dredged material pumped into the low-lying areas of the project area. These factors suggest that many remains could have been redeposited. Site HA506 is the eastern edge of the remains of the Cedarland Site. It was located on Lot 2, which has undergone extensive alteration. All that remained of the site at the time of the survey was disturbed oyster shell in a shallow midden (15 cm or less in thickness). Modern shell and concrete was mixed into the remains. A bank profile showed 30 cm of shell midden with modern leaf mold at the bottom. No artifacts were found during surface collection or sub-surface testing. When the north-south cross channel was dredged, it cut directly through the Cedarland site, with almost the entire site being removed to other areas of the Industrial Park. Heisler proposed that Cedarland could be considered completely destroyed and, therefore, insignificant.

Survey 02-130, entitled Cultural Resources Survey of a 3.5-acre Tract Port Bienville Industrial Park, Hancock County, Mississippi, was conducted by Shuman in 2002. These 3.5 acres lie entirely within Site 11. The tract is to be paved for use as a parking lot. The survey proposed to reexamine the area associated with HA506, the Cedarland site. Fieldwork showed that there were no subsurface traces of the site remaining. What little material was found lacked contextual integrity.

The remaining 13 surveys in a 1-mile vicinity do not overlap the immediate project area. All the surveys are included and described in the following table.

Table 1. Surveys Within the Project Vicinity

Survey Number	Survey Title	Date	Author	Summary
02-130	CRS of a 3.5 Acre Tract, Port Bienville Industrial Park, Hancock County, MS	2002	Shuman	Overlaps APE of Site 11. 3.5 acres: No subsurface traces of previously recorded site HA506, disturbed context reported
06-037	A Phase I CRA of New Development, Pearlington, Hancock County, MS	2006	Reams	12.5 Acres: Survey + 30 STPs, one early 20th c. historic site deemed ineligible for NRHP
08-279	Phase I CRS of Proposed Wastewater Collection System (Project S3&S4) Pearlington, Hancock County, MS	2008	Lauro	121 Acres: Survey + 296 STPs, relocated previously recorded prehistoric site HA532, recommended Phase II
08-1552	An Archaeological Survey of a Proposed Temporary Road for Culvert Replacement on Port and Harbor Drive in the Port Bienville Industrial Park, Hancock County, MS	2008	Jackson, Scott & Associates	.75 Acres: Survey + 1 STP, existing roadbed identified in project area, no cultural resources reported
09-0690	A Phase I CRA of a Proposed Mining Site in S7, 13, 14, and 23 T9S R16W, and a portion of S18 T9S R15W, Hancock County, MS	2008	Thorne	1,414 Acres: Survey + 249 STPs, disturbance from pine plantation activities, no cultural resources reported
12-0306	A Phase I CRS of Proposed Dock Dredging Areas of the Port Bienville Industrial Park Canal, Hancock County, MS	2012	Alvey and Baca	20 Acres: Survey + 11 STPs, all areas disturbed by dock construction. Relocated two previously recorded sites: HA506 destroyed by construction activities; 22Ha501 still listed on NRHP.
13-0654	A Phase I CRS for the Port Bienville Industrial Park Boat Launch Improvements, Hancock County, MS	2013	Glass	>1 Acre: Survey + 6 STPs, disturbance from launch and bulkhead construction, revisted and expanded footprint of historic site HA563 which remains eligible for NRHP
15-0053	Phase I CRS of the Proposed Anderson Rail Spur, Hancock County, Mississippi	2015	Jackson & Glass	1 Acre: survey conducted by TerraX. No survey report available on MDAH.
71-338	Untitled	-	-	Mid-size survey located to the south of Site 11. No survey report available on MDAH.
79-014	Archaeological Test Excavation in a Portion of Lot 83 of the Port Bienville Industrial Park, Hancock County, MS	1979	New World Research, Inc.	25 Acres: Survey + 6 STPs + 74 auger holes + 3 units, bulldozing disturbance recorded, no significant cultural resources reported
79-031	CRS with Recommendations of the Cleary Heights Sewer District, Rankin Co., EPA Project C280642-01-0	1979	Howell	Survey + intermediate STPs + auger holes, no cultural resources reported
79-061	A Surface Inspection of the Claiborne Site 22Ha501 and Areas to be Impacted by the Port Bienville Industrial Park	1979	Howell	Survey only, revisit of Claiborne Site HA501. Recorded disturbance from canal dredging, clearing and leveling, and previous excavation. Suggests undisturbed deposits may be limited.

79-062	Survey of eastern portion of Lot 83, Port Bienville Industrial Park, Hancock County, MS, conducted by New World Research, Inc.	1979	Swanson	Survey and surface collection, historic debris associated with Saucier-Claiborne Plantation identified, area bulldozed in 1975 and 1979
83-096	Archaeological Survey of Selected Areas of the Port Bienville Industrial Park	1983	Heisler	Overlaps APE of Site 11. 350 Acres: Survey + test pit + auger holes, prehistoric sites determined ineligible due to clearing and dredging disturbance
96-056	CRS of Approximately 320 Acres, Hancock County, Mississippi	1996	Lauro	320 Acres: Survey + 30m interval STPs. 1 unknown aboriginal surface scatter and 5 historic sites recorded, all determined not eligible except for 22HA615 Old Powell Home Site.

Sites

Eighteen sites are located in the vicinity of the project area, none of which will be affected by the proposed development (Figure 2).

Extensive cultural resource assessment has been conducted within the Port of Bienville Industrial Park over the last 50 years because it was the locus of intense prehistoric and historic activity. Two exceptionally important archaeological sites have been investigated in multiple evaluative surveys: the Poverty Point period Claiborne (HA501) and Late Archaic Cedarland (HA506). These sites represent the largest Archaic- and Poverty Point-aged aboriginal occupations known outside the Lower Mississippi Valley. Both sites have largely been destroyed by a combination of vandalism and Port of Bienville construction projects, and general consensus is that little remains of either site. Much of these two sites ended up in dredge material in surrounding waterways and in other areas of the Industrial Park (Howell 1979, New World Research 1979a, 1979b, 1979c; Jackson 1989).

One previously recorded site overlaps with the current project area: HA506 in Site 11. Site HA506, known as the Cedarland Site, had consisted of Poverty Point objects and Late Archaic points. The site has been almost totally destroyed by industrial development of the canal. Recorded in a 1983 survey by Heisler, it was revisited during a 2006 survey by Boudreux of canal dredging areas and again in 2012 by Alvey. No artifacts were found during return visits and what little remained of the site was in a stratigraphically disturbed context. No NRHP eligibility status was stated in the site report. No traces of HA506 were evident during the current pedestrian survey.

The following table summarizes the 18 previously reported sites within a 1-mile radius of the current project area.

Table 2. Sites Within the Project Vicinity

Site Number	Site Name	Period	Material	NRHP
HA501	Claiborne	Late Archaic Poverty Point	Poverty Point objects, worked bones, fiber tempered sherds, projectile points	Registered
HA506	Cedarland	Late Archaic Poverty Point	Poverty Point objects, Late Archaic points. This site and Claiborne (HA501) might be sequent occupations by the same people, with Cedarland being somewhat earlier.	Unknown
HA515	Mulatto Bayou Earthwork	Woodland Late Mississippi Historic Indian	Marksville incised & Marksville stamped sherds, misc. later Indian ceramics, historic period trade material	Recommended
HA539	Ford #6	Unknown Aboriginal	Landform with no archaeological materials	Unevaluated
HA540	Unnamed	Woodland Mississippi Historic 19th-20th C	2 house sites including historic ceramics, glass, Kaolin pipe stem, brick & mortar.	Unevaluated
HA561	Garcia Site	Late Woodland	Grog tempered sherd, shell midden	Eligible
HA562	Louis Site	Middle/Late Woodland	Oyster shell midden on edge of man-made barge canal	Ineligible
HA563	Claiborne Home	Historic 19th-20th C.	Plantation home site, reduced to foundation by road construction and bulldozing	Eligible
HA564	Lot 1 Site	Mississippi Period	Single plain shell tempered sherd	Ineligible
HA584	Unnamed	Unknown Aboriginal	Rangia shell midden covered in dredge spoil	Ineligible
HA658	Unnamed	Late Archaic Historic 20th C.	Lithic tools and debitage including Poverty Point perforators and drills, baked clay fragments, bones, shells, modern bottle glass, concrete, and metal fragments	Unknown
HA659	Unnamed	Unknown Aboriginal	Novaculite: 1 flake, 1 blade; 1 concrete fragment, 211 shell fragments, 4 untempered sherds	Ineligible
HA660	Unnamed	Unknown Aboriginal	2 flakes, 3 bone fragments, 1 shell fragment, burned clay	Ineligible
HA661	Unnamed	Unknown Aboriginal	Bone, shells, 2 flakes, 3 shatter, 1 core, baked clay fragment	Unknown
HA662	Unnamed	Unknown Aboriginal Historic 20th C.	Shell midden, bone fragments, bone pin, baked clay fragments, 3 flakes, modern concrete and nail	Unknown
HA663	Unnamed	Late Archaic Poverty Point	Lithic tools and debitage including non-local drill and perforator	Ineligible
HA664	Unnamed	Unknown Aboriginal	No material described	Ineligible
HA665	Unnamed	Unknown Aboriginal	12 flakes (1 Novaculite); 2 shatter, 1 bone (calcined antler tip); 1 sandstone fragment; 1 retouched pebble	Ineligible

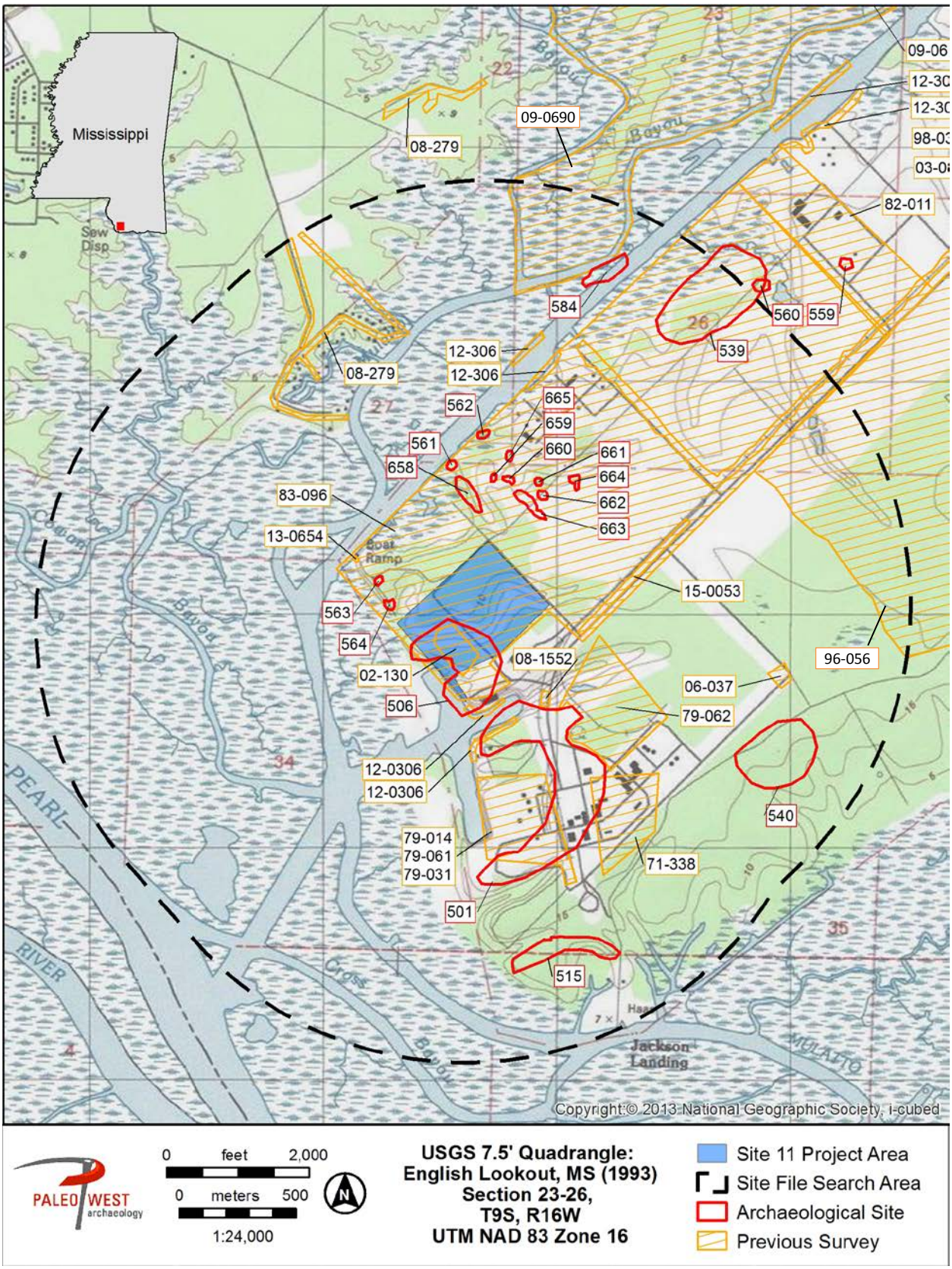

Figure 2. Previous sites and surveys within a 1-mile vicinity of Site 11.

PEDESTRIAN SURVEY AND SUBSURFACE TESTING

Phase IB consisted of pedestrian survey and subsurface testing. Pedestrian survey of the project area found evidence of extensive disturbance due to previous railway and road construction, backfill and grading for parking areas, and associated ditch construction.

Ground cover was extensive in some areas with dense vegetation and cleared in others. Much of the project area is low lying and wet and considered low probability. These areas were systematically checked for any elevations which might have archaeological potential. Due to standing water and boggy conditions some shovel tests were not excavated.

Subsurface testing investigated 219 STP locations. Across the project area, subsurface testing revealed extensive disturbance from previous development. Extremely mottled soils were common at depths down to 30 cm, at which point sterile subsoil was encountered. This disturbance could be reflective of numerous activities associated with industrial park development, ranging from clearing, leveling, and ditch construction, to the deposition of dredged material.

There was no evidence of intact cultural material in the project area, and all previously recorded sites within the APE were no longer evident and deemed ineligible for inclusion in the NRHP. Fieldwork results for Site 11 are described below.

Site 11

Site 11 covers an area of approximately 48 acres. It runs roughly from the southwest to the northeast. It is bounded to the north and west by paved access roads, to the southeast by pipe storage yards and an industrial building complex, and to the southwest by the canal. The paved access road, which is bermed with drainage running on either side, turns to cut through Site 11. The entire footprint of Site 11 was covered by pedestrian survey at 30 m intervals, which ran parallel to the area boundaries. Site 11 is a mix of wet soils, low brush/bramble areas, and partially cleared pine woods (Figure 3 and Figure 4). The southeastern portion is heavily disturbed by industrial activity. Much of that edge is paved over and there is abundant evidence of modern dumping activity. Parts of the wooded areas had signs of tree clearing for informal roadways. A large drainage ditch runs through the southwestern portion of Site 11, and some areas were wet with standing water (Figure 5).

Site 11 has two overlapping previous surveys: 02-130 and 83-096 (Figure 2). Site 22HA506 is within Site 11. It had consisted of Poverty Point objects and Late Archaic points, but the portion of the site in the current APE was completely destroyed by dock construction in 1983. The area of the site was in a stratigraphically disturbed context, affected by canal dredging activities (Figure 6). The area has undergone extensive land manipulation (Figure 7). No trace of the 22HA506 site was evident during pedestrian survey.

Figure 3. Tree clearing activity in Site 11.

Figure 4. Typical pine woods condition in Site 11.

Figure 5. Wetland area of Site 11.

Figure 6. Drainage running through the southern portion of Site 11, within HA506.

Figure 7. The NE extent of HA506, which has a raised berm road, drainage, and a paved storage yard.

Site 11 was excavated on a 30-m grid running parallel to the area boundaries (Figure 13). The 48-acre area was covered by 219 STPs (STPs 324–533 and 656–664). STPs bordering the access roads had gravel at 50 cm bmgs under fill, evidence of road construction disturbance. A typical soil profile for the wooded areas of Site 11 consisted of 12 cm of very dark grayish brown sandy loam atop 14 cm of brown sandy clay loam and sterile yellowish brown sandy clay (Figure 8). A typical profile for the wetland conditions in Site 11 consisted of 10 cm of dark grayish brown sandy loam atop 10 cm of light gray sand and pale brown sand (Figure 9). All STPs within the vicinity of 22HA506 were negative for cultural material. Modern trash, including shotgun shells, plastic bottles, and metal debris, was scattered throughout the project area. In the southeastern corner of Site 11, there was abundant dumping activity (Figure 11). A typical profile for this disturbed area was 20 cm of brown sandy loam full of roots and modern trash (Figure 10). Along the southwestern edge of Site 11, the woods dropped off with a steep slope leading down to the canal. STPs 527–529 were not excavated due to slope (Figure 12).

Figure 8. Profile of STP 391, typical for the wooded condition of Site 11.

Figure 9. STP 384, typical wetland condition in Site 11.

Figure 10. STP531 full of modern trash (plastic wrappers, bottle) and gravel. Electrical wire running through STP, typical for dumping areas in Site 11.

Figure 11. Dumping area in southeast of Site 11, circa STP 532.

Figure 12. Southwestern edge of Site 11 that drops off to the canal.

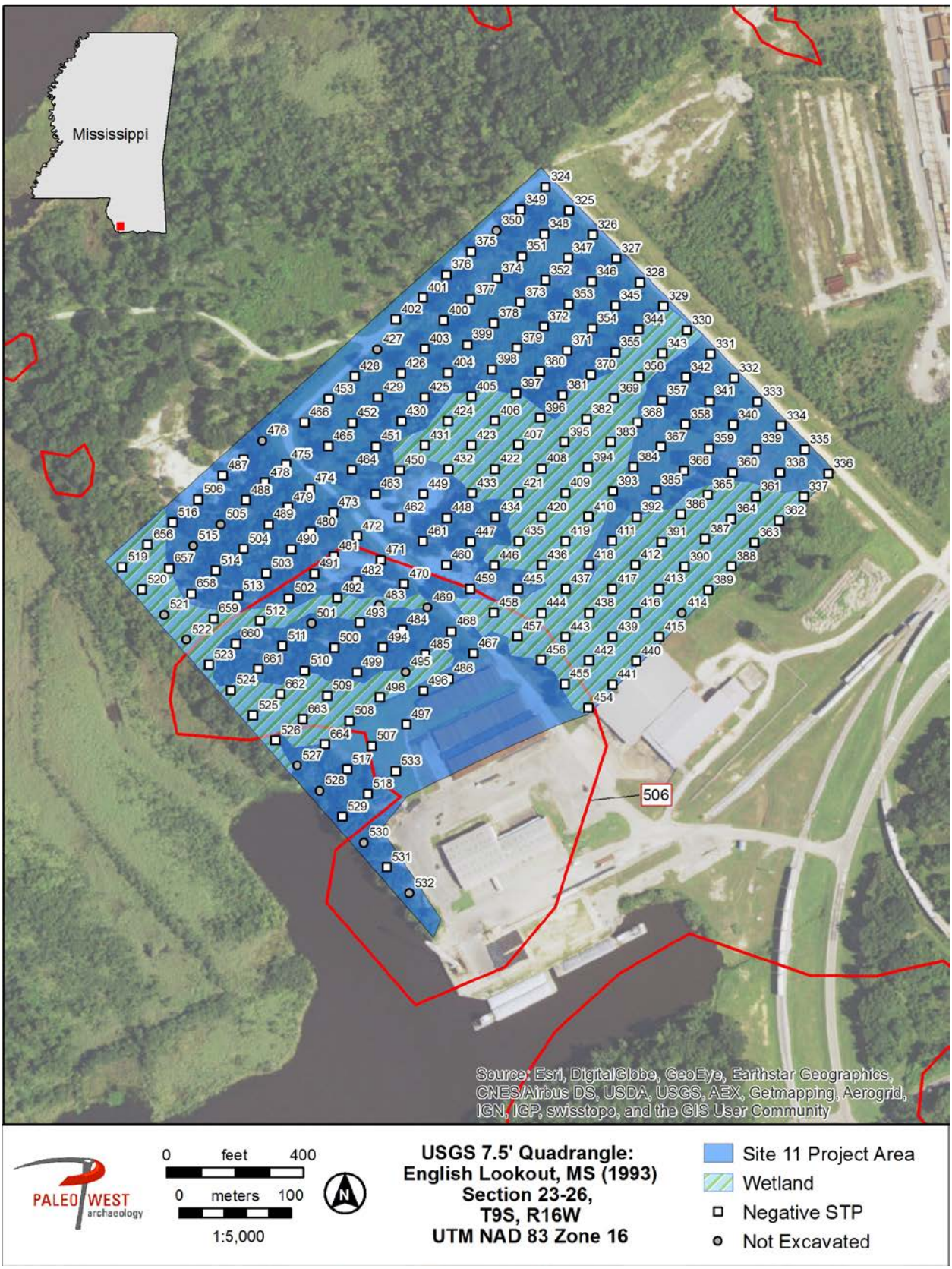

Figure 13. Results map for Site 11.

CULTURAL RESOURCES SENSITIVITY ASSESSMENT

No traces of prehistoric or historic cultural material was found in either the surface survey or subsurface investigations of the project area. There is no evidence to suggest that the project area contains intact prehistoric or historic cultural deposits, and it should not be considered archaeologically sensitive due to road construction disturbance and wetland conditions.

RECOMMENDATIONS

Four criteria are applied during the evaluation of an archeological resource's eligibility for inclusion in the NRHP. Normally, a resource must be at least 50 years of age and meet at least one of the following four criteria to be considered eligible for inclusion in the NRHP:

- Be associated with events that have made a significant contribution to the broad patterns of our history (Criterion A);
- Be associated with the lives of persons significant in our past (Criterion B); or
- Embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- Yield, or be likely to yield, information important in prehistory or history (Criterion D).

If the significance of a resource is established, then it is necessary to determine if the resource retains the integrity for which it is significant. The integrity of a resource is evaluated in regard to its location, setting, design, materials, workmanship, feeling, and association.

Pedestrian survey and subsurface investigations did not identify any prehistoric or historic cultural material or features within the proposed project area. Previous construction and development resulted in significant ground disturbance, which makes it unlikely for the project area to yield additional information. Based on the results of this archaeological investigation, PaleoWest Archaeology and Gulf South Associates recommends a finding of "no historic properties affected" and that the project be allowed to proceed as designed without further historic review.

If archaeological remains are discovered in course of construction it is recommended that all work in the vicinity should stop immediately, the Mississippi Department of Archives and History should be contacted, and a professional archaeologist brought in to conduct an assessment.

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Appendix A: STP Results

STP Number	Stratum: Depth	Munsell Soil Description	Comments
324	I:0-30	10YR4/1 Gravel dark gray loamy sand	NCM, mottled with a 10yr6/6 and 2.5y7/4, along drainage ditch and access road
325	I:0-22	10YR4/3 Roots brown silt loam	NCM
325	II:22-32	2.5Y6/4 Roots light yellowish brown loamy sand	NCM
326	I:0-30	10YR4/4 Roots dark yellowish brown sandy loam	NCM, mottled with 10yr7/6 and 2.5y7/4
327	I:0-10	10YR4/3 Roots brown loamy sand	NCM
328	I:0-21	2.5Y5/4 Roots light olive brown sandy loam	NCM
	II:21-31	2.5Y7/4 Roots pale yellow loamy sand	NCM
329	I:0-23	10YR4/3 Roots brown loamy sand	NCM
	II:23-30	10YR4/6 Roots dark yellowish brown sandy loam	NCM
330	I:0-23	10YR4/3 Roots brown loamy sand	NCM
	II:23-33	10YR7/4 Roots very pale brown sandy loam	NCM
331	I:0-12	10YR4/3 Roots brown loamy sand	NCM
332	I:0-21	10YR4/3 Roots brown loamy sand	NCM
	II:21-31	10YR7/4 Roots very pale brown sandy loam	NCM
333	I:0-15	10YR4/3 Roots brown loamy sand	NCM
	II:15-25	7.5YR5/6 Roots strong brown sandy clay loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
334	I:0-14	10YR4/4 Roots dark yellowish brown loamy sand	NCM
	II:14-24	7.5YR5/8 Roots strong brown sandy clay loam	NCM
335	I:0-25	10YR4/3 Roots brown loamy sand	NCM
	II:25-35	10YR5/6 Roots yellowish brown loamy sand	NCM, mottled with 10yr4/1 and 10yr5/8
336	I:0-10	10YR4/3 Roots brown sandy loam	NCM, mottled with 10yr 5/8, on slight slope to drainage ditch
337	I:0-17	10YR6/1 Roots gray sand	NCM
	II:17-35	10YR7/3 Roots very pale brown sand	NCM
	III:35-45	10YR7/4 Roots very pale brown sand	NCM
338	I:0-26	10YR7/1 Roots light gray sand	NCM
	II:26-50	10YR7/4 Roots very pale brown sand	NCM
339	I:0-22	10YR7/1 Roots light gray sand	NCM
	II:22-47	10YR7/3 Roots very pale brown sand	NCM
340	I:0-25	10YR7/1 Roots light gray sand	NCM
	II:25-50	10YR7/3 Roots very pale brown sand	NCM
341	I:0-10	10YR4/3 Roots brown loamy sand	NCM
342	I:0-10	10YR4/1 Roots dark gray loamy sand	NCM
343	I:0-10	10YR4/3 Roots brown loamy sand	NCM
344	I:0-18	10YR4/3 Roots brown loamy sand	NCM
	II:18-28	2.5Y6/4 Roots light yellowish brown silt loam	NCM, manganese staining present
345	I:0-12	10YR4/2 Roots dark grayish brown sandy loam	NCM
	II:12-22	2.5Y6/2 Roots light brownish gray sandy clay loam	NCM, manganese staining
346	I:0-16	10YR4/3 Roots brown loamy sand	NCM
	II:16-27	2.5Y6/2 Roots light brownish gray sandy clay loam	NCM, manganese staining
347	I:0-10	10YR5/6 Roots yellowish brown loamy sand	NCM, mottled with 5yr5/8 and 10yr7/1
348	I:0-14	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:14-24	2.5Y6/2 Roots light brownish gray sandy loam	NCM, manganese staining
349	I:0-8	10YR3/2 Roots very dark grayish brown loamy sand	NCM
	II:8-27	10YR7/4 Roots very pale brown loamy sand	NCM
	III:27-37	10YR5/8 Roots yellowish brown sandy clay loam	NCM
350	Not Excavated	N/A	Not excavated, drainage ditch

STP Number	Stratum: Depth	Munsell Soil Description	Comments
351	I:0-16	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:16-24	2.5Y6/2 Roots light brownish gray sandy loam	NCM, manganese staining
352	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:20-30	10YR5/6 yellowish brown sandy clay loam	NCM
353	I:0-15	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:15-25	10YR5/6 yellowish brown sandy clay	NCM
354	I:0-20	10YR4/3 brown	NCM
	II:20-30	10YR6/6 brownish yellow sandy clay	NCM
355	I:0-20	10YR3/3 dark brown sandy clay loam	NCM
356	II:20-30	10YR6/6 brownish yellow sandy clay	NCM
357	I:0-40	10YR7/4 very pale brown sand	NCM
358	I:0-40	10YR5/3 brown loamy sand	NCM
359	I:0-40	10YR7/3 very pale brown	NCM
360	I:0-50	10YR7/3 very pale brown	NCM
361	I:0-10	10YR4/3 brown sandy clay loam	NCM
362	I:0-15	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:15-25	7.5YR5/4 brown sandy clay	NCM
363	I:0-15	10YR4/3 brown sandy clay loam	NCM
	II:15-25	10YR5/4 yellowish brown loamy sand	NCM
364	I:0-15	10YR4/3 brown sandy clay loam	NCM
	II:15-25	10YR4/4 dark yellowish brown sandy clay	NCM
365	I:0-20	10YR6/6 brownish yellow sand	NCM
366	I:0-50	10YR7/3 very pale brown sand	NCM
367	I:0-30	10YR7/3 very pale brown sand	NCM
368	I:0-30	10YR7/3 very pale brown sand	NCM
369	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:20-30	10YR5/4 yellowish brown loamy sand	NCM
370	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:20-30	10YR5/4 yellowish brown loamy sand	NCM
371	I:0-10	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:10-20	10YR5/4 yellowish brown loamy sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
372	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM, mottled with 10YR 5/6 loamy sand
373	I:0-5	10YR4/4 dark yellowish brown silty clay loam	NCM
	II:5-15	10YR5/6 yellowish brown silty clay	NCM
374	I:0-15	10YR3/4 dark yellowish brown sandy clay loam	NCM
	II:15-25	10YR5/3 brown sandy clay	NCM
375	I:0-10	10YR4/4 Roots dark yellowish brown sandy clay loam	NCM
	II:10-20	7.5YR5/6 Roots strong brown clay	NCM
376	I:0-12	10YR3/3 Roots dark brown sandy loam	NCM
	II:12-30	10YR5/3 Roots brown sandy clay	NCM, mottled w 10yr 5/6
377	I:0-12	10YR3/3 Roots dark brown sandy clay loam	NCM
	II:12-24	10YR5/4 Roots yellowish brown sandy clay	NCM
	III:24-34	10YR6/3 pale brown sandy clay	NCM
378	I:0-18	10YR4/2 Ants dark grayish brown sandy loam	NCM
	II:18-34	10YR5/6 yellowish brown sandy clay	NCM
379	I:0-14	10YR4/2 Roots dark grayish brown sandy loam	NCM
	II:14-30	10YR5/6 yellowish brown sandy clay	NCM
380	I:0-17	10YR4/3 Roots brown sandy loam	NCM
	II:17-32	10YR5/6 yellowish brown sandy clay	NCM
381	I:0-10	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:10-19	10YR4/3 Roots brown sandy clay loam	NCM
	III:19-30	10YR5/4 yellowish brown sandy clay	NCM
382	I:0-8	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:8-22	10YR4/3 Roots brown sandy clay loam	NCM
	III:22-31	10YR5/4 yellowish brown sandy clay	NCM
383	I:0-18	10YR4/3 Roots brown silty clay loam	NCM
	II:18-32	10YR5/4 yellowish brown sandy clay	NCM
384	I:0-9	10YR4/2 dark grayish brown sandy loam	NCM
	II:9-22	10YR7/2 light gray sand	NCM
	III:22-31	10YR6/3 pale brown sand	NCM, wet. Water at 31 cm bmgs

STP Number	Stratum: Depth	Munsell Soil Description	Comments
385	I:0-21	10YR7/1 light gray sand	NCM
	II:21-40	10YR6/2 light brownish gray sand	NCM
386	I:0-12	10YR4/3 Roots brown sandy clay loam	NCM
	II:12-30	10YR5/6 yellowish brown sandy clay	NCM
387	I:0-10	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:10-24	10YR4/3 brown sandy clay	NCM, wet
	III:24-38	10YR5/4 yellowish brown sandy clay	NCM, wet. Water at 38 cm bmgs
388	I:0-12	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:12-27	10YR4/3 brown sandy clay	NCM
	III:27-38	10YR5/4 yellowish brown sandy clay	NCM
389	I:0-11	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:11-22	10YR4/3 Roots brown sandy clay loam	NCM
	III:22-30	10YR5/4 yellowish brown sandy clay	NCM
390	I:0-20	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:20-40	10YR4/3 Roots brown sandy clay loam	NCM
	III:40-50	10YR5/4 yellowish brown sandy clay	NCM
391	I:0-12	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:12-26	10YR4/3 Roots brown sandy clay loam	NCM
	III:26-40	10YR5/4 yellowish brown sandy clay	NCM
392	I:0-16	10YR6/1 Roots gray loamy sand	NCM
	II:16-50	10YR7/2 light gray sand	NCM
393	I:0-10	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:10-20	10YR6/3 pale brown sand	NCM, wet
	III:20-25	10YR7/1 light gray sand	NCM, water at 24 cm bmgs
394	I:0-11	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:11-22	10YR4/3 Roots brown sandy clay loam	NCM
	III:22-37	10YR5/4 yellowish brown sandy clay	NCM
395	I:0-17	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:17-30	10YR4/3 brown sandy clay	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	III:30-40	10YR5/4 yellowish brown sandy clay	NCM
396	I:0-20	10YR4/3 Roots brown sandy clay	NCM
	II:20-37	10YR5/4 yellowish brown sandy clay	NCM, mottled w 10 yr 5/8
397	I:0-10	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:10-24	10YR4/3 brown sandy clay	NCM
	III:24-35	10YR5/4 yellowish brown sandy clay	NCM
398	I:0-20	10YR4/3 brown sandy clay	NCM
	II:20-30	10YR5/4 yellowish brown sandy clay	NCM
399	I:0-7	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:7-20	10YR4/3 brown sandy clay loam	NCM
	III:20-30	10YR5/4 yellowish brown sandy clay	NCM
400	I:0-8	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:8-17	10YR4/3 brown sandy clay	NCM
	III:17-30	10YR6/4 light yellowish brown sandy clay	NCM, some iron mottling 10 yr 5/8
401	I:0-10	10YR3/2 very dark grayish brown sandy loam	NCM
	II:10-35	10YR4/3 brown sandy clay	NCM
	III:35-50	10YR6/3 pale brown sandy clay	NCM
402	I:0-31	10YR4/3 Roots brown loamy sand	NCM, mottled with 10yr6/8 and 10yr7/4
403	I:0-20	10YR4/2 Roots dark grayish brown loamy sand	NCM
404	I:0-18	10YR4/3 Roots brown sandy loam	NCM
	II:18-28	2.5Y6/2 Roots light brownish gray silt loam	NCM, manganese staining
405	I:0-10	10YR4/3 Roots brown loamy sand	NCM
406	I:0-10	10YR4/3 Roots brown loamy sand	NCM
407	I:0-26	10YR4/3 Roots brown loamy sand	NCM
	II:26-36	10YR6/4 Roots light yellowish brown loamy sand	NCM
408	I:0-10	10YR4/3 Roots brown loamy sand	NCM
409	I:0-25	10YR6/1 Roots gray sand	NCM
	II:25-45	10YR7/4 Roots very pale brown sand	NCM
410	I:0-15	10YR6/1 Roots gray sand	NCM
	II:15-40	10YR7/4 Roots very pale brown sand	NCM
411	I:0-10	2.5Y6/2 Roots light brownish gray loamy sand	NCM, manganese staining, hydric soil
412	I:0-27	10YR3/2 Roots very dark grayish brown sandy loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	II:27-37	10YR5/8 Roots yellowish brown loamy sand	NCM
413	I:0-32	10YR3/2 Roots very dark grayish brown loamy sand	NCM
	II:32-42	10YR4/6 Roots dark yellowish brown sandy loam	NCM
414	Not Excavated	N/A	Not excavated, gravel
415	I:0-15	10YR4/2 Gravel dark grayish brown loamy sand	NCM, mottled with 10yr5/6
416	I:0-24	10YR4/4 Roots dark yellowish brown loamy sand	NCM
	II:24-34	10YR6/4 Roots light yellowish brown loamy sand	NCM
417	I:0-15	10YR6/1 Roots gray sand	NCM
	II:15-25	10YR7/4 Roots very pale brown sand	NCM
418	I:0-10	2.5Y6/2 Roots light brownish gray sand	NCM
419	I:0-15	10YR4/3 Roots brown loamy sand	NCM
420	I:0-21	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:21-31	10YR4/6 Roots dark yellowish brown loamy sand	NCM
421	I:0-21	10YR4/3 Roots brown loamy sand	NCM
	II:21-31	2.5Y6/2 Roots light brownish gray loamy sand	NCM, manganese staining
422	I:0-20	10YR4/3 Roots brown loamy sand	NCM
	II:20-30	10YR6/4 Roots light yellowish brown sandy loam	NCM
423	I:0-10	10YR4/3 Roots brown sand	NCM
424	I:0-10	10YR4/3 Roots brown loamy sand	NCM
425	I:0-26	10YR4/3 Roots brown loamy sand	NCM
	II:26-36	10YR6/4 Roots light yellowish brown sand	NCM
426	I:0-33	10YR4/3 Roots brown loamy sand	NCM, mottled with 10yr5/6, along an existing access road and drainage ditch
427	Not Excavated	N/A	Not excavated, drainage ditch
428	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM, mottled W/ 10YR 5/4
429	I:0-15	10YR4/3 brown sandy clay loam	NCM
	II:15-25	10YR5/4 yellowish brown loamy sand	NCM
430	I:0-25	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:25-35	10YR5/6 yellowish brown loamy sand	NCM
431	I:0-20	10YR4/4 dark yellowish brown sandy clay loam	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	II:20-30	10YR5/4 yellowish brown sandy clay loam	NCM
432	I:0-10	10YR4/3 brown sandy clay loam	NCM
	II:10-25	10YR5/4 yellowish brown sandy clay loam	NCM
433	I:0-50	10YR7/3 very pale brown sand	NCM
434	I:0-20	10YR4/3 brown sandy clay loam	NCM
	II:20-30	10YR5/3 brown sandy clay	NCM
435	I:0-25	10YR3/4 dark yellowish brown sandy clay loam	NCM
	II:25-35	10YR4/4 dark yellowish brown sandy clay	NCM
436	I:0-20	10YR4/3 brown sandy clay loam	NCM
	II:20-10	10YR5/3 brown sandy clay	NCM
437	I:0-10	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:10-20	10YR7/3 very pale brown sand	NCM
438	I:0-50	10YR7/3 very pale brown sand	NCM
439	I:0-20	10YR7/3 very pale brown sand	NCM, mottled W/ 10 yr 4/4 sandy clay loam
440	I:0-50	10YR4/4 dark yellowish brown	NCM
441	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM, terminated at ferrous pipe
442	I:0-50	10YR7/3 very pale brown sand	NCM
443	I:0-10	10YR6/6 brownish yellow sand	NCM
	II:10-50	10YR7/3 very pale brown sand	NCM
444	I:0-40	10YR7/3 very pale brown sand	NCM
445	I:0-40	10YR7/3 very pale brown sand	NCM
446	I:0-30	10YR4/4 dark yellowish brown sandy loam	NCM
	II:30-40	10YR4/4 dark yellowish brown sandy clay	NCM
447	I:0-20	10YR7/3 very pale brown sand	NCM, root impasse at 20cm bmgs
448	I:0-20	10YR4/4 dark yellowish brown silty clay	NCM
	II:20-30	7.5YR5/6 strong brown clay	NCM
449	I:0-40	10YR7/3 very pale brown sand	NCM
450	I:0-40	10YR7/3 very pale brown	NCM
451	I:0-50	10YR4/4 dark yellowish brown sandy clay loam	NCM
452	I:0-10	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:10-25	10YR5/4 yellowish brown sandy clay	NCM
453	I:0-10	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:10-30	10YR5/4 yellowish brown sandy clay loam	NCM
454	I:0-13	10YR4/3 Roots brown loamy sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
	II:13-23	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	III:23-33	2.5Y5/4 Roots light olive brown loamy sand	NCM
455	I:0-19	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:19-29	10YR7/1 Roots light gray loamy sand	NCM
	III:29-39	10YR3/2 Roots very dark grayish brown loamy sand	NCM
457	I:0-34	10YR8/2 Roots very pale brown sand	NCM
	II:34-55	10YR8/1 Roots white sand	NCM
458	I:0-30	10YR8/2 Roots very pale brown sand	NCM
	II:30-50	10YR8/1 Roots white sand	NCM
459	I:0-33	10YR7/4 Roots very pale brown sand	NCM
	II:33-49	10YR8/1 Gravel white sand	NCM, mottled with 2.5yr6/2 and 10yr6/6 clay
460	I:0-35	10YR8/4 Roots very pale brown sand	NCM
	II:35-50	10YR8/1 Gravel white sand	NCM
461	I:0-35	10YR8/2 Roots very pale brown sand	NCM
	II:35-50	10YR8/1 Roots white sand	NCM
462	I:0-35	10YR7/4 Roots very pale brown sand	NCM
463	I:0-35	10YR7/4 Roots very pale brown sand	NCM
464	I:0-15	10YR6/4 Roots light yellowish brown sandy loam	NCM, mottled with 10yr6/8
465	I:0-10	10YR4/1 Roots dark gray sandy loam	NCM, mottled with 10yr6/8
466	I:0-22	10YR3/2 Roots very dark grayish brown loamy sand	NCM
	II:22-32	10YR5/6 Roots yellowish brown sandy loam	NCM
467	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
	II:20-30	10YR5/6 yellowish brown loamy sand	NCM
468	I:0-50	10YR7/3 very pale brown sand	NCM
469	Not Excavated	N/A	Not excavated due to standing water
470	I:0-20	10YR4/4 Gravel dark yellowish brown sandy loam	NCM
	II:20-30	10YR7/3 very pale brown sand	NCM
471	I:0-20	10YR4/4 Gravel dark yellowish brown sandy loam	NCM
	II:20-30	10YR7/3 very pale brown sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
472	I:0-30	10YR7/3 very pale brown sand	NCM
473	I:0-30	10YR7/3 very pale brown	NCM
474	I:0-30	10YR7/3 very pale brown sand	NCM, mottled w/ 10 yr 4/4 sandy clay loam
475	I:0-5	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:5-15	7.5YR5/4 brown clay	NCM
476	Not Excavated	N/A	Not excavated, drainage ditch
477	I:0-50	10YR7/3 very pale brown sand	NCM
478	I:0-20	10YR7/3 very pale brown sand	NCM
479	I:0-10	10YR4/4 dark yellowish brown sandy clay loam	NCM
	II:10-25	10YR5/4 yellowish brown sandy clay loam	NCM
480	I:0-50	10YR7/3 very pale brown sand	NCM
481	I:0-40	10YR7/3 very pale brown sand	NCM
482	I:0-50	10YR7/3 very pale brown sand	NCM
483	Not Excavated	N/A	Not excavated due to standing water
484	I:0-40	10YR7/3 very pale brown sand	NCM
485	I:0-10	10YR4/4 Roots dark yellowish brown sandy clay loam	NCM
	II:10-50	10YR7/3 Roots very pale brown sand	NCM
486	I:0-10	10YR3/4 Roots dark yellowish brown sandy clay loam	NCM
	II:10-20	10YR5/4 Roots yellowish brown loamy sand	NCM
487	I:0-25	10YR7/4 Roots very pale brown sand	NCM
	II:25-40	10YR8/1 Roots white sand	NCM
488	I:0-10	10YR4/3 Roots brown sand	NCM
489	I:0-35	10YR7/4 Roots very pale brown sand	NCM
	II:35-45	10YR8/1 Roots white sand	NCM
490	I:0-15	10YR4/1 Roots dark gray sandy loam	NCM
	II:15-25	10YR7/1 Roots light gray sand	NCM
491	I:0-25	10YR8/2 Roots very pale brown sand	NCM
492	I:0-19	10YR8/2 Roots very pale brown sand	NCM
	II:19-35	10YR7/4 Roots very pale brown sand	NCM
493	I:0-35	10YR7/4 Roots very pale brown sand	NCM, mottled with a 10yr8/2
494	I:0-19	10YR8/2 Roots very pale brown sand	NCM
	II:19-45	10YR7/4 Roots very pale brown sand	NCM
495	Not Excavated	N/A	Not excavated due to standing water

STP Number	Stratum: Depth	Munsell Soil Description	Comments
496	I:0-23	10YR8/2 Roots very pale brown sand	NCM
	II:23-40	10YR7/4 Roots very pale brown sand	NCM
	III:40-45	10YR5/6 Roots yellowish brown sand	NCM
497	I:0-30	10YR4/4 dark yellowish brown sandy clay loam	NCM, mottled w/ 10YR 5/6 sandy clay
498	I:0-20	10YR4/4 dark yellowish brown sandy loam	NCM
499	I:0-35	10YR7/3 Roots very pale brown sand	NCM
500	I:0-25	10YR7/3 very pale brown sand	NCM
501	Not Excavated	N/A	Not excavated due to standing water
502	I:0-40	10YR7/3 very pale brown sand	NCM
503	I:0-25	10YR3/4 dark yellowish brown sandy clay loam	NCM
	II:25-35	10YR5/4 yellowish brown loamy sand	NCM
504	I:0-40	10YR7/3 very pale brown sand	NCM
505	Not Excavated	N/A	Not excavated due to standing water
506	I:0-50	10YR7/3 very pale brown sand	NCM
507	I:0-8	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:8-15	10YR5/6 Roots yellowish brown loamy sand	NCM
	III:15-18	10YR3/2 Roots very dark grayish brown sand	NCM
508	I:0-25	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:25-35	10YR5/6 Roots yellowish brown sandy loam	NCM
509	I:0-27	10YR3/2 Roots very dark grayish brown loamy sand	NCM
	II:27-37	7.5YR6/4 Roots light brown sandy loam	NCM
510	I:0-19	10YR6/2 Roots light brownish gray sand	NCM
	II:19-39	10YR7/4 Roots very pale brown sand	NCM
511	I:0-25	10YR7/4 Roots very pale brown sand	NCM
512	I:0-40	10YR7/3 Roots very pale brown sand	NCM
513	I:0-21	10YR6/2 Roots light brownish gray sand	NCM
	II:21-45	10YR7/4 Roots very pale brown sand	NCM
514	I:0-40	10YR7/3 very pale brown sand	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
515	Not Excavated	N/A	Not excavated, in area of clear cutting and timber piling
516	I:0-20	10YR8/2 Roots very pale brown sand	NCM
517	I:0-25	10YR4/3 Roots brown sandy loam	NCM
	II:25-35	10YR4/6 dark yellowish brown loamy sand	NCM
518	I:0-25	10YR4/4 Roots dark yellowish brown sandy clay loam	NCM
519	I:0-18	10YR4/2 Roots dark grayish brown loamy sand	NCM
	II:18-28	10YR5/6 Roots yellowish brown sandy loam	NCM
520	I:0-25	10YR3/2 Roots very dark grayish brown sandy loam	NCM
	II:25-35	2.5Y6/2 Roots light brownish gray sandy loam	NCM, manganese staining
521	Not Excavated	N/A	Not excavated due to standing water
522	Not Excavated	N/A	Not excavated due to standing water
523	I:0-20	10YR6/2 Roots light brownish gray loamy sand	NCM
	II:20-30	10YR7/4 Roots very pale brown sand	NCM
524	I:0-20	10YR4/3 Roots brown loamy sand	NCM
	II:20-30	10YR6/4 Roots light yellowish brown sandy loam	NCM
525	I:0-23	10YR3/2 Roots very dark grayish brown sand	NCM
	II:23-33	10YR5/6 Roots yellowish brown sandy loam	NCM
526	I:0-22	10YR4/4 Roots dark yellowish brown sand	NCM, charcoal flecking
527	Not Excavated	N/A	Not excavated due to slope
528	Not Excavated	N/A	Not excavated, trash pile
529	Not Excavated	N/A	Not excavated, trash pile
530	Not Excavated	N/A	Not excavated, trash pile
531	I:0-24	10YR4/3 Roots brown sandy loam	NCM, gravel and modern trash (discarded): plastic bottle, food wrappers, electrical wire
532	Not Excavated	N/A	Not excavated, trash pile
533	I:0-10	10YR4/3 brown sandy clay loam	NCM
	II:10-20	10YR4/4 dark yellowish brown sandy clay	NCM
	III:20-40	10YR5/6 yellowish brown sandy clay	NCM

STP Number	Stratum: Depth	Munsell Soil Description	Comments
656	I:0-25	10YR4/4 Roots dark yellowish brown sandy clay loam	NCM
657	I:0-40	10YR7/3 very pale brown sand	NCM
658	I:0-40	10YR7/3 very pale brown sand	NCM
659	I:0-40	10YR7/3 very pale brown sand	NCM
660	I:0-40	10YR7/3 roots very pale brown sand	NCM
661	I:0-35	10YR7/3 roots very pale brown sand	NCM
662	I:0-40	10YR7/3 very pale brown sand	NCM
663	I:0-25	10YR4/3 Roots brown sandy loam	NCM
	II:25-35	10YR4/6 dark yellowish brown loamy sand	NCM
664	I:0-25	10YR4/4 roots dark yellowish brown sandy clay loam	NCM

Appendix B: STP Locations

Area	STP	Easting	Northing
Site 11	324	251706	3346498
Site 11	325	251727	3346476
Site 11	326	251748	3346455
Site 11	327	251769	3346434
Site 11	328	251790	3346412
Site 11	329	251811	3346391
Site 11	330	251832	3346370
Site 11	331	251853	3346348
Site 11	332	251874	3346327
Site 11	333	251895	3346305
Site 11	334	251916	3346284
Site 11	335	251937	3346263
Site 11	336	251958	3346241
Site 11	337	251937	3346221
Site 11	338	251915	3346242
Site 11	339	251894	3346263
Site 11	340	251873	3346285
Site 11	341	251852	3346306
Site 11	342	251831	3346328
Site 11	343	251810	3346349
Site 11	344	251789	3346370
Site 11	345	251768	3346392
Site 11	346	251747	3346413
Site 11	347	251726	3346434
Site 11	348	251705	3346456
Site 11	349	251683	3346477
Site 11	350	251662	3346459
Site 11	351	251684	3346436
Site 11	352	251705	3346414
Site 11	353	251726	3346393
Site 11	354	251747	3346371
Site 11	355	251768	3346350
Site 11	356	251789	3346328
Site 11	357	251810	3346307
Site 11	358	251831	3346285
Site 11	359	251852	3346264
Site 11	360	251873	3346242
Site 11	361	251894	3346221
Site 11	362	251915	3346199
Site 11	363	251892	3346179
Site 11	364	251872	3346201
Site 11	365	251851	3346222
Site 11	366	251830	3346244
Site 11	367	251809	3346265
Site 11	368	251788	3346287
Site 11	369	251767	3346308
Site 11	370	251746	3346330

Area	STP	Easting	Northing
Site 11	371	251725	3346351
Site 11	372	251704	3346373
Site 11	373	251683	3346394
Site 11	374	251662	3346416
Site 11	375	251639	3346440
Site 11	376	251617	3346419
Site 11	377	251638	3346397
Site 11	378	251660	3346376
Site 11	379	251680	3346354
Site 11	380	251701	3346333
Site 11	381	251721	3346312
Site 11	382	251742	3346290
Site 11	383	251764	3346270
Site 11	384	251784	3346247
Site 11	385	251805	3346226
Site 11	386	251827	3346205
Site 11	387	251848	3346183
Site 11	388	251872	3346158
Site 11	389	251851	3346137
Site 11	390	251830	3346158
Site 11	391	251810	3346180
Site 11	392	251787	3346203
Site 11	393	251766	3346225
Site 11	394	251744	3346247
Site 11	395	251723	3346270
Site 11	396	251701	3346291
Site 11	397	251679	3346313
Site 11	398	251658	3346335
Site 11	399	251636	3346357
Site 11	400	251614	3346378
Site 11	401	251596	3346399
Site 11	402	251572	3346379
Site 11	403	251598	3346353
Site 11	404	251618	3346332
Site 11	405	251639	3346310
Site 11	406	251660	3346289
Site 11	407	251681	3346267
Site 11	408	251702	3346246
Site 11	409	251723	3346224
Site 11	410	251744	3346203
Site 11	411	251765	3346181
Site 11	412	251786	3346160
Site 11	413	251807	3346138
Site 11	414	251828	3346117
Site 11	415	251807	3346095
Site 11	416	251786	3346117

Area	STP	Easting	Northing
Site 11	417	251765	3346138
Site 11	418	251744	3346160
Site 11	419	251723	3346181
Site 11	420	251702	3346202
Site 11	421	251681	3346224
Site 11	422	251660	3346245
Site 11	423	251639	3346267
Site 11	424	251618	3346288
Site 11	425	251597	3346310
Site 11	426	251576	3346331
Site 11	427	251556	3346353
Site 11	428	251535	3346328
Site 11	429	251556	3346310
Site 11	430	251577	3346288
Site 11	431	251598	3346267
Site 11	432	251619	3346245
Site 11	433	251640	3346224
Site 11	434	251661	3346202
Site 11	435	251682	3346181
Site 11	436	251703	3346159
Site 11	437	251724	3346138
Site 11	438	251745	3346117
Site 11	439	251766	3346095
Site 11	440	251787	3346074
Site 11	441	251765	3346053
Site 11	442	251744	3346074
Site 11	443	251723	3346095
Site 11	444	251702	3346117
Site 11	445	251681	3346138
Site 11	446	251660	3346159
Site 11	447	251639	3346180
Site 11	448	251617	3346202
Site 11	449	251596	3346223
Site 11	450	251575	3346244
Site 11	451	251554	3346266
Site 11	452	251533	3346287
Site 11	453	251512	3346308
Site 11	454	251744	3346032
Site 11	455	251723	3346053
Site 11	456	251702	3346074
Site 11	457	251680	3346096
Site 11	458	251659	3346117
Site 11	459	251638	3346138
Site 11	460	251617	3346160
Site 11	461	251596	3346181
Site 11	462	251575	3346202

Area	STP	Easting	Northing
Site 11	463	251554	3346223
Site 11	464	251532	3346245
Site 11	465	251511	3346266
Site 11	466	251490	3346287
Site 11	467	251641	3346080
Site 11	468	251621	3346100
Site 11	469	251600	3346121
Site 11	470	251579	3346143
Site 11	471	251558	3346164
Site 11	472	251537	3346185
Site 11	473	251516	3346207
Site 11	474	251495	3346228
Site 11	475	251474	3346249
Site 11	476	251452	3346271
Site 11	477	251440	3346259
Site 11	478	251455	3346233
Site 11	479	251475	3346211
Site 11	480	251496	3346189
Site 11	481	251516	3346167
Site 11	482	251537	3346146
Site 11	483	251557	3346124
Site 11	484	251578	3346102
Site 11	485	251598	3346080
Site 11	486	251619	3346058
Site 11	487	251417	3346240
Site 11	488	251438	3346218
Site 11	489	251458	3346196
Site 11	490	251478	3346174
Site 11	491	251499	3346152
Site 11	492	251519	3346130
Site 11	493	251540	3346108
Site 11	494	251560	3346086
Site 11	495	251581	3346064
Site 11	496	251596	3346047
Site 11	497	251566	3346033
Site 11	498	251558	3346041
Site 11	499	251537	3346063
Site 11	500	251517	3346086
Site 11	501	251497	3346108
Site 11	502	251476	3346130
Site 11	503	251456	3346152
Site 11	504	251436	3346174
Site 11	505	251415	3346196
Site 11	506	251395	3346218
Site 11	507	251550	3345998
Site 11	508	251530	3346020

Area	STP	Easting	Northing
Site 11	509	251510	3346043
Site 11	510	251490	3346065
Site 11	511	251470	3346087
Site 11	512	251451	3346110
Site 11	513	251431	3346132
Site 11	514	251411	3346155
Site 11	515	251391	3346177
Site 11	516	251372	3346198
Site 11	517	251528	3345977
Site 11	518	251547	3345955
Site 11	519	251327	3346158
Site 11	520	251345	3346138
Site 11	521	251365	3346115
Site 11	522	251385	3346093
Site 11	523	251405	3346070
Site 11	524	251424	3346048
Site 11	525	251444	3346025
Site 11	526	251464	3346003
Site 11	527	251484	3345980
Site 11	528	251504	3345958
Site 11	529	251524	3345935
Site 11	530	251544	3345911
Site 11	531	251564	3345889
Site 11	532	251584	3345866
Site 11	533	251572	3345975
Site 11	656	251350	3346178
Site 11	657	251369	3346156
Site 11	658	251389	3346134
Site 11	659	251409	3346112
Site 11	660	251429	3346089
Site 11	661	251449	3346067
Site 11	662	251469	3346044
Site 11	663	251488	3346022
Site 11	664	251508	3345999