

US EPA ARCHIVE DOCUMENT

**CULTURAL RESOURCES ASSESSMENT
IN SUPPORT OF GREENHOUSE GAS PERMITTING FOR THE
CCI CORPUS CHRISTI LLC CONDENSATE SPLITTER FACILITY
CORPUS CHRISTI, TX**

Prepared for

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LIST OF ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
Atlas	Texas Archaeological Sites Atlas
B.P.	years Before the Present
BMP	Best Management Practice
bpd	barrel per day
CA	Cultural Resource Assessment
CCI	CCI Corpus Christi LLC
CEI	Coastal Environments, Inc.
EPN	Emission Point Number
GHG	greenhouse gas
MSS	maintenance, startup, and shutdown
MVCU	marine vapor combustion unit
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PSD	Prevention of Significant Deterioration
SCR	Selective Catalytic Reduction
SHPO	State Historic Preservation Officer
THC	Texas Historical Commission
tpd	ton per day
TPDES	Texas Pollutant Discharge Elimination System
USEPA	U.S. Environmental Protection Agency
USGS	United States Geological Survey
WESTON	Weston Solutions, Inc.

SUMMARY

CCI Corpus Christi LLC (CCI) submitted a greenhouse gas (GHG) permit application to the U.S. Environmental Protection Agency Region 6 (USEPA) on 4 November 2013 to obtain a Prevention of Significant Deterioration (PSD) permit authorizing the construction of a Condensate Splitter Process Facility (facility) at the proposed CCI facility in Corpus Christi, Texas.

USEPA's issuance of a GHG PSD permit to CCI is an action subject to requirements pursuant to the National Historic Preservation Act. This Cultural Assessment (CA) reviews the potential for direct and indirect effects of project-related construction, operations, and air emissions increases on historic properties or other culturally significant features or landscapes within a designated Area of Potential Effects (APE).

The geographic boundaries of the APE were established based on the direct impacts from construction and operation of the facility. The APE boundaries for construction and operation include the process areas, supporting structures, and the associated construction laydown area, along with an approximately 8-mile long pipeline located along the Joe Fulton International Trade Corridor right-of-way. CCI also took into consideration whether the APE should be expanded based on indirect impacts from air emissions.

The APE is absent of any culturally significant features or landscapes. Consequently, USEPA's action in issuing a PSD permit to CCI for the construction of the condensate splitter facility would have no effect on cultural resources for purposes of the National Historic Preservation Act (NHPA), as no cultural, historical, or archaeological resources are present within the APE for the project.

1 INTRODUCTION

CCI Corpus Christi LLC (CCI) submitted a greenhouse gas (GHG) permit application to the U.S. Environmental Protection Agency Region 6 (USEPA) on 4 November 2013 to obtain a Prevention of Significant Deterioration (PSD) permit authorizing the construction of a Condensate Splitter Process Facility (facility) at the proposed CCI facility in Corpus Christi, Texas.

USEPA issuance of a GHG PSD permit to CCI is an action subject to the provisions of Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended) and defined in 36 CFR Part 800. The intent of Section 106 is for Federal agencies to take into account adverse effects on any historic properties situated within the direct or indirect Area of Potential Effects (APE) of the proposed undertaking and to afford the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), tribal groups, and any other interested parties an opportunity to comment on the proposed action within a reasonable time period. Coastal Environmental, Inc. conducted a desktop Cultural Resource Assessment (CA) for the proposed facility in order to assess the potential of the proposed development to adversely affect historic properties as required under the Section 106 regulations.

Under 36 CFR Part 800, “Historic Property” is defined as:

[...] any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior.

This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria.

To be considered eligible for the National Register of Historic Places (NRHP), a property must meet one of the four following criteria (36 CFR 60.4): (a) they are associated with events that have made a significant contribution to the broad patterns of our history; (b) they are associated with the lives of persons significant in our past; (c) they embody the distinctive 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; or (d) they have yielded, or may be likely to yield, information important in prehistory or history.

2 PROJECT DESCRIPTION

2.1 PROJECT FACILITIES AND LOCATION

The construction of the facility in Corpus Christi is proposed with two primary phases described below:

- Phase I includes two identical fractionation trains each capable of processing 50,000 barrels per day (BPD) of hydrocarbon condensate material for a total processing capacity of 100,000 BPD; and
- Phase II includes process equipment for the loading of 500,000 BPD of condensate / crude at two planned marine loading docks. Additional process equipment associated with Phase II includes six storage tanks.

The product slate would consist of mixed light hydrocarbons (Y-grade), combined naphtha (consisting of heavy stripped naphtha and light naphtha), jet fuel, marine diesel, and heavy gas oil/bottoms. Process equipment associated with Phase I includes heaters/boilers combustions sources, flare, cooling tower, storage tanks, wastewater treatment system, and marine loading with associated piping and other fugitive equipment.

The proposed facility would be constructed at the location shown in **Figure 2-1**. The proposed layout of the facility is shown in **Figure 2-2**.

2.2 LINEAR FACILITIES

Two pipelines for the transport of condensate and product are anticipated to be constructed in an existing, approximately 50 foot wide, pipeline right-of-way from the facility along approximately 8 miles of the Joe Fulton International Corridor, connecting to existing distribution pipeline(s). The proposed pipeline locations are shown on Figure 2-3. The pipelines will be constructed in compliance with applicable permits and approvals, and construction methods will be consistent with industry-recognized practices.

2.3 CONSTRUCTION INFORMATION

2.3.1 Construction Activities and Schedule

Construction of the facility is scheduled to begin in November 2014. A finalized schedule of construction will depend on the USEPA's schedule for issuing the GHG permit. Once started, construction is estimated to take approximately 16 months to complete.

A finalized list of equipment necessary for the construction of the facility was not available as of the date of this report. However, it is expected that the construction equipment required will be equivalent to the industry standards for a project of this scope and may include heavy earth-moving equipment such as cranes, bulldozers, backhoes, and/or excavators.

2.3.2 Environmental Controls

Best Management Practices (BMP) will be incorporated during the construction of the facility to minimize emissions from construction equipment.

CCI Corpus Christi (CCI) will file a Notice of Intent and obtain the required construction stormwater permit from the Texas Commission on Environmental Quality (TCEQ). The project will include the required implementation of a Storm Water Pollution Prevention Plan (SWPPP) with specific BMPs identified for sediment and erosion control. Prior to and during construction, CCI will install environmental controls and BMPs where necessary and in accordance with an approved construction stormwater permit. These controls may include installing barriers (e.g., silt fencing, hay bale structures) or diversion structures (e.g., temporary slope breakers, retention ponds) to prevent erosion of sediment or water from migrating off the construction area. Environmental controls will remain in place throughout the construction phase or until permanent controls are in place as required by the permit.

2.4 OPERATION AND MAINTENANCE INFORMATION

2.4.1 Operations

Phase I would be comprised of two identical parallel fractionation trains. Each train would be capable of processing 50,000 BPD of hydrocarbon condensate feedstock for a total processing capability of 100,000 BPD. Condensate/crude feedstock would be received by pipeline, truck, or

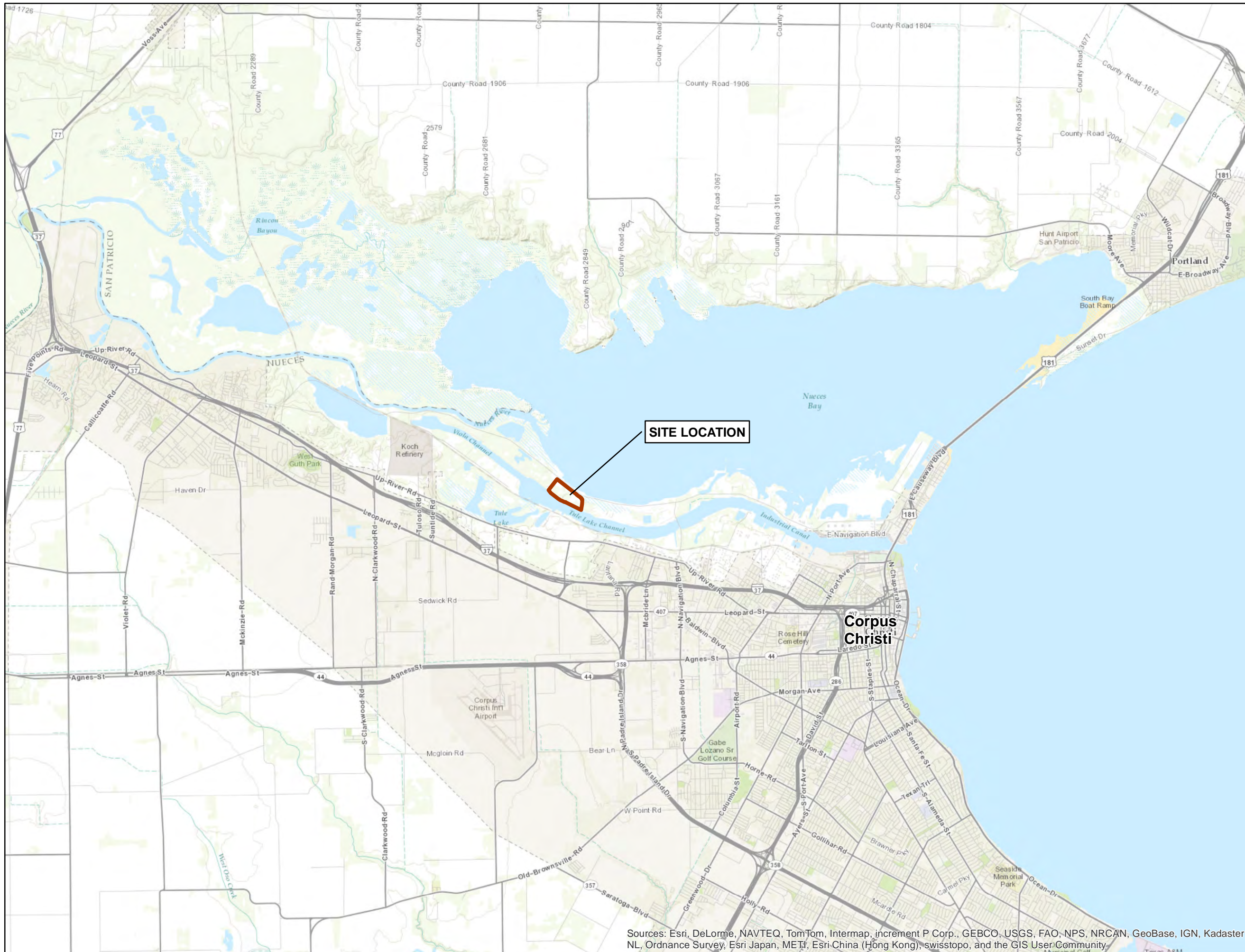
barge and would be stored in various storage tanks. The fractionation column would split the treated feedstock into the commercially acceptable product slate.

Other support processes would be required for proper and safe operation of the condensate splitter process. A circulating cooling water system with a cooling water tower (Emission Point Number [EPN]: CTW) would provide cooling for process operations. An elevated flare would be used for emergency or upset conditions and certain planned maintenance, startup, and shutdown (MSS) activities. A Selective Catalytic Reduction (SCR) would be installed on the charge heaters (EPNs: H-1 and H-2). The SCR would utilize aqueous ammonia injection and catalyst reactions to control NO_x emissions. Additionally, there are two ship loading docks and a barge loading dock for product exported off-site. The marine loading docks would be serviced with a marine vapor combustion system.

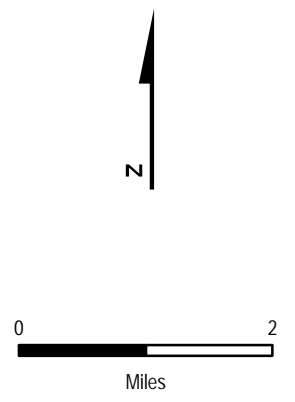
Process wastewater would be generated from various process operations within Phase I. The individual process wastewater streams would be collected and combined in an enclosed wastewater gathering system or process sewer. The wastewater gathering system would include typical sewer components such as drains, pipes, and junction boxes (e.g., manholes). The combined wastewater from the gathering system would be processed in a wastewater treatment system. The treatment system would include oil-water separation, pH neutralization, other physical/chemical pretreatment operations, aerobic biological treatment, and secondary clarification. The treated wastewater would be discharged to the Tule Lake Channel (part of the Nueces Bay system) consistent with a Texas Pollutant Discharge Elimination System (TPDES) permit to be issued by TCEQ.

2.5 PHASE II BULK PETROLEUM TERMINAL

Phase II would receive unrefined condensate/crude by pipeline, truck, and barge. The unrefined condensate/crude would be stored in one of several storage tanks (EPNs: TK-116 through TK-121) and would be shipped off-site by ships. The marine loading docks would be supported with a common marine vapor combustion unit (MVCU) to control captured loading vapors.



LEGEND
Property Boundary



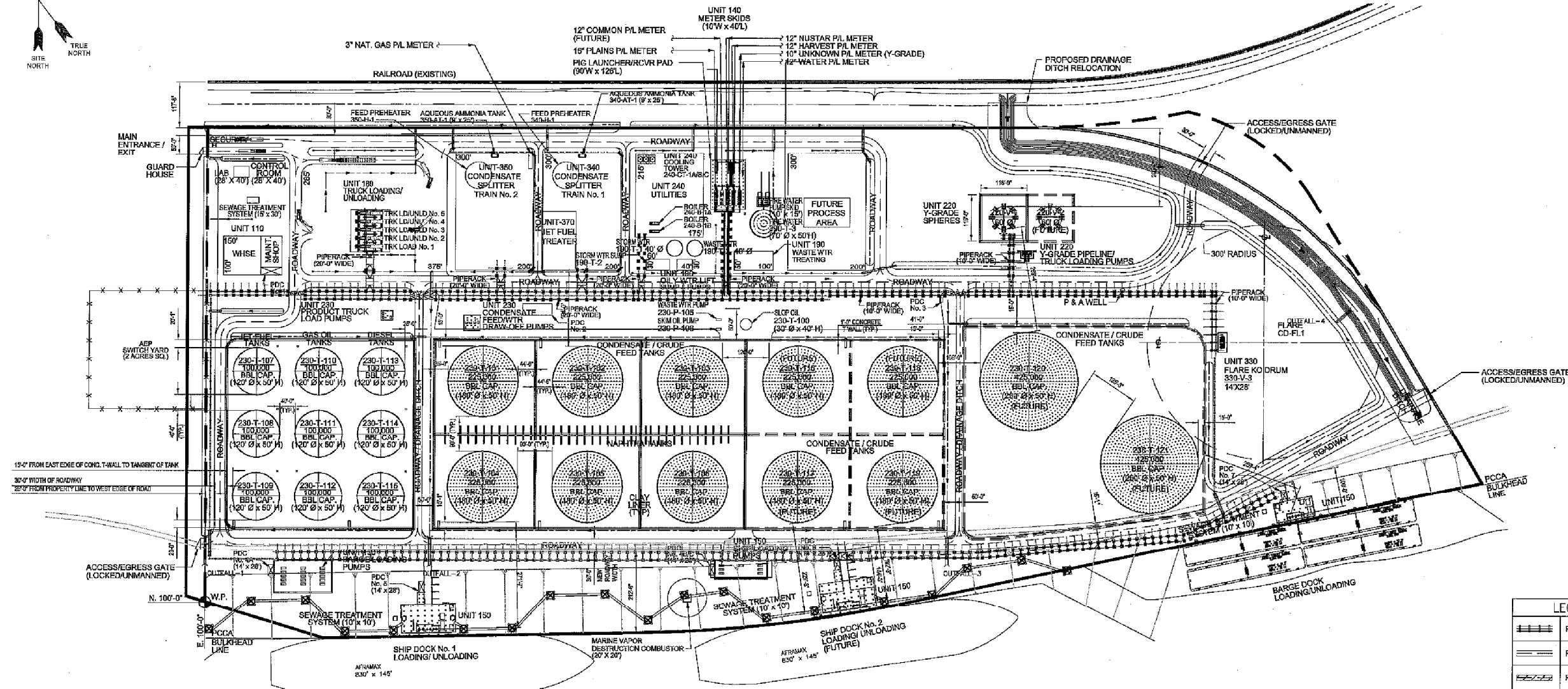
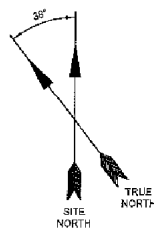
SOURCE: (c) 2010 Microsoft Corporation and its data suppliers



FIGURE 2-1
SITE LOCATION MAP
CCI CORPUS CHRISTI
CULTURAL RESOURCES ASSESSMENT
CORPUS CHRISTI, TEXAS

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

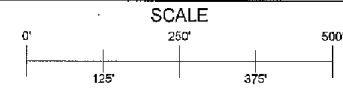
DATE	PROJECT NO	SCALE
FEB 2014	13844.058.001.0007	AS SHOWN



LEGEND	
	RAILROAD
	ROADWAY
	ROADWAY/DIKE
	DIKE
	POWER DISTRIBUTION CENTER
	PDC No. XX

FEL 3

PRELIMINARY
2-17-14



SOURCE: Conceptual Site Plan, Willbros Engineers, LLC



FIGURE 2-2
PROPOSED PROJECT LAYOUT
CCI CORPUS CHRISTI
CULTURAL RESOURCES ASSESSMENT
CORPUS CHRISTI, TEXAS

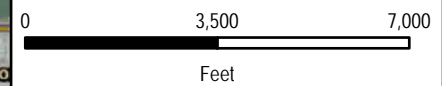
DATE FEB 2014	PROJECT NO 13844.058.001.0007	SCALE AS SHOWN
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16" WESTERN ROUTE
 OD: 16"
 WT: 0.375" CARBON STEEL
 (ANSI 600, 1480 PSIG MAOP)
 LINE DEPTH: 4' TO TOP OF PIPE
 TOTAL DEPTH: 5'
 LENGTH: 3.16 MILES

12" EASTERN ROUTE
 OD: 12.75"
 WT: 0.500" CARBON STEEL
 (ANSI 600, 1480 PSIG MAOP)
 LINE DEPTH: 4' TO TOP OF PIPE
 TOTAL DEPTH: 5',4"
 LENGTH: 5.16 MILES

- LEGEND
- WESTERN PIPELINE
 - EASTERN PIPELINE
 - PROPERTY BOUNDARY



SOURCE: (c) 2010 Microsoft Corporation and its data suppliers



FIGURE 2-3
 PROPOSED PIPELINES
 CCI CORPUS CHRISTI
 CULTURAL RESOURCES ASSESSMENT
 CORPUS CHRISTI, TEXAS

Copyright:© 2013 Esri, DeLorme, NAVTEQ, TomTom, Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

DATE	PROJECT NO	SCALE
FEBRUARY, 2014	13844.064.001.0002	AS SHOWN

3 PROJECT LOCATION AND APE

The proposed location for the CCI Splitter totals approximately 82 acres situated between the Nueces Bay and the Corpus Christi Ship Channel Tule Lake Channel, along the Joe Fulton International Trade Corridor, in Corpus Christi, Nueces County, Texas (**Figure 2-1**).

36 CFR 800 defines the APE as follows:

[...] the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The APE generally takes into account both direct (e.g., destruction, alteration, damage) and indirect (e.g., visual, noise, vibration impacts) effects a project could have on those resources. The area surrounding the proposed facility is industrial, with facilities dedicated to petrochemical processing present. Therefore, construction of the new facilities would not significantly alter the view shed or likely affect the integrity of historic properties near to the proposed construction. The APE is established based on the direct impacts from construction and operation of the facility. The APE boundaries for construction and operation encompass the 82-acre tract of land that includes the process areas and supporting structures and the associated pipeline (**Figures 2-2 and 2-3**). This cultural assessment provides an evaluation of the APE.

4 NATURAL SETTING

4.1 TOPOGRAPHY AND LANDSCAPE

The project is located in South Texas in the Gulf Coastal Prairies and Marshes natural vegetation zones. Historically, this region was dominated by tall grass prairies and live oak woodlands, but much of the habitat has been lost due to agricultural and urban development's. This region of Texas consists of a slowly drained, level plain less than 150 feet above mean sea level in elevation and barrier islands off the coast. Several streams and rivers cross the region as they flow from inland areas to the Gulf of Mexico. Common vegetation communities in this ecoregion include salt grass marshes along bays and estuaries, remnant tall grass prairies, and oak mottes. Old growth woodlands can still be found in some river bottoms throughout the region (TPWD, 2012). Though much of the native habitat of this ecoregion has been lost, it still serves as important habitat for numerous species of migratory birds. The bays, estuaries, and rivers also serve as vital spawning areas for species of fish and shrimp (TPWD, 2012).

The project site is generally flat and primarily located above a berm along the ship channel. Elevations range from sea level along the ship channel to approximately 18 feet above sea level above the berms. The site land was created through the placement of dredge materials, and is characterized by the resulting undulating ground surface.

4.2 GEOLOGY AND SOILS

Corpus Christi is located within the Coastal Bend region of the West Gulf Coast Plain, the area has a dry, sub-humid climate and receives an average annual rainfall of approximately 31 inches. Nueces County occasionally experiences extremely high winds and torrential rains capable of removing topsoil as well as some underlying soil layers. While much of the land is dedicated to agricultural and livestock, petroleum and natural gas operations are also common in this area (Shafer, 1968).

In general, the soils on the flats of the Coastal Plains consist mainly of Orelia sandy clay loams, Papalote fine sandy loam, Raymondville clay loam, and Monteola series. Underlying these soils is Pleistocene subsoil formed of Beaumont clay (Shafer, 1968). However, because the area of the APE

is constructed from dredge material, or spoil, from the construction of the ship channel, the aforementioned soils are not in natural formation on the spoil island. Soils within the project area are heavily disturbed, thus they do not display natural stratigraphy.

According to the USDA soil survey, the entire project area is mapped as Ijam Clay Loam. This soil is comprised of sandy or loamy dredge spoils and is listed on the hydric soil list for Texas. It is poorly drained and has a depth to water table of 0 to 36 inches. During the site survey, the soil was confirmed to be either sandy or silty clay, with gleyed or low matrix chroma consistent with hydric soils. Additionally, shells and rocks believed to be from dredged materials deposited on-site were observed in the soil throughout the property.

5 CULTURAL SETTING

5.1 REGIONAL PREHISTORIC OVERVIEW

The APE is located in the Texas Coastal archaeological region. Humans have lived in the Texas Coastal area for at least 11,000 years. This region identifies populations ranging from the Paleoindian period (prior to 8,000 years Before the Present [B.P.]), to Archaic foraging cultures (ca. 8,000 - 2,000 B.P.), the Ceramic period (2,000 - 1,300 B.P.), and to the Late Prehistoric period (ca. 1300 - 500 B.P.). These cultural time periods are based on changes archeologists perceive in the material record related to environment, technology, subsistence practices, and/or population size of prehistoric cultures (Ricklis, 2004).

5.2 PALEOINDIAN PERIOD (CA. 11,000 – 8,000 B.P.)

Paleoindian sites in the Texas Coastal archaeological region are rare and often consist of isolated finds of diagnostic artifacts. The Paleoindian period begins with the initial presence of people in the region, as visible in the archaeological record, and spans the transition from the end of the Pleistocene, over 13,000 years ago, into the early Holocene. This period is also generally associated with the transition from a reliance on Ice Age fauna to smaller, more locally available taxa, due to the extinction of all Ice Age fauna (except bison) approximately 10,000 years ago. Lanceolate projectile points with ground, concave bases, and longitudinal fluting typical of Paleoindian tool technology recovered in this region suggest early occupations were principally distributed along the valleys of major stream basins (Perttula, 1995) or the Gulf Coast (Ricklis, 2004). Paleoindians in Texas practiced a nomadic hunting and gathering lifestyle, and this lifestyle continued well into the Archaic period, despite changes in climate and environment (Story, 1990).

5.3 ARCHAIC PERIOD (CA. 8,000 – 2,000 B.P.)

Changes in technology accompanied climate and environmental changes during the Archaic period (8,000 - 2,000 B.P.). Based on data from numerous sites across North America, archaeologists define the Archaic on the basis of a heavy reliance on plant foods; new cooking and food preparation technologies, including use of fire-heated stones for their thermal retention

properties, grinding stones for processing nuts and seeds, earth ovens for prolonged cooking episodes; and, in some locales, the systematic burial of the deceased in established cemeteries. The Archaic Period is subdivided into Early, Middle, and Late divisions. Each of these subdivisions has characteristic types of artifacts, especially projectile points, which suggest differences in economy, technology, and possibly regional adaptations. Many Archaic sites are represented by flaked stone dart points and other lithic tools that have been found in the inland region of Texas, mostly near major streams (Ricklis, 2004). However, the paucity of other evidence (i.e., faunal, botanical, etc.) allows for little generalization regarding subsistence strategies other than the suggestion that these groups were likely engaged in some form of hunting and gathering. In general, sites with intact Early and Middle Archaic components are rare in South Texas. On the coast, Archaic period sites consist mostly of shell middens located along the shores of secondary bays or in and around river mouths and deltas (Ricklis, 2004).

The number of known Late Archaic period sites is much higher than any previous period, and this has led researchers to suggest significant population growth occurred during this time. Data from Late Archaic sites in Coastal Texas also indicate people were becoming more sedentary. These data include the use of poor quality local lithic materials, which suggests there was reduced mobility and smaller, more localized territories. Additionally, cemeteries become more common and could be quite large. Based on investigations at Late Archaic period sites, archeologists posit that indigenous people retained a hunting-gathering subsistence economy but also developed more regionally specialized approaches toward exploiting their environment (Story, 1990).

5.4 THE EARLY CERAMIC PERIOD (CA. 2,000 – 1,300 B.P.)

The Archaic period generally ends with the introduction of ceramics in prehistoric sites (2,000 - 1,300 B.P.). During the Early Ceramic period, there is not much evidence of major changes in ways of life. Early Ceramic period artifacts recovered overlying Archaic artifacts near river drainages suggest consistent patterns in subsistence and settlement over time. The earliest ceramics include thick-walled, blocky paste ceramics, with little to no temper other than natural sand inclusions. These chunky pottery types ultimately gave way to the thinner-walled

sandy paste ceramics known as Goose Creek Plain (Aten, 1983) that dominated prehistoric assemblages of South Texas until well into the Historic Period.

5.5 LATE PREHISTORIC PERIOD (CA. 1,300 – 500 B.P.)

The Late Prehistoric period is usually defined by the introduction of the bow and arrow. Evidence suggests that the Late Prehistoric period in Coastal Texas can be divided into the Initial Late Prehistoric sub-period, represented by Scallorn arrowpoints, and the Final Late Prehistoric period. This latter period correlates with the well-documented Toyah phase common throughout Texas, represented by an abundance of bison bone and a lithic assemblage geared towards processing the meat and hides of large game (Ricklis, 2004). Unlike the more sedentary Caddo Indians to the north, the Native Americans of Coastal Texas practiced a pattern of seasonal migration, fishing along the coast during the Spring and Summer months, while hunting deer, bison, and bear inland during the Winter (Newcomb, 2002).

5.6 HISTORIC OVERVIEW OF THE PROJECT AREA

Beginning with the Spanish explorer Cabeza de Vaca and the Narvaez expedition of 1528, Spanish *entradas*, or formal expeditions into Texas during the late-seventeenth and early-eighteenth centuries, documented the more recent history of many of the native groups of the region. When the Spanish missions were established in East Texas in the late-1600s, *entradas* began to travel regularly through the study area. With Alonso de León's expedition of 1680, El Camino Real (the King's Road) was established from Villa Santiago de la Monclova in Mexico to East Texas. This roadway followed established Native American trade routes and trails and became a vital link between Mission San Juan Bautista in Northern Mexico and the Spanish settlement of Los Adaes in East Texas (McGraw et al., 1991).

Little is known about the majority of these tribes, but some of those documented include the Cantona, Muruam, Payaya, Sana, and Yojuane. Other tribes encountered by early explorers included mobile hunting parties from villages in South and West Texas, such as Catequeza, Cayanaaya, Chalome, Cibolo, and Jumano, who traveled to bison hunting grounds in the Blackland Prairies (Newcomb, 1993). Later Native American tribes, such as the Tonkawa from Oklahoma and the Lipan Apache and Comanche from the Plains, migrated into the region and

displaced groups or tribes (Newcomb, 2002). Archaeological sites dated to this period typically contain a mix of both European imported goods, such as metal objects and glass beads, and chipped stone tools.

During the Mexican War, a small settlement was developed at the mouth of the Nueces River in 1842 that largely served as a trading post. In 1846, Nueces County was formed with the newly incorporated City of Corpus Christi as its county seat. The first census of Nueces County in 1850 reported a total population of 689 with an economy based mainly on ranching of cattle and sheep. Following the Civil War, the population in Nueces County rapidly increased, growing from 3,975 in 1870 to 21,955 in 1910, with much of the population located in the Corpus Christi area. With the continued growth of the region and the city as an economic, trading, and shipping center, efforts were made to improve access to the ocean with dredging of the main sea channel in 1874 (TSHA, 2013).

With the discovery of natural gas in Nueces County in 1922, several major oilfields were developed and the oil and natural gas industry became prominent in Corpus Christi, and continues to dominate the area today. To support the rapid growth, the Port of Corpus Christi was opened in 1926 (TSHA, 2013).

6 NATIVE AMERICAN TRIBES WITH AN INTEREST IN THE PROJECT AREA

A records review of the Texas Historical Commission's (THS's) online "Guidelines for Tribal Consultation" database was conducted to determine what Native American Tribes may have an interest in Nueces County, Texas. The Comanche Nation of Oklahoma and the Tonkawa Tribe of Oklahoma are specifically identified on the THC dataset as including Nueces County as an area of interest. Nineteen (19) additional tribes have a known interest in Texas, but their territorial extent is not listed. These tribes include the following:

- Alabama-Coushatta Tribe of Texas
- The Delaware Nation
- Quapaw Tribe of Oklahoma
- Alabama-Quassarte Tribe Town
- Kialegee Tribal Town
- Seminole Nation of Oklahoma
- Apache Tribe of Oklahoma
- Kickapoo Traditional Tribe of Texas
- Thlopthlocco Tribal Town
- Caddo Nation
- Kickapoo Tribe of Oklahoma
- Tunica-Biloxi Tribe
- Cherokee Nation of Oklahoma
- Kiowa Tribe of Oklahoma
- United Keetoowah Band of Cherokee Indians
- Coushatta Tribe of Louisiana
- Mescalero Apache Tribe
- Wichita and Affiliated Tribes
- Poarch Band of Creek Indians

7 ARCHAEOLOGICAL BACKGROUND AND PREVIOUS STUDIES

Research for this cultural assessment consisted of a records search online through the Texas Archaeological Sites Atlas (Atlas) and a review of historic period maps and aerial photographs. Based on the review of the THC Archaeological Sites Atlas, few archaeological investigations have been conducted in the region of the APE, and no previously recorded archaeological sites fall within the CCI facility area. The Site Atlas lists three sites within 3 kilometers (1.84 miles) of the APE (**Figure 7-1**).

- Archaeological site 41NU158 lies about 1.4 km south and west of the subject property, in the southeast corner of Tule Lake Tract. While the description of the site is not provided, site 41NU158 was reported to have shell, burned bone, and clay flake tools and scattered debitage, suggesting it is a prehistoric Native American site. The site measures approximately 200 meters (m) by 300 m. When S. Black recorded the site in 1977, it was badly eroded, and the exact site boundaries could not be determined.
- Located less than 1 km from the current project lays site 41NU177. The site was recorded in 1978 by M. Johnson as a prehistoric campsite. It is also in close proximity to the Tule Lake Channel. Site 41NU177 produced both arrow and dart points, pottery sherds, burned clay, clams and oysters, and other snail shells. Sometime in the past, the site was cut in half by the construction of a railroad. It is currently a part of an employee recreation center.
- Site 41NU176 is approximately 1.3 km from the project area. Also recorded by Johnson in 1978, this site of undetermined size offers up little in the way of prehistoric information. It was recorded simply as a shell midden scattered over a large area.
- Two more sites are located just outside of the 3-km radius (**Figure 7-1**). Both were recorded by Johnson in 1978. Archaeological site 41NU174, located 3.12 km from the project area, is recorded as a flower bed on Hall Street in Ebony Acres in Corpus Christi. Johnson recorded this site based on one arrow point, scattered flakes and cores, and a ring made from a silver coin.
- Site 41NU175 lies due east of NU174, about 3.13 km from the project area. This site record offers no more than “In about 1955 Louis rainwater found [...] a canister shot [...].”

There is no documentation as to the eligibility of the five prehistoric sites on the NHRP. However, as there is no information stating that any of the sites are eligible for the NRHP, it is reasonable to assume that none of the sites had enough integrity or that there was little, if any, information available from the site to add to the archaeological record. Therefore, it is likely

they would not be eligible for the NHRP today, because these sites are likely in worse condition now than when recorded, due to the increased shipping traffic and wave action.

8 HISTORICAL LAND USE

To meet rising demand and growth, the Port of Corpus Christi was opened in 1926 with four cargo docks. Within two years, two additional docks were added, and by 1930, the channel was deepened to 30 feet. From 1930 to 1989, the ship channel was further dredged to the current depth of 45 feet. The Port of Corpus Christi Authority currently owns over 21,000 acres of land (approximately 16,000 acres is submerged) with 8 cargo docks and 11 oil docks (Port of Corpus Christi, 2014).

The proposed facility and associated pipeline is located along the land created through dredging underwater sediments from the Nueces Bay and placing the dredge spoils in another location to create a navigable shipping channel. Over 60 years, dredge materials from these activities were disposed on a narrow piece of land extending from the shoreline westward to the Tule Lake area, forming a spoil island.

As detailed in *An Archaeological Phase I Survey of 82.48 Acres in Nueces County, Corpus Christi, Texas*, attached in Appendix B, numerous archaeological sites are located along the south side of the ship channel across the channel from the proposed facility and associated pipeline. While it is possible historic or prehistoric cultural material was dredged up and deposited on the spoil area that now creates a barrier between Corpus Christi proper and Nueces Bay (TSHA, 2013), there are no recorded sites on the island. The map from 1887 (see Appendix B, **Figure 4**) shows open water north of the shoreline and the area below the bluff and along Nueces Bay was void of any type of structure with the exception of the railroad. By 1925, several structures dot the bluff line (see Appendix B, **Figure 5**). The aerial from 1961 (see Appendix B, **Figure 6**) shows expansion of the spoil island from the time the Port opened in 1926. By 1979 (see Appendix B, **Figure 7**), the island is somewhat vegetated, gravel/shell roads are visible. The ship channel was dredged to its current depth of 45 feet in 1989. The smooth grading and sparse vegetation in the aerial photograph from 1990 (see Appendix B, **Figure 8**) suggests recent activity. In the most recent aerial photography (see Appendix B, **Figure 9**) the current project area is clearly visible and appears virtually the same in 2011 as it does today. Roads appear again along with some vegetation. The maps and aerials from 1887 until 2011

provide evidence that the island has grown over time and has not been used for homes, ranches, or other types of structures. More importantly, the land was not present prehistorically.

9 FIELD SURVEY

An archaeological field survey was performed by Coastal Environments, Inc. (CEI) in September 2013 under Texas State Antiquities Permit #6659 and included visual inspection of the entire 82-acre proposed facility area and shovel testing at intervals following the guidelines for cultural resources surveys established by the Council of Texas Archeologists and adopted by SHPO. Morehead, S. and Pringle, J. from CEI conducted a Phase I archaeological survey and results of the field survey are presented in a separate report titled *An Archaeological Phase I Survey of 82.48 Acres in Nueces County, Corpus Christi, Texas*, attached in **Appendix B**. Twelve (12) transects were created to run north to south and east to west throughout the project area. Most of the soils within the shovel tests suggest disturbed soils and fill; they were consistently a 10YR6/3 with spots or streaks of 10YR3/3 mottling (**Appendix B, Figures 13 and 14**). All shovel tests were sandy with intermittent shell and gravel mixing. Small amounts of clay were seen mixed with the sand in three shovel tests. All shovel tests were negative for cultural material.

Surface scatters of shell were found across the project area; however, none of the scatters held artifacts or other evidence suggesting prehistoric occupation (**Appendix B, Figure 15**). **Appendix B**, detailing the field survey findings, was presented to the THC on 7 October 2013 as part of the Antiquities Code of Texas review of the Antiquities Permit #6659.

In 2002 the entire 11.8 miles length of the then proposed Joe Fulton International Trade Corridor was surveyed by SWCA Environmental Consultants during an impact evaluation. The majority of the project was found to be situated on areas of dredge material, areas of fill, and heavily disturbed areas. Only a portion of the entire project located east of Carbon Plant Road at the northwest portion of the project areas, and 2 miles from the proposed CCI facility, was determined to have the potential to contain intact archaeological materials. The area was surveyed and no materials were found. SWCA recommended that no further work for the project be performed. In a letter to the Texas Historical Commission (THC) dated 22 April 2002 TxDOT forwarded the results of the impact evaluation and survey with the recommendation for no further work for the 11.8 mile stretch of the Joe Fulton International Trade Corridor. THC concurred with this recommendation on 9 May 2002 (TxDOT, 2002).

The pipelines proposed for the splitter facility are along the Joe Fulton International Trade Corridor and within the above referenced survey area. Therefore, no additional survey work is recommended for the proposed pipeline route.

10 SUMMARY AND RECOMMENDATIONS

There are no known archaeological sites or any other known cultural resources within the APE. Additionally supported by reconnaissance and shovel tests of the APE, the entire project area is considered a low probability for historic and prehistoric cultural material.

An archaeological field survey was performed in September 2013 and included visual inspection of the 82-acre proposed facility site and shovel testing at intervals following the guidelines for cultural resources surveys established by the Council of Texas Archeologists and adopted by SHPO. The results of the field survey are presented in a separate report titled *An Archaeological Phase I Survey of 82.48 Acres in Nueces County, Corpus Christi, Texas*, attached in **Appendix B**.

The proposed pipeline corridor was surveyed during the initial cultural survey work performed for the construction of the Joe Fulton International Trade Corridor. No archaeological materials were found during the 2002 survey and no further work was recommended. THC concurred that the proposed project would have no effect on archaeological historic materials or properties, and that no further surveys were required.

The entire plat of land comprising the subject property is made up of accumulation of dredged spoil materials from the construction and maintenance of the ship channel. The entire proposed project site is situated on disturbed land. While archaeological survey revealed many areas to have deposits of oyster shell, most of these deposits were crushed and found in association with gravel; therefore, likely a result of dredge materials or deposited as stabilizers or fill. The single object found, a rusty bar of metal is determined to be modern. No site, historic or prehistoric materials were encountered during reconnaissance or shovel testing survey. Based on the information presented in this report and on the results of the above field investigation, the proposed project would not affect any cultural resources, and no further cultural investigation work is warranted.

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APPENDIX A

ARCHAEOLOGIST RESUMES

JENNIFER A. KELLY, M.A.

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Coastal Environments, Inc. (CEI)
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EDUCATION:

M.A. (Applied Anthropology), 2004, Department of Anthropology,
University of South Florida
B.A. (Anthropology), 2000, Department of Anthropology,
University of South Florida
A.A. (Liberal Arts), 1997, St. Petersburg Junior College

PROFESSIONAL AFFILIATIONS:

Society for American Archaeology (SAA)
Council of Texas Archeologists (CTA)
Texas Archeological Society (TAS)
Southern Texas Archaeological Association (STAA)
Southeastern Archaeological Conference (SEAC)
Florida Anthropological Society (FAS)
Archaeological Institute of America (AIA)
Society for Historical Archaeology (SHA)

EXPERIENCE:

Jennifer Kelly is an archaeologist who serves as Project Archaeologist, Principal Investigator and Branch Director at CEI's office in Corpus Christi, Texas. She has participated in cultural resources fieldwork as a principal investigator, project archaeologist, and field archaeologist. Her experience includes report production, artifact processing and analysis. Ms. Kelly has experience conducting historical and archaeological records reviews as required by the Texas Historical Commission, overseeing Section 106 surveys and subsequent reports, and in determining National Register eligibility for historic and prehistoric archaeological sites. She meets federal and Texas requirements for both Archaeologist, Project Archaeologist, and Principal Investigator.

Relevant Project Experience:**Coastal Environments, Inc.:**

- Survey, testing, and monitoring for Naismith Engineering at the newly recorded archaeological sites 41JW33 – 37 in Alice, Texas. This project is being conducted for the City of Alice on the site of the proposed Multi-Use Complex. Principal Investigator and Project Archaeologist, 2013-2014.
- Data recovery and geological investigations at 41HR796, a site with Early Archaic and Paleo-Indian components in Harris County, Texas. This project was conducted for the Texas Department of Transportation. Project Archaeologist and TDS operator, 2012.
- Phase II archaeological and geological investigations at 41HM61, a site with Late Archaic and Late Prehistoric components, Hamilton County, Texas, for Texas Department of Transportation. Project Archaeologist, 2011.
- Monitoring oiled archaeological sites for HDR/E2M Engineering under contract to BP Oil along the Gulf coast of Louisiana. Senior Archaeologist, 2011.
- Phase I archaeological survey for Morris P. Hebert, Inc., for a proposed extension of Farm to Market Road (FM) 565, Mont Belvieu, Chambers County, Texas. Project Archaeologist, 2011.
- Phase I survey and mapping of archaeological site 16SB47 for the New Orleans District, U.S. Army Corps of Engineers, in St. Bernard Parish, Louisiana. Archaeologist, 2010.
- Archaeological testing at the Terra del Mar Subdivision for Hogan Development Corporation, along Oso Creek in Nueces County, Texas. Project Archaeologist, 2010.
- Phase I archaeological survey for Hidalgo Municipal Utility District #1 (MUD) and the Texas Water Development Board, under contract to Halff Associates for the development of a waste-water treatment plant and a water-treatment facility in Hidalgo County, Texas. Principal Investigator, 2010.
- Phase I survey for the City of Milano, Texas, for the development of a Fire Protection Facility in Milan County. Project Archaeologist, 2010.

- Phase I archaeological survey with backhoe trenching for Texas A&M – Corpus Christi, for the development a new tennis facility, under contract to Halff Associates, Inc. Principal Investigator, 2009.
- Phase I survey for Port Arthur LNG Holdings, LLC, in cooperation with Texas Parks and Wildlife Department, in the J. D. Murphree Wildlife Management Area, near Port Arthur, Texas. Project Archaeologist, 2009.
- Phase I survey Padre Island National Seashore for part of headquarters parking lot expansion, Kleberg County, Texas. Principal Investigator, 2009.
- Cypress Creek Data Recovery at 41HR991 in Harris County, Texas. Conducted for Moore Archeological Consultants, Inc. Project Archaeologist, July 2009
- Phase I archaeological survey and coring of a 20-mile proposed pipeline and gas storage facility in Delhi, Louisiana. Project Archaeologist, September–October 2009.
- Monitoring, Survey, and Testing at the Historic Site of Camp Hulen, Matagorda County, Texas. Conducted for Moore Archeological Consulting, Inc. Project Archaeologist, April 2008.
- Intensive survey of 3.0 miles of the North Floodway Levee in Hidalgo County, Texas. Work performed under contract to Moore Archeological Consulting, Inc., and included testing of La Lomita historical site and a newly discovered prehistoric site (41HG219) near Peñitas, Texas. Project Archaeologist, January 2008.
- Intensive Survey of the Hidalgo Levee Area, Hidalgo County, Texas. Phase I consisted of 3.7 miles, and Phase II, 8.0 miles under contract to Moore Archeological consultants, Inc. This work was done for the IWBC. Project Archaeologist, October-November 2007.
- Jackson Landing/Mulatto Bayou Earthwork Site, Pearlinton, Mississippi. This work entailed intensive mapping and testing of an aboriginal mound in order to determine the date of the mound and its relationship to other aspects of the site. Conducted for Mississippi Department of Marine Resources. Archaeologist, September 2007
- McGloin Bluff Site (41SP11), San Patricio County, Texas. Included archaeological testing by means of three 1-by-2-meter units, and one 1-by-1-m unit at this Late Prehistoric campsite located along the shore of Corpus Christi Bay. Project funded by the Port of Corpus Christi Authority. Field Archaeologist, November 2006.

- San Jacinto River Dolphins. Underwater remote-sensing survey for a proposed dolphin fender system at the I-10 bridge over the San Jacinto River, Harris County, Texas. This was a Phase I survey of a construction area conducted for TxDOT. Field Archaeologist, July 2006.
- Sabine Lake Causeway. Terrestrial and marine remote-sensing survey for a proposed replacement of the SH 82 Causeway at Sabine Lake, Jefferson County, Texas, and Cameron Parrish, Louisiana. This was a Phase I survey of construction areas associated with the planned replacement of the State Highway 82 bridge and causeway across lower Sabine Lake. Conducted for TxDOT. Field Archaeologist, July 2006.
- Bayou Teche Shipwreck. Cultural resource testing, mapping, and determination of historical significance of the New Iberia shipwreck (site 16IB80). This work involved the study of the remains of an unidentified wooden vessel located in Bayou Teche at the town of New Iberia, Louisiana. The study included historical background research, mapping, and test excavations to determine the condition and extent of the remains and their historical significance. Performed for the Louisiana Department of Wildlife and Fisheries. Field Archaeologist, July-August 2006.
- Data Recovery at Archaeological Site 41AN38. The site investigated was a fourteenth-century Caddo farmstead near Frankston, Anderson County, Texas. This work included the excavation of over 50 1-by-1-m units, and the recovery of more than five burials and their associated funerary artifacts. Conducted for TxDOT. Project Manager, February-April 2006.
- Mapping and Delineating Occupation Boundaries at the McGloin Bluff Site (41SP11), San Patricio County, Texas. Conducted for the Port of Corpus Christi Authority. September 2005. Intensive Cultural Resources Survey of 623 Acres Surrounding the Known Location of the McGloin Bluff site (41SP11), San Patricio County, Texas. Conducted for the Port of Corpus Christi Authority. Field Archaeologist, March 2005.

University Projects:

- Undergraduate and Graduate student at the University of South Florida (USF), 2000-2004, during which archaeological experience was gained working on the following projects:
- Data recovery at the Fort Dade site (8Pa25) in Ft. Dade, Florida. Supervised by Brent Weisman, Ph.D. March 2003.
- Data recovery at the Handball Court site (8Hi330), USF campus, Tampa, Florida. Supervised by Nancy Marie White, Ph.D. May 2002.

- Established the boundaries for the Weedon Island Educational Center at the Weeden Island site (8Pi1), St. Petersburg, Florida. Supervised by Brent R. Weisman, Ph.D., USF, and Sheila Stewart, Weedon Island Educational Center. September 2001.
- Archaeological field School (data recovery) at the USF Village site (8Hi2187), USF campus, Tampa, Florida. Supervised by Nancy Marie White, Ph.D. May 2001.
- Registered archaeological site along the Withlacoochee River, Florida. Supervised by Brent R. Weisman, Ph.D. March 2001.
- Aided in archaeological investigations at the Dean-Burry site survey, Hernando County, Florida. Supervised by Brent R. Weisman, Ph.D. April 2000.
- Mapping of lithic scatters and burial locations at an archaeological site on Emerson Point, Sned Island, Florida, using Trimble GPS. Supervised by Bill Burger, M.A. September 1999.

SELECTED PUBLICATIONS:

Articles and Monographs:

Kelly, Jennifer A., Robert H. Tykot, and Jerald T. Milanich

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Paleopathology Association South American Meeting, Rio De Janeiro, Brazil, July 27–29, 2005.

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2004 Prehistoric Subsistence Adaptations in West-Central Florida as Determined by Stable Isotope Analysis. Paper presented at the 73rd Annual Meeting of the American Association of Physical Anthropologists, Tampa, Florida, April 14–17, 2004.

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2004 The Importance of Maize in Prehistoric Florida. Paper presented at the 69th Annual Meeting of the Society for American Archaeology, Montreal, Quebec, March 31–April 4, 2004.

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2003 Ecological and Dietary Diversity in Prehistoric Gulf Coast Florida. Poster presented at the 68th Annual Meeting of the Society for American Archaeology, Milwaukee, Wisconsin, April 9–13, 2003.

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2002 A Preliminary Determination of Subsistence Variation and Dietary Changes Among Prehistoric Gulf Coast Florida Populations Using Stable Isotope Analysis. Paper presented at the 54th Annual Meeting of the Florida Anthropological Society, St. Petersburg, Florida, May 3–5, 2002.

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2002 Stable Isotope Analysis and Subsistence Adaptations along the Gulf Coast of Florida from the Archaic through Safety Harbor Periods. Paper presented at the 33rd International Symposium on Archaeometry, Amsterdam, Holland, April 22–26, 2002.

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2002 Dietary Variation and Change Among Prehistoric Gulf Coast Florida Populations: A Preliminary Study of the Archaic Through Safety Harbor Periods Using Stable Isotope Analysis. Paper presented at the

67th Annual Meeting of the Society for American Archaeology, Denver, Colorado, March 20–24, 2002.

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2001 Stable Isotope Analysis and Hunter-Gatherer Diets in Patagonia. Paper presented at the Society for Archaeological Sciences, Newcastle, U.K., August 29-September 1, 2001.

Kelly, Jennifer A., Scott Grammer, Robert H. Tykot, J. Belardi, Luis Borrero, Julieta Gómez Otero, and Ricardo A. Guichon

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2000 Dieta a partir de isótopos estables en restos óseos humanos de Patagonia Austral. Estado actual y perspectivas. Paper presented at the IV Congreso de la Asociación Latinoamericana de Antropología Biológica, Uruguay, October 2000.

Kelly, Jennifer A., Robert H. Tykot, Ricardo A. Guichon, and Luis A. Borrero

2000 Stable Isotope Analysis and Prehistoric Human Diet in Southern Patagonia. Paper presented at the 65th Annual Meeting of the Society for American Archaeology, Philadelphia, Pennsylvania, April 5–9, 2000.

Contract Reports:

Morehead, Sally A., and Jennifer A. Kelly

2011 *A Cultural Resources Survey of a 0.65-Mile Pipeline Route along Nueces Bay, San Patricio County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Bio-West, Inc., Rosenberg, Texas.

Kelly, Jennifer A.

2010 *Archaeological Survey of 8.2 Acres in Hidalgo County, Texas, for a Proposed Water Treatment Plant*. Coastal Environments, Inc., Corpus Christi. Submitted to Hidalgo County Municipal Utility District (MUD) #1, Mission, Texas.

Kelly, Jennifer A., Thurston H. G. Hahn III, and Bryan L. Guevin

2010 *Archaeological Investigations within the Terra Mar—San Sebastian Subdivision, Corpus Christi, Nueces County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Hogan Development Company, LP, Corpus Christi.

Kelly, Jennifer A., and Thurston H. G. Hahn III

- 2010 *Archaeological Survey of .36 Acres in Hidalgo County, Texas, for a Proposed Water Treatment Plant*. Coastal Environments, Inc., Corpus Christi. Submitted to Hidalgo County Municipal Utility District (MUD) #1, Mission, Texas.

Kelly, Jennifer A., and Thurston H. G. Hahn III

- 2010 *A Cultural Resources Survey for the City of Milano, Community Fire Protection Facility in Milam County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to TLC Engineering, Houston.

Joanne Ryan, Douglas C. Wells, Jennifer A., Kelly and Lauren McPherson

- 2009 *Cultural Resource Findings from FEMA Monitoring of Debris Removal and Demolition in Vermilion Parish, Louisiana*. Coastal Environments, Inc., Baton Rouge. Submitted to Federal Emergency Management Agency, U.S. Department of Homeland Security, New Orleans.

Kelly, Jennifer A., and Bryan L. Guevin

- 2009 *A Phase I Archaeological Survey for the Proposed Tennis Court Facility Project for Texas A&M University, Corpus Christi, in Nueces County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Halff Associates, Inc., Dallas.

Kelly, Jennifer A.

- 2009 *Cultural Resources Survey of Spoil Disposal Areas for the Proposed Port Arthur Marine Terminal in Jefferson County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Port Arthur LNG Holdings, LLC, Houston, Texas.

Kelly, Jennifer A.

- 2009 *Archaeological Survey of a Parking Lot Extension Project on the Padre Island National Seashore, Nueces County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Padre Island National Seashore, Corpus Christi.

Kelly, Jennifer A.

- 2008 *Cultural Resources Survey of a New Test Well, a Re-Entry Well, and an Access Road, San Patricio County, Texas*. Coastal Environments, Inc., Corpus Christi. Submitted to Conestoga-Rovers & Associates, LLC, Baton Rouge.

Kelly, Jennifer A.

- 2007 *Pedestrian Survey of 33.5 Acres at the Corner of South Staples Avenue and Timbergate, Nueces County, Texas*. Coastal Environments, Inc.,

Corpus Christi. Submitted to ESA Consulting Engineers, Longview, Texas.

Kelly, Jennifer A., and Robert A. Ricklis

2007 *Archaeological Survey of a Proposed Cell Tower Site Located Next to the Lon Hill Power Plant Substation, Corpus Christi, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to EBI Consulting, South York, Pennsylvania.

Kelly, Jennifer, Richard Weinstein, Joanne Ryan, and Bryan Haley

2007 *The Homestead of James Taylor White II: Historical, Archaeological, and Geophysical Investigations at Two Proposed Safety Rest Areas along Interstate Highway (IH) 10, Chambers County, Texas.* Archeological Studies Program, Report No. 80. Environmental Affairs Division, Texas Department of Transportation, Austin.

Ricklis, Robert A., and Jennifer A. Kelly

2007 *Archaeological Survey of Master Channel 27 Drainage Improvement Area, Nueces County, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to Maverick Engineering, Corpus Christi.

Ricklis, Robert A., and Jennifer A. Kelly

2007 *Archaeological Testing of the Eastern Portion of the McGloin Bluff Site (41SP11), San Patricio County, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to Port of Corpus Christi Authority, Corpus Christi.

Kelly, Jennifer A., and Robert A. Ricklis

2006 *Archaeologically Sensitive Area Avoidance Plan for Seismic Exploration on Mustang Island, including Shamrock Point, and other Nearby Areas in Nueces County, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to Southwestern Energy Co., Houston.

Ricklis, Robert A., Jennifer A. Kelly, and Richard A. Weinstein

2006 *Three Reports on Archeological Surveys and Testing of a 432.7-acre Tract Near Ingleside, San Patricio County, Texas, and a Detailed Topographic Map of the McGloin Bluff Site, 41SP11.* Coastal Environments, Inc., Corpus Christi. Submitted to Port of Corpus Christi Authority, Corpus Christi.

Kelly, Jennifer A.

2005 *Archeological Survey of Port of Corpus Christi 400+ Acres near Ingleside-on-the-Bay, San Patricio County, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to Port of Corpus Christi Authority, Corpus Christi.

Kelly, Jennifer A.

2005 *Cultural Resources Survey of a 700-acre Tract of Land along the Gulf Intracoastal Waterway, Port O'Connor, Texas.* Coastal Environments, Inc., Corpus Christi. Submitted to G & W Engineering, Inc., Port Lavaca, Texas.

APPENDIX B

**AN ARCHAEOLOGICAL PHASE I SURVEY OF 82.48 ACRES IN
NUECES COUNTY, CORPUS CHRISTI, TEXAS**

**An Archaeological Phase I Survey
of 82.48 Acres in Nueces County,
Corpus Christi, Texas**



by
Jennifer A. Kelly
Coastal Environments, Inc.
Corpus Christi, Texas

for
Weston Solutions, Inc.
Houston, Texas

Texas Antiquities Permit #6659
USACE-C-1814
CEI Project #213068
Weston P.O. #0083864

November 25, 2013

Introduction

Coastal Environments, Inc. (CEI) was contracted by Weston Solutions, Inc. of Houston, Texas under the Weston Purchase Order #0083864 to conduct a Phase I archaeological survey on 82.48 acres (33.38 hectares) owned by the Port of Corpus Christi Authority (POCCA). The tract of land will be leased by Castleton Commodities International who plan to build a condensate splitter. The subject property is located along the north shore of the ship channel, south of Carbon Plant Road in Nueces County, Texas (Figures 1 and 2).

In accordance with the Council of Texas Archeologists Guidelines, reconnaissance and shovel testing were conducted on September 17 and 18, 2013 using 32 person-hours. CEI archaeologists S. Morehead and J. Pringle excavated 23 shovel tests within the subject property under Texas Antiquities Permit #6659 and under Permit USACE-C-1814. Due to heavy rains in the Corpus Christi area prior to the survey, much of the area was inundated at the time of survey, however, in some areas where water was not standing, the ground visibility was greater than 70 percent. For these reasons, the number of shovel tests (>11-100 acres = 1 shovel test for every 2 acres) was reduced from the minimum standard of 42. Defined wetlands also minimized the shovel testing. Shovel tests were dug to a maximum depth of one meter or to a depth where ground water was encountered. Every effort was made to determine whether historic structures or prehistoric cultural material was present on the island that is the project area. During the archaeological Phase I survey, no artifacts indicating the existence of prehistoric or historic sites were collected and no sites were found.

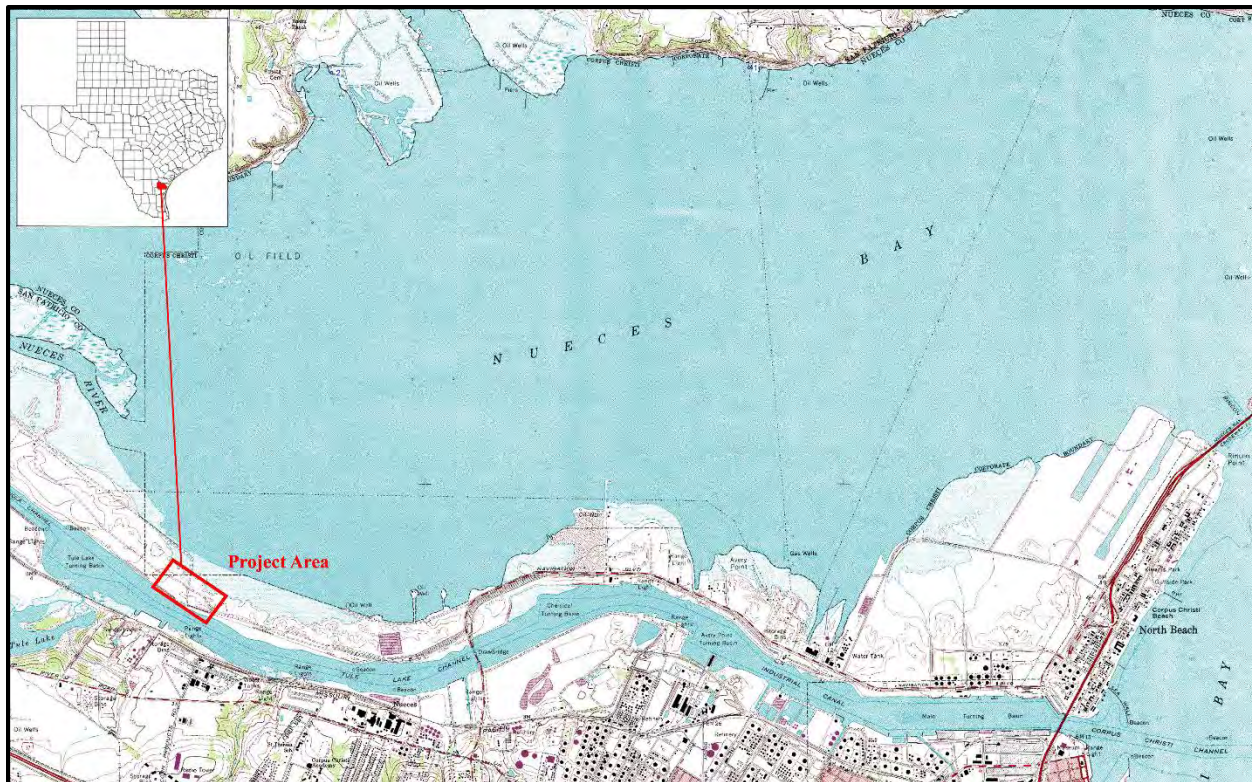


Figure1. Map of the project area within a portion of Nueces County, Corpus Christi, Texas (modified from USGS Quadrangle map of Corpus Christi Quadrangle 1968 revised 1975).



Figure 2. Aerial of the project area south of Carbon Plant Road and north of the ship channel (modified from Google Earth 2011).

Geologic Setting

Falling in the Coastal Bend region of the West Gulf Coast Plain, the area has a dry, sub-humid climate and receives an average annual rainfall of approximately 31 inches. Nueces County occasionally experiences extremely high winds and torrential rains capable of removing topsoil as well as some underlying soil layers. While much of the land is dedicated to agricultural and livestock, petroleum and natural gas operations are also common in this area (Shafer 1968).

The soils on the flats of the Coastal Plains consist mainly of Orelia sandy clay loams, Papalote fine sandy loam, Raymondville clay loam, and Monteola series (Figure 3). Underlying these soils is Pleistocene subsoil formed of Beaumont clay (Shafer 1968). However, because the area on which the archaeological survey was conducted is made up of dredge material, or spoil, from the construction of the ship channel, the aforementioned soils are not in natural formation on the spoil island. Soils within the project area are heavily disturbed, thus they do not display natural stratigraphy. The project area is vegetated with scrub and invasive plants likely deposited from windblown events or carried in from fill stabilizing events. These include huisache (*Acacia farenisia*) and hackberry trees (*Celtis occidentalis*).

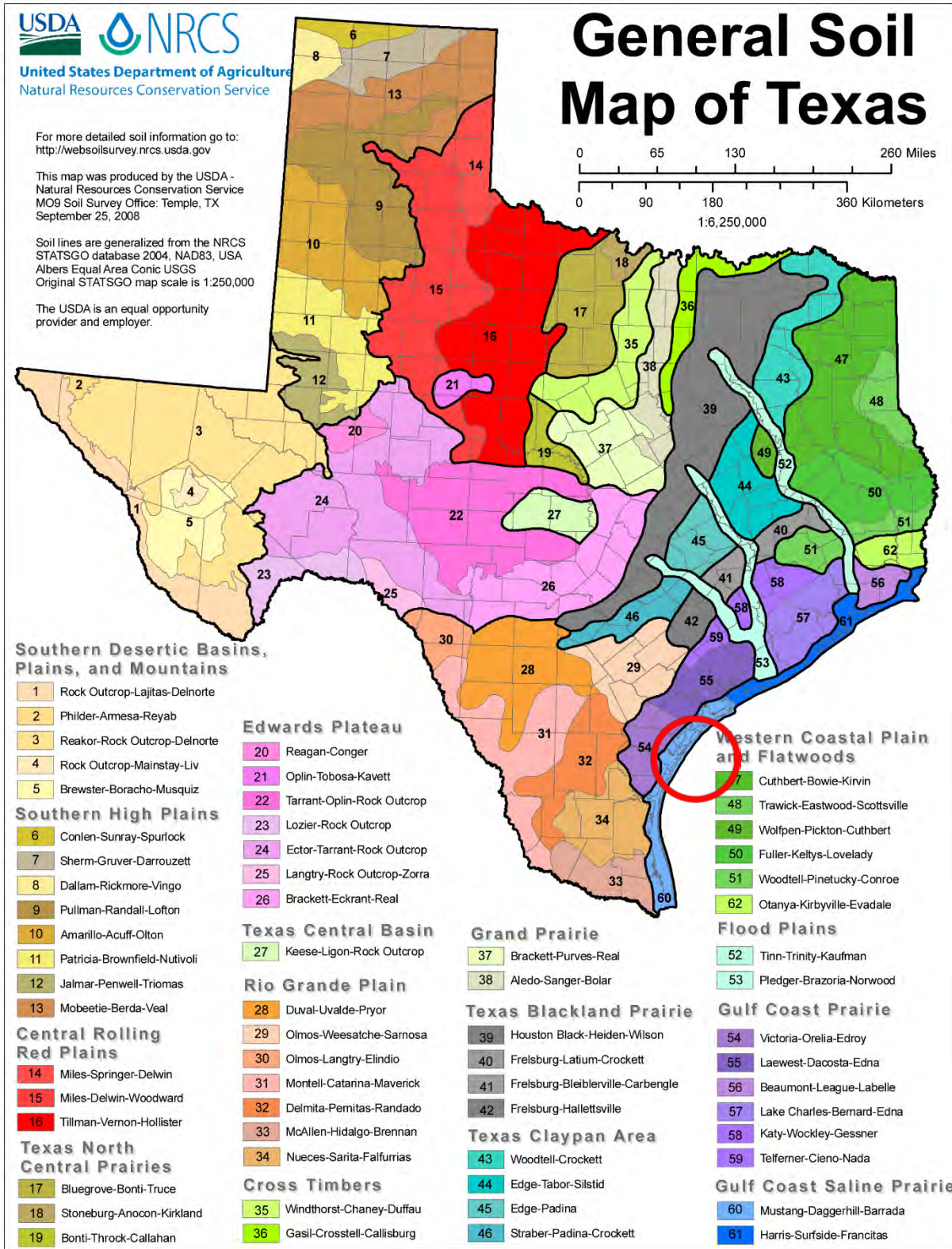


Figure 3. Soil Map of the project area circled in red (modified from General Soil Map of Texas).

Background Information

The closest recorded archaeological sites that provided artifacts are located south of the project area by approximately 1.57 kilometers, .97 kilometers, and 1.39 kilometers respectively. All were recorded between 1977 and 1978 and are located south of the ship channel within Corpus Christi proper.

While the description of the site was not provided, site 41NU158 was reported to have shell, burned bone and clay, and scattered debitage suggesting it is a prehistoric site. Located in the southeast corner of the Tule Lake Tract, S. Black recorded that the site was badly eroded in 1977. Site 41NU177 is also located in close proximity to Tule Lake Channel. The site produced arrow points, dart points, pottery sherds, burned clay, clams, and oysters, and other snail shells. It has been cut in half by railroad track and is currently part of an employee recreation center. Site 41NU177 lies about .64 k east of 41NU158. The third closest site to the current project area is 41NU176. Recorded by Malcom Johnson in 1978, this site is recorded simply as a shell midden scattered over a fairly large area (Texas Historical Commission 2013).

The need for a deep water port in Corpus Christi was realized after the hurricane of 1919. The Port was opened in 1926 with four cargo docks. In 1930, the channel was deepened to 30 feet, and by 1989 the current depth of 45 feet was reached. All of the dredging events added to the island. It is possible that historic or prehistoric cultural material was dredged up and deposited on the spoil island that now creates a barrier between Corpus Christi proper and Nueces Bay (Wikipedia 2013).

There are numerous sites located along the south side of the ship channel however, there are no recorded sites on the subject property, or within the entire spoil island. This land was created as a result of dredge deposition during construction of the ship channel over a 60-year period. Dredging is an excavation activity or operation usually carried out at least partly underwater, in shallow seas or fresh water areas with the purpose of gathering up bottom sediments and disposing of them at a different location. This technique is often used to keep waterways navigable. The process of dredging creates spoils (excess material), which are removed from the

dredged area. Dredging can produce materials for land reclamation or other purposes, usually construction-related. Figures 4, 5, 6, 7, 8, and 9 show evidence of the construction of the island, where the project tract is located, over time.

While idealized, the map from 1887 (see Figure 4) clearly shows open water north of the shoreline. The area below the bluff and along Nueces Bay was void of any type of structure with the exception of the railroad. By 1925, several structures dot the bluff line (see Figure 5). The aerial from 1961 (see Figure 6) shows expansion of the spoil island from the time the Port opened in 1926. Thus, the ship channel was constructed sometime between 1922 and 1926. It is clear that the spoil was piped or pumped in as it appears in several maps to be fluvial-like, or fanned out. By 1979 (see Figure 7), the island is somewhat vegetated and gravel/shell roads are visible. The ship channel was dredged again to its current depth of 45 feet in 1989. The aerial from 1990 (see Figure 8) suggests recent activity. Figure 9 is the most recent aerial available via Google Earth. The current project area is clearly visible and looks virtually the same in 2011 as it does today. Roads appear again along with some vegetation. The maps and aerials from 1887 until 2011 provide evidence that the island has grown over time, and has not been used for homes, ranches, or other types of structures. More importantly, the land was not present prehistorically.



Figure 4. Map of Corpus Christi from 1887 showing open water in Nueces Bay (borrowed from Texas Map Store).



Figure 5. Quadrangle map from 1925 showing open water north of the railroad. Note the small black squares indicating buildings up on the bluff.



Figure 6. Aerial of the ship channel and the island in 1961. The fluvial-like formations resulted from spoil accumulation (borrowed from Google Earth 2013).



Figure 7. Google aerial from 1979 after stabilization of the spoil island (after Google Earth 2013).



Figure 8. Aerial of the ship channel in 1990. Light areas are deposition of spoil accumulated when the channel was dredged to the current depth of 45 feet in 1989 (after Google Earth 2013).



Figure 9. Google aerial of a portion of the ship channel in 2011 (after Google Earth 2013).

Fieldwork and Results

In order to test the project area for historic or prehistoric cultural material, S. Morehead and J. Pringle from CEI conducted a Phase I archaeological survey in Corpus Christi, Nueces County, Texas on September 17 and 18, 2013. The archaeological project area measures 365.8 meters (1200 ft.) north to south and 975.4 m (3200 ft.) east to west. Twelve transects were created to run north and south, and east to west throughout the project area. Transects were spaced every 30 meters, and shovel tests were excavated in any locations with less than 30 percent visibility in order to maximize the possibility of locating any historic or prehistoric sites. Originally, preliminary research into the history and prehistory of the area along with the satellite imagery of the project area led to an estimate of 42 shovel tests. However, once archaeologists arrived at the site and began the survey, shovel testing was decreased in some areas due to inundation and disturbance (Figure 10).

The field that is the project area was somewhat marshy due to recent rains (Figure 11). Several wetlands dot the area as well. Other obstacles include roads, gravel and shell, standing water, deep depressions and cut banks. As a note, the cut banks revealed more than 10 feet of spoil (Figure 12). Most of the soils within the shovel tests suggest disturbed soils and fill. They were consistently a 10 YR6/3 with spots or streaks of 10YR3/3 mottling (Figures 13 and 14). All shovel tests were sandy with intermittent shell and gravel mixing. Small amounts of clay was seen mixed with the sand in three shovel tests. Water was encountered in the majority of shovel tests between 60 and 84 centimeters below the surface. All shovel tests were negative for cultural material.

Surface scatters of shell were found across the project area however, none of the scatters held artifacts or other evidence suggesting prehistoric occupation (Figure 15). The only object encountered was a heavily rusted bar lying in the road that runs east to west on the south side of the project area. The metal was surrounded by gravel and shell and determined to be modern trash or an item that someone lost. This bar was not collected.



Figure 10. Aerial of the project area showing placement of 23 negative shovel tests, wetlands, areas under water, pits and cut banks. The ground visibility in the light sandy areas are 70-100 percent (modified from Google Earth 2013).



Figure 11. Marshy area encountered during survey of a portion of the spoil island. View to southwest. September 17, 2013.



Figure 12. Portion of a cut bank showing more than a meter of spoil deposition. View to east. September 17, 2013.



Figure 13. Shovel test to a depth of 84 cm where ground water was encountered. September 18, 2013.

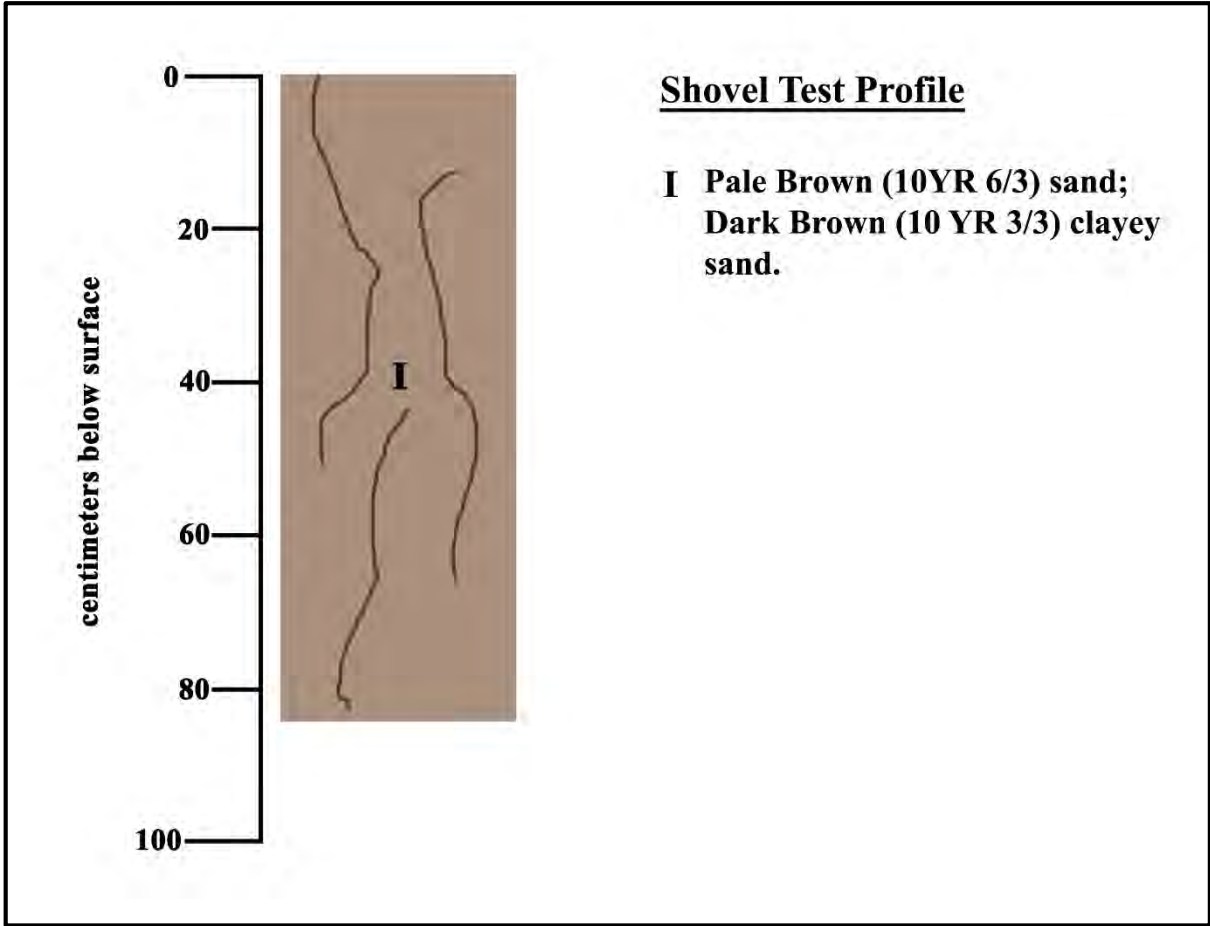


Figure 14. Profile of Figure 13 shovel test.



Figure 15. One of several mixed shell and gravel scatters within the project area. September 17, 2013.

Conclusion

The entire project area was considered low probability for historic and prehistoric cultural material. Indeed, reconnaissance and shovel tests support this. The entire plat of land that is the subject property appears to be made up of spoils from the accumulation of the dredge while constructing the ship channel. While survey revealed many areas to have deposits of oyster shell, most of these deposits were crushed and found in association with gravel. This suggests that the shell may have been deposited as stabilizer or fill for the land in general, or to create roadways. Moreover, several gravel/shell roads are located within the area. The single object found, a rusty bar of metal, is determined to be modern. No site, historic or prehistoric, was encountered during reconnaissance or shovel testing survey. It is the determination of CEI archaeologists that the construction of the condensate splitter be allowed to proceed.

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