

Appendix F

Cultural Resources Baseline Investigation Summary

Job No. PCA20166

APPENDIX F

CULTURAL RESOURCES BASELINE INVESTIGATION SUMMARY FOR THE PROPOSED CORPUS CHRISTI SHIP CHANNEL DEEPENING PROJECT

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Acronyms and Abbreviations

APE	Area of Potential Effects
AWOIS	Automated Wreck and Obstruction Information System
CDP	Channel Deepening Project
ENC	Electronic Navigation Chart
GIWW	Gulf Intracoastal Waterway
NAS	naval air station
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
PCCA	Port of Corpus Christi Authority
SAL	State Antiquities Landmarks
SHPO	State Historic Preservation Offices
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Department
USACE	U.S. Army Corps of Engineers
USS	United States Ship

1.0 CULTURAL RESOURCES

The proposed Port of Corpus Christi Authority (PCCA) Channel Deepening Project (CDP) is subject to various Federal and State cultural resource regulations. At the Federal level, the proposed project is subject to Section 106 of the National Historic Preservation Act of 1966, as amended (Section 106). Under this law, any Federal agency must consider how its actions might affect significant cultural resources. In the eyes of this law, “significant” resources are those that are determined to be eligible for or are listed on the National Register of Historic Places (NRHP). In simpler terms, Section 106 requires that Federal agencies ask themselves, “What could happen to important cultural resources if I issue this permit (or provide these funds, or allow construction on lands that I control)?” Section 106 is not a prohibition on impacting important cultural resources; it only requires that an agency know the potential effects of their action and take those effects into account as part of their decision-making process.

Cultural resources are often divided into archaeological and non-archaeological (buildings, objects, districts, cultural landscapes) resources at least 50 years of age. In addition, Traditional Cultural Properties are included among Federally managed cultural resources. Traditional Cultural Properties are places of cultural, ceremonial, or religious significance, most often associated with Native American Tribes, that may or may not include archaeological or non-archaeological components. The U.S. Army Corps of Engineers (USACE) issued PCCA CDP Record of Decision under the National Environmental Policy Act would be one such Section 106-triggering Federal action. The USACE takes significant cultural resource impacts into account by consulting with local interested parties, including State Historic Preservation Offices (SHPOs, in the case of Texas, the Texas Historical Commission [THC]) and Tribal Historic Preservation Officers to determine how best to identify cultural resources that may be affected by a proposed action, what resources can be considered “significant,” and how best to manage those resources in relation to the proposed action. Federal agencies consult with Tribes directly for Section 106 projects on a nation-to-nation basis.

The State of Texas also manages terrestrial and underwater archaeological resources through the Antiquities Code of Texas. Under the Antiquities Code of Texas, archaeological resources located on lands owned or managed by the State of Texas or a political subdivision thereof must be identified and managed by that controlling agency in consultation with the THC. Significant archaeological sites, called State Antiquities Landmarks (SAL) must be found and assessed prior to allowing ground-disturbing activities within these public lands. The proposed PCCA CDP is located within lands that the Texas General Land Office manages, making the project subject to State-level archaeological resource regulatory oversight.

While both the Federal and State cultural resource laws have significant overlap, one important distinction is that the Antiquities Code of Texas is limited to projects’ direct physical impact footprint. Federal agencies must take direct *and* indirect effects into account to comply with Section 106. As a result, Federal cultural resource review and documentation often incorporates archaeological, historical, and cultural properties that are farther away from the proposed project footprint.

The following summary details a general overview of the cultural setting and history of the study area that will form the basis of assessing the PCCA CDP-related effects.

2.0 CULTURAL HISTORY OVERVIEW

2.1 PALEOINDIAN PERIOD

Humans arrived in North and South America (collectively called “the New World”) between 16,000 and 14,500 years before present (BP) (Gilbert et al., 2008; Pitblado, 2011). Until recently, archaeologists and historians thought that the Paleoindian Period in Texas did not begin until around 12,000 BP (Perttula, 2004). However, new evidence from the Debra Friedkin and Gault sites in Central Texas have pushed the date of earliest occupation back to around 15,000 BP (Swaminathan, 2014; Gault School, 2016). The Paleoindian Period in Texas is currently estimated to range from approximately 15,000 to 8,500 BP.

As the Pleistocene ended, diagnostic Paleoindian materials in the form of Clovis, Folsom, and Plainview projectile points began to enter the archaeological record. These points were lanceolate-shaped and fluted for hafting to wooden spears. Paleoindian-period hunters then used atlatls (a wooden instrument with a handle at one end and a hook at the other used to throw the “spears” – because these “spears” were thrown and not thrust, they are called “darts”) to increase their throwing force and range. This allowed them to hunt large game such as mammoth, mastodons, bison, camel, and horse (Black, 1989; Hofman et al., 1989). In addition to large game, Paleoindian groups also harvested smaller prey, including antelope, turtle, frogs, and other small to medium-sized game. Stylistic changes in projectile point technology occurred during this later portion of the period. Environmental studies suggest that Late Pleistocene climates were wetter and cooler (Mauldin and Nickels, 2001; Toomey et al., 1993), gradually shifting to drier and warmer conditions during the Early Holocene (Bousman, 1998). The end of the Pleistocene was arid to semiarid, and prickly pear and agave populations were high (Bousman et al., 1990).

2.1.1 Offshore Pre-European-Contact (Pre-Contact/Prehistoric) Cultural Resources

The Gulf of today is 200 to 300 feet higher than it was when the first humans arrived on the North American continent during the closing centuries of the last Ice Age more than 14,000 years ago when much of the Earth’s water was locked up in ice sheets and glaciers. At the height of the Ice Age, the Texas Coast was roughly 100 miles farther out than it is today and the modern-day Corpus Christi Bay Estuary was not coastal at all; it was composed of inland prairie terraces and river valleys that were probably like the environment surrounding Kenedy or Poteet, Texas of today. The plant and animal communities native to these inland prairies would have had a much larger range that would have extended into what is now the Outer Continental Shelf. Early humans in the region would have occupied this same, extended landform during this time as well (Joy, 2018). Over time, global temperatures rose which, in turn, melted the ice sheets and lifted sea levels across the planet. Geological data indicate that these rising waters first flooded the study area around 9,000 years ago, creating the Corpus Christi Bay estuary (Ricklis, 2021). As the Gulf Coast receded, so did prehistoric peoples of Texas, creating a band of previously exposed upland landforms that have the potential to hold submerged, intact cultural deposits (Joy, 2018; 2020).

This phenomenon of rising sea levels over a period of thousands of years has distinct implications for the archaeological and cultural record of the study area. Paleoindian occupants in the study area would not have been coastal peoples; sites of this age submerged in the study area would be prairie Paleoindian occupation sites of inland peoples. These inland sites would have been clustered along paleochannels that are now inundated by Gulf waters. Coastal communities from the Paleoindian period are far offshore on the Outer Continental Shelf, and these types of sites have only just begun to receive intensive archaeological attention (Joy, 2020).

Cultural resource management laws do not make management distinctions between historic and prehistoric resources; identifying and assessing the significance of *all* cultural resources is central to Section 106's objective. Despite this, finding the remnants of these earliest communities in offshore environments has been opportunistic and passive. This is largely because most of the remnants of ancient human occupation sites – primarily stone tools and tool-making-byproducts, flakes that archaeologists call “lithic debitage” – are difficult for archaeologists to detect using traditional underwater remote sensing tools like magnetometers and side-scan sonar. Despite the high concentrations of Pre-Clovis, Clovis, and Folsom sites along the Gulf Coast, not a single unequivocal coastal Paleoindian site has ever been identified on the Gulf or Atlantic Ocean Outer Continental Shelf (Joy, 2018; Lowery, 2012; Stanford and Bradley, 2012). Archaeologists are learning that lithic debitage scatters, indicative of pre-contact occupation sites of this period, can be detected on the sea floor using sub-bottom profiler data (Grøn et al., 2018; 2021). By coupling these new methods with ongoing marine paleo-landscape modeling and sediment coring, researchers are conducting more offshore studies dedicated to exploring these first human occupations in the region (Evans, 2016).

2.2 ARCHAIC PERIOD

Archaeological sites attributed to the Archaic Period in the Central Coast region exhibit a shift from more mobile hunting strategies to a heavier reliance on a diverse spectrum of local plants and animals, centered at seasonal campsites associated with springs and/or drainages (Hofman et al., 1989). The Archaic broadly dates from 8500 to 1250 BP (Hofman et al., 1989; Perttula, 2004). Increased numbers of ground and pecked stones, roasting pits, and stone-lined hearths at archaeological sites of this period suggest that populations relied more heavily on specialized processing of plants for food (Hofman et al., 1989).

Early Archaic sites in this region primarily consist of dense oyster shell piles, called middens, with few stone artifacts. A notable lack of land animal or fish bones shows that these were not yet important food sources during this period. The massive glaciers of the last Ice Age melted during the Early and Middle Archaic, and the Texas region transitioned to a period of intense heat and aridity, called the altithermal. Archaeologists note that site densities were lower than earlier prehistoric occupations. This indicates that fewer people lived in the region, presumably because of the hotter, drier conditions along the coast. By the Late Archaic, sea levels stabilized, and the present-day bays, lagoons, and barrier islands began to take form (Ricklis, 1995). Some Late Archaic sites tend to have thicker deposits and greater densities of artifacts than Early Archaic sites which suggests a larger population and more intensive resource use. Although few

cemeteries from the Early Archaic period have been recorded (Ricklis et al., 2012), the number of archaeologically recorded cemeteries appears to have increased dramatically during the Late Archaic period. This indicates a transition in settlement patterns from more nomadic bands of hunter-gatherers, to more permanent settlements based around productive fishing and hunting grounds (Ricklis et al., 2012).

2.3 LATE PREHISTORIC PERIOD

The Late Prehistoric period in the study area corresponds with the introduction of the bow and arrow. Despite this technological advancement, hunting and foraging activities were similar between the Late Archaic and the beginning of the Late Prehistoric. Beginning around 1000 to 300 BP, the Toyah culture came to prominence in Central and Southern Texas. This corresponds with the time when bison herds returned to the Southern Plains, and bison bones are common at Toyah sites. Toyah material culture includes a distinctive “toolkit” of Perdiz arrow points, beveled knives, end scrapers, and drills, all of which were useful in processing bison and deer hides (Kenmotsu and Boyd, 2012).

2.4 HISTORIC/POST-EUROPEAN-CONTACT PERIOD

The Texas Coast’s Post-Contact, Historic Period begins in the early 16th century with the first European explorers visiting the region and documenting their observations. The Historic Period then continues to the modern day. The Texas Gulf Coast consists of several barrier islands, bays, ports, and channels whose history is closely tied to early maritime exploration, 18th and 19th century settlement, and 20th century trade and development. By the mid-19th century, most development in the region stayed closest to the coast (Long, 2020a).

2.4.1 Early European Maritime Exploration

In 1519, Governor of Jamaica, Francisco de Garay, authorized an expedition to explore the Gulf Coast between Florida and the Río Pánuco of Mexico (at modern-day Tampico, Veracruz, Mexico) in the hopes of finding a waterway that would lead to Asia. Lieutenant Alonso Álvarez de Piñeda was chosen to lead four ships and a contingent of 270 men on the voyage. Between the early spring and late fall of 1519, Piñeda’s team documented many prominent features along their voyage, such as the mouth of the Mississippi River, and produced the first known chart of the Gulf Coast that includes the study area region (Weddle, 2021; Lowery, 2020). Piñeda is credited with naming the Corpus Christi Bay system, claiming it for the Spanish King on the Feast of Corpus Christi Day, in June of 1519 (Leatherwood, 2021a).

Nearly a decade later, in 1528, Álvar Núñez Cabeza de Vaca and his crew were among a large expedition party that wrecked along the Texas Coast while documenting the Coast between the Rio Grande and the Cape of Florida. Cabeza de Vaca’s group was among the few who survived when they wrecked on Galveston Island (Long, 2020a). Over the next six years, Cabeza de Vaca and his companions walked west to the Pacific Coast then headed south, eventually to Mexico City. Along their journey they visited the study area. His account is regarded as Texas’ first ethnological study of the region’s Indigenous populations

and is an often-cited resource for Texas archaeologists interpreting prehistoric lifeways from sites and features (Chipman, 2021; Thoms et al., 2021).

The French explorer Robert Cavelier, Sieur de La Salle was the next prominent European explorer to visit the area. La Salle and 300 crew and settlers sailed from France in 1684 with four ships – *La Belle*, *l’Aimable*, *Le Joly*, and *Le Saint-Francois* – to find the mouth of the Mississippi River and set up a permanent settlement (Bruseth and Turner, 2005). La Salle’s flagship, *La Belle*, sank in Matagorda Bay during a storm in 1686 and was the subject of an extensive archaeological excavation in the 1990s (41GM86; Bruseth and Turner, 2005). The earliest known map thought to depict the Copano Bay region from LaSalle’s voyage provides possible evidence La Salle reached Aransas and Corpus Christi bays (Dowling et al., 2010).

In 1746, Colonel José de Escandón built the fort Aranzazu at Live Oak Point to defend the bay from the French. On the opposite side of the bay, the Spanish founded the port of El Cópáno, the first seaport in Texas. El Cópáno, found at the northern end of Copano Bay, remained unpopulated until the 19th century. With little Spanish activity occurring along the Texas Coast, the area fell victim to piracy, smuggling, and illegal trading (Dowling et al., 2010).

Twenty years later, Escandón, then governor of Nuevo Santander, authorized Captain Blas María de la Garza Falcón to explore the coast between the Rio Grande and Garza Falcón's ranch outpost, Estancia de Santa Petronila south of present Corpus Christi. Garza Falcón settled the area, as well as provided a report of Padre Island in 1766. The report included descriptions of the landscape: small clumps of stunted laurels and willows, red grass, and ships’ timbers littering the beach. While waiting for Garza Falcón's report, Escandón received information from fisherman and settler, José Antonio de Garabito, describing the Texas Coast between the Rio Grande and the Nueces River as “large pastureland surrounded by lagoons.” He noted sandbanks, which became fully submerged during a storm surge, and therefore, the area could not be identified as an island (Weddle, 2020).

In September of that year, 25 soldiers, led by Garza Falcón, supported Ortiz Parilla’s expedition, as tensions rose between the French and Spanish. He and the soldiers set camp along the Laguna Madre, located between Padre Island and the mainland, referring to it as Playa de la Bahía de Corpus Christi, or Playa de Corpus Christi. Ortiz Parilla’s expedition produced a map, including an accurate depiction of Padre Island and Corpus Christi Bay, Mustang Island, Copano Bay (referred to as Bahía de Santo Domingo), and San José Island. However, the Nueces River is missing from the sketches (Weddle, 2020).

2.4.2 Post-Contact Native American Tribal history in the Region

The Karankawa people were the primary occupants of the Texas Gulf Coast when European explorers first arrived in the region. Their name means “dog lovers” in their native language (Calhoun County Museum, 2020; Bruseth and Turner 2005). These early Texas inhabitants were nomadic; they seasonally occupied the barrier islands in the Gulf Coast and retreated to the Texas inlands in the off season. They lived in small huts, made of a ring of poles drawn together at the center and covered with hides or mats (Bruseth and Turner 2005). The Karankawas navigated between the islands and the Texas interior maritime pathways on

large dugout canoes. Fishing, hunting, and foraging were their main form of subsistence (Lipscomb, 2020). Early written accounts depicted the Karankawas as tall, with body piercings and linear or animal-shaped tattoos (Calhoun County Museum, 2020; Bruseth and Turner 2005).

The Karankawa people were familiar with Spanish and French interests in the region and were known to have clashed with both groups in the early years of European exploration. Following La Salle's tepid claim to the region in the early 18th century, Spain bolstered its efforts to colonize the region and convert the local inhabitants to loyal Spanish citizens. The Karankawas resisted the conversion to Catholicism and more violence ensued. The Spaniards used the Karankawa-Spanish War as justification for their eradication and as an opportunity to gain control of the Texas Coast. Conflicts continued for more than a decade (Lipscomb, 2020; Seiter, 2020).

When Texas fell under Mexican control in 1821, the Mexican government encouraged white settlers to immigrate to the underpopulated region that the Karankawa had called home. Anglo-American Texans flooded in, straining the region's natural resources. The settlers waged constant war against the Karankawa to drive them off. During the Texas Republic era, the Karankawas were politically demonized and pushed into Mexico, then back into Texas. To survive, many of them took Mexican last names or allied themselves with white ranchers and assimilated into those communities. The last band of Karankawas was eradicated in 1858 in Rio Grande City along the Texas/Mexico border (Lipscomb, 2020; Seiter, 2020).

Modern Karankawas call themselves "the Karankawa Kadla," meaning mixed or partial Karankawa, and they have made considerable efforts to revitalize their language and cultural traditions in the region (Lipscomb, 2020). They are not a Federally recognized Tribe.

2.4.3 Merchant Vessels and Harbors of the 18th and 19th Centuries

Ports developed along the lower Texas Coast supported various industries, including fishing, cattle and sheep ranching, and ship building. Local leaders saw the economic advantages the bay area could bring if further developed. Families settled into the area, businesses and schools opened, and a system of channels and harbors supported maritime shipments. In the 1780s, Governor Bernardo de Gálvez established a port of entry and customhouse in what is now Refugio County, named El Cópago. The port served Refugio and neighboring towns, and its formidable reputation encouraged settlement in the area. (Long, 2020a; Leffler, 2020).

White settlers were not permanently established in the Corpus Christi Bay area until September 1839 when entrepreneurs Henry Lawrence Kinney and his partner, William P. Aubrey, established a trading post on the west shore of Corpus Christi Bay (Long, 2020a; 2020b). The town was small with no more than 20 reported residences.

When the United States acquired the Texas Republic, the nation feared that Mexican forces would try to reclaim portions of their former territory. The U.S. government sent Army General Zachary Taylor to the beach at Corpus Christi in July of 1845 to stand ready to enforce its claim on the southern border. More

than half of the U.S. Army camped at Fort Marcy – as Taylor called it – along a mile-long site near the site where United States Ship (USS) *Lexington* is moored today until the following March of 1846 (Payne, 1970). The seven-month encampment spurred the growth of Corpus Christi. Various traders, entrepreneurs, and Federal resources poured into the area to service the almost 4,000 men stationed on a desolate stretch of sand. Larger trade routes were set up to connect the camp by land to the other military forts and by sea to the greater Gulf Coast for provisions, mail, and general trade. The summer months were favorable, but the winter made the area’s shortcomings clear. Inadequate housing and a lack of wood for heat and cooking left scores of men ill and bedridden. Future U.S. Presidents Zachary Taylor and Ulysses S. Grant, in addition to a host of future high-ranking military leaders of the Civil War, lived at the camp before moving south during the Mexican American War (Payne, 1970).

Corpus Christi’s shortcomings compared to other Texas coastal communities became increasingly clear as populations rose during the second half of the 19th century. Corpus Christi lacked access to fresh water and a deep-water port, making it somewhat of a lawless frontier town. In addition, there was no effective city government until the 1850s. However, by the 1860s, the population had grown to 1,200 and new schools and businesses were built (Long, 2020b).

2.4.4 The Study Area During the Civil War

The Civil War reached the study area in the summer of 1862, during the Battle of Corpus Christi. A part of the Texas Coast from Pass Cavallo to Corpus Christi was under blockade by United States Ship (USS) *Arthur*. Commerce, however, continued through the port at Corpus Christi because USS *Arthur* had too deep of a draft to pass through the barrier islands. Lieutenant John W. Kittredge, commander of *Arthur*, later received two vessels from New Orleans, *Corypheus*, a yacht, and *Sachem*, a steamer, both of which could pass through the shallow waters and into the interior waterways of Corpus Christi. Once inside, his shallow-drafted Union vessels captured Confederate Ship *Reindeer* and Confederate Ship *Belle Italia* and converted them into Union gunboats. On August 12, 1862, Kittredge commanded a fleet made up of *Corypheus*, *Sachem*, *Reindeer*, and *Belle Italia* into Corpus Christi Bay, and captured Confederate Ship *Breaker* (Delaney, 2020).

A conflict between the Union naval fleet and Confederate ground forces at Corpus Christi ensued after civilians fled the area. Confederate forces managed to drive back the Union fleet despite being outgunned and outmanned but keeping the city under Confederate control was hardly a celebratory victory. The years after the Battle of Corpus Christi left many of the city’s residents unprotected from encroaching United States’ forces and cut off from supplies. Residents were faced with starvation and constant turmoil until the war ended three years later (Delaney, 2020).

2.4.5 Post-Civil War Era

Following the Civil War, Corpus Christi, and the surrounding areas, including Port Aransas and Refugio, supported sheep and cattle ranching. Port Aransas, formerly known as Ropesville and Tarpon, is located on Mustang Island. The port town, St. Mary’s of Aransas, found on Copano Bay, was the largest lumber and

building-materials center in western Texas. Merchants also shipped much-needed supplies out of the port during the Civil War. The war devastated Aransas County's economy, and many towns were destroyed. However, towns such as Fulton and Rockport were founded in 1866 and 1867, respectively. Both towns supported the cattle industry, with Rockport home to several packeries. Rockport was eventually developed into a deep-water harbor, as was Aransas Pass in 1920 after several failed attempts (Long, 2020a).

Corpus Christi was used as a shipping center during a cattle boom in the 1870s, revitalizing the post-war economy. But it was not until the September 14, 1919 hurricane, which devastated the Gulf Coast, that Corpus Christi leaders implemented a plan for a deep-water port. To support its growing cattle trade, Corpus Christi dredged its main sea channel to allow access to larger steamers. Construction was completed on the port in 1926 (Long, 2020b). Its construction reduced the importance of Rockport's deep-water port (Long, 2020a).

The economy improved following the construction of the deep-water ports after being impacted by the damaging effects of the 1919 hurricane. In the years to follow, the construction of the Port of Corpus Christi, as well as the discovery of oil in Nueces County in 1930, offset the economic impact of the Great Depression (Long, 2020b). In addition, the late 19th century introduced shipbuilding and fishing into the market. The shrimping industry, introduced to the economy of Rockport by the 1930s, was prosperous, producing 51 million pounds of shrimp by the 1950s. Rockport's shipbuilding industry boomed during World War I and World War II (Long, 2020a). In 1965, the Port of Corpus Christi began dredging the navigational channels that are being upgraded as part of the current undertaking (Long, 2020b).

2.4.6 The Gulf Intracoastal Waterway

The proposed CDP crosses the Gulf Intracoastal Waterway (GIWW), a significant inland navigational and commercial waterway that parallels the Gulf coast, as it passes through the barrier Mustang and San José islands into Nueces Bay. The GIWW is a 1,100-mile-long, shallow-draft (~12 feet deep) canal system and interior waterway that runs continuously from the Port of Brownsville, Texas to Saint Marks, Florida. More than 30 percent of the entire GIWW (379 miles) follows Texas' coast (Texas Department of Transportation, 2020). Engineers and government leaders formulated the first concepts for the GIWW as an internal commercial system of interconnecting canals and roads as early as 1808, but, beyond occasional survey approvals, little physical progress was made throughout most of the 19th century. The first plans for the Texas portion of the GIWW were developed in 1875, but the dominant railroad industry successfully hindered most efforts to build it well into the 20th century (Leatherwood, 2021b). Prospectors' discovery of oil at the Spindletop field near Beaumont ushered in an oil boom that pushed canal development further, but the GIWW did not reach the study area until 1941 (Leatherwood, 2021b). Construction began in earnest when the United States entered World War II when the Gulf of Mexico became a primary hunting ground for German U-Boats (submarines). The US needed a safe transport corridor to carry supplies out of the gulf and into the open Atlantic Ocean. The GIWW was expanded and extended to its current dimensions during the War (Texas Department of Transportation, 2020; Leatherwood, 2021b).

2.4.7 Naval Aviation and Naval Air Station Corpus Christi

During the 1920s and 1930s, the U.S. Navy explored the fledgling tactic of employing aircraft in naval combat roles. These various wargaming exercises were called “Fleet Problems.” By 1938, the U.S. Navy had 1,000 planes in service; however, that year, Congress authorized funds to triple naval air strength and construct new naval air stations (NAS). The Navy chose a location in Flour Bluff, fifteen miles southeast of Corpus Christi as one such NAS. The site was selected due to its favorable weather year-round and flat, undeveloped land. Corpus Christi Bay would also allow space for seaplanes to land. Construction on NAS Corpus Christi began quickly, and the station was commissioned on March 12, 1941. In early April, the first group of cadets reported for training (Coletta, 1985).

Following the Japanese attack on Pearl Harbor on December 7, 1941, NAS Corpus Christi was flooded with recruits. With its access to the ocean and port facilities, the station soon became a supply base for vessels involved in coastal patrol. In addition, the PBY *Catalinas*, used in advanced pilot training, conducted long-range patrols of the Texas Coast. In 1944, a torpedo bombing training squadron was also added to the facility. Pilots trained at NAS Corpus Christi typically joined carrier air wings or went on to fly multi-engine patrol bombers, as several types of aircraft were used to train cadets, including F6-F *Hellcats*, F8-F *Bearcats*, P2V *Neptunes*, and PBM *Mariners*.

During the 1950s, the Navy constructed more runways and navigation systems at NAS Corpus Christi. Training aircraft for primary recruits were upgraded to the T-28 *Trojan* planes while helicopters were being used at the base regularly. In 1954, the first F9F-2 *Panther* jet propelled aircraft began flying from NAS Corpus Christi; however, jet flight training quickly switched to NAS Kingsville in 1957. In 1956, USS *Antietam*, CV-36, arrived off NAS Corpus Christi, allowing pilots to become carrier qualified. By the mid-1960s, the Navy discontinued seaplane operations (Coletta, 1985), including landings in Corpus Christi Bay.

3.0 OVERVIEW OF KNOWN CULTURAL RESOURCES IN THE STUDY AREA

The following section is a summary of previously-recorded terrestrial and offshore archaeological sites, surveys, cemeteries, NRHP properties or districts, and other cultural resources within the study area that have been recorded in various databases. These include:

- THC’s Online Archeological Sites Atlas (THC Atlas, 2021)
 - NRHP-listed Districts and Properties
 - Historic-age cemeteries
 - Previously conducted terrestrial and underwater archaeological investigations (locations, reports of findings)*
 - Previously recorded archaeological sites*
 - Previously recorded historic shipwrecks*
- Texas State Marine Archeologist (at the THC)
 - Various records and past investigation reports not available on the Atlas.
- National Oceanic and Atmospheric Administration (NOAA) Automated Wreck and Obstruction Information System (AWOIS) and Electronic Navigation Chart (ENC) Datasets (NOAA, 2021)
 - Recorded historic and recent shipwreck general locations and descriptions.

** Denotes datasets that contain sensitive archaeological site location information. These data are restricted from public presentation or distribution.*

3.1 TERRESTRIAL CULTURAL RESOURCES

3.1.1 National Register of Historic Places Properties and Districts in the Study Area

According to the THC’s Atlas (2021), six NRHP listed Districts (Table 1) and 14 NRHP listed properties are located within the study area (Table 2). Most of these resources are individual residences, commercial buildings, and other structures that are far away from the CDP project’s Area of Potential Effects (APE). Previous CDP cultural resource coordination resulted in a determination that none of these resources is likely to be affected by the proposed action. The Aransas Pass Light Station is the closest National Register-listed resource to any of the proposed project components.

Table 1
Historic Districts within the Study Area

National Register Reference #	Year Listed	Historic District	County
77001423	1977	Aransas Pass Light Station	Aransas
88001829	1988	Broadway Bluff Improvement	Nueces
6000121	2016	600 Building	Nueces
15000336	2015	Galvan Ballroom	Nueces
66000820	1966	King Ranch	Kleberg, Kenedy
96000065	1996	Seale, Wynn, Junior High School	Nueces

Source: THC Atlas (2021).

Table 2
National Register Listed Properties within the Study Area

National Register Reference #	Year Listed	County	NRHP Property Name
83003155	1983	Nueces	Guggenheim, Simon, House
75001945	1975	Aransas	Fulton, George W., Mansion
79003002	1979	Nueces	Tarpon Inn
79003003	1979	Nueces	Old St. Anthony's Catholic Church
93000129	1993	Nueces	King, Richard, House
94001016	1994	Aransas	Hoopes--Smith House
71000918	1971	Aransas	Mathis, T.H., House
76002054	1976	Nueces	Britton-Evans House
83003156	1983	Nueces	Lichtenstein, S. Julius, House
83003157	1983	Nueces	Sidbury, Charlotte, House
76002055	1976	Nueces	Nueces County Courthouse
03001043	2003	Nueces	USS <i>Lexington</i>
83003811	1983	Refugio	Wood, John Howland, House
10000863	2010	Nueces	Sherman Building

Source: THC Atlas (2021).

3.1.2 Recorded Historic-Age Cemeteries within the Study Area

According to the THC Atlas (2021), 39 previously recorded historic-age cemeteries are mapped within the study area (Table 3). San Ignacio Cemetery, near the community of Ingleside, is the closest of any of these historic-age cemeteries to the CDP project vicinity, but it is still roughly 1.6 miles away. This cemetery is briefly discussed in the Impacts chapter.

Table 3
Previously Recorded Cemeteries within the Study Area

THC Cemetery #	Cemetery Name	County
NU-C003	Memory Gardens	Nueces
RF-C004	St Bernard	Refugio
RF-C005	La Rosa	Refugio
RF-C006	Oakwood	Refugio
NU-C013	Seaside Memorial	Nueces
NU-C014	Aberdeen	Nueces
NU-C033	Rose Hill	Nueces
NU-C018	Holy Cross	Nueces
NU-C002	Old Bayview	Nueces
NU-C009	Nueces County	Nueces
NU-C031	Mercer	Nueces
NU-C022	Royal Palms	Nueces
NU-C011	Robstown	Nueces
NU-C025	Hebrew Rest	Nueces
NU-C008	St. Anthony's	Nueces
AS-C005	McLester Family	Aransas
AS-C008	Barber	Aransas
NU-C016	Sunshine	Nueces
NU-C001	Duncan	Nueces
AS-C001	Cementerio San Antonio de Padua	Aransas
AS-C002	Fulton	Aransas
AS-C003	Rockport	Aransas
AS-C004	Lamar	Aransas
AS-C006	Powell-Young	Aransas
AS-C007	Aransas Memorial Park	Aransas
SP-C001	Sinton	San Patricio
SP-C008	San Pedro	San Patricio
SP-C010	Bethel	San Patricio
SP-C012	Bellevue	San Patricio
SP-C013	San Patricio Memorial Park	San Patricio
SP-C014	Portland	San Patricio
SP-C015	Prairie View	San Patricio
SP-C016	San Ignacio	San Patricio
SP-C022	Eternal Rest	San Patricio
SP-C025	Meansville	San Patricio
RF-C003	Saint Mary's	Refugio
SP-C011	Rosita	San Patricio
SP-C020	Welder Grave	San Patricio
NU-C019	New Bayview	Nueces

Source: THC Atlas (2021).

3.1.3 Previously Conducted Terrestrial Archaeological Investigations in the Study Area

The THC's Atlas includes information regarding all recorded terrestrial archaeological field projects (that the state is informed of) conducted within the state. These projects include reconnaissance and intensive field surveys, NRHP and/or SAL-eligibility testing, and data recovery excavations. Information thoroughness and accuracy varies between the records but one can make some general interpretations from the dataset. The THC Atlas (2021) records indicate that 344 terrestrial field investigations have been conducted within the study area with the earliest dating back to 1921 (Figure 1). The USACE oversees a range of public and private development projects such as navigation improvements, oil and gas pipelines, and general infrastructure. The 109 recorded terrestrial projects in the study area attributed to the USACE – nearly five times its nearest neighbor – reflects the agency's broad oversight (Table 4). Archaeological surveys and intensive site investigations associated with road and other transportation improvement projects, sponsored by the Texas Department of Transportation (n=23; and its earlier iteration as the Texas Department of Highways and Public Transportation: n=7) or the Federal Highway Administration (n=15), make up another significant component of recorded field investigations. None of the previously conducted terrestrial projects directly overlaps the CDP APE; however approximately 33 – roughly 10 percent of the total number of recorded terrestrial field investigations – are within 3,000 feet of it. Findings from the remaining 311 recorded investigations are unlikely to contribute significant insights relevant to the CDP's potential to impact significant terrestrial archaeological resources.

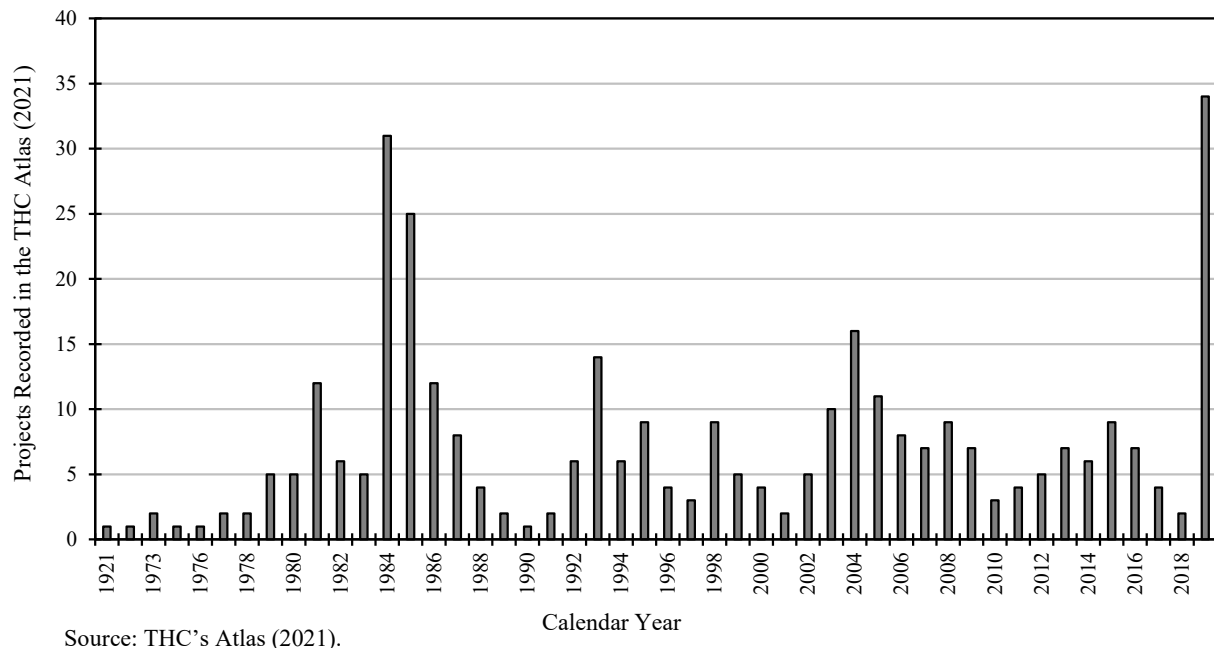


Figure 1. Recorded Archaeological Field Investigations Conducted within the Study Area

Table 4
Summary of Previously Conducted Terrestrial Archaeological Projects in the Study Area

Project Sponsor/Agency	Number of Projects
U.S. Army Corps of Engineers-Galveston District	109
Texas Department of Transportation	23
City of Corpus Christi	20
Environmental Protection Agency	17
Federal Highway Administration	15
U.S. Air Force	11
Texas Water Development Board	10
Texas Parks and Wildlife Department	9
Texas Department of Highways and Public Transportation	7
Port of Corpus Christi Authority	6
U.S. Navy	6
Housing and Urban Development	6
Federal Energy Regulatory Commission	5
Texas A&M University - Corpus Christi	4
Lower Colorado River Authority	4
Federal Housing Administration	3
City of Rockport	3
Nueces County	3
City of Portland	2
San Patricio Municipal Water District	2
General Services Administration	2
Aransas County	2
Veterans Administration	2
Other*	22
<i>Null/Unknown</i>	<i>51</i>
Total	344

*Other: Gregory-Portland Independent School District, Bureau of Reclamation, City of Fulton, Port of Corpus Christi Authority, U.S. Fish and Wildlife Service, Private, US Fish and Wildlife, Refugio County, Texas General Land Office, San Patricio County Drainage District, Naismith Engineering, Inc., Naval Facilities Engineering Command Southeast, City of Woodsboro, U.S. Army, Voestalpine Texas LLC, Environmental Protection Agency, Bureau of Land Management, Federal Communications Commission, Witte Museum, Texas Commission on Environmental Quality, City of Port Aransas, and Nueces County Coastal Parks System (1 recorded survey each).

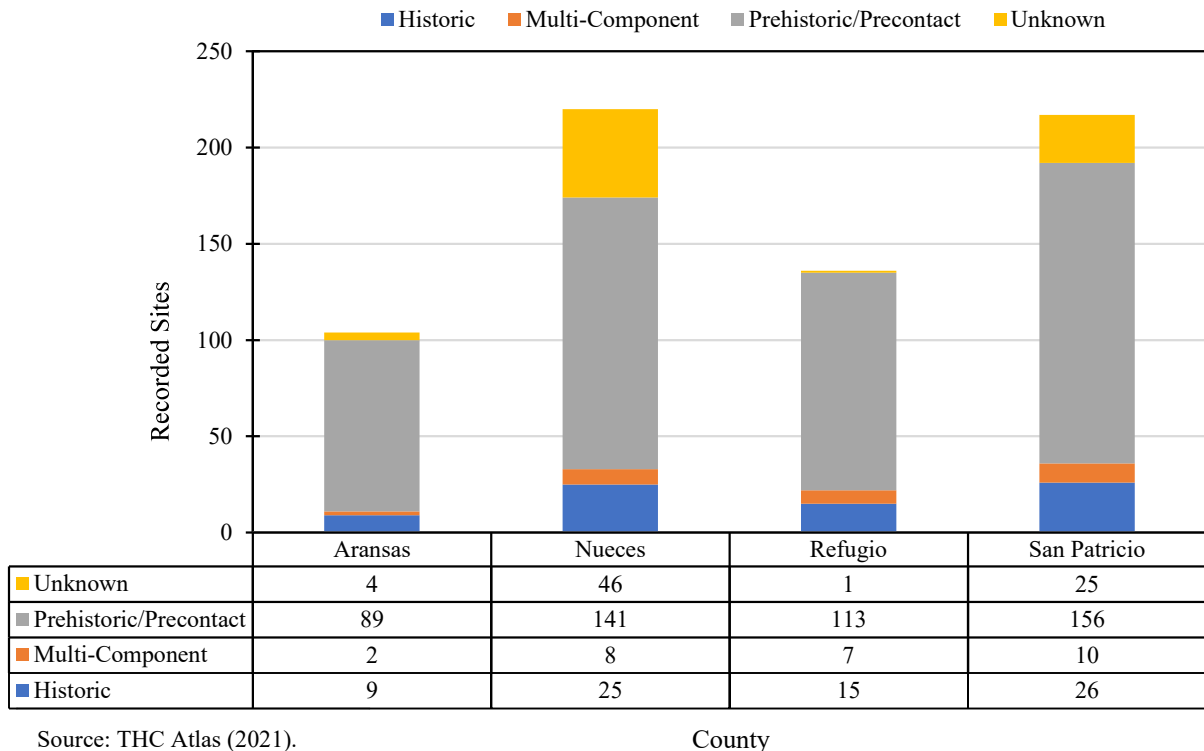
Source: THC Atlas (2021).

3.1.4 Previously Recorded Terrestrial Archaeological Sites in the Study Area

The THC's Atlas (2021) records indicate that there are 677 previously recorded terrestrial archaeological sites within the overall study area (Figure 2). These sites are remnants of a range of occupations from humans' earliest millennia in the region to the early-to-mid-20th century. Most of these sites dot the shorelines of the study area's major water bodies while many have been recorded farther inland. Across each of the study area counties, site age distributions are similar: most recorded sites are attributed to pre-

contact/prehistoric periods while historic-age sites make up roughly 10 percent of a given county’s site tally. The overwhelming majority of recorded prehistoric/precontact site components are of an unspecified age (Table 5). In some part, the unattributed components could be an indication of incomplete or inaccurate site records in the THC’s database. With that said, many archaeological sites are small, isolated lithic flake or shell scatters with no specific types of artifacts that archaeologists know date to a certain historical period, called “diagnostics.” As a result, a substantial number of these sites’ ages remain unspecified.

Most of the recorded prehistoric sites date to the Late Prehistoric or Late Archaic/Late Prehistoric periods (from 3,000 to 300 years ago). Also of note, only one recorded site (41SP157 in San Patricio County) in the study area has an identified Paleoindian component. This matches the regional cultural chronology patterns discussed above. Most of the recorded prehistoric archaeological sites/site components within the study area are small, isolated lithic scatter sites like those described above (Table 6). When one includes the even more sparse scatters, these non-descript sites make up more than 60 percent of the total tally. A third of the prehistoric sites are defined as occupation sites, most often with shell middens. This is indicative of the bay systems’ influence on ancient people’s lives. In addition, nine site records include references to containing human remains: 41AS80, 41NU60, 41NU66, 41NU276, 41RF20, 41SP1, 41SP45, 41SP64, and 41SP203. Many of these sites were recorded decades ago in poor condition, eroded on shorelines and none are mapped in the CDP’s project vicinity.



Source: THC Atlas (2021).

County

Figure 2. Distribution of the Ages of Terrestrial Archaeological Sites within the Study Area (Divided by Bounty and Primary Site Component Age)

Table 5
Summary of Recorded Terrestrial Archaeological Site Components in the Study Area

Prehistoric/ Precontact Period	Number of Components	Percentage of Total
Late Paleoindian/Archaic	1	10.2
Archaic	36	6.8
Early Archaic	1	0.2
Early/Middle Archaic	1	0.2
Middle/Late Archaic	1	0.2
Late Archaic	16	3.0
Late Archaic/Late Prehistoric	17	3.2
Late Prehistoric	73	13.9
<i>Unspecified</i>	380	72.2
Total	526	100.0

*Divided by specific component age

Source: THC Atlas (2021).

Table 6
Summary of Recorded Terrestrial Prehistoric Archaeological Sites/Site Components in the Study Area*

Recorded Prehistoric Site/ Site Component Type	Number of Recorded Sites	Percentage of Total
Scatter/campsite	244	46.4
Occupation/midden/shell midden	165	31.4
Unknown Prehistoric	95	18.1
Scatter/campsite; shell midden	13	2.5
Prehistoric burial/cemetery	8	1.5
Scatter/campsite; prehistoric burial/cemetery	1	0.2
Total	526	100.0

* Divided by Site type

Source: THC Atlas (2021).

Pre-contact archaeological sites that now lie underwater but were originally on dry land would follow similar distributional patterns of terrestrial pre-contact archaeological sites farther inland. Typically, terrestrial archaeological sites of this period are denser on terraces overlooking waterways. Periodic floods along these waterways carry mud that can bury remnants of ancient campsites, homes, and other features, preserving them in place (Davis, 2017). This preservation gives archaeologists more data from which to learn about the people who used and created the site and therefore makes them more scientifically valuable. Even though they are now underwater, many of these relict river and stream channels – and their corresponding terraces – are detectable within the study area. Bathymetric data indicates that most of the modern Corpus Christi Bay complexes were terrestrial terraces overlooking the confluence of the Nueces and Mission rivers during this period (Evans, 2016). The ancient Nueces River channel continued

southward, through Redfish Bay and what is now Mustang Island State Park, where it eventually emptied into the Gulf at the Outer Continental Shelf. Because of natural siltation processes within the Gulf, prehistoric cultural deposits could be preserved under more recent Holocene deposits (Evans, 2016; Davis Jr., 2017).

As stated above, historic-age archaeological sites make up roughly 10 percent of the total study area assemblage. This is likely the result of two factors: 1) archaeologists did not typically study and formally record historic-age sites as intensively before cultural resource regulatory laws were put in place; and 2) the “historic” period lasts for only 300-400 years, roughly five percent of the full span of human occupation in the region. Not enough time has passed in the historic period to generate as many sites as the 8,000-year prehistoric period. Accordingly, when viewed in relation to their prehistoric counterparts, the density of historic-age sites is high (Table 7). Domestic and farmstead sites make up nearly half of all the historic-age sites, most dating to the late 1800s and early 1900s. Nondescript trash scatters make up another quarter of the total historic-age site tally. Other notable sites relate to military (41NU253, Zachary Taylor’s Army Camp site; 41AS82, Shellbank Island Civil War Fort; and 41NU361, military housing remnants at Corpus Christi NAS), commercial (41SP35, La Quinta Mansion; 41SA95, a mid-19th-century salt production facility), and transportation (41NU289 and 41NU290, remnants of the Aransas Railroad and Ransom Island causeways) activities. Four cemeteries/burial sites are among the THC Atlas (2021) site records for the study area as well: 41NU254, 41RF143 (the Plummer’s Graves Cemetery), 41SP122 (Hatch Preemption Cemetery), and 41SP276 (Portland/Georgia Cemetery). All are attributed to the late 19th century.

Table 7
Summary of Recorded Historic-Age Terrestrial Archaeological
Sites/Site Components in the Study Area*

Recorded Historic-Age Site Type/Primary Age	Sites/Site Components	Percentage of Total
Agriculture	2	2
1901-1950	1	50
Unspecified	1	50
Burial/cemetery	4	3.9
1851-1900	4	100
Commerce/Transportation	5	4.9
1851-1900	2	40
1901-1950	3	60
Commercial	7	6.9
1801-1850	1	14.3
1901-1950	6	85.7
Domestic/Farmstead	44	43.1
1801-1850	1	2.3
1851-1900	15	34.1
1901-1950	17	38.6
Unspecified	11	25

3.0 Overview of Known Cultural Resources in the Study Area

Recorded Historic-Age Site Type/Primary Age	Sites/Site Components	Percentage of Total
Education	2	2
1851-1900	2	100
Engineering/Industrial	3	2.9
1901-1950	3	100
Military	6	5.9
1801-1850	1	16.7
1851-1900	3	50
1901-1950	1	16.7
Unspecified	1	16.7
Nondescript scatter/trash dump	29	28.4
1851-1900	1	3.4
1901-1950	14	48.3
Unspecified	14	48.3
Grand Total	102	100

* Divided by site type and primary age.

Source: THC Atlas (2021).

Previously recorded sites 41NU92, 41NU153, and 41NU210 are located within the proposed CDP's APE. They will be discussed in more detail in the Impacts chapter. Below is a summary of some of the other previously recorded sites within the study area but are farther away. Though they are not likely to be impacted by the undertaking, they are indicative of the types of terrestrial archaeological resources in the project vicinity.

Site 41SP28 is part of a series of shell middens that were recorded on a shoreline dune ridge on the northern shore of Corpus Christi Bay. Shell middens along the dune ridge typically hold the remains of lithic tools and fire-hardened clay in addition to the shell artifacts. Many of these sites are dateable only by projectile points; in the case of 41SP28, two dart points were recovered: one Tortugas point and the other a Plainview type, dating the site to sometime in the Middle to Late Archaic (41SP28 Site Record in THC Atlas, 2021). Evidence for long-term occupation in the study area is prevalent.

Site 41SP11 is the location of a substantial prehistoric occupation; artifacts at the site included several types of lithic dart points (Darl, Catan, Perdiz, Eddy, Starr, and Young), shell tools, stone pipe fragments, decorated and undecorated ceramics, and a glass bead. Artifacts seen at Site 41SP108 indicate a camp site and associated shell midden. In addition to the midden, artifacts included lithics, burned bone, and ceramics. Site 41SP78 was the location of a prehistoric burial that includes five to seven individuals and associated burial goods like a necklace, Ensor lithic point, and bone objects (41SP11 Site Record in THC Atlas, 2021).

While shell middens such as 41SP28 demonstrate that humans occupied the area during the Archaic Period, the ceramics at 41SP108 and 41SP11 and burials at 41SP78 indicate temporally longer occupations and possibly permanent settlements by the Late Prehistoric period (Rutherford et al., 2018).

Sites 41NU253 and 41NU351 have been identified as the locations of General Zachary Taylor's Camp during the Mexican American War. Artifacts recovered from 41NU253 included clay pipes, bottles, ammunition, and military accoutrements including buttons and belt buckles (41NU253 site record in Atlas, 2021). Site 41NU351 is also part of General Taylor's encampment at Corpus Christi, and it is located within modern-day Artesian Park. The park was named after a well that was drilled at the site to supply fresh water for the army during Taylor's encampment. The archaeological site has a subsurface layer of coal and iron slag left over from the seven-month encampment. After the Civil War, the area was presumably used as a leisure area; archaeologists encountered bottles dating from 1878 to 1882 (41NU351 site record in THC Atlas, 2021).

Finally, Site 41AS91 was initially recorded in 1995 as a potential army supply depot and camp dating to the Mexican American War and potentially re-used during the Civil War. Though informants visited the site, the high sand dunes obscured what historical records suggested might be buried features such as the quartermaster's headquarters, ordinance stores, general hospital, and more. Archaeologists did not observe any such features and based their interpretations primarily on archival records. In 2001, archaeologists returned to the site area. This time, investigators successfully interpreted that the landform on which the original 41AS91 boundary had been recorded had not developed until the 1870s, after the Aransas Lighthouse was constructed. The site recorders in 2001 did find structural features, including brick fragments and wooden posts that they attributed to a factory built in 1934. The site's original boundary is adjacent to the proposed SJI project component, but the revised site boundary is farther to the west, away from the APE. Archaeologists recommended that the site's NRHP and SAL eligibility was undetermined, pending additional investigation (41AS91 site records in THC Atlas, 2021).

Other sites associated with leisure along the bay shore include the site of the Harbor Inn (41SP199), a resort dating to the early 20th century. Structural elements and steps are located on site along with caliche-lined walkways. Artifacts recovered from the site included colorless glass, cow bone, and refrigerator and stove parts (41SP199 site record in Atlas, 2021). Historic causeways leading to the barrier islands include sites 41NU289 and 41NU290. Site 41NU289 is the remains of a 1912 railroad causeway leading to docking facilities on Harbor Island, and 41NU290 is of the remains of a causeway leading to 1930s and 1940s resorts on Ransom Island (THC Atlas, 2021).

3.2 UNDERWATER/MARITIME CULTURAL RESOURCES WITHIN THE STUDY AREA

3.2.1 Previously Conducted Underwater Archaeological Surveys

According to the THC Atlas (2021), underwater archaeologists have conducted 46 surveys within the study area. These surveys cover nearly 31,000 acres of submerged lands in the study area and span more than 40 years, beginning in 1976 and extending to 2019. Investigations supporting the petroleum industry (n=27) make up nearly 60 percent of the total number of projects, while navigational, dredging, and other infrastructure improvements account for another quarter (n=11). Other surveys correspond with reef and

habitat improvement projects (n=4), and specific site assessments (n=3; Table 8). Most of these projects were conducted regularly throughout the 43 years of recorded investigations, but a distinct increase in petroleum-industry-related surveys corresponds with the recent fracking boom of the mid-to-late 2000s (Figure 3). Ten of the 46 recorded investigations overlap or are located adjacent to CDP project components. Those surveys will be discussed in more detail in the Impacts chapter.

Table 8
Summary of Recorded Underwater Archaeological Surveys Conducted in the Study Area

Proponent Industry	Number of Surveys	Percentage of Total Surveys
Petroleum	27	59.0
Navigation/Dredge	11	24.0
Habitat Management	4	9.0
Site Assessment	3	7.0
Undetermined	1	2.0
Total	46	100.0

Source: THC Atlas (2021).

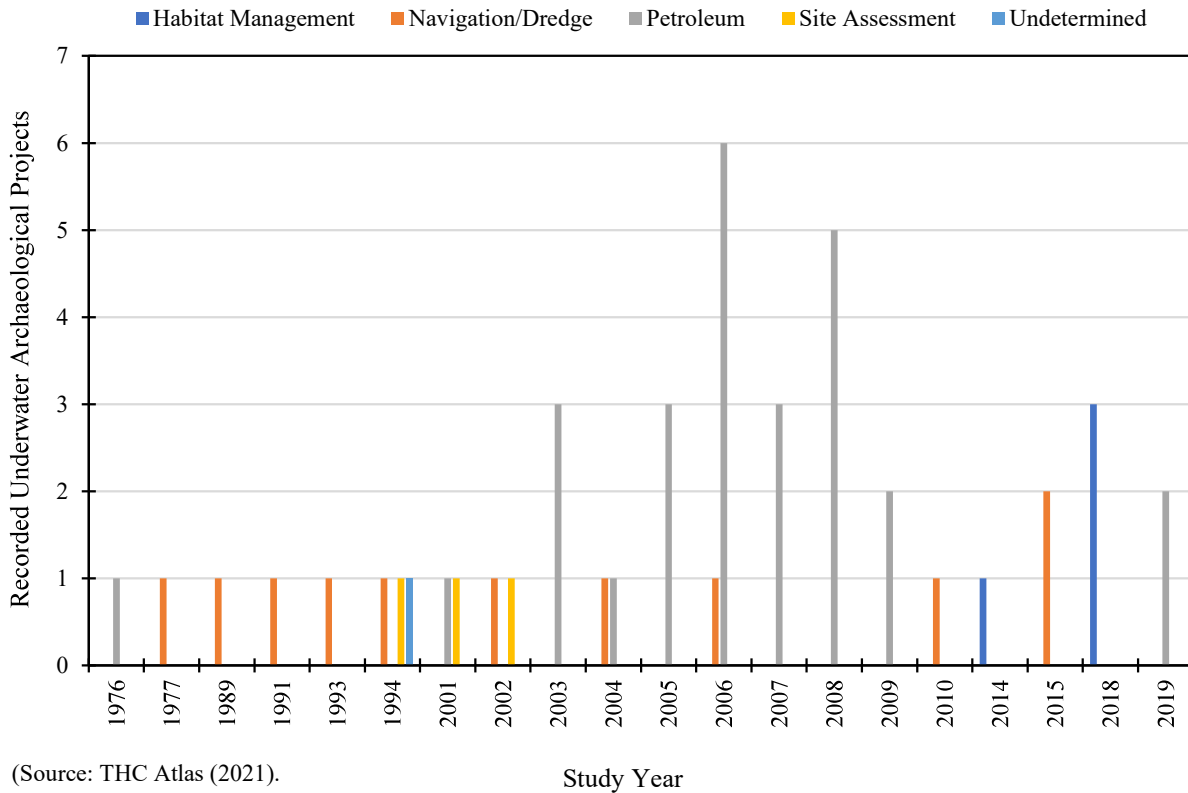


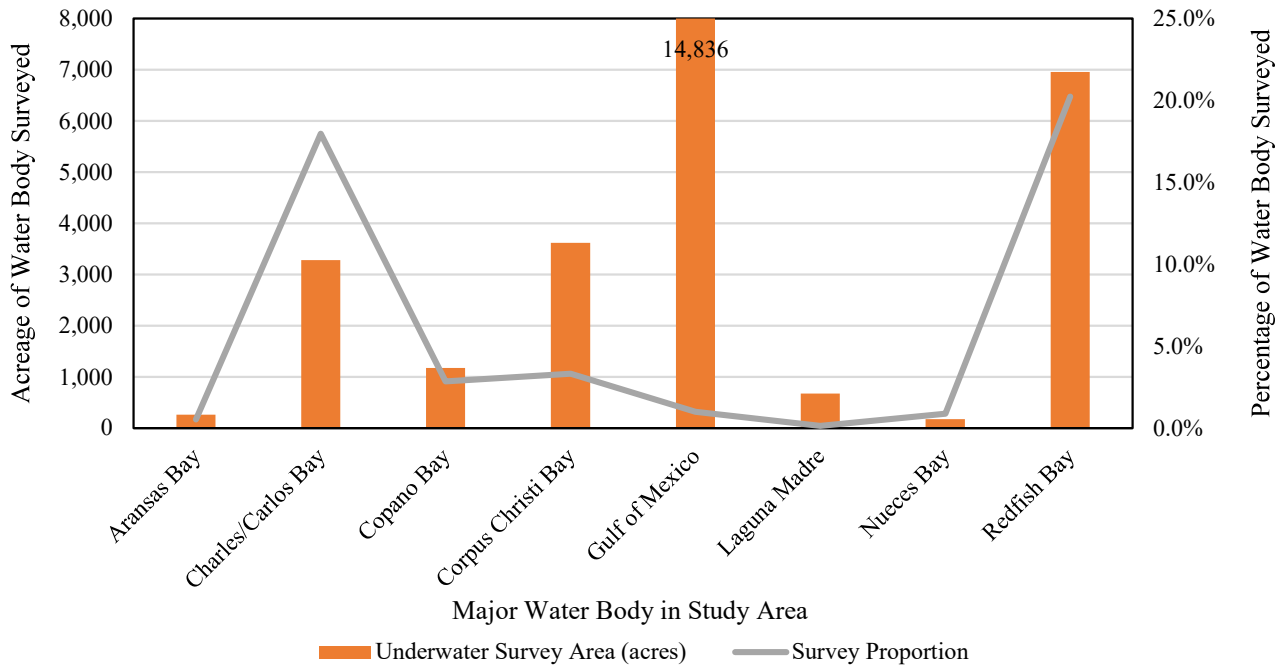
Figure 3. Recorded Archaeological Field Investigations Conducted within the Study Area

Intensive archaeological survey is necessary to determine with certainty how a proposed action (e.g., a construction project like the proposed CDP) might impact – directly or indirectly – archaeological cultural resources. Bulk geographic data from Texas Parks and Wildlife’s Coastal Fisheries Division (2018) and aggregated information from underwater archaeological investigations within the PCCA CDP study area (THC Atlas, 2021) offer a preliminary glimpse of what might be affected once the project begins construction. Table 9 and Figure 4 provide breakdowns of these datasets. At the most basic level, little of the study area has been physically investigated. Collectively, more than two million acres of the study area’s underwater footprint (more than 98 percent; larger than the state of Delaware) has never been subject to formal archaeological investigations. Most of the individual water bodies, though higher than the overall average, have three percent or less survey coverage. A significantly greater proportion of Charles/Carlos Bay, near the study area’s eastern edge, and Redfish Bay, just inside the breakwater, have been previously surveyed. For the former, this is likely a reflection of the bay’s small size, while the latter corresponds with a particularly busy part of the study area with numerous previous development projects.

Table 9
Summary of Geographic and Cultural Resource Distribution Data within the Study Area

Water Body	Total Area (acres)	Underwater Survey Area (acres)	Survey Proportion (Percent)	Recorded THC Shipwrecks	Underwater Surveys	Shipwrecks Per Surveyed Acre	Surveyed Acres Per Shipwreck
Aransas Bay	50,970	266	0.5	10	9	0.0376	26.6
Charles/Carlos Bay	18,252	3,280	18.0	0	1	0.0000	N/A
Copano Bay	41,190	1,173	2.8	3	5	0.0026	391.1
Corpus Christi Bay	108,968	3,617	3.3	18	11	0.0050	200.9
Gulf of Mexico	1,490,390	14,836	1.0	89	6	0.0060	166.7
Laguna Madre	472,615	674	0.1	1	1	0.0015	674.1
Nueces Bay	19,842	175	0.9	0	2	0.0000	N/A
Redfish Bay	34,385	6,958	20.2	28	11	0.0040	248.5
Total	2,236,610	30,980	1.4	149	46	0.0048	207.9

Source: THC Atlas (2021); Texas Parks and Wildlife Department (TPWD, 2018).



Source: THC Atlas (2021); TPWD (2018).

Figure 4. Previous Underwater Survey Coverage of the Study Area by Water Body/Bay System

Researchers can expect greater interpretive accuracy from a combination of the total survey acreage *and* the proportion of that coverage compared to the overall study area. From that perspective, data projections generated from earlier surveys in Corpus Christi and Redfish bays are likely more correct than those from, for instance, Nueces Bay or Laguna Madre. While the previous investigations do tell us a lot about the types of archaeological resources that the CDP may impact, it is essential to remember that we are basing that understanding on a tiny portion of the overall picture.

3.2.2 Previously Recorded Shipwrecks within the Study Area

THC records list 149 recorded shipwrecks within the study area (THC Atlas, 2021). Fifty-four (n=54) of those are nearest to the proposed segments of the CDP APE. Twenty-seven (n=27) of these recorded shipwrecks correspond with entries in NOAA’s AWOIS/ENC databases. An additional 31 AWOIS shipwreck records are mapped in the study area but do not correspond with THC shipwrecks. This brings the total number of recorded shipwrecks in the study area to 180. Table 10 includes the list of known shipwrecks inside the study area, as well as their THC Shipwreck Number and/or AWOIS Record Number, the year each was lost, a trinomial (if the shipwreck is also an archaeological site), each shipwreck’s SAL status, what type of vessel (if known), and its estimated position accuracy (THC Atlas, 2021; NOAA, 2021).

Table 10
Reported Shipwrecks within the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
5	–	<i>Henrietta</i>	1888	–	yes	sailing ship, merchant	1.0 mile	–
31	182	<i>Empress</i>	1955	–	no	trawler	1.0 mile	THC, AWOIS, ENC
41	–	Unknown	pre–1943	–	no	barge	"excellent"	–
51	4175	<i>Mary</i>	1876	41NU252	yes	sail–steam, merchant	"exact"	THC, AWOIS
113	–	Unknown	1834	–	yes	sailing ship	15.0 miles	–
114	–	<i>Wildcat</i>	1834	–	yes	sail	5.0 miles	–
115	–	<i>Cardena</i>	1834	–	yes	sailing ship, merchant	3.0 miles	THC
137	191	<i>Atlanta</i>	1957	–	no	unknown	1.0 mile	THC, AWOIS, ENC
141	–	<i>Baddacock</i>	1920	41NU282	no	sail tug	–	–
153	–	<i>Bertha</i>	1917	–	no	unknown	5.0 miles	–
156	–	<i>Betty Sca</i>	1966	–	no	oil screw	–	–
165	–	<i>Captiva II</i>	1942	–	no	yacht	3.0 miles	–
175	–	<i>Chuckadee</i>	1963	–	no	shrimp boat	1.0 mile	–
192	–	<i>Colonel Yell</i>	1847	–	yes	sail–steam, merchant	2.0 miles	THC
197	–	<i>Coral Sands</i>	1955	–	no	unknown	–	THC
208	–	<i>Dayton</i>	1845	–	yes	sail–steam, merchant	–	–
214	–	<i>Desco</i>	1966	–	no	oil screw	–	–
215	–	<i>Dixie Dandy</i>	1957	–	no	oil screw	–	–
235	–	<i>Electra</i>	1955	–	no	unknown	5.0 miles	–
256	–	<i>40 Fathom No. 12</i>	1955	–	no	unknown	0.5 miles	THC
260	–	<i>Florette</i>	1938	–	no	unknown	20.0 miles	–
286	–	<i>Guyton No. 1</i>	1916	–	no	barge	1.0 mile	THC
287	–	<i>Guyton No. 10</i>	1911	–	no	barge	5.0 miles	THC, ENC
307	–	Unknown	1865	41NU153	yes	anti–torpedo raft; naval vessel	0.10 miles	–
315	–	<i>Japonica</i>	1941	–	no	oil screw	5.0 miles	–
316	–	<i>Jesse C. Barbour</i>	1922	–	no	sailing ship, merchant	20 miles	–

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
343	–	<i>Libbie Shearn</i>	1911	–	no	sailing ship, merchant	3.0 miles	–
423	–	<i>Philidelphia</i>	1868	–	yes	sail–steam, merchant	1.0 mile	–
469	–	<i>San Jacinto</i>	1960	–	no	oil screw	5.0 miles	–
512	–	<i>Umpire</i>	1852	–	yes	sail–steam, merchant	0.5 miles	THC
513	11022(?)	Unknown (<i>Utina?</i>)	–	41NU264	no	–	–	THC, AWOIS
609	–	<i>Mary E. Lynch</i>	1902	–	no	sailing ship, merchant	1.5 miles	–
623	–	<i>Mystery</i>	1899	–	yes	sailing ship, merchant	–	–
637	–	<i>Hannah</i>	1862	–	yes	sailing ship, merchant	–	–
653	–	<i>Mattie</i>	1873	–	yes	sailing ship, merchant	0.5 miles	THC
655	–	<i>Mary Agnes</i>	1862	–	yes	sailing ship, merchant	5.0 miles	THC
658	–	<i>Lottie Mayo</i>	1886	–	yes	sailing ship, merchant	3.0 miles	–
659	–	<i>Louisa</i>	1865	–	yes	sailing ship, merchant	5.0 miles	–
853	176(?)	Unknown	1954	–	no	unknown	–	THC, AWOIS, ENC
854	–	<i>Tarambana</i>	1967	–	no	unknown	–	–
855	185(?)	Unknown	1960	–	no	trawler	0.5 miles	THC, AWOIS, ENC
858	4162	<i>Hill Tide</i>	1967	–	no	–	1.0–3.0 miles	THC, AWOIS, ENC
860	–	<i>Liboria C.</i>	1954	–	no	trawler	1.0 mile	–
861	201	<i>Blue Bonnet</i>	1967	–	no	trawler	–	THC, AWOIS
992	–	<i>Lake Austin</i>	1903	–	yes	trading scow	3.0 miles	THC
1019	–	Unknown	pre–1928	–	no	unknown	0.25 miles	THC
1024	4190	Unknown	–	–	no	unknown	–	THC, AWOIS, ENC
1025	4193	<i>Lisa Gail</i>	1972	–	no	unknown	–	THC, AWOIS, ENC
1027	–	Unknown	pre–1968	–	no	unknown	0.25 miles	THC
1028	195	<i>De Rail</i>	1972	–	no	cabin cruiser	0.25 miles	THC, AWOIS

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
1030	–	Unknown	pre–1950	–	no	unknown	0.25 miles	THC
1031	4175	<i>Jimbo</i>	1965	–	no	fishing boat	0.35 miles	THC, AWOIS
1032	5020	<i>John Worthington</i>	1944	41AS88	no	oil tanker	"exact"	THC, AWOIS, ENC
1045	–	<i>William Bagley</i>	1863	–	yes	sail–steam, merchant	3.0 miles	THC
1047	–	Unknown	pre–1935	–	no	unknown	0.25 miles	THC
1049	–	<i>Ramyrez</i>	1882	–	yes	unknown	0.25 miles	THC
1056	–	Unknown	pre–1853	–	yes	schooner	0.5 miles	THC
1086	–	Unknown	pre–1971	–	no	unknown	–	THC
1087	–	Unknown	pre–1973	–	no	unknown	0.25 miles	THC
1088	–	Unknown	pre–1975	–	no	unknown	0.5 miles	THC
1089	–	Unknown	pre–1966	–	no	unknown	0.5 miles	THC
1090	–	Unknown	1977	–	no	unknown	–	THC, ENC
1091	–	Unknown	pre–1977	–	–	unknown	–	THC
1092	–	Unknown	pre–1967	–	no	fishing vessel	0.5 miles	THC
1180	–	Unknown	pre–1971	–	no	unknown	0.25 miles	THC
1181	–	Unknown	pre–1971	–	no	unknown	0.25 miles	THC
1218	5166(?)	Unknown	pre–1975	–	no	unknown	0.25 miles	THC, AWOIS
1219	–	Unknown	pre–1975	–	no	unknown	0.25 miles	THC
1220	–	Unknown	pre–1970	–	no	unknown	0.25 miles	THC
1221	5101(?)	Unknown	pre–1972	–	no	unknown	0.25 miles	THC, AWOIS
1222	–	Unknown	pre–1959	–	no	unknown	0.25 miles	THC
1223	10439(?)	Unknown	pre–1959	–	no	unknown	0.25 miles	THC, AWOIS, ENC
1224	5047(?)	Unknown	pre–1959	–	no	unknown	0.25 miles	THC, AWOIS, ENC
1225	5051(?)	Unknown	pre–1970	–	no	unknown	0.25 miles	THC, AWOIS, ENC
1226	–	Unknown	pre–1975	–	no	unknown	0.25 miles	THC

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
1227	–	Unknown	pre–1968	–	no	unknown	0.25 miles	THC
1228	5967	Unknown	pre–1972	–	no	unknown	0.25 miles	THC, AWOIS
1229	–	Unknown	pre–1971	–	no	unknown	1.0 mile	THC
1230	–	Unknown	pre–1971	–	no	unknown	–	THC
1231	–	Unknown	pre–1975	–	no	unknown	–	THC
1232	4998	<i>Bahia Honda</i>	pre–1968	–	no	shrimp boat	0.25 miles	THC, AWOIS, ENC
1233	–	Unknown	pre–1970	–	no	unknown	–	THC, ENC
1234	10436	Unknown	pre–1959	–	no	unknown	0.25 miles	THC, ENC
1272	–	<i>L'éclair</i>	1866	–	yes	sailing ship, merchant	5.0 miles	THC
1289	–	Unknown	pre–1971	–	no	unknown	0.5 miles	THC
1411	–	<i>Two Marys</i>	1882	–	yes	sailing ship, merchant	0.5 miles	THC
1412	–	<i>Tex Mex</i>	1882	–	yes	sailing ship, merchant	0.5 miles	THC
1417	–	<i>Silas</i>	1902	–	no	sailing ship, merchant	2.0 miles	THC
1420	–	<i>Ellen</i>	1901	–	no	sailing ship, merchant	0.25 miles	THC
1422	–	<i>Mary Lorena</i>	1900	–	yes	sailing ship, merchant	1.0 mile	THC
1449	–	<i>Reindeer</i>	1870	–	yes	sailing ship, merchant	0.5 miles	THC
1450	–	<i>Sea Bird</i>	1870	–	yes	sailing ship, merchant	3.0 miles	THC
1457	–	<i>Surprise</i>	1871	–	yes	sailing ship, merchant	1.0 mile	THC
1459	–	<i>Mary Hanson</i>	1870	–	yes	sailing ship, merchant	3.0 miles	THC
1476	–	<i>Nonesuch</i>	1880	–	yes	sailing ship, merchant	5.0 miles	THC
1528	–	Unknown	pre–1900	–	yes	unknown	0.25 miles	THC
1532	4817	Unknown	pre–1971	–	no	unknown	–	THC, AWOIS, ENC
1533	–	Unknown	1970	–	no	unknown	–	THC
1534	–	Unknown	pre–1966	–	no	unknown	0.1.0 miles	THC

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
1535	–	Unknown	pre–1950	–	no	unknown	0.25 miles	THC
1536	–	Unknown	pre–1971	–	no	unknown	0.25 miles	THC
1537	–	Unknown	pre–1950	–	no	unknown	0.25 miles	THC
1538	4816(?)	Unknown, Donna Marie (AWOIS)	pre–1976	–	no	unknown	–	THC
1539	–	Unknown	1976	–	no	unknown	–	THC
1690	–	<i>Leeway II</i>	1975	–	no	fishing vessel	"poor"	THC
1727	–	<i>Pilot Boy</i>	1916	–	no	steamship	20 miles	THC
1938	4183	<i>Eagle's Cliff</i>	1981	–	no	freighter	10.0 miles	THC, AWOIS
1939	–	<i>Jane and Julie</i>	1981	–	no	trawler	5.0 miles	THC
1940	–	<i>De Rail</i>	1972	–	no	yacht	3.0 miles	THC
1941	–	<i>Liberia C</i>	1964	–	no	–	5.0 miles	THC
1942	–	<i>Cabazon</i>	1959	–	no	–	5.0 miles	THC
1943	–	<i>Princess Pat</i>	1958	–	no	–	2.0 miles	THC
1944	–	<i>Jiffie</i>	1955	–	no	–	5.0 miles	THC
2186	–	<i>Tramp</i>	1919	–	no	–	5.0 miles	THC
2187	–	<i>Ring Dove</i>	1919	–	no	–	5.0 miles	THC
2190	–	<i>Texas No. 2</i>	1960	–	no	–	–	THC
2209	–	<i>American Star</i>	1970	–	no	–	5.0 miles	THC
2215	–	<i>Baetty Sca</i>	1966	–	no	–	5.0 miles	THC
2218	–	<i>Bill Hollis</i>	1970	–	no	–	3.0 miles	THC
2224	–	<i>Buckroy</i>	1959	–	no	–	–	THC
2231	–	<i>Captain Jimmie</i>	1962	–	no	–	–	THC
2236	–	<i>Claudia Eliza G.</i>	1976	–	no	–	–	THC
2240	–	<i>Corpus Lady</i>	1969	–	no	–	–	THC
2260	–	<i>Georgiana</i>	1951	–	no	–	5.0 miles	THC
2271	–	<i>Irvin</i>	1948	–	no	–	–	THC
2281	4191	<i>Lionel Hodgson</i>	1977	–	no	–	–	THC, AWOIS, ENC
2282	–	<i>Little Saran</i>	1959	–	no	–	–	THC
2287	–	<i>Mert</i>	1970	–	no	–	–	THC
2289	–	<i>Coral Chipper</i>	1961	–	no	–	–	THC

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
2291	-	<i>Miss Anita Bryant</i>	1971	-	no	-	-	THC
2292	-	<i>Miss Aransas</i>	1974	-	no	-	-	THC
2302	-	<i>Mr. Murphy</i>	1968	-	-	-	-	THC
2306	-	<i>Ocean Bride</i>	1958	-	no	-	-	THC
2311	-	<i>Powhatton</i>	1969	-	no	-	-	THC
2323	-	<i>Scorpion</i>	1984	-	no	-	-	THC
2334	-	<i>Taasinge</i>	1970	-	no	-	-	THC
2369	-	Unknown	-	41NU291	no	-	"exact"	THC
2373	186(?)	Unknown	pre-1973	-	no	-	0.25 miles	THC, AWOIS, ENC
2374	-	Unknown	pre-1991	-	no	-	"high"	THC
2408	5016	"Fire Brick" Wreck	post-1915	41AS117	no	steamship	"exact"	THC, AWOIS, ENC
2414	-	<i>Waco</i>	-	-	-	-	"exact"	THC
2430	-	<i>Utina</i> (Hull 1)	-	41NU292	no	-	"exact"	THC, ENC
2459	-	"Bob Hall Pier Wreck"	1800s?	41KL108	no	unknown	1.0 mile	THC
2473	-	<i>Breaker</i>	1862	-	-	schooner	5.0 miles	THC
2479	-	<i>Lizzie Baron</i>	-	-	-	steamer	5.0 miles	THC
2488	-	<i>America</i>	1863	-	-	schooner	5.0 miles	THC
2545	-	Unknown	pre-1900	41AS119	-	steamship	"exact"	THC
2561	-	Unknown	pre-1908	-	-	-	0.25 miles	THC
2562	-	Unknown	-	TBA	-	-	"exact"	THC
-	190	Unknown	-	-	-	-	-	AWOIS, ENC
-	279	Unknown	-	-	-	-	-	AWOIS, ENC
-	4159	<i>Gypsy Girl</i>	-	-	-	-	-	AWOIS, ENC
-	4172	"Blue Hull Airboat"	1984	-	-	airboat	-	AWOIS
-	4186	<i>Margie B</i>	-	-	-	-	-	AWOIS, ENC
-	4807	Unknown	-	-	-	-	-	AWOIS, ENC
-	4838	Unknown	-	-	-	-	-	AWOIS, ENC
-	4839	<i>Sir John</i>	-	-	-	-	-	AWOIS, ENC
-	4846	Unknown	-	-	-	-	-	AWOIS, ENC

3.0 Overview of Known Cultural Resources in the Study Area

THC Shipwreck Number	AWOIS Record #	Name	Year Lost	Trinomial	SAL	Vessel Type	Position Accuracy	Dataset
-	5014	<i>Moon Glow</i>	-	-	-	-	-	AWOIS, ENC
-	5087	Unknown	-	-	-	-	-	AWOIS, ENC
-	5110	Unknown	-	-	-	-	-	AWOIS, ENC
-	5117	Unknown	-	-	-	-	-	AWOIS, ENC
-	5155	Unknown	-	-	-	-	-	AWOIS, ENC
-	5190	Unknown	-	-	-	-	-	AWOIS, ENC
-	7856	Unknown	-	-	-	-	-	AWOIS, ENC
-	7857	<i>First Boy</i>	-	-	-	-	-	AWOIS, ENC
-	8209	Unknown	-	-	-	-	-	AWOIS, ENC
-	8877	<i>Vilco 22</i>	-	-	-	-	-	AWOIS, ENC
-	10427	Unknown	-	-	-	-	-	AWOIS, ENC
-	10428	Unknown	-	-	-	-	-	AWOIS, ENC
-	10429	Unknown	-	-	-	-	-	AWOIS, ENC
-	10431	Unknown	-	-	-	-	-	AWOIS, ENC
-	10432	Unknown	-	-	-	-	-	AWOIS, ENC
-	10434	Unknown	-	-	-	-	-	AWOIS, ENC
-	10435	<i>Rose Mist</i>	-	-	-	-	-	AWOIS, ENC
-	10961	<i>Teachers Pet</i>	-	-	-	-	-	AWOIS, ENC
-	11022	Unknown	-	-	-	shipwreck	-	AWOIS
-	13346	Unknown	-	-	-	fishing vessel	-	AWOIS, ENC
-	13347	<i>Bertram</i>	1992	-	-	fishing vessel	-	AWOIS, ENC
-	13348	Unknown	-	-	-	-	-	AWOIS, ENC

Figure 5 presents the overall number of shipwrecks in the THC's shipwreck database within each of the study area's major water bodies/bay systems while Figure 6 depicts the general density of recorded shipwrecks within each of the study area's major water bodies in surveyed acres per recorded shipwreck (THC Atlas, 2021; TPWD, 2018). On this chart, higher bars correspond with less frequent recorded wrecks and lower site density. (Charles/Carlos and Nueces bays had no recorded shipwrecks, so their corresponding wreck densities cannot be calculated). Overall, shipwrecks are distributed across the Corpus Christi Bay

system at an average of one every 203.8 surveyed acres (see Table 7). Recorded shipwrecks are more frequent within Aransas and Corpus Christi bays and within the Gulf study area portions. The greatest density of recorded shipwrecks in the study area are in the vicinity of the bay entrance at Aransas Pass. This is due to the intense vessel traffic through the pass as well as the navigational hazards that endangered those ships prior to more permanent jetties being constructed (USACE, 2003). They are less common in Copano and Redfish bays. Shipwrecks are least common within Laguna Madre. This should not be interpreted as a direct representation of actual shipwreck density. The survey coverage is much lower there than in other water bodies. It is likely that more investigations within the Laguna Madre could significantly change this projection. The CDP components correspond with higher-shipwreck-density major water bodies (the Gulf and Corpus Christi Bay), suggesting a higher likelihood that construction could affect previously unrecorded shipwrecks and cultural resources.

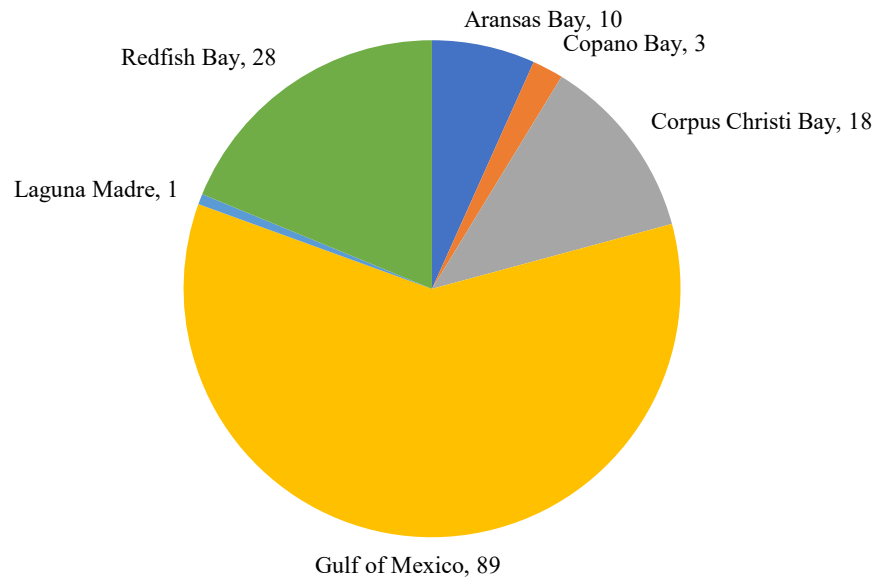
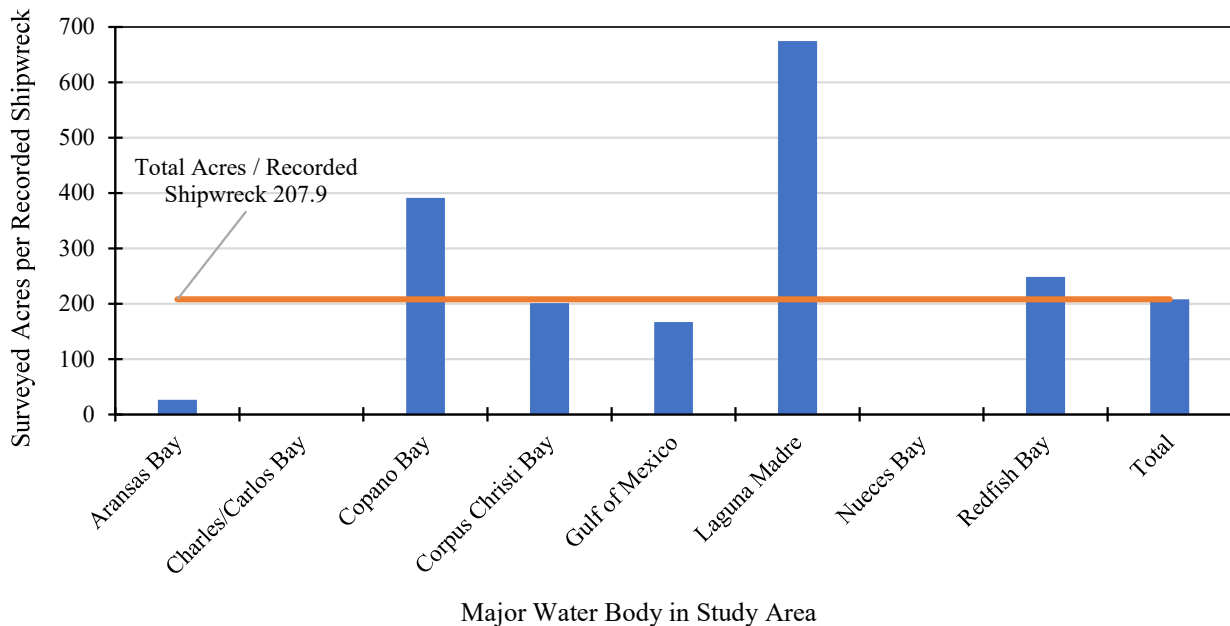


Figure 5. Number of Recorded Shipwrecks within the Study Area

Estimated shipwreck age information included with previously recorded shipwreck datasets supplies another opportunity for basic analysis and interpretation. Most previously recorded shipwrecks within the study area wrecked sometime after 1950 ($n=84, 55$; Figure 7). Only six recorded shipwrecks (four percent) date to 1850 or earlier (THC Atlas, 2021). In general, this data suggests that previously unknown and unrecorded shipwrecks within the study area are more likely going to have wrecked in the last 70 years. Figures 8 and 9 show a consistent distribution of the different shipwreck age groups across each of the major water bodies. With that said, Redfish Bay shipwrecks are more often older than those in Corpus Christi Bay or the Gulf. Unrecorded shipwrecks within Redfish Bay could more likely be older as well.

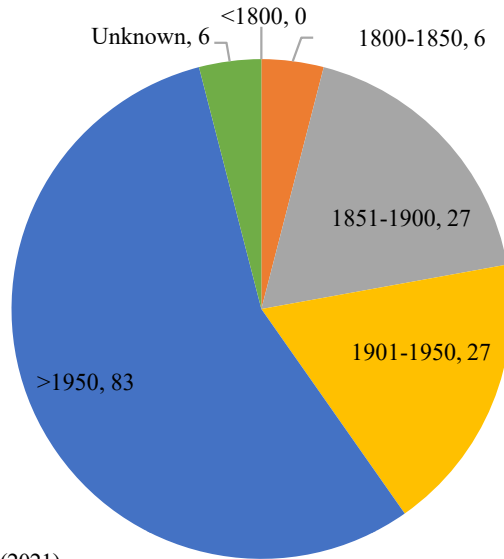


Source: THC Atlas (2021); TPWD (2018).

Figure 6. Density of Recorded Shipwrecks within the Major Water Bodies of the Study Area

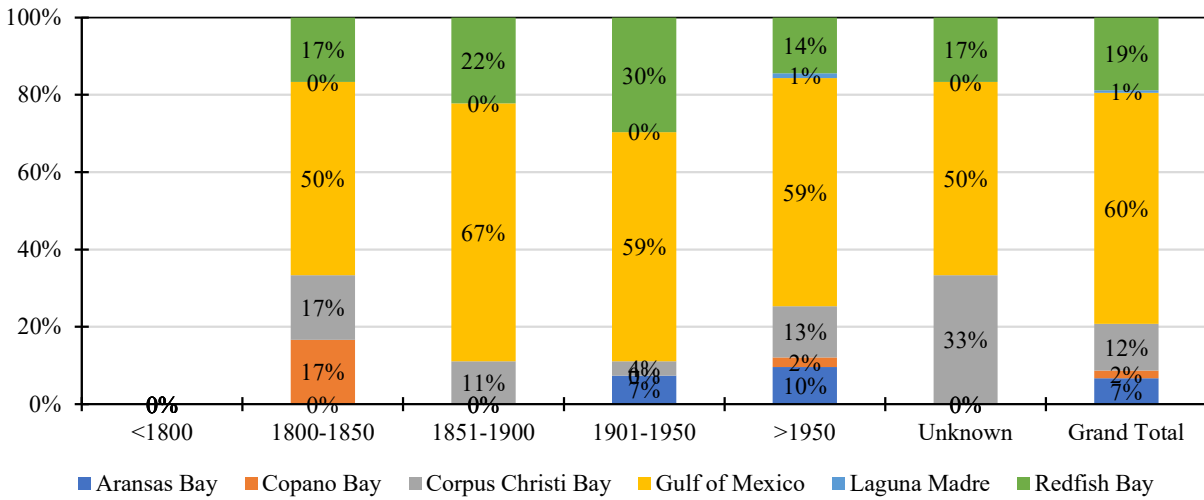
3.2.3 Potential for Submerged Aircraft

It is important to highlight the history of NAS Corpus Christi when evaluating submerged cultural resources within the study area. Following numerous reports of salvage events, the United States Navy Naval History and Heritage Command's Underwater Archaeology Branch, expanded their purpose to the protection of submerged naval aircraft in addition to naval shipwrecks during the late 1990s (Neyland and Grant, 1999; Coble, 2001). At domestic NAS locations, the greatest potential for losses comes from operational flights (such as ferry flights) or training flights. This has been demonstrated at coastal NAS locations throughout the country (Schwarz et al., 2017; Bleichner et al., 2018). It is currently unknown where dive bombing ranges for NAS Corpus Christi were located, but it can be assumed that at least some were in the surrounding bays, as pilots would have needed to be proficient at bombing targets on the water's surface. Additionally, the introduction of the torpedo bombing training schedule for pilots in 1944 suggested another bombing range in the bays specifically for torpedo bombing practice. Following the arrival of USS *Antietam* in 1956, potential for training accidents grew larger as pilots could gain carrier qualifications. It is currently unknown if any training losses occurred; however, as demonstrated by similar accidents aboard USS *Wolverine* (IX-64) and USS *Sable* (IX-81) off Chicago during World War II, potential for losses cannot be ruled out (Naval History and Heritage Command, 2020).



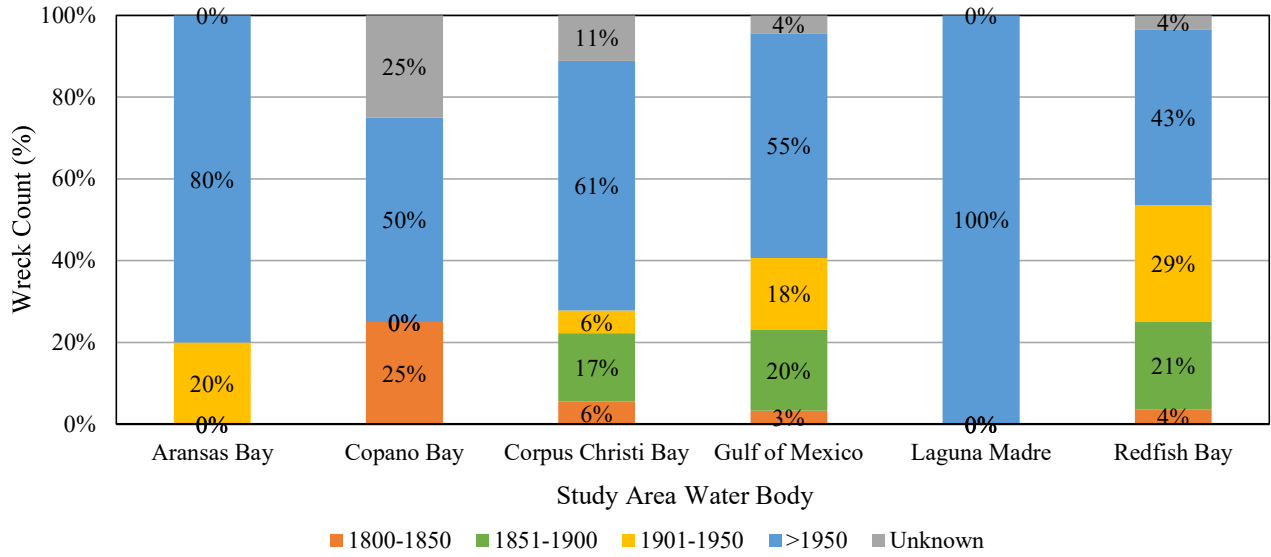
Source: THC Atlas (2021).

Figure 7. General Age Distribution of Recorded Shipwrecks within the Study Area



Source: THC Atlas (2021); TPWD (2018).

Figure 8. Percentage of Age Distribution of Recorded Shipwrecks within the Study Area



Source: THC Atlas (2021); TPWD (2018).

Figure 9. Percentage of Water Body Distribution of Recorded Shipwrecks within the Study Area, By Age Group

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