INTENSIVE ARCHAEOLOGICAL SURVEY OF THE PROPOSED CHEVRON PHILLIPS CHEMICAL PLANT EXPANSION PROJECT, HARRIS COUNTY, TEXAS

Prepared for

Chevron Phillips Chemical Company LP

Prepared by

Michael S. Crow and Jill Armbruster

SWCA Project No. 21457

SWCA Cultural Resources Report No. 2011-547

November 14, 2011 (revised February 8, 2012 and September 14, 2012)

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Prepared for

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ABSTRACT

On behalf of Chevron Phillips Chemical Company LP, SWCA Environmental Consultants (SWCA) conducted an intensive archaeological survey in advance of the proposed Chevron Phillips Chemical Plant Expansion Project in Harris County, Texas. Chevron Phillips Chemical Company LP is expanding the ethylene production capacity at the Cedar Bayou Plant in Baytown, Texas. The Cedar Bayou Plant is situated on 1,200 acres of land and has been in operation since 1963.

The anticipated footprint for the proposed expansion project will encompass approximately 455 acres of land within and immediately adjacent to the operating Cedar Bayou Plant. The proposed expansion project will require authorization under current Greenhouse Gas (GHG) permitting requirements. GHG permits are presently administered by the Environmental Protection Agency (EPA); therefore, archaeological investigations were conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended).

Background research indicated that a pipeline corridor bisecting a portion of the study area was previously surveyed for cultural resources; however, the remaining study area has not been previously surveyed. No previously documented cultural resources were identified within a 1-mile radius of the study area.

Survey investigations identified one isolated prehistoric find and the remains of four modern house sites. Based on the paucity of cultural material and limited research potential, or their modern age, these resources are recommended NOT ELIGIBLE for inclusion on the National Register of Historic Places (NRHP).

In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify historic properties within the study area. As no properties eligible for inclusion on the NRHP were identified, SWCA recommends no further archaeological investigations within the study area.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

MANAGEMENT SUMMARY

PROJECT TITLE: Intensive Archaeological Survey of the Proposed Chevron Phillips Chemical Plant Expansion Project, Harris County, Texas.

SWCA PROJECT NUMBER: 21457

PROJECT DESCRIPTION: SWCA Environmental Consultants conducted an intensive archaeological survey for the proposed Chevron Phillips Chemical Plant Expansion Project in Harris County, Texas. Chevron Phillips Chemical Company LP is expanding ethylene production capacity at the Cedar Bayou Plant in Baytown, Texas. The Cedar Bayou Plant is situated on 1,200 acres of land and has been in operation since 1963. The anticipated footprint for the proposed expansion project would encompass approximately 455 acres of land within and immediately adjacent to the operating Cedar Bayou Plant.

LOCATION: The study area is located in east-central Harris County, Texas near the intersection of Interstate 10 with the Chambers County line. The study area is depicted on the Mont Belvieu, Texas United States Geological Survey 7.5-minute topographic quadrangle.

NUMBER OF ACRES SURVEYED: Approximately 455 acres

PRINCIPAL INVESTIGATOR: Michael S. Crow

DATES OF WORK: October 17, 2011 through October 21, 2011.

PURPOSE OF WORK: The proposed expansion project will require authorization under current Greenhouse Gas (GHG) permitting requirements. GHG permits are presently administered by the Environmental Protection Agency; therefore, archaeological investigations were conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended).

NUMBER OF SITES: The SWCA investigations identified a prehistoric isolated find and the remains of four modern house sites. These resources are recommended NOT ELIGIBLE for listing on the National Register of Historic Places.

CURATION: Nothing was collected; therefore, nothing was curated.

COMMENTS: All investigations were in accordance with the standards and guidelines of the NHPA and the Texas Historical Commission's minimum archaeological survey standards for such projects.

INTRODUCTION

On behalf of Chevron Phillips Chemical Company LP, SWCA Environmental Consultants (SWCA) conducted an intensive archaeological survey in advance of the proposed Chevron Phillips Chemical Plant Expansion Project in Harris County, Texas. Chevron Phillips Chemical Company LP is expanding ethylene production capacity at the Cedar Bayou Plant in Baytown, Texas. The Cedar Bayou Plant is situated on 1,200 acres of land and has been in operation since 1963. The plant currently produces ethylene, propylene, high and low density polyethylene, and alpha olefins as main products. The location is ideally suited for expansion since the plant receives ethylene from and supplies ethylene to a pipeline running between Chevron Phillips Chemical facilities in Sweeny, Pasadena, Port Arthur, and Orange, Texas.

The proposed expansion project will require authorization under current Greenhouse Gas (GHG) permitting requirements. GHG permits are presently administered by the Environmental Protection Agency (EPA); therefore, archaeological investigations were conducted in accordance with Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended). Investigations included an archaeological background literature and records review and an archaeological survey of approximately 455 acres of land located within or immediately adjacent to the operating Cedar Bayou Plant.

Based on a review of soils, geology, recorded archaeological sites, and the results of previously conducted surveys in the area, SWCA conducted an intensive pedestrian survey with shovel testing of the 455-acre study area.

All investigations adhered to guidelines provided in Section 106 of the NHPA and the Council of Texas Archaeologists Guidelines for Performance, Curation, and Reports. Michael Crow served as Principal Investigator and participated in portions of the fieldwork along with Jill Armbruster, Kristen Jeremiah, and Travis Cornish between October 17 and October 21, 2011.

DEFINITION OF STUDY AREA

The proposed expansion project is located in east-central Harris County near the intersection of Interstate Highway 10 and the Chambers County line. The study area is depicted on the Mont Belvieu United States Geological Survey (USGS) 7.5" topographic quadrangle (Figure 1).

The anticipated footprint, or Area of Potential Effect (APE), for the proposed undertaking, including process areas, lay-down yards, employee/contractor parking, or other uses during the project construction phase, will encompass approximately 455 acres of land located within or immediately adjacent to the operating Cedar Bayou Plant. Approximately 89 acres of the overall 455-acre project APE are located within the Cedar Bayou Plant which is marked by numerous structures, paved roads and parking areas, buried pipelines and utilities, and storm water detention basins. The remaining 366 acres consists of undeveloped, forested land, improved pasture, and cultivated farmland.

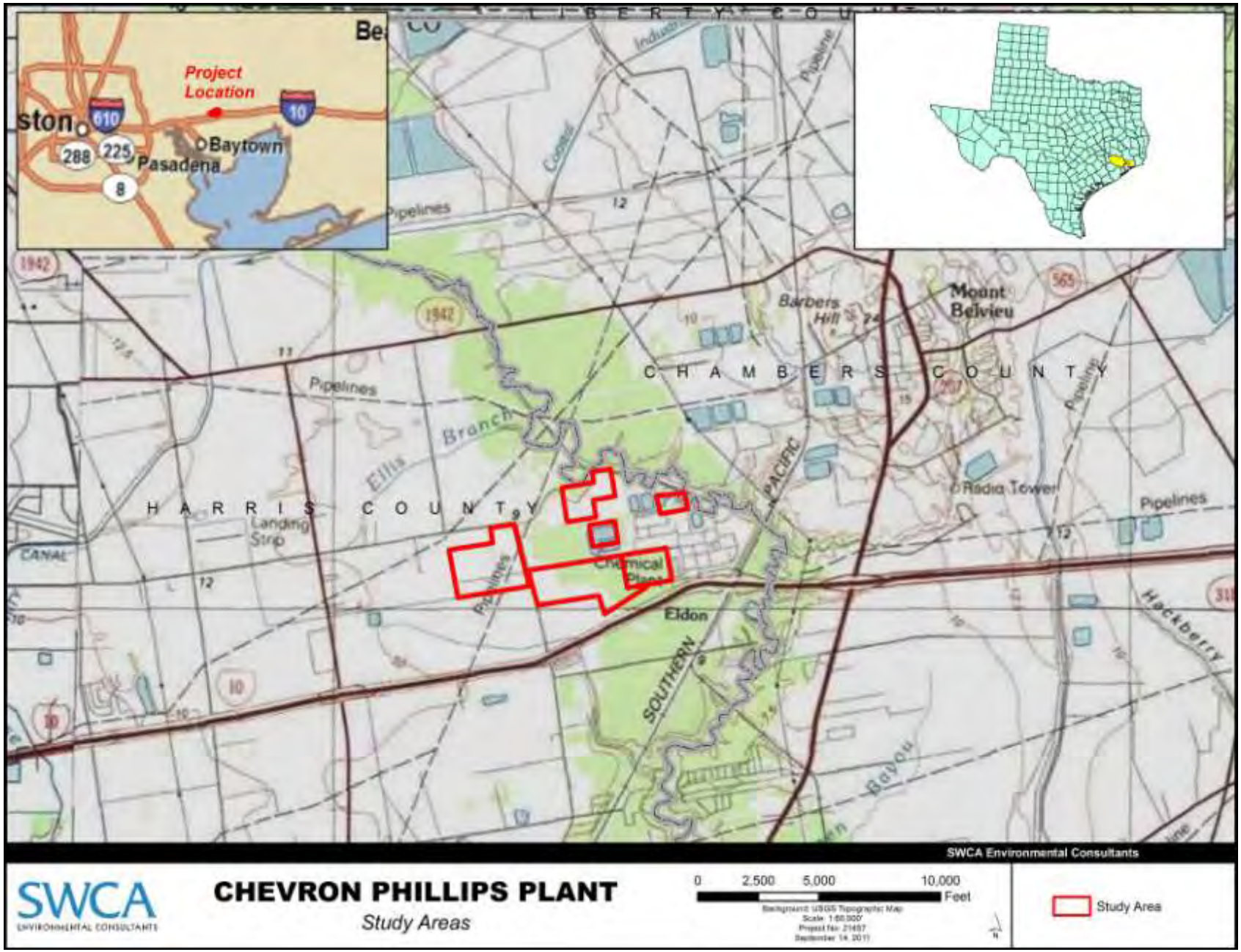

Figure 1. Project location map.

ENVIRONMENTAL SETTING

The study area is situated in southeast Texas, in an area that includes the upper Texas coast, from the Sabine River southwest to the Brazos River, as well as the adjacent inland coastal plain. This area is defined as the Western Gulf Coastal Plain (Griffith et al. 2007). The Western Gulf Coastal Plain is a relatively flat strip of land, generally 50 to 90 miles wide, adjacent to the Gulf of Mexico. The principal distinguishing characteristics of this region are its relatively flat topography and mainly grassland potential natural vegetation. Inland from this region, the plains are older, more irregular, and have mostly forest or savanna-type vegetation. Largely and because of these characteristics, a higher percentage of the land is used for cropland than in bordering ecological regions. Rice grain, sorghum, cotton and soybeans are the principal crops. Urban and industrial uses have expanded greatly in recent decades and oil and gas production is common (Griffith et al. 2007).

Harris County falls within the Level IV Northern Humid Gulf Coastal Prairies Ecoregion (Griffith et al. 2007). The historical vegetation was mostly tallgrass grasslands with a few clusters of oaks. Little bluestem (*Schizachyrium scoparium*), yellow Indiangrass (*Sorghastrum nutans*), brownseed paspalum (*Paspalum plicatulum*), gulf muhly (*Muhlenbergia capillaries*), and switchgrass (*Panicum virgatum*) were the dominant grassland species in a mixture with hundreds of other herbaceous species across these prairies. Some post oak savannas (*Wuercus stellata*) occur along the boundary with the East Central Texas Plains. Some loblolly pines (Pinus taeda) occur in the northern extent of the region. Riparian area vegetation in the north part of the region is similar to the South Central Plains. In the south fewer bottom land oaks and hickories occur, and pecan (*Carya illinoesis*), sugar hackberry (*Celtis laevigata*), ash (*Fraxinus* sp.), southern live oak (*Quercus virginiana*), and cedar elm (*Ulmus crassifolia*) become the important overstory species. Cane brakes (*Arundinaria gigantean*) may have also occurred along some creeks and rivers in this region (Smeins et al. 1992).

Historically, the diverse animal populations of the region included bison (*Bison bison*), pronghorn (*Antilocarpa americana*), and white-tailed deer (*Odocoileus virginianus*). Red wolves (*Canis rufus*) were once found in the riverine forests (Gafe 1999). Birds and waterfowl are relatively abundant today (Griffith et al. 2007).

GEOLOGY

Surface geology in the study area is mapped as the Beaumont Formation (Barnes 1982). These deposits consist of mostly clay, silt, and sand, and exhibit an almost featureless surface, characterized by relict river channels represented by meander patterns and pimple mounds on meanderbelt ridges (Barnes 1982).

SOILS

According to the Natural Resources Conservation Service (NRCS 2011), soils in the study area are part of the Midland-Beaumont soil association. These are poorly drained, very slowly permeable soils formed in loamy and clayey sediments of Pleistocene age (Wheeler 1976). Specific soils found in the study area are Beaumont and Lake Charles clays, Gessner loam, Bernard clay loam, and Beaumont-Urban land complex (Table 1).

HOUSTON-PALM

The Houston District Potential Archaeological Liability Map (PALM) is a guide to archaeological potential related to geomorphology in the Houston District (Abbott 2001). According to Abbott (2001), the Beaumont, Lake Charles and Bernard series have a low geoarcheological, while the Gessner series exhibits a low-to-moderate geoarcheological potential (Table 1).

Table 1. Soils in the study area.

Series	Texture	Description	Landform	PALM
Beaumont	clay	The Beaumont series consists of very deep, poorly drained, very slowly permeable soils on low uplands. They formed in clayey sediments of Pleistocene age.	coastal prairies	low
Bernard	clay loam	The Bernard series consists of very deep, somewhat poorly drained, very slowly permeable soils that formed in thick clayey sediments on marine terraces of Pleistocene age. Slopes range from 0 to 1 percent.	coastal prairies	low
Gessner	loam	The Gessner series consists of very deep, poorly drained, very slowly permeable soils that formed in loamy sediments derived from the Lissie Formation of Pleistocene age. Slope ranges from 0 to 1 percent, but are mainly less than 0.3 percent.	coastal prairies	low-moderate
Lake Charles	clay	The Lake Charles series consists of very deep, moderately well drained, very slowly permeable soils that formed in clayey sediments of Pleistocene age. Slopes are mainly less than 1 percent, but range from 0 to 8 percent.	broad coastal prairies	low

CULTURAL HISTORY

PREHISTORIC

The study area is located in the Southeast Texas Archaeological Region (Perttula 2004:7). The prehistoric cultural sequence of this region has been described by Aten (1983), Patterson (1995), Ricklis (2004: 181), and Story (1990). The following synopsis is based on these sources.

The prehistoric culture history of southeast Texas has been divided into three general periods: Paleoindian, Archaic and Ceramic. The Paleoindian period, called the "Early Cultures" by Story (1990:168), is most conspicuously identified by lanceolate projectile points with ground lateral and basal margins. Clovis, San Patrice, and Scottsbluff types are distributed throughout the East Texas part of the Gulf Coastal Plain, although Folsom and Dalton tend to occur only in the northern and north-central areas. A general picture of these early peoples has been reconstructed from a relatively scant record. Their high-mobility lifestyle depended upon a diversity of food resources, including big game mammals. Population densities were low and social structure is hypothesized as relatively simple.

The Archaic period encompasses a wide span of time and cultures. Two basic characteristics, along with various adaptive changes, distinguish this from the earlier period. The "increased density of population and reduction in size of the area exploited" (Story 1990: 213) are evidenced in the material record by a number of indicators. Projectile point styles proliferated while displaying greater geographical and temporal specificity. Lithic technology became more expedient and liberal with raw materials as locally available lithic resources were more commonly exploited. Specialization in cooking features and food processing implements suggest more intensive utilization of available plant resources. Shell exploitation along the coast becomes more prevalent as evidenced by ubiquitous shell midden sites. Archaeologically, the Archaic is much more visible as these adaptations left a more voluminous and diverse legacy of sites and materials.

The Ceramic period or "Late Cultures" as defined by Story (1990), for southeastern Texas began roughly 2000 years ago. A pervasive characteristic of these cultures is the ubiquity of plain sandy-paste ceramics. Kent and Gary points are frequent in the early stages of this period, and were eventually displaced by arrow points such as Alba and Catahoula, perhaps as early as A.D. 500 to 600. Subsistence strategies depended on hunting and gathering, with little if any evidence of horticulture. Bison may have been exploited in the few centuries prior to European contact.

HISTORIC PERIOD

Earliest Contact / Colonial Era (1500-1836)

The Spanish Colonial period (A.D. 1630–1821) can be characterized as the initial period of Aboriginal/European contact and European settlement in Texas. During this time, the region was inhabited by several aboriginal groups including the Coapite, Copane, Karankawa, and Orcoquizas (Kleiner 2008). The first Spanish expedition into the area was probably the expedition of Álvar Núñez Cabeza de Vaca, following the failed 1527 Panfilo de Narvaez expedition (Kleiner 2008). In February 1685, the La Salle expedition entered Matagorda Bay and established Fort St. Louis along Garcitas Creek. Throughout the mid-1700s, the upper Texas coast continued to be an area of

contention between France and Spain until the 1763 Treaty of Paris clearly placed Louisiana within the Spanish realm. French trader Joseph Blancpain traveled through the lower Trinity River and Galveston Bay area in 1754. In response, the Spanish established Nuestra Senora de la Luz Mission in 1756 near the present day site of Wallisville. In the same year a military presidio, Agustin de Ahumada Presidio, was established on the east bank of the Trinity River near the Liberty-Chambers County line. Most Spanish settlement in the area was abandoned by the early 1770s (Kleiner 2008).

By 1803, when the United States acquired Louisiana, the region was under Spanish control as a part of the Atascosito District (Kleiner 2008). Shortly thereafter, Mexico gained independence and assumed Spain's former territories in 1821. Anglo-American settlement began in earnest after 1824 when Stephen F. Austin received the first official colonization grant from the Mexican Government to bring 300 Anglo settlers into the area.

Colonization proceeded rapidly and Harrisburg, Velasco, Brazoria, Columbia, Washington and San Felipe became the principal settlements. However, the Mexican government's efforts to later curtail American immigration resulted in several disturbances, all leading up to the Texas Revolution and the final battle at San Jacinto in which Texas won independence from Mexico.

Republic of Texas / Pre-Civil War (1836–1860)

During the Republic of Texas era, from 1836–1845, Harris (then Harrisburg) County was formed in 1836 (Henson 2008). The San Jacinto River and other major waterways in the area played an integral role in the economic life of the region at this time. Plantations dotted their banks, growing rice, cotton, sugarcane and other crops, while steamboats transported goods and people to and from the port at Galveston. The cattle industry was introduced at this time as well, serving as another boost to a growing economy (Henson 2008).

During the 1850s, these industries grew in conjunction with the railroads. In 1853, Harrisburg County was the terminus for the Buffalo Bayou, Brazos and Colorado Railway, facilitating the transport of cotton and sugar across the county. Five other railroads were built before the Civil War, including the Texas and New Orleans Railroad (Houston to Orange) and the Eastern Texas Railroad (Sabine Pass to Beaumont), both of which were completed by 1861 (Henson 2008).

With the region's dependence on slave labor, residents voted heavily in favor of secession and many citizens participated as Confederate soldiers (Kleiner 2008).

The Post–Civil War / Reconstruction Period (1865–1880)

Following the Civil War, recovery from the war was slow, with principal agricultural exports dropping to a fraction of their pre-war totals. After the war, many freedmen worked for their former masters or started small farms. By the late 1870s, livestock, lumber, and shipping industries had recovered significantly, owing in part to railroad expansion and improvements, and utilization of the Houston Ship Channel (Henson 2008). However, significant agriculture did not develop again until after 1890 (Henson 2008).

Late Nineteenth / Early Twentieth Century (1880–1940s)

After 1880, rail transportation in the region increased significantly, principally following the introduction of the Texas and New Orleans (now the Southern Pacific Transportation Company) in 1860, linking Houston to Orange. This railroad was later linked to the Louisiana and Western and through service to the City of New Orleans in 1881 (Kleiner 2008). By 1890, Midwestern developers had purchased land along the new North Galveston, Houston, and Kansas City Railroad which headed east from Houston along the southern side of Buffalo Bayou towards Morgan's Point. This was done to attract other out-of-state farmers to raise fruit, berries and vegetables, or just to seek more a temperate climate (Henson 2008).

Oil exploration in the early-twentieth century generated a population explosion in the region, particularly in Humble with the oil boom at Moonshine Hill in 1905. Oil was also discovered at Goose Creek and Tabbs Bay, which led to the establishment of a temporary boomtown in 1915-1917. In 1919, Ross Sterling and the Humble Oil and Refining Company (now Exxon) built a refinery near the oilfield on the San Jacinto above the mouth of Goose Creek. The development of the area as an industrial hub really began in 1911 when the formation of the Houston Ship Channel Navigation District was approved. The 50-mile-long channel was deepened and eventually widened to allow oceangoing vessels. Petroleum and other refineries popped up all along Buffalo Bayou and the San Jacinto River (Henson 2008).

In modern times, the region's economy continues to center around the shipping, agricultural, and petroleum industries. Many residents of the region find employment in the Houston metropolitan area.

METHODS

BACKGROUND REVIEW

An SWCA archaeologist conducted a background review and environmental literature search of the study area to determine the locations and content of any previous archaeological surveys and recorded archaeological sites in or near the study area. The investigation utilized the Texas Historical Commission's (THC) online database (ATLAS). Site files, relevant maps, and NRHP and State Archaeological Landmark (SAL) listings were examined. These sources provided information on the nature and location of previously conducted archaeological surveys and previously recorded cultural resource sites. Aerial photographs, Bureau of Economic Geology Maps, and the Natural Resources Conservation Service's Web Soil Survey, were also examined for information related to the study area.

FIELD METHODS

The fieldwork consisted of an intensive visual survey for "Areas" located within the plant and an intensive pedestrian survey with shovel testing for "Areas" located exterior to the plant. The goal of the work was to locate all prehistoric and historic archaeological sites in the investigated study area, establish vertical and horizontal site boundaries as appropriate, and evaluate the significance and eligibility of any site recorded for listing in the NRHP.

All investigations adhered to guidelines provided in Section 106 of the NHPA and the Council of Texas Archaeologists Guidelines for Performance, Curation, and

Reports with any exceptions thoroughly documented.

The field survey consisted of one team of three SWCA archaeologists walking transects within the study area. During the survey, the archaeologists examined the ground surface and eroded profiles for cultural resources. Shovel tests were excavated in 20-cm arbitrary levels to 1 m in depth or to culturally sterile deposits, whichever came first. The matrix was screened through ¼-inch mesh. The location of each shovel test was plotted using a GPS receiver, and each test was recorded on appropriate project field forms.

RESULTS

BACKGROUND REVIEW

The background review indicated that a small portion of the study area has been previously surveyed for cultural resources, and no previously documented cultural resources are located within or immediately adjacent to the study area. Two archaeological projects were identified within one mile of the survey corridor. These include a 1988 survey of portions of Interstate Highway 10 for the Federal Highway Administration and a 2008 pipeline survey conducted by TRC (Laird 2008). A portion of the TRC survey transects the westernmost block of the study area (Laird 2008).

The background review revealed that no previously documented cultural resources are located within a 1-mile radius of the study area. The nearest documented resources are archaeological sites 41HR312 and 41CH380, located approximately 1.5 miles from the study area. Site 41HR312 is a nineteenth-century brickyard located on the northwest bank of Cedar Bayou. Site 41CH380 is a prehistoric ceramic surface scatter recorded during Federal Emergency Management Agency (FEMA) removal of storm debris.

FIELD INVESTIGATIONS

The study area includes five "Areas" located within the interior and to the exterior of the operating plant (Figure 2). Based on the amount of disturbance observed within the Cedar Bayou Plant, in combination with soils possessing a low geoarchaeological potential, investigations within Areas 1a, 4 and 5 were limited to reconnaissance-level efforts. Areas 1b, 2, and 3, located outside of the operating plant were investigated by intensive survey and shovel testing. A total of 154 shovel tests were excavated within the three Areas located exterior to the plant (Appendix A). The placement of shovel tests within each "Area" is presented in Figure 2.

AREA 1

Area 1 is a 207-acre parcel located on the southwest side of the plant (Figure 2). Within Area 1, 51 acres are located within the boundaries of the existing plant (designated Area 1a) and 156 acres are located outside of the plant (Area 1b).

A reconnaissance of Area 1a was conducted on October 17, 2011. The western edge of Area 1a is bounded by a manmade ditch and utility easement. The remainder of the Area is almost completely paved, with foundations and parking area associated with earlier facilities scattered throughout (Figure 3). No prehistoric or historic cultural materials were encountered during the reconnaissance. Based on the degree of ground disturbance, as well as the low geoarchaeological potential indicated by Lake Charles and Beaumont clays reported in the area, no subsurface investigation was undertaken in the area.

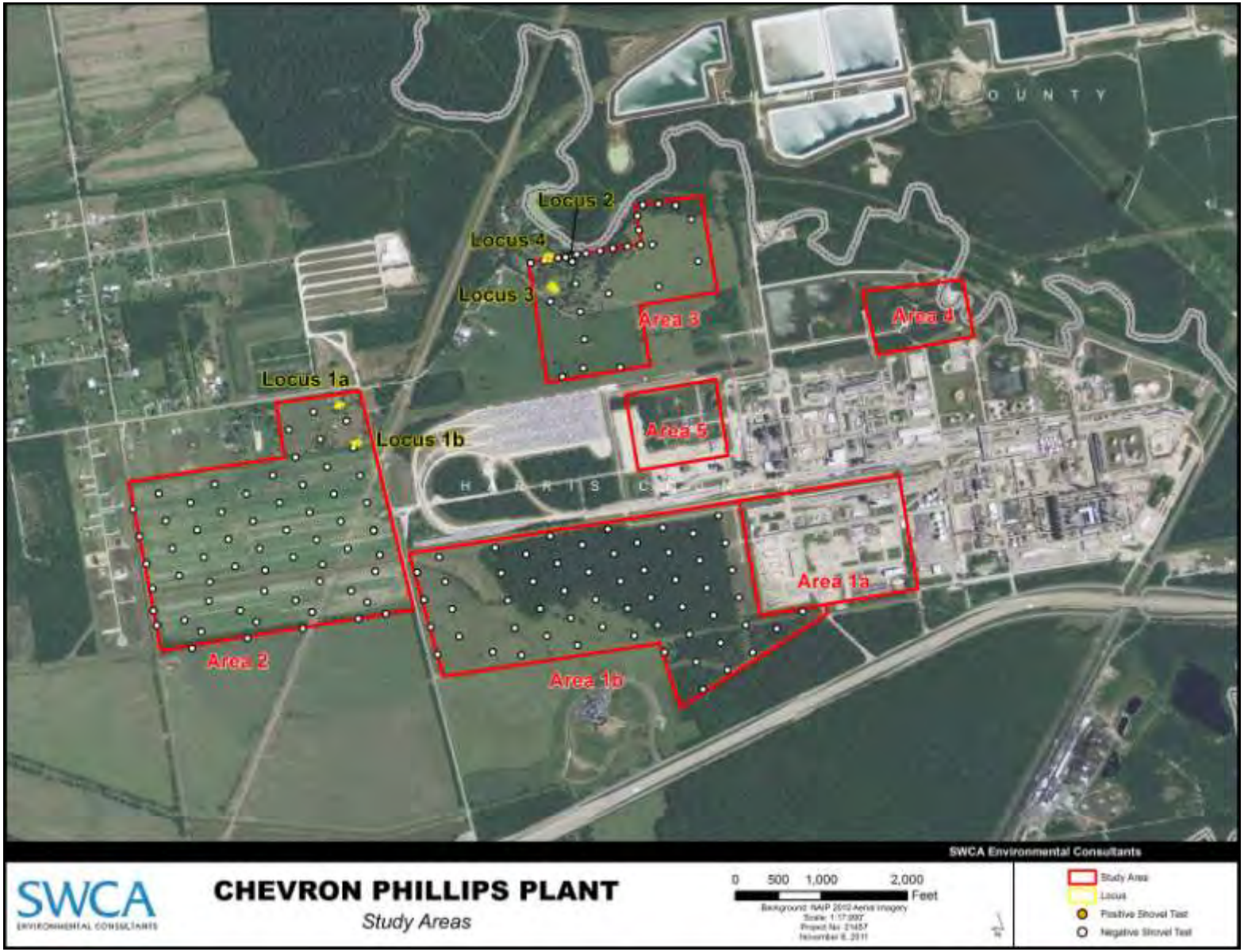

Figure 2. "Areas" of investigation.

Figure 3. Area 1a overview (view west).

Area 1b is a 156-acre parcel located to the southwest of the existing plant (Figure 2). The area is a mixture of undeveloped forested land and improved pasture (Figure 4). Investigations in Area 1b included a systematic pedestrian survey and excavation of a total of 63 shovel tests (Appendix A). A typical shovel test revealed two strata in profile. Stratum I extended from 0 to 25 cm below ground surface and was a brown (10YR5/2) clay loam. Stratum II extended from 25 to 45 cm below surface and was a brown (10YR4/2) clay. No artifacts or features were encountered in Area 1b.

Figure 4. Area 1b overview (view north).

AREA 2

Area 2 is a 148-acre parcel located to the west of the existing plant (Figure 2). The area is a former rice field with noticeable furrows, small dikes and a large irrigation canal (Figure 5). Survey investigations in the area consisted of an intensive pedestrian survey and excavation of 61 shovel tests (Appendix A). A typical shovel test in Area 2 exhibited two strata in profile. Stratum I was dark gray brown (10YR4/2) silt clay from 0 to 18 cm below surface. Stratum II was very dark brown clay from 18 to 35 cm below surface. No artifacts were recovered from any of the shovel tests, though the remains of two probable home sites were identified in the northeast corner of Area 2 (Locus 1).

Figure 5. Irrigation canal in Area 2 (view east).

LOCUS 1

Locus 1 was used to designate the remains of two former modern house sites in the northeast corner of Area 2. Historical aerial imagery shows that these houses were demolished by 2008. Locus 1a was located in the northeast corner of Area 2 and consisted of a large concrete slab house foundation (Figure 6), a driveway, and a possible well line fabricated with PVC pipe. The remains of tree house were observed in a nearby tree. Historical aerial imagery shows this house in the area by 1970. Prior to that, several smaller structures or pens are evident on the property as early as 1944, though by 1978 these structures were raised

or relocated and a large barn and pond are evident in the same area by 1978.

Historical aerial photographs show the second structure, Locus 1b, on the property between 1978 and 1989. On the aerial photographs the second structure resembles a mobile home and features remaining in the area include a concrete slab and walkway, a power pole and a gravel road.

Figure 6. Locus 1a, concrete slab from demolished house in northeast corner of Area 2.

Modern artifacts and debris from the two structures were scattered on the surface and included modern wire nails, modern bottle glass, a modern kitchen mug and synthetic materials. A total of six shovel tests were excavated in the area and no subsurface artifacts were encountered.

AREA 3

Area 3 is a 62-acre parcel located to the northwest of the existing plant (Figure 2). The area is part cow pasture and partly a former rural residential area, with a mixture of woods and previously landscape lawns (Figure 7). Historic aerial photographs from 1995 as many as five structures located in the residential area near the oxbow lake. Evidence for only two of these structures was located during survey (Locus 3 and 4).

Investigation in Area 3 included a systematic pedestrian survey and excavation of a total of 34 shovel tests (Appendix A). A typical shovel test had two strata in profile. Stratum I was brown (10YR5/2) clay loam from 0 to 10 cm below surface. Stratum II was light yellow brown (10YR6/4) clay loam from 10 to 25 cm below surface. A single shovel test was positive for cultural material (Locus 2).

Figure 7. Area 3 overview (view southwest).

LOCUS 2

Locus 2 is an isolated find consisting of a single chert flake (Figure 8) recovered from 10-20 cm below surface in Area 3, Transect 1, Shovel Test 4. Locus 2 is located near an oxbow lake along Cedar Bayou (Figure 9).

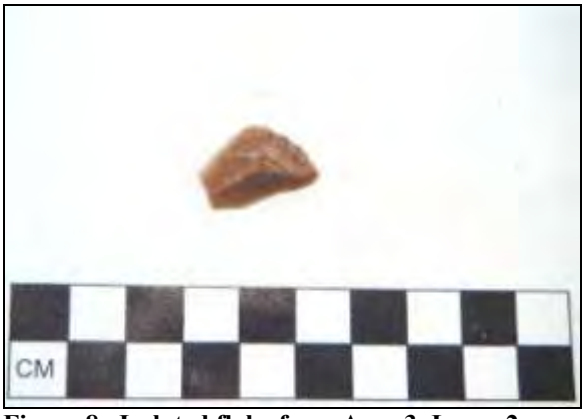

Figure 8. Isolated flake from Area 3, Locus 2.

Figure 9. Detailed plan of Area 3.

Locus 2 was delineated with two shovel tests excavated at 10-m intervals in each of the cardinal directions from the positive test (Figure 9). Six delineation tests were excavated and no additional artifacts were recovered. Two delineation tests to the north were attempted, but not excavated due to a slope of 20 degrees or greater.

Due to the lack of any additional artifacts or cultural features, Locus 2 possesses little to no research value and is unlikely to provide any additional contribution to our understanding of the prehistory of the region. As Locus 2 is an isolated find comprised of a single artifact, no site trinomial was sought for this resource.

LOCUS 3

Locus 3 is a modern house site located near the oxbow lake in Area 3 (Figure 9). Historical aerial photographs indicate this house was built between December of 1989 and January of 1995. The structure was then demolished between January of 1995 and April of 2002. All that remains of the structure is the concrete slab foundation, sidewalk and driveway (Figure 10). At the time of investigations, the house slab was being used for the storage of farm supplies (Figure 11). A total of three shovel tests were excavated in the vicinity of this feature, and no artifacts were recovered (Figure 9).

Figure 10. Locus 3, concrete foundation, sidewalk and driveway for modern house (view southwest).

Figure 11. Locus 3, concrete foundation for modern house (view west).

LOCUS 4

Locus 4 is a modern house site also located near the oxbow lake in Area 3 (Figure 9). Historical aerial photographs indicate this house was built between January of 1995 and April of 2002. The structure was then demolished between April of 2006 and October of 2008. All that remains of the structure is the concrete slab foundation and driveway (Figure 12). At the time of investigations, the house slab was being used for the storage of farm equipment (Figure 12). A total of five shovel tests were excavated in the vicinity of this Locus and no artifacts were recovered (Figure 9).

Figure 12. Locus 4, concrete foundation for modern house (view west).

Figure 13. Area 4, detention basin (view north).

Figure 14. Area 4, raised levee around Lake Blackwood (view west).

AREA 4

Area 4 is a 19-acre parcel at the north end of the plant adjacent to Cedar Bayou (Figure 2). Area 4 is located within the boundaries of the existing plant. This area currently contains a recreational lake referred to as Lake Blackwood, a storm water detention basin and a telecommunications tower. Historical imagery shows this part of the plant was developed between 1970 and 1978. Lake Blackwood was constructed by enlarging a natural oxbow of Cedar Bayou.

A reconnaissance of Area 4 was conducted on October 17, 2011. The area as a whole has been severely modified by prior channelization of Cedar Bayou, as well as the construction of a detention basin and the lake (Figures 13 and 14). The adjacent uplands have been artificially contoured to include a levee along the northern boundary of the area as well as elevated roadways and facilities. No prehistoric or historic cultural materials were encountered during the reconnaissance. Based on the degree of ground disturbance, as well as the overall low geoarchaeological potential indicated by soils reported in the area, no subsurface investigation was undertaken in the area.

AREA 5

Area 5 is a small, approximately 19-acre parcel located within the interior of the existing plant. It is located north of Area 1 and south of Area 3 (Figure 2). Area 5 primarily consists of a disused section of the plant that has become overgrown with vegetation. The area includes several concrete and metal structures, large wastewater treatment tanks and settling pond, buried pipelines and utilities, and asphalt and caliche paved surfaces (Figure 15 and 16).

Figure 15. Area 5, overview of buildings (view west).

Figure 16. Area 5, wastewater treatment pond (view southwest).

Because of the level of ground disturbance and low geoarcheological potential indicated by the Lake Charles series soils reported for the area (Abbott 2001), no subsurface investigations were conducted. A reconnaissance of Area 5 conducted on October 17, 2011 did not encounter any prehistoric or historic cultural materials.

SUMMARY AND RECOMMENDATIONS

On behalf of Chevron Phillips Chemical Company LP, SWCA conducted an intensive archaeological survey in advance of the proposed Chevron Phillips Chemical Plant Expansion Project in Harris County, Texas. The work included an archaeological background literature and records review and an archaeological survey of approximately 455 acres of land located within or immediately adjacent to the operating Cedar Bayou Plant.

Background research indicated that a pipeline corridor bisecting a portion of the study area was previously surveyed for cultural resources. No previously documented cultural resources were identified within a 1-mile radius of the study area.

Archaeological investigations included a reconnaissance of previously disturbed areas within the plant, and an intensive pedestrian survey with shovel testing within relatively less disturbed areas located outside the existing plant. The investigations identified five non-site loci. Locus 2 is a single isolated lithic flake, and Loci 1a, 1b, 3 and 4 are the remains of late-twentieth-century home sites. Based on the paucity of cultural material and limited research potential, or their modern age, these resources are recommended NOT ELIGIBLE for listing on the NRHP.

In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify archaeological historic properties within the study area. As no properties eligible for inclusion on the NRHP were identified, SWCA recommends no further archaeological investigations.

The THC concurred with the reported recommendations in written correspondence dated February 8, 2012. Record of this correspondence is presented in Appendix B.

REFERENCES

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APPENDIX A

SHOVEL TEST LOG

Appendix A. Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/18/2011	Area 1	TR 1	1	1	0-20	N	10YR4/6	Silt clay	Calcium carbonate	Compact soil	In plowed field, heavily compacted, cows and limestone
				2	20-25	N	10YR2/2	Clay			
			2	1	0-18	N	10YR4/2	Silt clay	Calcium carbonate	Compact soil	Intense compaction
				2	18-31	N	10YR2/2	Clay			
			3	1	0-16	N	10YR4/2	Silt clay		Compact soil	Just east of ditch near road
				2	16-38	N	10YR2/2	Clay			
			4	1	0-14	N	10YR4/2	Silt clay	Calcium carbonate	Compact soil	Disturbed soil, very mottled
				2	14-28	N	10YR6/6 mot w/ 2/2	Clay		Compact soil	
			5	1	0-12	N	10YR5/2 mot w/ 10YR6/1	Sandy clay	Pebbles, rocks, and calcium carbonate	Compact soil	Disturbed soil, very mottled
				2	12-27cm	N	10YR4/2	Silt clay			
				3	27-40	N	10YR2/2	Clay			
		TR 2	1	1	0-25	N	10YR4/2	Clay	Calcium carbonate	Compact soil	10m south of canal on small landform, Open cow pasture
			2	1	0-30	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture
			3	1	0-30	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture
			4	1	0-30	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture
			5	1	0-20	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture
		TR 3	1	1	0-25	N	10YR3/2	Clay loam		Compact soil	Cow pasture, greater than 10% slope
			2	1	0-20	N	10YR3/2	Clay loam		Compact soil	Cow pasture
			3	1	0-15	N	10YR3/2	Clay loam		Compact soil	Cow Pasture
			4	1	0-10	N	10YR3/2	Clay loam	Small gravels	Compact soil	On top of manmade ridge, disturbed

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/18/2011	Area 1	TR 4	1	1	0-30	N	10YR5/2	Clay	Calcium carbonate	Compact soil	Dried water basin 10m south of canal
			2	1	0-20	N	10YR5/2	Clay loam	Calcium carbonate	Compact soil	Pine and palm forested area
				2	20-40cm	N	10YR3/2	Clay			
			3	1	0-25	N	10YR3/2	Clay			Pine and palm forested area
			4	1	0-30	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Pine and palm forested area
			5	1	0-30	N	10YR4/2	Clay		Compact soil	Forested with pine and palm
		TR 5	1	1	0-13	N	10YR4/2	Silt loam		Compact soil	Compact with roots
				2	13-37	N	10YR6/6 mot w/ 2/2	Clay			
			2	1	0-18	N	10YR4/2	Silt clay		Compact soil	Compact with roots
				2	18-35	N	10YR2/2	Clay		Compact soil	Compact
			3	1	0-15	N	10YR5/2 mot w/ 10YR4/1	Silt clay		Compact soil	Compact
				2	15-34	N	10YR3/1 mot w/ 7.5YR4/4	Clay		Compact soil	
			4	1	0-18	N	10YR4/1	Silt clay		Compact soil	Compact
				2	18-36	N	10YR3/1 mot w/ 7.5YR4/4	Clay			
		TR 6	1	1	0-15	N	10YR4/2	Clay loam		Compact soil	Forested with pine and palm
				2	15-35	N	10YR3/1	Clay		Compact soil	Clay blocky and compact
			2	1	0-40	N	10YR4/2	Clay		Compact soil	Clay blocky and compact
			3	1	0-20	N	10YR5/2	Clay loam		Compact soil	Forested with pine and palm
				2	20-45cm	N	10YR4/2	Clay			
			4	1	0-30	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture
			5	1	0-25	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Open short grass, open cow pasture

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/18/2011	Area 1	TR 7	1	1	0-16	N	10YR4/2	Silt clay		Compact soil	Compact
				2	16-39	N	10YR6/6 mot w/ 2/2	Clay			
			2	1	0-19	N	10YR4/2	Silt clay		Compact soil	Compact
				2	19-27	N	10YR2/2	Clay			
			3	1	0-14	N	10YR4/2	Silt clay		Compact soil	Compact
				2	14-29	N	10YR2/2	Clay			
			4	1	0-18	N	10YR4/2	Silt clay		Compact soil	Compact
				2	18-27	N	10YR2/2 mot w/ 7.5YR4/4	Clay			
		TR 8	1	1	0-15	N	10YR3/2	Clay loam		Compact soil	Chinese tallow, mixed woods, and palmetto
			2	1	0-10	N	10YR5/2	Silt loam		Compact soil	Chinese tallow, mixed woods, and palmetto
				2	10-20cm	N	10YR4/6	Clay loam			
			3	1	0-20	N	10YR5/1 mot w/ 10YR3/2	Clay loam		Compact soil	Chinese tallow, mixed woods, and palmetto
			4	1	0-20	N	10YR4/6 mot w/ 10YR3/2	Silt clay loam		Compact soil	Pasture
			5	1	0-15	N	10YR5/1	Silt clay loam		Compact soil	Pasture
		TR 9	1	1	0-20	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-35cm	N	10YR4/2	Clay			
			2	1	0-25	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	25-45	N	10YR4/2	Clay			
			3	1	0-25	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	25-35	N	10YR4/2	Clay			
			4	1	0-20	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-40	N	10YR4/2	Clay			
			5	1	0-15	N	10YR4/2	Clay loam		Compact soil	Pine and palm forested area
					15-30	N	10YR4/2	Clay			
		TR 10	1	1	0-24	N	10YR2/2	Clay		Compact soil	Heavily compacted with roots

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/18/2011	Area 1	TR 10	2	1	0-18	N	10YR4/2	Silt clay		Compact soil	Compact
				2	18-30	N	10YR2/2	Clay			
			3	1	0-16	N	10YR4/2	Silt clay		Compact soil	Compact
				2	16-28	N	7.5YR4/4 mot w/ 10YR2/2	Clay			
			4	1	0-14	N	10YR4/2	Silt clay		Compact soil	Slight mottling w/ strong brown @ base
				2	14-26	N	10YR2/2	Clay			
			5	1	0-18	N	10YR4/2	Silt clay		Compact soil	Compact
				2	18-24	N	10YR2/2	Clay			
			6	1	0-14	N	10YR4/2	Silt clay		Compact soil	Compact
				2	14-30	N	10YR2/2	Clay			
			7	1	0-15	N	10YR4/2	Silt clay		Compact soil	3m north of barbed wire fence
				2	15-31	N	10YR2/2 mot w 7.5YR4/4	Clay			
		TR 11	1	1	0-15	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	15-30cm	N	10YR4/2	Clay			
			2	1	0-20	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-30cm	N	10YR4/2	Clay			
			3	1	0-20	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-30	N	10YR4/2	Clay			
			4	1	0-15	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	15-35	N	10YR3/2	Clay			
			5	1	0-25	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	25-35	N	10YR4/2	Clay			
			6	1	0-20	N	10YR5/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-25	N	10YR4/2	Clay			
		TR 12	1	1	0-30	N	10YR4/2	Silt clay		Compact soil	Slight mottling w/ strong brown @ base
				2	30-48	N	10YR2/2	Clay			
			2	1	0-15	N	10YR4/2	Clay loam		Compact soil	Pine and palm forested area

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/18/2011	Area 1	TR 12		2	15-25	N	10YR3/2	Clay			
			3	1	0-18	N	10YR4/2	Silt clay		Compact soil	Compact
				2	18-27	N	10YR2/2	Clay			
			4	1	0-20	N	10YR4/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-30	N	10YR3/2	Clay			
			5	1	0-12	N	10YR4/2	Clay loam		Compact soil	Area looks very disturbed, drainage 1.5m north, barbed wire fence 1m south
				2	12-28cm	N	10YR2/2	Clay			
			6	1	0-20	N	10YR4/2	Clay loam		Compact soil	Pine and palm forested area
				2	20-30cm	N	10YR3/2	Clay			
		TR 13	1	1	0-18	N	10YR5/2 mot w 7.5YR4/4	Clay loam		Compact soil	Compact
				2	18-30	N	10YR4/1 mot w 7.5YR4/4	Clay			
		TR 14	1	1	0-20	N	10YR3/1	Silt clay loam		Compact soil	Small woods between road and a pipeline
10/19/2011	Area 2	TR 1	1	1	0-14	N	10YR5/2 mot w/ 10YR7/2	Clay		Compact soil	Compact soil
				2	14-30	N	10YR2/2	Clay			
			2	1	0-16	N	mot w/ 10YR7/2	Clay		Compact soil	Compact
				2	16-40	N	10YR2/2	Clay			
			3	1	0-17	N	10YR5/2	Clay		Compact soil	Compact
				2	17-40	N	10YR2/2	Clay		Compact soil	
			4	1	0-10	N	10YR7/2 mot w/ 10YR5/2	Clay		Compact soil	Compact
		TR 1		2	10-37cm	N	10YR2/2	Clay			
			5	1	0-12	N	10YR7/2 mot w/ 10YR5/2	Clay		Compact soil	Compact
				2	12-28cm	N	10YR2/2	Clay		Compact soil	Compact
		TR 2	1	1	0-30	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/19/2011	Area 2	TR 2	2	1	0-35	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			3	1	0-30	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			4	1	0-25	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
		TR 3	1	1	0-10	N	10YR3/2	Clay loam		Compact soil	Open field, Old rice field
				2	10-20cm	N	10YR2/2	Clay			
			2	1	0-10	N	10YR2/2	Clay		Compact soil	Open field, Old rice field
			3	1	0-20	N	10YR2/2	Clay		Compact soil	Open field, Old rice field
			4	1	0-10	N	10YR2/2	Clay		Compact soil	Open field, Old rice field
			5	1	0-20	N	10YR2/2	Clay		Compact soil	Open field, Old rice field
		TR 4	1	1	0-35	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			2	1	0-31	N	10YR3/1	Clay		Compact soil	Slight organic leeching
			3	1	0-12	N	10YR5/3	Clay		Compact soil	Compact
				2	12-30cm	N	10YR3/1	Clay			
			4	1	0-30	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			5	1	0-28	N	10YR3/1	Clay		Compact soil	Slight organic leeching
10/20/2011		TR 5	1	1	0-28	N	10YR3/2	Clay		Compact soil	Modern bottle glass not collected
			2	1	0-19	N	10YR4/1 mot w/10YR3/2	Clay		Compact soil	Extremely compact
			3	1	0-23	N	10YR4/2	Silt clay	Calcium carbonate	Compact soil	Compact
			4	1	0-14	N	10YR5/3	Loam sand		Compact soil	Possible fill, overburden
				2	14-27	N	10YR2/1	Clay			
			5	1	0-11	N	10YR4/2	Silt clay		Compact soil	Modern debris

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/20/2011	Area 2	TR 5		2	22-27cm	N	10YR2/1	Clay			
			6	1	0-43	N	10YR2/2	Clay		Compact soil	Modern bottle glass not collected
		TR 6	1	1	0-35	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			2	1	0-25	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			3	1	0-20	N	10YR5/4	Clay		Compact soil	Open short grass, agricultural field
			4	1	0-30	N	10YR5/4	Clay		Compact soil	Open short grass, agricultural field
			5	1	0-20	N	10YR5/4	Clay	Calcium carbonate	Compact soil	Tall grass, mixed weed field
				2	20-45	N	10YR3/2	Clay			
			6	1	0-35	N	10YR4/2	Clay	Calcium carbonate	Compact soil	Short grass area
		TR 7	1	1	0-20	N	10YR2/2	Clay loam		Compact soil	Open field, Old rice field
			2	1	0-20	N	10YR3/2	Clay loam		Compact soil	Open field, Old rice field
			3	1	0-20	N	10YR3/2	Clay loam		Compact soil	Open field, Old rice field
			4	1	0-20	N	10YR2/2	Clay loam		Compact soil	Open field, Old rice field
			5	1	0-25	N	10YR2/2	Clay loam		Compact soil	Open fenced in field, modern wire nail, not collected
			6	1	0-25	N	10YR3/2	Clay loam		Compact soil	Open fenced in field
		TR 8	1	1	0-30	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			2	1	0-25	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			3	1	0-25	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			4	1	0-30	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
		TR 9	1	1	0-15	N	10YR4/2	Silt clay		Compact soil	Compact

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/20/2011	Area 2	TR 9		2	15-28	N	10YR2/1	Clay			
			2	1	0-10	N	10YR4/2	Silt clay		Compact soil	Compact
				2	10-28cm	N	10YR2/1	Clay			
			3	1	0-31	N	10YR2/1 mot w/ 10YR4/2	Clay		Compact soil	Surface appears disturbed
			4	1	0-36	N	10YR2/1	Clay		Compact soil	Organic leeching
		TR 10	1	1	0-10	N	10YR3/2	Silt clay loam		Compact soil	Very dry and compact
			2	1	0-15	N	10YR3/2	Clay loam		Compact soil	Very dry and compact
			3	1	0-15	N	10YR3/2	Clay loam		Compact soil	Old rice field, grassy field
			4	1	0-15	N	10YR3/2	Clay loam		Compact soil	Old rice field, grassy field
		TR 11	1	1	0-35	N	10YR3/2	Clay		Compact soil	Open short grass, agricultural field
			2	1	0-25	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			3	1	0-20	N	10YR4/2	Clay		Compact soil	Open short grass, agricultural field
			4	1	0-20	N	10YR5/4	Clay		Compact soil	Open short grass, agricultural field
		TR 12	1	1	0-21	N	10YR2/1	Clay		Compact soil	Extremely compact
			2	1	0-13	N	10YR2/1mot w/ 10YR4/2	Clay		Compact soil	Compact
				2	13-29	N	10YR2/1	Clay			
			3	1	0-26	N	10YR2/1	Clay		Compact soil	Extremely compact
			4	1	0-31	N	10YR2/1	Clay		Compact soil	Extremely compact
		TR 13	1	1	0-20	N	10YR3/2	Silt clay loam		Compact soil	Very dry and compact
			2	1	0-20	N	10YR3/2	Silt clay loam		Compact soil	Very dry and compact

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/20/2011	**Area 2**	**TR 13**	3	1	0-15	N	10YR3/2	Clay loam		Compact soil	Very dry and compact
			4	1	0-20	N	10YR3/2	Clay loam		Compact soil	Very dry and compact
10/21/2011	**Area 3**	**TR 1**	1	1	0-12	N	10YR4/3	Sandy clay		Compact soil	In modern house site, 1m NE of driveway
				2	12-24cm	N	7.5YR5/6 mot w/ 10YR6/1	Clay			
			2	1	0-20	N	10YR5/2	Sandy loam		Gravel	15m SW of house foundation, construction gravels covering ground
			3	1	0-25	N	10YR2/2	Clay loam		Compact soil	Grassy lawn, large pines and oaks, cleared house site
			4	1	0-15	P	10YR4/2	Sandy loam		Compact soil	10-20cmbs: 1 chert flake
				2	15-31	P	10YR6/3 mot w/ 10YR7/1	Sandy clay			
			5	1	0-10	N	10YR5/2	Sandy loam		Compact soil	5m south of swamp
				2	10-35cm	N	10YR7/3	Clay loam			
				3	35-45	N	7.5YR4/6	Clay			
			6	1	0-10	N	10YR5/3	Clay loam		Compact soil	5m south of oxbow lake
				2	10-20cm	N	10YR5/6	Silt clay loam			
			7	1	0-22	N	10YR4/2	Sandy loam		Compact soil	Compact
				2	22-32cm	N	10YR6/3 mot w/ 10YR7/1	Sandy loam			
			8	1	0-10	N	10YR5/2	Sandy loam		Compact soil	Open short grass in cow pasture
				2	10-25cm	N	10YR6/2	Clay loam			
				3	25-35cm	N	10YR8/2	Clay			
			9	1	0-10	N	10YR3/2 mot w 10YR5/6	Clay loam		Compact soil	Open pasture, very compact
			10	1	0-18	N	10YR4/2	Sandy clay		Compact soil	Compact
				2	18-37cm	N	10YR6/3 mot w/ 10YR7/1				
			11	1	0-30	N	10YR4/3	Clay		Compact soil	20m east of stump

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/21/2011	Area 3	TR 1	12	1	0-15	N	10YR3/1	Clay loam		Compact soil	In area partially truncated
				2	15-28cm	N	10YR6/3 mot w/ 10YR7/1	Clay			
			13	1	0-20	N	7.5YR6/8	Clay		Compact soil	On small "push pile", in dense timber forest
			14	1	0-14	N	10YR3/1	Clay		Compact soil	Area is heavily disturbed
				2	14-26	N	10YR6/3 mot w/ 10YR7/1	Clay			
			15	NE	NE	NE	NE	NE	NE	NE	Canal dredge spill, disturbed push pile
			16	NE	NE	NE	NE	NE	NE	NE	Canal dredge spill, disturbed push pile
			17	NE	NE	NE	NE	NE	NE	NE	Canal dredge spill, disturbed push pile
		TR 2	1	1	0-12	N	10YR4/3	Sandy Clay		Compact soil	Extremely compact
				2	12-21cm	N	7.5YR3/3 mot w/ 7.5YR5/6	Clay			
			2	1	0-30	N	10YR6/4	Clay		Compact soil	Open short grass, cow pasture
		TR 3	1	1	0-15	N	10YR5/3	Silt clay loam		Compact soil	Pasture
				2	10-20cm	N	10YR4/6 mot w/ 10YR3/2	Clay loam			
			2	1	0-13	N	10YR4/3	Sandy clay		Compact soil	Extremely compact
				2	13-28	N	7.5YR5/6 mot w/ 10YR6/1	Clay			
		TR 4	1	1	0-9	N	10YR4/3	Clay		Compact soil	Extremely compact
				2	9-20cm	N	7.5YR5/6 mot w/ 10YR6/1	Clay			
			2	1	0-10	N	10YR5/3	Silt clay loam		Compact soil	Pasture
				2	10-20cm	N	10YR4/6 mot w/ 10YR3/2	Clay loam			
		TR 5	1	1	0-9	N	10YR4/3	Sandy clay		Compact soil	Extremely compact
				2	9-24cm	N	7.5YR5/6 mot w/ 10YR6/1	Clay			

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/21/2011	Area 3	TR 5		3	24-31	N	10YR5/1	Clay			
			2	1	0-30	N	10YR6/4	Clay		Compact soil	Open short grass, cow pasture
			3	1	0-10	N	10YR5/3	Silt clay loam		Compact soil	Pasture
				2	10-20cm	N	10YR4/6 mot w/ 10YR3/2	Clay loam			
			4	1	0-20	N	10YR6/4	Clay		Compact soil	Open short grass, cow pasture
			5	1	0-30	N	10YR6/4	Clay		Compact soil	Open short grass, cow pasture
		TR 6	1	1	0-10	N	10YR5/3	Silt clay loam		Compact soil	near Locus 3 (modern House site)
				2	10-20cm	N	10YR6/4	Clay			
			2	1	0-25	N	10YR5/4	Clay		Compact soil	Open short grass. Cow pasture
		Locus 2 Delineation	N1000 E990	1	0-15	N	10YR5/3	Silt clay loam		Compact soil	Large pines, oaks, near Locus 3(modern house site) yard
				2	15-25	N	10YR5/3 mot w 10YR4/6	Clay loam			
			N1000 E980	1	0-18	N	10YR4/2	Sandy loam		Compact soil	Delineation
				2	18-33cm	N	10RYR6/3 mot w/ 7.5YR7/1	Clay			
			N1000 E1010	1	0-12	N	10YR4/2	Sandy loam		Compact soil	Delineation
				2	12-28cm	N	10YR6/3 mot w/ 10YR7/1	Clay			
			N1000 E1020	1	0-15	N	10YR4/2	Sandy loam		Compact soil	Delineation
				2	15-28	N	10YR6/3 mot w/ 10YR7/1	Clay			
			N1000 E980	1	0-18	N	10YR4/2	Sandy loam		Compact soil	Delineation
				2	18-33cm	N	10YR6/3 mot w/ 10YR7/1	Clay			
			N990 E1000	1	0-10	N	10YR5/4	Clay loam		Compact soil	25m south of swamp
				2	10-25cm	N	10YR5/2	Clay loam			
				3	25-35	N	10YR8/2	Clay			

Appendix A (continued). Shovel test data (organized by date and segment).

Date	Area	Transect	Shovel Test #	Level	Depth (cmbs)	Negative or Positive	Munsell	Soil Texture Description	Inclusions	Reason for Termination	Comments
10/21/2011	Area 3	Locus 2 Delineation	N980 E1000	1	0-15	N	10YR5/2	Clay loam		Compact soil	35 m south of swamp
				2	15-30	N	10YR5/2	Clay			
			N1010 E1000	NE	NE	NE	NE	NE	NE	NE	Not excavated due to slope of oxbow lake
			N1020 E1000	NE	NE	NE	NE	NE	NE	NE	Not excavated due to slope of oxbow lake

APPENDIX B

AGENCY CORRESPONDENCE

SWCA®
ENVIRONMENTAL CONSULTANTS
Sound Science. Creative Solutions.

Houston Office
7255 Langtry, Suite 100
Houston, TX 77040
Tel 713.934.9900 Fax 713.934.9906
www.swca.com

February 8, 2012

Mr. Brad Jones
Archeology Division, Texas Historical Commission
1511 Colorado
Austin, TX 78701

Re: Submittal of Draft Report – *Intensive Archeological Survey of the Proposed Chevron Phillips Chemical Plant Expansion Project, Harris County Texas*

Mr. Jones:

On behalf of Chevron Phillips Chemical Company LP (CP Chem), SWCA conducted an intensive archaeological survey in advance of the proposed Chevron Phillips Chemical Plant Expansion Project in east Harris County, Texas. The proposed expansion project will require authorization under current Greenhouse Gas (GHG) permitting requirements which are presently administered by the Environmental Protection Agency (EPA). As such, archaeological investigations were conducted in accordance with Section 106 of the National Historic Preservation Act of 1966 (as amended).

The enclosed draft report presents the results of an intensive archaeological survey of approximately 455 acres of land located within and immediately adjacent to CP Chem's existing Cedar Bayou Plant. Survey investigations identified one isolated prehistoric find and the remains of four modern (late twentieth century) house sites. Based on the paucity of cultural material and limited research potential, or their modern age, these resources are recommended NOT ELIGIBLE for inclusion on the National Register of Historic Places (NRHP).

In accordance with 33 CFR Part 325, Appendix C and Section 106 of the NHPA (36 CFR 800.4), SWCA has made a reasonable and good faith effort to identify historic properties within the study area. As no properties eligible for inclusion on the NRHP were identified, SWCA recommends no further archaeological investigations within the study area.

Please feel free to call me if you have any questions or concerns at (713) 934-9900.

Respectfully submitted,

Michael S. Crow, M.A., RPA
Project Manager/Archaeologist

CONCUR
by _____
for Mark Wolfe
State Historic Preservation Officer
Date 3/1/12
Track# _____

cc: Cynthia L. Gleason (CP Chem)
Aimee Wilson (EPA)

Enclosure

DRAFT REPORT
ACCEPTABLE

APPENDIX C

CURRICULUM VITAE OF PRINCIPAL INVESTIGATOR

MICHAEL S. CROW, M.A., RPA
Cultural Resources Program Director

Education / Training

- M.A., Anthropology, Texas A&M University - College Station, 2004
- B.A., Anthropology, Texas A&M University - College Station, 2000
- PSMJ Resources, Inc, Project Management Bootcamp, 2006
- Basic Wetland Delineation, WTI, 2006
- Biological Resource Training, TxDOT, 2004
- Traffic Noise Modeling, TxDOT, 2004
- Section 7: Endangered Species Act, Interagency Cooperation, TxDOT, 2004
- Wetland Installation, Creation, and Reconstruction, WTI, 2004
- Southwest Texas State Lithic Technology Workshop, 2001 and 2002

Registration / Certification

- Registered Professional Archaeologist (National), 2004-present
- Historic Preservation Certificate, Texas A&M University; College Station, Texas, 2004

Experience Summary

Mr. Crow has served as principal investigator or project manager on numerous archaeological projects throughout Texas and surrounding states, including Mississippi, Louisiana, and Oklahoma. Mr. Crow has also managed large-scale linear survey projects including the 25-mile MS HUB Pipeline Expansion Project in Simpson, Jefferson Davis, and Covington counties, Mississippi; the 40-mile Chevron West Texas LPG Pipeline Project in Hardin, Liberty, and Chambers counties, Texas; the 46-mile Onshore Component of the Texas Offshore Port System Pipeline Project in Brazoria and Galveston counties, Texas; the 67-mile Air Products LLC Cedar Bayou to Port Neches CO2 Pipeline Project in Chambers, Liberty, and Jefferson counties, Texas; the 310-mile Denbury Green Pipeline Project reaching from Donaldsonville, Louisiana to the Hastings Oil Field in Brazoria County, Texas; and the 270-mile Acadian Haynesville Extension stretching from near Shreveport to West Baton Rouge, Louisiana.

He has expertise in archaeological methods and theory, as well as cultural resources compliance processes, whether federal (National Historic Preservation Act [NHPA], U.S. Army Corps of Engineers [USACE], Federal Energy Regulatory Commission [FERC], etc.) or state in nature.

In addition to his cultural resources background, Mr. Crow is experienced in conducting wetland delineations and determinations, including large-scale linear projects in Texas, Oklahoma, Arkansas, and Mississippi. He has participated in Section 404 permitting efforts, threatened & endangered species habitat assessments, and has conducted numerous Phase I Environmental Site Assessments in Texas, Colorado, and Wyoming.

Mr. Crow has received training and attended courses in Wetland Delineation, Traffic Noise Modeling, Section 7 of the Endangered Species Act, Biological Resources, and Wetland Installation, Creation, and Reconstruction. He is proficient in the use/application of Global Positioning Systems (GPS), Geographic Information Systems (GIS), and Computer Aided Design (CAD) technologies.

SWCA Project Experience

Archaeological Investigations along the Proposed 50-mile Crossover Pipeline Project, Bee, Goliad, and Refugio Counties (2010): Survey of 41 anticipated USACE jurisdictional waterways along the proposed alignment. *Role: Principal Investigator / Manager. Client: Kinder Morgan, Inc.*

Archaeological Investigations along the Proposed 11-mile Hooks to Lyman Project Alignment, Dewitt and Karnes Counties, Texas (2010): Intensive pedestrian survey of proposed project alignment, much of which lies in the Cuero I National Register District. *Role: Principal Investigator / Manager. Client: Copano Energy, Inc.*

Liberty County Access Road Archaeological Survey, Liberty County, Texas (2010): Survey of proposed road realignment along the Trinity River. *Role: Principal Investigator. Client: Samson Lone Star, LLC.*

Archaeological Investigations of Multiple Gathering Lines for the M2 Gathering System, DeSoto and Sabine Parishes, Louisiana (2010-present): Ongoing survey of proposed gathering lines (well connects) in northwest Louisiana. *Role: Principal Investigator / Manager. Client: EPCO, Inc.*

Archaeological Survey of the 270-mile Acadian Haynesville Extension, AHE Archaeological Investigations at the Proposed 25-mile MS HUB Pipeline Expansion, Red River, DeSoto, Natchitoches, Rapides, Avoyelles, St. Landry, Point Coupee, West Baton Rouge, Iberville and Assumption Parishes, Louisiana (2010–present): Intensive archaeological survey of portions of the the proposed alignment stretching from near Shreveport to West Baton Rouge. *Role: Principal Investigator / Manager. Client: EPCO, Inc.*

Archaeological Survey of Proposed Road and Parking Improvements at Fort Travis Seashore Park, Galveston County, Texas (2010): Intensive archaeological survey and metal detecting within footprint of proposed road and parking improvements. *Role: Principal Investigator / Manager. Client: Galveston County.*

Archaeological Investigations along the Proposed 12.5-mile Shintech Pipeline, Iberville and West Baton Rouge Parishes, Louisiana (2010): Survey of proposed pipeline route crossing Bayou Plaquemine. *Role: Principal Investigator / Manager. Client: Project Consulting Services, Inc.*

Archaeological Investigations at the Proposed 20-acre Army Reserve Development, Bryan, Texas (2010): Archaeological survey of proposed Army Reserve Center Development. *Role: Principal Investigator / Manager. Client: US Army Corps of Engineers – Louisville District, c/o CH2M HILL.*

West Willow Seismic Shoot, Southeast Texas (2009-2010): Development of an Archaeological Avoidance Plan for a 200-square-mile Seismic Shoot. *Role: Cultural Resources Specialist. Client: Samson Lone Star, LLC.*

Stanley 3-D Seismic Shoot, DeSoto Parish, Louisiana (2009): Development of an Archaeological Avoidance Plan for a 100-square-mile Seismic Shoot. *Role: Principal Investigator. Client: Chesapeake Energy Corporation.*

Archaeological Investigations along the Proposed 4.25-mile Spring-Cypress Road Improvement Project, Harris County, Texas (2008–present): Prinicipal Investigator for archaeological survey of 4.25 segment of

Spring-Cypress Road between State Highway 249 and Telge Road in Harris County. *Role: Principal Investigator / Manager. Client: Tolunay Wong Engineering, Inc./HCPID.*

Archaeological Investigations at the Proposed 23.6-acre Workspace, Bond Salt Dome Storage Project, Simpson County, Mississippi (2008): Principal Investigator and report author for investigations of a 23-acre tract associated with a proposed gas storage facility. *Role: Principal Investigator / Manager. Client: Energy South Midstream.*

310-mile Denbury Green Pipeline Project; Louisiana and Texas (2008–2009): Survey investigations along a 310-mile long CO_2 pipeline project in support of acquisition of USACE Section 404 Permit. *Role: Principal Investigator / Manager. Client: C..H Fenstermaker and Associates, Inc.*

40-mile West Texas LPG Pipeline Project; Hardin, Liberty, and Chambers Counties, Texas (2007): Scoping/Agency Coordination, project management, and primary report author for a 40-mile long LPG pipeline project. *Role: Project Archaeologist / Manager. Client: ENSR Corporation.*

Archaeological Testing of 41GV120; Galveston County, Texas (2007): Coordinated a three-person team during test excavations at 41GV120, a Late Prehistoric mound site, located along Clear Creek. *Role: Project Archaeologist. Client: Lentz Engineering, LC.*

Archaeological Investigations at the 290-Acre Lake Conroe East Development; Montgomery County, Texas (2007): Principal Investigator and primary report author for a cultural resources investigation of a 290-acre proposed residential development on the shoreline of Lake Conroe. *Role: Principal Investigator. Client: Envirotest, Ltd.*

67-mile Air Products and Chemicals, Inc., Cedar Bayou to Neches Station H2 Pipeline Project; Chambers, Liberty, and Jefferson Counties, Texas (2007): Project Archaeologist/Field Lead for cultural resources, wetland, and threatened & endangered species surveys for a 67-mile long hydrogen pipeline project. *Role: Project Archaeologist / Enviromental Specialist. Client: Mustang Engineering, Inc.*

6-mile Ameresco Pipeline Project; Harris County, Texas (2007): Completed a wetand delineation of a 6-mile long methane pipeline project. *Role: Project Manager. Client: Mustang Engineering, Inc.*

Blue Bayou Ready Mix Phase I Environmental Site Assessment (ESA) Portfolio; Brazoria and Harris Counties, Texas (2007): Completed Phase I Environmental Site Assessments for five ready mix facilities. *Role: Environmental Specialist. Client: Cemex.*

Archaeological Investigations at the Clear Creek Improvement Project; Galveston County, Texas, USACE Case I-5360, Texas Antiquities Permit #4450 (2007): Served as client liaison, primary report author, and participated in a Phase I archaeological survey of a 5-mile long drainage easement along Clear Creek. *Role: Project Archaeologist. Client: Lentz Engineering, LC.*

Stone Creek Ranch Detention Project; Harris County, Texas (2007): Completed a wetland delineation and prepared and submitted a USACE 404 permit package for a 4,300-foot stream channelization project. *Role: Project Manager. Client: ESA Specialists of America, Inc.*

M2 Sports Greens Bayou Site; Harris County, Texas (2007): Coordinated a two-person team in the completion of a wetland determination and Phase I Environmental Site Assessment for a 367-acre recreational lake facility. *Role: Field Lead / Environmental Specialist. Client: M2 Sports, Inc.*

Mississippi Hub Gas Storage Facility; Simpson and Jeff Davis Counties, Mississippi (2007): Participated as part of a two-person team in the completion of a wetland delineation of a 15-mile FERC-regulated natural gas pipeline. *Role: Environmental Specialist. Client: Mustang Engineering, Inc.*

LFC, Inc. On-call Services; Statewide, Texas (2007): (Ongoing) Assessed impacts to cultural resources and conducted Phase I archaeological surveys for numerous wireless telecommunication tower sites throughout Texas. *Role: Principal Investigator. Client: LFC, Inc.*

41KM 226 Data Recovery; Kimble County, Texas (2007): Participated in data recovery efforts for a Late Archaic/Toya Phase component along a transportation right-of-way. *Role: Project Archaeologist. Client: Texas Department of Transportation.*

Archaeological Investigations at Mississippi Hub, LLC Bond Salt Dome Storage Project Utility Corridor; Simpson County, Mississippi (2006): Coordinated a three-person team of archaeologists in the completion of a 7-acre tract associated with a proposed FERC-regulated gas storage facility. *Role: Principal Investigator. Client: Mustang Engineering, Inc.*

Pignut Gully, Clemmons Gully and Stone SE; Jefferson and Hardin Counties, Texas (2006): Completed a Phase I intensive archaeological survey of two well pads and approximately 3 miles of associated pipelines and access roads. *Role: Principal Investigator. Client: Samson Lonestar, LP.*

Frontier Aggregates Wetland Delineation; Montgomery County, Texas (2006): Participated in the completion of a wetland delineation for an approximately 300-acre proposed sand & gravel operation. *Role: Environmental Specialist. Client: Frontier Aggregates, Inc.*

Mid-Continent Crossing Project; Texas, Oklahoma, Arkansas, Mississippi, Tennessee, and Alabama (2006): Participated in the completion of a wetland delineation and threatened & endangered species habitat assessment for an 866-mile natural gas pipeline. *Role: Environmental Specialist. Client: TRC Companies, Inc.*

Louetta-Holzwarth Tract Phase I Environmental Site Assessment; Harris County, Texas (2006): Conducted a Phase I Environmental Site Assessment for a 19-acre proposed residential development. *Role: Environmental Specialist. Client: Portrait Homes.*

Duke Energy Copiah County Gas Storage Project; Copiah County, Mississippi (2006): Coordinated two two-person teams in the completion of a wetland delineation of a 450-acre tract and an associated 15-mile pipeline for a proposed gas storage facility. *Role: Field Lead / Environmental Specialist. Client: TRC Solutions.*

Rocky Top Ready Mix Phase I Environmental Site Assessment (ESA) Portfolio; Wyoming and Colorado (2006): Completed Phase I Environmental Site Assessments for five ready mix facilities in Colorado and Wyoming. *Role: Environmental Specialist. Client: Cemex.*

HCFCD John Paul's Landing Park; Harris County, Texas (2005): Participated in the completion of a wetland delineation of a proposed wetland mitigation bank along Greens Bayou. *Role: Environmental Specialist. Client: Aviles Engineering Corporation.*

Other Project Experience

Phase I and II Environmental Site Assessments, Cultural Resources Investigations: Drafted Section 106 and FCC NEPA documentation; public, government, and tribal consultation for multiple (100+) telecommunication tower sites. Served as principal investigator for multiple cultural resources assessments and archaeological surveys conducted at wireless telecommunication tower sites in Texas. *Role: Environmental Consultant / Archaeologist. Employer: LFC, Inc.*

Multiple TxDOT Projects: Conducted NEPA, NHPA (Section 106), 4(f), and other environmental regulations compliance concerning transportation projects; identification of natural and cultural resources within project APE; ground-truthing of consultant work; drafting of environmental documents (e.g., CE, EA, EIS, and 4(f) documents) and gathering of supporting information. *Role: Environmental Specialist. Employer: Texas Department of Transportation.*

Mammoth Recovery; Clute, Texas: Assisted with the recovery of mammoth (*Mammuthus columbi*) remains. Participated in the excavation of paleontological remains, site mapping using Sokkia Total Station and Trimble GPS unit, and site map generation. *Role: Field Technician. Employer: Center for the Study of the First Americans, Texas A&M University.*

200-acre Survey; Houston, Texas: Participated in a survey of two tracts (approximately 200 acres) in south central Houston. Included pedestrian survey, shovel testing, and monitoring of backhoe trench excavation. *Role: Archaeological Technician. Employer: HR Gray & Pape, Inc.*

Morgan Family Cemetery; Marlin, Texas: Conducted survey and identification of unmarked interments at the Morgan Family Cemetery. Directed course of investigations, organization and supervision of field crew and equipment, site mapping, photography, and primary author and graphics specialist. *Role: Principal Investigator. Employer: Center for Ecological Archaeology, Texas A&M University.*

Bodcau Bayou Pipeline; Bossier Parrish, Louisiana: Surveyed a 5-kilometer section of pipeline crossing Bodcau Bayou, Bossier Parrish, Louisiana. Included pedestrian survey and shovel testing. *Role: Archaeological Technician. Employer: HTC Consultants, Inc.*

Yegua Creek Archaeological Project; Nails Creek State Park: Conducted a survey of prehistoric and historic sites at Nails Creek State Park, a 300+ acre park on the south side of Lake Somerville. Included pedestrian survey, shovel testing, photography, operation of GPS receiver, collection of GIS data layers, and later, co-authored two chapters and generated graphics in a final report. *Role: Project Archaeologist. Employer: Center for Ecological Archaeology, Texas A&M University.*

University of Texas at San Antonio Campus Survey: Surveyed two tracts (totaling ca. 5 acres) at the University of Texas at San Antonio campus. Included a pedestrian survey and shovel testing. *Role: Project Archaeologist. Employer: Center for Ecological Archaeology, Texas A&M University.*

Matagorda Cemetery; Matagorda Texas: Conducted an investigation of graves dating to the mid-19th century. Conducted excavation of human remains, author and graphics specialist in final report. *Role: Project Archaeologist. Employer: Center for Ecological Archaeology, Texas A&M University*.

Veterans and Lick Creek Parks, College Station, Texas: Conducted survey and site testing at two city parks. Included pedestrian survey and shovel testing, site (Phase II) testing, graphics specialist in final report. *Role: Project Archaeologist. Employer: Center for Ecological Archaeology, Texas A&M University*.

Professional Experience

- **SWCA Environmental Consultants; Houston, Texas (2006–present):** Mr. Crow joined SWCA in August 2006 where he has applied his expertise in both cultural and natural resources fields. He currently manages and assists on a range of projects including cultural resources investigations, wetland delineations/determinations, Threatened & Endangered Species Habitat Surveys, Section 404 Permitting, and Phase I Environmental Site Assessments. *Role: Archaeologist / Environmental Specialist.*
- **LFC Environmental, Inc. (2005–2006).** *Role: Environmental Consultant / Archaeologist.*
- **Texas Department of Transportation, Bryan District (May 2004–March 2005).** *Role: Environmental Specialist II.*
- **Dr. Alston V. Thoms, Center for Ecological Archaeology, Texas A&M University (2004).** *Role: Freelance Graphics Specialist.*
- **Center for Ecological Archaeology, Texas A&M University (2000–2004).** *Role: Graduate Research Assistant.*
- **HRA Gray and Pape, LLC (2003).** *Role: Archaeological Technician.*
- **Dr. Carolyn Boyd, Texas A&M University Press (2003).** *Role: Freelance Graphics Specialist.*
- **HTS Inc., Consultants (2002).** *Role: Archaeological Technician.*
- **Center for Ecological Archaeology, Texas A&M University (Fall 2000).** *Role: Work Study Employee.*

Publications / Reports

Crow, M. S., A. Mod, T. Roberts, and A. King. 2010. *An Intensive Archaeological Survey of Proposed Road and Parking Improvements at Fort Travis Seashore Park, Galveston County, Texas*. SWCA Cultural Resources Report No. 2010-419. Houston, Texas

Crow, M. S., C. Kauk, A. King, and L. F. Maas. 2008. *Summary Report for Cultural Resources Survey of Portions of the Proposed Denbury Onshore, LLC - 24-Inch CO2 Pipeline Project: USACE New Orleans District Section*. SWCA Cultural Resources Report No. 2008-415. Houston, Texas.

Chavez, M. R., A. King, and M. S. Crow. 2008. *Archaeological Survey of the Onshore Component of the Texas Offshore Port System (TOPS) Pipeline Project, Brazoria and Galveston Counties, Texas*. SWCA Cultural Resources Report No. 2008-403. Houston, Texas.

Crow, M. S., C. Kauk, and L. F. Maas. 2008. *An Archaeological Survey of Portions of the 15.25-mile Buckeye Bayer San Jacinto to Baytown Pipeline in Chamber and Harris Countries, Texas*. SWCA Cultural Resources Report No. 2008-330. Houston, Texas.

Acuña, L. I., M. S. Crow, E. Wingate, and K. A. Miller. 2008. *Archaeological Testing at 41GV120 for the Clear Creek Improvement Project, Galveston County, Texas*. SWCA Cultural Resources Report No. 2008-49. Texas Antiquities Permit No. 4692. Houston, Texas.

Crow, M. S., E. Wingate, L. I. Acuña, and K. A. Miller. 2007. *Archaeological Investigations at the Clear Creek Drainage Improvement Project, Galveston County, Texas.* SWCA Cultural Resources Report No. 2007-152. Houston, Texas.

Crow, Michael S., 2006. *Archaeological Investigations at Clemmons Gully #1 and #2 Wells, Hardin County, Texas*. SWCA Cultural Resources Report No. 2006-512. Submitted to Army Corps of Engineers, Galveston District.

Crow, Michael S. 2006. *Archaeological Investigations at Mississippi Hub, LLC Bond Salt Dome Storage Project Utility Corridor, Simpson County, Mississippi*. SWCA Cultural Resources Report No. 2006-513. Submitted to Federal Energy Regulatory Commission and Mississippi Department of Archives and History, 2006.

Crow, Michael S. and Alston V. Thoms. 2003. *Field Investigations at the Morgan Family Cemetery, Falls County, Texas*. Manuscript on file. Center for Ecological Archaeology, Texas A&M University, College Station, Texas.

Thoms, Alston V., Scott A. Minchak, Michael S. Crow, and Steve W. Ahr. 2003. Description of Prehistoric Sites, In Yegua *Creek Archaeological Project: Survey Results from Lake Somerville State Parks and Trailway, East-Central Texas*, edited by Alston V. Thoms, pp. 53-104. Center for Ecological Archaeology, Technical Report No. 7. Texas A&M University, College Station.

Stahman, Andrea R., Michael S. Crow, Scott A. Minchak, Steven W. Ahr, and Alston V. Thorns. 2003. Description of Historic Sites, In *Yegua Creek Archaeological Project: Survey Results from Lake Somerville State Parks and Trailway, East-Central Texas*, edited by Alston V. Thorns, pp. 105-118. Center for Ecological Archaeology, Technical Report No. 7. Texas A&M University, College Station.

Stahman, Andrea R., Michael S. Crow, Scott A. Minchak, Steven W. Ahr, and Alston V. Thorns. 2003. Historic Artifacts, In *Yegua Creek Archaeological Project. Survey Results from Lake Somerville State Parks and Trailway, East-Central Texas*, edited by Alston V. Thorns, pp. 53-104. Center for Ecological Archaeology, Technical Report No. 7. Texas A&M University, College Station.

Crow, Michael S. 2001. Of Grave Shafts and Burial Containers. In *The Matagorda Cemetery Project: Unmarked Graves and Community Heritage*, edited by Alston V. Thoms, pp. 27-37. Center for Ecological Archaeology, Technical Report No. 5. Texas A&M University, College Station.

Presentations

2002. Texas Archaeological Society annual meeting in Laredo. Traditional Cultural Properties symposium. Paper titled *Investigations of Unmarked Graves at Matagorda Cemetery: Pioneer Burial Practices and Community Heritage*.

Additional Graphics Work

2001. Thoms, Alston V. (editor). *Prehistoric and Historic Occupation in Central Brazos County: Archaeological Investigations of Two City Parks: Veterans Park and Athletic Complex and Lick Creek Park College Station, Texas*. Center for Ecological Archaeology, Technical Report No. 4. Texas A&M University, College Station.

2001. Thoms, Alston V. (editor). *Reassessing Cultural Extinction: Change and Survival at Mission San Juan Capistrano, Texas*. Reports of Investigation No. 4, Center for Ecological Archaeology, Texas A&M University, College Station.

Professional Affiliations / Committees

- Register of Professional Archaeologists, 2004–present
- Society for American Archaeology, 2002–present
- Texas Archaeological Society, 2002–present
- Council of Texas Archaeologists, 2001–present

Awards / Honors

- Distinguished Student, Blinn College, Fall 1996
- Academic Excellence Award, College of Liberal Arts, Texas A&M University, Spring 1999
- Academic Excellence Award, College of Liberal Arts, Texas A&M University, Fall 2000