A Cultural Resources Survey of the Targa Longhorn Gas Processing Plant and Access Road Wise County, Texas

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ABSTRACT

On the 11th and 12th of January 2012 Deep East Texas Archaeological Consultants (DETAC) conducted a cultural resource management survey of the proposed 23.5 hectares (58 acre) Targa Longhorn Gas Processing Plant and access road northeast of Decatur, Texas. Shovel testing the project area did not recover any cultural material, but the visual inspection noted an Aeromotor 602 windmill that was used to operate a water well. The windmill is most likely associated with a historic period house (41WS80) east of the project area; however, the windmill is not an architectural element of the site nor have any Aeomotor 602 wells been listed on the NRHP as stand-alone sites. No further investigations are recommended for the proposed project area; however, if any cultural material is recovered during construction, then excavation should stop and a qualified archaeologist should be contacted to evaluate the impact. DETAC is requesting concurrence with the determination of "no effect" to NRHP eligible properties for the proposed project area.

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INTRODUCTION

On 11 and 12 January 2012 Deep East Texas Archaeological Consultants (DETAC) conducted a cultural resources survey of the proposed Targa Longhorn Gas Processing Plant and access road in Wise County approximately 10 kilometers (km) (6 miles (mi)) northeast of Decatur, Texas (Figure 1). Proposed construction includes clearing and leveling the area that will include the plant and access road. The Area of Potential Effect (APE) is 23.5 hectares (ha) (58 acres). The archaeological survey was conducted at the request of the Environmental Protection Agency under Section 106 of the National Historic Preservation Act.

The purpose of this survey was to locate, describe, and record any cultural resources within the project area boundaries. The report was prepared following the short report format outlined by the Council of Texas Archaeologists (CTA) (2005a) with modifications requested by the Texas Historical Commission (THC) (Martin 1999). No previously recorded sites will be impacted by the proposed project. No new archaeological sites were recorded, and no artifacts or cultural material was collected during the survey, but an Aeormotor 602 windmill was noted next to a stock tank. This type of windmill is common throughout the nation and none are listed on the National Register of Historic Places (NRHP) as stand-alone sites. DETAC requests concurrence with a determination of "no effect" to properties listed or eligible for the (NRHP).

DEFINITION OF STUDY AREA

The project includes an irregular-shaped area 19.4 ha (48.1 acres) with an access road 2.2 km (1.3 mi) long and 18 meters (m) (60 feet (ft)) wide. The project areas is located in a livestock pasture. The APE was staked at the time of the survey. Construction will include clearing and leveling the area and access road followed by building the power plant. The proposed access road begins at the intersection of F.M. 51 and a private improved gravel road. The proposed access road follows the improved gravel road and a fenceline for 1.7 km (1.0 mi) to the northwest and then continues an additional 500 m (1,640 ft) to the plant area. Vegetation is primarily pasture grasses with scattered oak and mesquite trees. Modern fences and unimproved dirt roads bisect the project area.

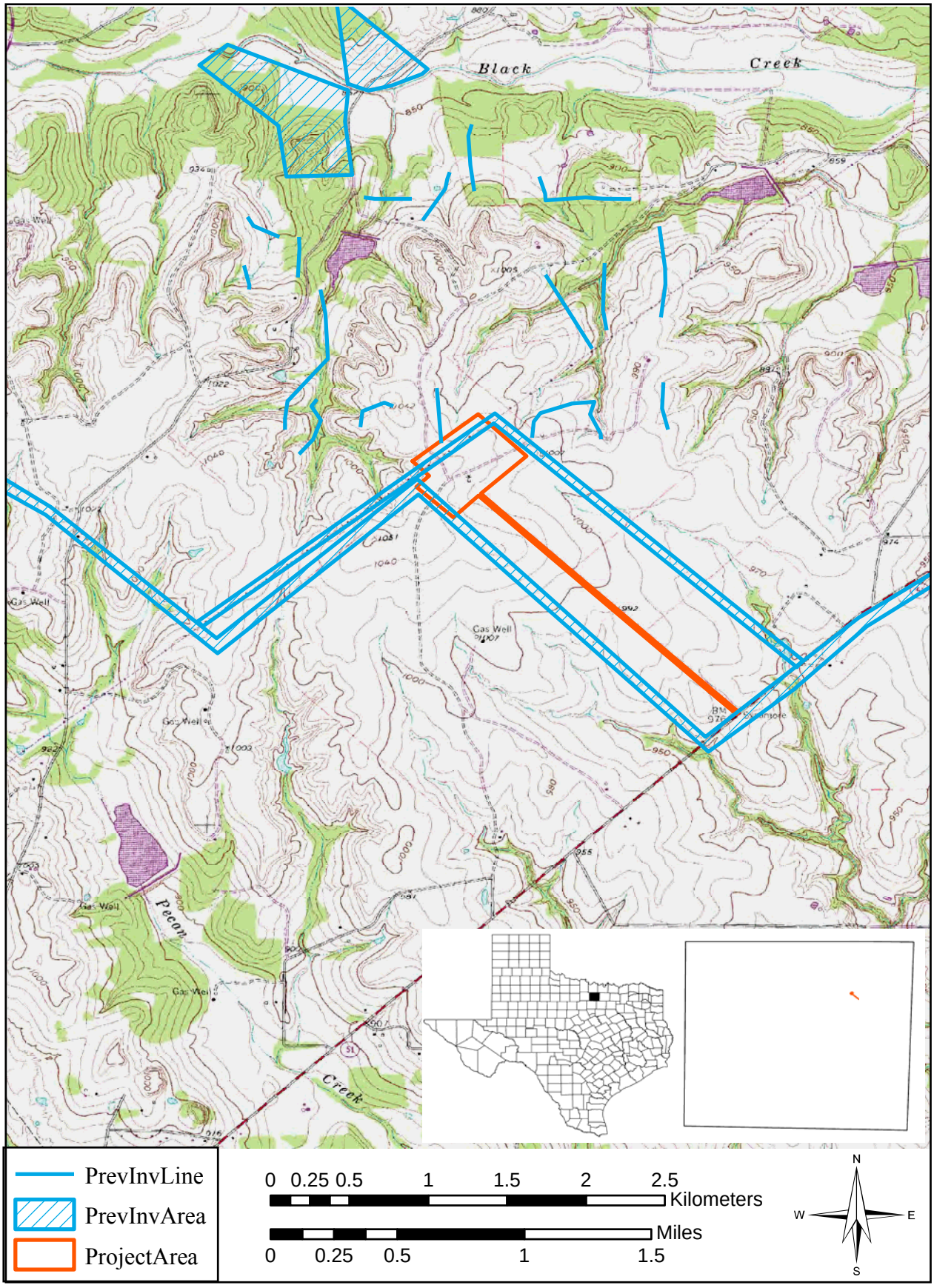

Figure 1. Longhorn Gas Processing Plant project area on Pecan Creek 7.5' Quad

PREVIOUS RESEARCH AND CULTURAL HISTORY

Overall, Wise County has been part of broad studies, investigated in large examinations, and numerous smaller surveys. The larger investigations focused on surveys for several reservoirs along the upper Trinity River (e.g., Stephenson 1949 and Brown *et al*. 1990) as well as surveys in the Caddo and LBJ National Grasslands (e.g., Jurney *et al*. 1989). The numerous smaller surveys in the area include both upland and lowland settings and were conducted primarily for county utility services, roads and petroleum wells in the LBJ National Grasslands (e.g., Ippolito 1989).

In addition to the fieldwork referenced above, several documents have added significantly to available information on the archaeological record in this region. In 1993 Perttula and Kenmotsu consider the area as part of the Prairie-Savanna Archeological sub-region that is part of the Eastern Planning Region; however, in 2004 Perttula (2004:7 Figure 1.1) described the area as part of the North-Central Texas Archeological Region. The documents of primary importance are Alex Kreiger's (1946) excavations on the Harrell Site (41YN1) and his definition of the Henrietta Focus. The project area falls between the Panhandle to the west (e.g., Brooks 2004:331-346), or the Post-Oak Savanna area to the east (e.g., Fields 2004:347-369). Current research is also published in the *Archeological Journal of the Texas Prairie Savannah* (Todd 2011) which describes work across north Texas.

The occupation of the area includes the Paleo-Indian (pre-6500 B.C.), Archaic foraging cultures (6500 B.C. – A.D. 700), Late Prehistoric Period (A.D. 700 - 1700), and the Historic Period (post-1700) (Pemberton and Cliff 2008:11). The Paleo-Indian period (pre-6500 B.C.) is characterized by small, mobile bands of hunters and gatherers that consumed a variety of native plants and animals (Szarka *et al*. 2008:11). The Archaic foraging culture (6500 B.C – A.D. 700) refers to hunter-gatherers who implemented more regionally specialized approaches toward exploiting their environment evidenced by burned rock, hammerstones, and a variety of plant and meat processing tools (Prikryl 1990). The Late Prehistoric Period (A.D. 700-1700) includes early and late phases cumulatively described as the Henrietta Focus. The Henrietta Focus was influenced by both Plains Villagers to the north and west and the Caddoan culture from the east and south (Crook 2011:16). These cultures exhibited a greater reliance on cultigens (Brown

and Lebo 1990:16) and prolonged occupations at specific locales indicating an increasingly sedentary lifestyle (Ferring and Yates 1997:6).

The Historic period (post-1700) describes both the history behind the current cultural setting of the area and marks a transition from the native populations' domination of the area to the American immigrants' establishment of farms, towns, and counties. The first Anglo settlement in the Wise County area began in earnest in 1854. By 1856 Wise County was formed from portions of Cooke and Denton Counties. Settlers established small, self-sustaining farms. The Wise County population remained small and Indian raids were common until 1874. Settlers sold corn and cotton and began ranching, but moving produce to rivers was costly. The arrival of the railroad in 1882 expanded the economy dramatically as farmers and ranchers were able to transport produce and livestock to Ft. Worth cheaper and faster than before. The city continued to grow with the establishment of Decatur Baptist College in 1892 and the modern expansion of agribusiness and petroleum production (Barton 2012).

RESEARCH DESIGN AND METHODOLOGY

The investigations were preformed in compliance with the National Historic Preservation Act of 1966 (PL89-665), as amended in 1974, 1976, 1980, and 1992; the National Environmental Policy Act of 1969 (PL91-190, 83 Stat. 915, 42 USC 4231, 1970); the Archaeological Protection Act of 1979 (PL96-95; 16 U.S.C. 470aa-mm), the guidelines set forth by the CTA (2005b); and the ethics standards of the Texas Archaeological Society and the Society of Professional Archaeologists.

The program of site definition was conducted in accordance with the National Park Service criteria (36 CFR, part 60.4) for determining eligibility of a cultural resource to the NRHP. The objectives of the survey were to locate prehistoric and historic cultural resources sites within the survey areas. If sites were found, then the investigations were to delineate the vertical and horizontal extent of each site, determine each site's integrity, and provide a preliminary evaluation of each site's potential for NRHP eligibility.

Before initiating fieldwork, DETAC conducted a records and literature review using the Texas Archaeological Site Atlas (THC 2012). The atlas contains a current database with published and unpublished data regarding cultural resource surveys, location maps, and cultural resources records. In addition, these records show State Archaeological Landmarks (SAL) and NRHP eligibility of previously recorded sites.

DETAC conducted a 100 percent pedestrian survey of the area. The pedestrian survey relied on shovel testing and visual examination of the project area to locate sites. Shovel testing included excavating an area approximately 30 centimeters (cm) in diameter in 10 cm (4 inch (in)) levels down to the clay substrate or 90 cm (35 in). The weather and soil conditions limited examination of the excavated soil to trowling in accordance with THC guidelines. According to the THC guidelines, project areas between 11 and 100 acres require a minimum of one shovel test every two acres. Linear project areas require a minimum of 16 shovel tests for every mile. Following these guidelines, the pedestrian survey included a surface inspection focused on areas with exposed soil (e.g., erosional features and ant mounds) along with a minimum of 66 shovel tests with 24 shovel tests in the 19.4 ha (48.1 ac) area and 22 shovel tests along the 2.2 km (1.3 mi) long access road. More shovel tests were excavated closer to stream channels and along ridge summits. Shovel test locations were recorded with a Magellan GPS with 3 to 5 meter accuracy and notes were made about soil color, texture, and shovel test depth.

RESULTS

The literature search and records review of the Texas Archaeological Site Atlas (2012) found two archaeological sites and three surveys within 1.6 km (1 mi)) of the project area. The sites were recorded as part of a PBS&J survey for a 345 kV transmission line. The other two surveys were conducted for the US Forest Service on the Caddo/LBJ Grasslands north of the project area.

PBS&J conducted a survey for two alternative transmission line routes that passed near or through the current project area (Pemberton and Cliff 2008). Their initial survey corridor paralleled the northern and eastern limits of the project area and documented sites 41WS79 and 41WS80. The final survey corridor paralleled the western boundary of the project area; no sites were documented during the reroute survey. During the survey,

PBS&J excavated shovel tests on a discretionary basis as per their medium probability methodology. Site 41WS79 was recorded as a historic period house with an artifact scatter approximately 750 m (2500 ft) east of the southern end of the proposed access road (Perry 2005). Site 41WS80 was recorded as a historic period house foundation with an artifact scatter and a windmill approximately 70 m (230 ft) east of the proposed plant facility (Perry 2006). Neither site was considered eligible for inclusion to the NRHP, and no further work was recommended for either site because of the "low artifact density, types of artifacts recovered and the date of the site" (Perry 2006).

The surveys conducted on the Caddo/LBJ Grasslands included a 1987 survey for several low berms to slow erosion and a survey of seismic lines in three units roughly 1.6 km (1 mi) north of the project area (Moore 2010). Two sites, 41WS108 and 41WS110, were found during the seismic survey along Black Creek. A third site, 41WS35, was also found along Black Creek. Site 41WS35 was recorded as a burned rock and lithic artifact scatter and considered ineligible for inclusion to the NRHP (Peter and Allday 1989). Site 41WS108 was recorded as an Archaic artifact scatter with a Carrollton dart point, and 41WS110 was recorded as a prehistoric lithic artifact scatter and a historic cement foundation (Shaddox and Hall 2010). Not enough information was collected on 41WS108 or 41WS110 to make a determination of NRHP eligibility.

Soil series in the project include Somervell (SoC) on ridge summits and Bolar (BoB), Purves (PvB), and Mingo (MoB) series on backslopes. All four series include 20 to 30 cm (8 to 12 in) of dark brown clay loam over 8 to 70 cm (4 to 28 in) of brown clay. These soils formed in place from underlying limestone bedrock. Pebble to cobble-size limestone gravels and marine mega-fossils are common.

Vegetation in the project area was pasture grasses and scattered scrub brush with a few mesquite and oak trees mostly along fence lines (Figure 2). Ground surface visibility was approximately 10% with patchy areas of near 80% visibility on the backslopes in the northwest corner of the project area. Seeping ground water from recent rain made surface inspection and shovel tests difficult in concave areas along the ridge slopes as puddles formed on the surface or filled shovel tests during excavation.

Weather conditions during the survey were sunny and cold. Recent rain left most of the area soggy as run-off soaked into the ground and seeped back to the surface along

Project area looking west

Somervell series soils

Windmill in project area

Figure 2. Project area photographs and soil profile

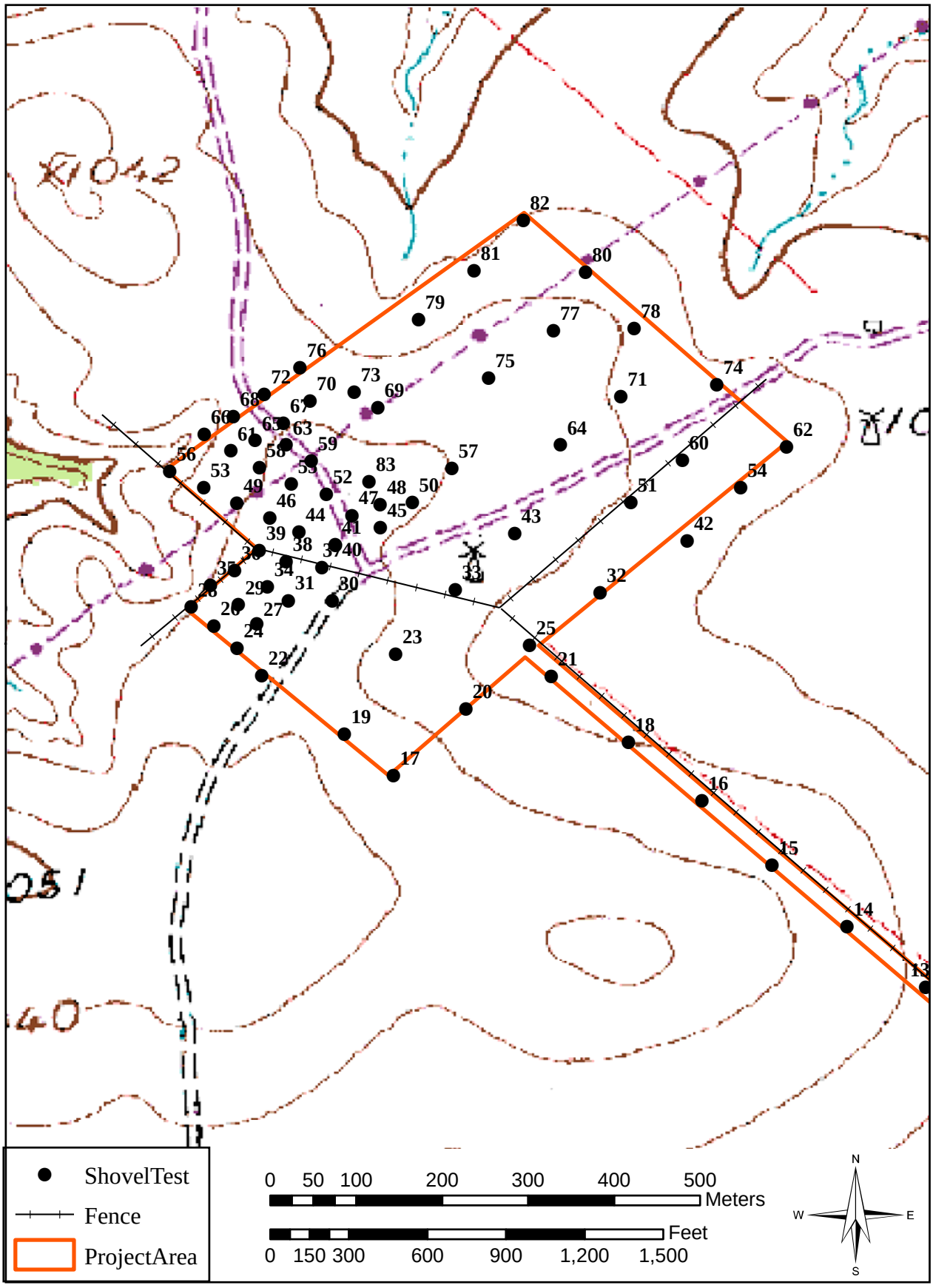

Figure 3. Project area shovel tests

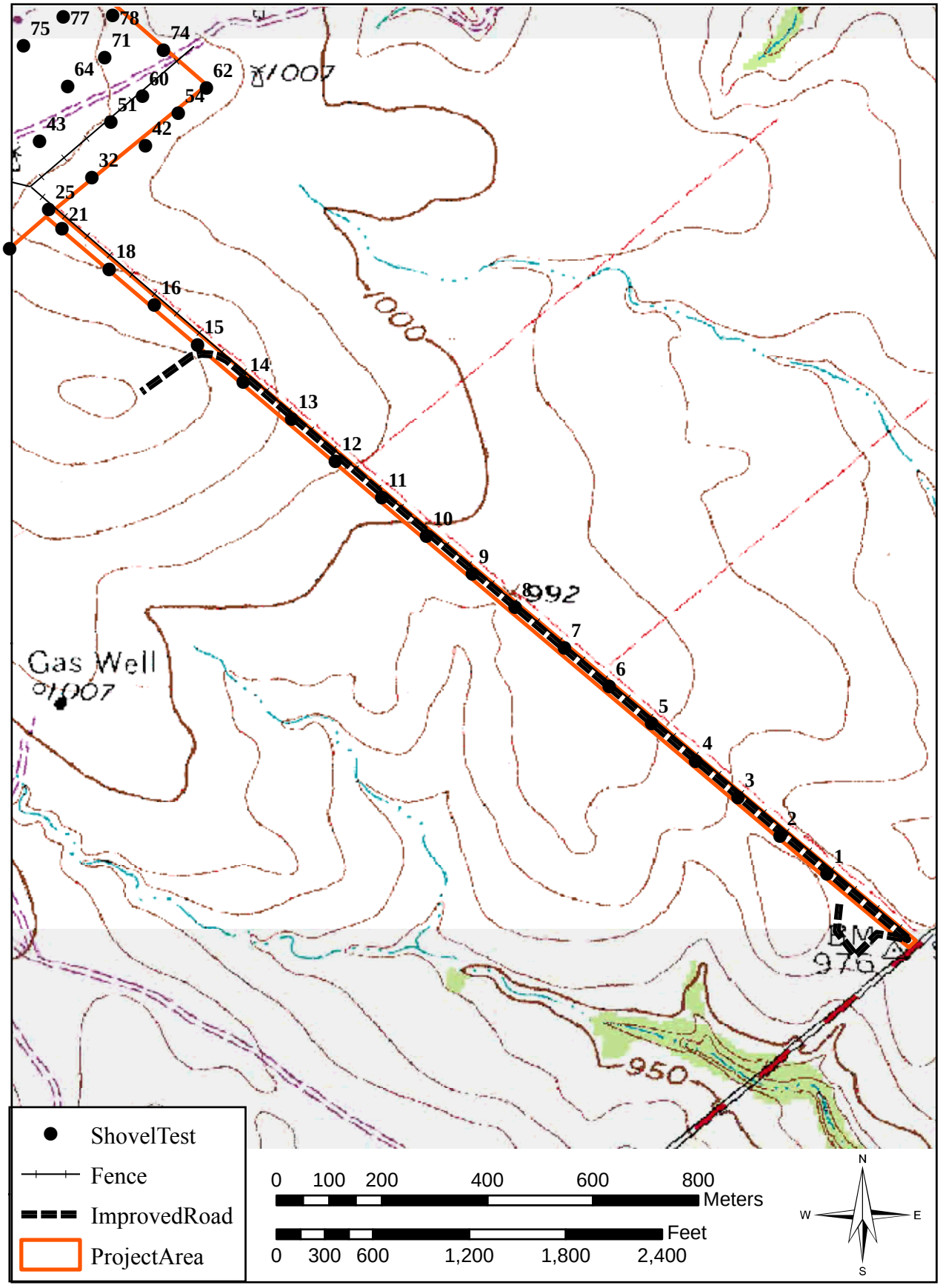

Figure 4. Access road shovel tests

the slopes and low areas. Shovel tests were excavated by two DETAC archaeologists over the course of two days (Figures 3 and 4). Initially, shovel tests were excavated at 100 m (330 ft) intervals across the project area and along the west side of the access road. No shovel tests were excavated along the eastern portion of the access road or at the southern end of the access road because the area was leveled and covered in an improved gravel surface. The northwest corner of the project area and ridge summit were shovel tested at 30 m (100 ft) intervals surrounding the headwaters of a drainage that was considered to have a higher probability of containing cultural material. A total of 82 shovel tests were excavated across the APE. The majority of shovel tests documented dark brown clay or brown clay loam 10 to 30 cm (4 to 12 in) deep over brown gravelly clay. The clayey texture and near saturated soil was often trowled through instead of screened. No artifacts were observed in the surface inspection or found in the shovel testing.

An out of use windmill and livestock water trough were found near the midpoint of the proposed project area. The windmill location is visible on the 7.5' topographic map along with the windmill on 41WS80. The windmill sails are galvanized metal; they were found on the ground next to the tower. The tower is approximately 10 m (30 ft) high and made of welded steel. The gearbox at the top of the tower had manufactured parts with a galvanized metal cover. The water trough at the base of the tower has a concrete floor and a metal wall approximately 6 m (20 ft) in diameter and approximately 60 cm (24 in) high. The water tank did not have any water in it at the time of survey. The well head is a vertical steel pipe approximately 10 cm (4 in) in diameter at the base of the tower and surrounded by a broken concrete foundation. Steel water troughs were first manufactured in 1904 and the self-oiling enclosed gear cases for windmill's were first manufactured in 1915 (Windmill-Parts 2012). The windmill is most likely an Aeormotor 602 based on the size, number, and construction of the sails along with the shape of the gearbox and the shape of the vane (Neal personal communication 2012; Baker 1985:116). The Aeromotor 602 was manufactured between 1916 and 1933 in Chicago (Baker 1985:116) and these windmills are still being serviced today (Windmill-Parts 2012).

A search of the NRHP database revealed that free standing windmills listed on the NRHP have unique architectural elements or were an integral part of a NRHP site, e.g., a

windmill used to power a sugar mill or provide water to a house. The windmill found during the survey is most likely associated with site 41WS80 east of the project area; however, the windmill is not an architectural element of the site because it was used for watering livestock instead of supplying the house with water. The windmill found during the survey is not eligible for inclusion to the NRHP because: 1) it is not a unique architectural design, 2) this style of windmill is still in service, and 3) the windmill is free standing farm equipment not providing water or power to an archaeological site.

SUMMARY AND RECOMMENDATIONS

The proposed Targa Longhorn Gas Processing Plant and access road northeast of Decatur, Texas includes a 19.4 ha (48.1 ac) area and a 2.2 km (1.3 mi) long access road. The total APE is 23.5 ha (58 ac). Previous investigations recorded a historic period house foundation with a windmill roughly 70 m (230 ft) east of the project area; no further work was recommended because of the limited potential for information relevant to understanding local history (Perry 2006). For the current project area, a total of 82 shovel tests were excavated in clay loam and clay soil 10 to 30 cm (4 and 12 in) deep. No artifacts were recovered from shovel testing. The surface inspection found a wind-powered water well in the project area similar to the one on 41WS80. The windmill in the project area was an Aeromotor 602 manufactured between 1916 and 1933; this model is still in use today. The windmill is most likely associated with a historic period house (41WS80) east of the project area; however, the windmill is not an architectural element of the site because it was used for watering livestock instead of supplying the house with water.

Based on the shovel test results and the visual examination, there is little chance of encountering undiscovered cultural resources in the project area; however, in the event that human remains and/or archaeological materials are discovered during construction, then the project activity will immediately cease and the THC shall be notified of the discovery. DETAC is requesting a concurrence with the determination of “no effect” to properties listed or eligible for listing to the NRHP for the proposed Targa Longhorn Plant as defined by the National Historic Preservation Act.

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Appendix A
Shovel Test Data

ST No	Depth (cm)	Soil color and texture above the B-horizon	ST No	Depth (cm)	Soil color and texture above the B-horizon
1	20	Brown clay	42	30	Brown clay
2	20	Brown clay	43	30	Brown clay
3	20	Brown clay	44	20	Brown clay
4	20	Brown clay	45	20	Brown clay loam
5	20	Brown clay	46	30	Brown clay
6	20	Brown clay	47	20	Brown clay
7	20	Brown clay	48	10	Brown gravelly clay loam
8	20	Brown clay	49	30	Brown clay
9	20	Brown clay	50	20	Brown gravelly clay
10	20	Brown clay	51	30	Brown clay
11	20	Brown clay	52	20	Brown clay
12	20	Brown clay	53	30	Brown clay
13	30	Brown clay loam	54	30	Brown clay
14	20	Brown gravelly clay	55	20	Brown clay
15	10	Brown gravelly clay	56	30	Brown clay
16	20	Brown gravelly clay	57	30	Brown clay
17	20	Brown clay	58	20	Brown clay
18	20	Brown gravelly clay	59	20	Brown clay loam
19	20	Brown clay	60	20	Brown clay
20	30	Brown clay	61	20	Brown clay
21	20	Brown gravelly clay	62	30	Brown clay
22	20	Brown clay	63	10	Brown clay
23	30	Brown clay	64	20	Brown clay
24	20	Brown clay	65	30	Brown clay
25	30	Brown clay	66	20	Brown clay
26	20	Brown clay	67	30	Brown clay
27	20	Brown clay	68	20	Brown clay
28	20	Brown clay	69	30	Brown clay
29	20	Brown clay	70	30	Brown clay
30	30	Brown clay	71	20	Brown clay
31	20	Brown clay	72	20	Brown clay
32	30	Brown clay	73	30	Brown clay
33	30	Brown clay	74	30	Brown clay
34	30	Brown clay	75	20	Brown clay
35	20	Brown clay	76	20	Brown clay
36	30	Brown clay	77	10	Brown clay
37	20	Brown clay	78	30	Brown clay
38	30	Brown clay	79	30	Brown clay
39	30	Brown clay	80	20	Brown gravelly clay
40	20	Brown clay	81	20	Brown clay
41	20	Brown clay	82	30	Brown clay