ARCHAEOLOGICAL SURVEY
OF THE
TRAVIS RANCH WASTEWATER
TREATMENT PLANT SITE
KAUFMAN COUNTY, TEXAS

Jesse Todd, MS, MA

Submitted to:
TRAVIS RANCH DEVELOPMENT, LP
16660 North Dallas Parkway, Suite 2900
Dallas, Texas 75248

Prepared by:
AR CONSULTANTS, INC.
P.O. Box 820727
Dallas, Texas 75382

Cultural Resources Report 2003-41
October 23, 2003
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ABSTRACT

AR Consultants, Inc. conducted an archaeological survey for Travis Ranch Development, LP who intends to construct a wastewater treatment plant with a buffer zone on 15 acres and a 1600 foot long outflow pipeline. The plant site is located 1.5 miles north of Forney in Kaufman County, Texas and is situated at the edge of the East Fork of the Trinity River valley just downstream from Lake Ray Hubbard. The proposed plant site is to be constructed on the slope of a ridge and the buffer zone and the pipeline right-of-way is in the East Fork floodplain.

Since no cultural materials were discovered during the pedestrian survey or shovel testing, AR Consultants Inc. recommends that further cultural resource investigations are unwarranted in conjunction with this project. If cultural materials are discovered during construction, work should cease immediately in that area and the Texas Historical Commission should be notified.
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INTRODUCTION

On October 16, 2003, AR Consultants, Inc. conducted a pedestrian survey of 16.5 acres for a proposed wastewater treatment plant and two possible outflow pipeline right-of-ways southeast of Lake Ray Hubbard and in the East Fork of the Trinity River's floodplain. The proposed plant area is on a ridge and its slope. The pipeline routes are in a floodplain setting. The plant site area is drained by an unnamed intermittent drainage and the pipeline right-of-ways are parallel to the unnamed drainage and they bend southeast to parallel to Thompson Slough and enter the slough after approximately 25 meters. The survey area is north of US 80 and is approximately 1.5 miles northwest of Forney, Texas in Kaufman County. The study area parallels a bend in the road northwest of the intersection of Ray Hubbard Drive and FM 740 (Figure 1). The survey was done for Travis Ranch Development, LP.

The purpose of this investigation was to locate any cultural resources that are present within the plant site and pipeline corridors and make recommendations about their significance and how they might be impacted by construction. The survey was conducted because the nearby Waters of the United States are the responsibility of the Fort Worth Division of the US Army Corps of Engineers. The relevant federal legislation includes Section 404 of the Clean Water Act that is administered by the US Army Corps of Engineers. Development of this project will be at or within the scope of the nationwide permit. Other relevant federal legislation includes the National Historic Preservation Act of 1966, as amended (PL-96-515), the National Environmental Policy Act of 1969, as amended (PL-90-190), the Archaeological and Historical Preservation Act of 1974, as amended (PL-93-291), Executive Order No. 11593, "Protection and Enhancement of the Cultural Environment" and Procedures for the Protection of Historic and Cultural Properties (36CFR800), Appendix C. The Antiquities Code of Texas does not apply to this investigation, but this report has been prepared to be reviewed by the Texas Historical Commission as the Section 106 review agency.

This report has been written in accordance with the guidelines for short reports prepared by the Council of Texas Archeologists (ND) and adopted by the Archeology Division of the Texas Historical Commission. The following report presents a brief description of the natural and cultural environment of the area. This is followed by a description of the research design and methodology. The results of the investigation follow and constitute the body of the report. The last chapter presents recommendations that arise from the study. A list of references cited concludes the report.
The proposed wastewater treatment plant and possible outflow pipeline routes and shovel test locations along the routes shown on a portion of the Forney North, TX 7.5' USGS map.
Administrative Information:

Sponsor: Travis Ranch Development, LP
Review Agencies: Fort Worth District, Corps of Engineers and the Archeology Division of the Texas Historical Commission
Principal Investigator: Jesse Todd, MS, MA
Field Crew: Jesse Todd, MS, MA
Date: October 16, 2003
Acres Evaluated: 16.5
Sites Recorded and revisited: None
Curation: No artifacts were recovered
NATURAL ENVIRONMENT

The area of the proposed wastewater treatment plant and outflow pipeline routes is underlain by the Upper Cretaceous age Ozan formation which is commonly referred to as the "lower Taylor marl" (Bureau of Economic Geology 1988). The Ozan formation consists of calcareous clay which contains silts and sands, especially in the upper portion of the formation. Quaternary alluvium fills the East Fork valley and overlies the Ozan in the western portion of the study area, and an older Quaternary natural terrace comprises the surface deposits in the eastern portion of the study area.

Two soil associations, the Ferris-Altoga and the Trinity-Kaufman are found in the study area (Pringle 1977: General Soil Map). The Trinity-Kaufman Association is a floodplain deposit found in the valley of the East Fork and the Ferris-Altoga Association is on the prairie uplands. Specific soils within the study area are occasionally flooded Trinity clay and Lewisville silty clay with 3 to 8 percent slopes (Pringle 1977:Sheet 17). Occasionally flooded Trinity clay is usually level and is protected from flooding by a levee system (Pringle 1977:23). The Lewisville silty clay is formed on old stream terraces and the top of the subsoil is generally 15 inches below the present ground surface (Pringle 1977:18).

The study area is located in the Blackland Prairie vegetative area of Texas. Kuchler (1966) classified the prairie as being dominated by Andropogon-Sipa grasses. Various other grasses are present as well. The prairie environment is one of low biotic diversity. The Texan biotic zone (Blair 1950:Figure 1) also includes the study area. This prairie savannah zone contains 47 species of mammals, 41 reptiles, and 35 amphibians. The area averages 38.67 inches of rainfall per year; ranging from an average of 2.11 inches in July to 4.99 inches in April.

Paleoenvironmental change is not well documented, but it is summarized by Prikryl (1993:192-193). Prior to 12,000 BC, the climate of north central Texas was cooler and moister than at present. Between 12,000 and 8,000 BC, the climate became warmer and this continued to the present, but with brief mesic periods. It is suggested that the presence of high grass pollen and low arboreal pollen between 5550-1050 BC show a drying with a return of arboreal pollen after 1050 BC. The later change is similar to today's environment. High grass pollen also occurs at approximately AD 450 and from AD 1550 to 1650, and this also indicates drier periods. The presence of paleosols between AD 1 and 1000 suggest an increase in moisture during this period with a return to drier conditions after AD 1000.
CULTURE HISTORY

Introduction

The prairie lands of North Central Texas have been occupied for many thousands of years and the history of the prehistoric peoples who have left behind evidence of their occupation is known to many of the residents who inhabit the area today. At the same time, a thorough understanding of these people and their use of the land during this lengthy occupation is lacking due to the vastness of the area, the ephemeral evidence of some of this occupation, and the limited and scattered studies that have been carried out. Virtually no major cultural resources studies have been conducted in Kaufman County and the following discussion draws on information presented by Smith (1969), Skinner (1972), Peter and McGregor (1988), Prikryl (1990 and 1993), and other sources. The Prehistoric period spans a long time period and for convenience has been divided into three major periods, Paleo-Indian, Archaic, and Late Prehistoric.

Culture History

There has been no conclusive evidence of pre-Paleo-Indian occupation in the State of Texas. Two discoveries have been attributed to this period. The first was the report of stone boulders found near the community of Malakoff in Henderson County that had been carved with a likeness of human heads and have been reported as the Malakoff Heads or Malakoff Man (Sellards 1941). The three boulders are late Pliocene or early Pleistocene age gravels which are considered to be more than a million years old (Menzer and Slaughter 1971) and this is well outside the recognized time period of human occupation in the Americas. In addition, no independent evidence in the form of artifacts, fauna or features was found with the heads and the discovery of the heads was not adequately documented. Later examination of two of the heads by Guderjan (1991) determined that one head was made at the site using metal tools and the other was an ecofact.

The Paleo-Indian culture (11,000 to 8,000 BP) had been described as relying on an economy of hunting and gathering, with primary emphasis being on the hunting and processing of megafauna (mammoth and bison). The Lewisville site (Crook and Harris 1957) and the Aubrey site (Ferring 1989) are good examples of sites dated to this period. Both sites are campsites and both were deeply buried, and thus preserved, under the sediments of the present floodplains of the Elm Fork of the Trinity River. Surface artifacts dating to this period have been reported from the Kaufman County area (Meltzer and Bever 1995:Table 2), but no Paleo-Indian sites have been investigated.

There is little evidence of Paleo-Indian occupation in the area of the proposed project although projectile points such as Clovis, Folsom, Meserve, Plainview, San Patrice, Scottsbluff, and Eden have been found on the surface of sites throughout the region. A
Folsom point was found at 41KF47, to the south of the proposed wastewater treatment plant. Fragments of Folsom and Scottsbluff or Eden points were found at the Wild Bull site at Cedar Creek Lake (Story 1965:188-190), but they were not in a primary context and were associated with later age Archaic materials. Little is known about the lifeways of these early peoples who are believed to have populated eastern Texas (Shafer 1977).

The Archaic culture period follows the Paleo-Indian and lasts from 6,000 BC to possibly as late as AD 600. Hunting and gathering continued to be the means by which the people supported their groups. This adaptation was more diversified than that of the earlier period and there is limited evidence that the population increased in size during the course of this period of time. Archaic sites are more common, although there is little evidence of Early Archaic occupation in the area. The Middle Archaic period has been termed the La Harpe Aspect in East Texas (Johnson 1962:269), while the term Trinity Aspect (Crook and Harris 1952) has been used in the Trinity River Basin. Prikryl (1990:73) has questioned the value of the Trinity Aspect and prefers the use of time period terminology since there seem to be questions about the primary contexts of the assemblages from the sites used to define the Aspect.

By the Late Archaic, there is sufficient information to describe the presence of several site types. These include midden sites, shell lens sites, artifact scatters, and upland edge scatters (Richner and Bagot 1978:146). The majority of these sites are known to occur along the major drainages where studies have been conducted, but the few upland surveys have demonstrated that scattered occupation sites are present away from the main drainages in such areas as the Big Rock area in north-central Henderson County north of Athens (Guderjan 1981).

A transition to the Late Prehistoric/Caddoan period is signaled by the presence of a crude form of generally plain brown pottery known as Williams Plain that occurs at sites where dart points dominate the assemblages. This pottery type was found at the Gossett Bottoms, Lacy, and Wild Bull sites at Cedar Creek Lake (Story 1965). Very little is known about this transition period.

The beginning of the Late Prehistoric is signaled by the appearance of ceramics and arrow points in the first millennium AD. The Late Prehistoric I period (ca. AD 600-1200) is also signaled by the appearance of houses and corn horticulture. Locally made pottery appears to be copies of Caddoan Alto and Sanders phase types. Evidence for corn horticulture was noted at the Cobb-Pool site at Lake Joe Pool (Peter and McGregor 1988). Late Prehistoric II dates from AD 1200-1600 and is characterized by the appearance of a Plains Village-like artifact assemblage. Harahey knives, thumbnail scrapers, and flake drills are frequently found with triangular-shaped and Perdiz arrow points. In some cases, these artifacts have been found with bison kills and in other cases bison scapulas had been used to make hoe blades. Nocona Plain, a shell-tempered pottery, occurs during this prehistoric period and is believed to be locally made.
The protohistoric period of North Central Texas begins with the entrance of the Spanish about AD 1541. At about this same time, immigrant Native American groups moved into the same area and either displaced the prehistoric inhabitants or moved into areas that had previously been abandoned. The beginning of this period was marked by limited and sporadic contact between European explorers and the native occupants. The introduction and adoption of the horse, and ultimately firearms, resulted in a shift from a more sedentary seasonal round to emphasis on bison hunting.

A wide variety of historic Indian groups inhabited this part of Texas. There are very few sites attributed to historic Indians in this region (Skinner 1988), but sites are known in surrounding areas where historic Wichita sites are reported from near Waco, Mexia, Emory, and Spanish Fort.

The historic period (Fox 1983) overlaps with the protohistoric, but is best known in the area for the period from the Civil War to the present. During this period, the indigenous population was eliminated and removed from the area. The invading Europeans focused on farming and ranching.

The Anglo-American history of the Upper Trinity River Basin has been divided into the Frontier, Initial Cash Crop, Tenant Farming, and Agribusiness periods by Richner and Lee (1976:125-133). The Frontier period lasted from about 1820 to 1850 and was followed by the Initial Cash Crop period which lasted until 1870. Tenant Farming began at 1870 and continued to about 1940. Agribusiness began after the Great Depression and continues to this date.

Previous Investigations

Investigations in the Cedar Creek Lake/Big Rock area have been mentioned above. An archaeological survey of the Cedar Creek Lake area was conducted for the National Park Service in 1961 (Davis 1961). Several sites were recorded, and in 1964, the Texas Archeological Salvage Project from The University of Texas at Austin excavated at three sites that are now under the lake (Story 1965). The area from Cedar Creek Lake west is included in Prikryl’s (1993) Prairie-Savannah Region of Texas.

Investigations in the Forest Grove/Big Rock area began in 1974 with a literature search (Bagot and Skinner 1974), and continued with a survey of the Forest Grove Lake area which recorded five prehistoric and two historic sites as well as the community of Forest Grove (Richner and Lee 1974). Additional survey was done in 1978 by Richner (1978). Further site survey work was done in the mine area in 1980 (Guderjan 1981), and this resulted in the recording of twelve previously unrecorded prehistoric and fifty previously unrecorded historic sites. The Big Rock Shelter was tested as part of this investigation.

Since the 1970s, numerous small-scale cultural resources surveys were conducted of transmission corridors, pipelines, and Soil Conservation Service floodwater retarding structures throughout Kaufman County (Ferring 1975; Lynott and Banks 1977).
TRAVIS RANCH WASTEWATER TREATMENT PLANT ARCHAEOLOGICAL SURVEY

overall impression from these studies is that historic and prehistoric cultural resources are present, but are widely scattered and sites are small in size and frequently are surface deposits in the upland. Using Lynott's (1977) model for prehistoric occupation, only three of his site types were recorded in the Upper Cedar Creek Watershed (Lynott and Banks 1975:45). Of note is the fact that lithic procurement sites are found in upland areas where metaquartzite gravels occur. Habitation sites are reported to be near available water sources. A similar pattern is noted by Richner (1978:6) in the Forest Grove Lake area north of Athens.

Upstream and along the East Fork valley, archaeological surveys and excavations were conducted at Lake Lavon and Lake Ray Hubbard [formerly Forney Reservoir]. The surveys were not systematic or comprehensive as would be required by the Corps of Engineers and the Texas Historical Commission (2002) today, as they focused on prehistoric sites and on areas which had high probability for containing preserved site deposits. Nevertheless, 25 sites were recorded at Lake Lavon (Stephenson 1949b and c) and subsequent excavation defined the Wylie Focus (Stephenson 1949a and 1952). This work built on earlier investigations by members of the Dallas Archeological Society (Harris 1948 and 1960; Wilson 1946). In the 1960s and 1970s, further survey and excavation was done which added to our understanding of the local archaeology (Lorrain 1965; Lynott 1975, 1977). In 1963, the Dallas Archeological Society (DAS) surveyed the area of Lake Ray Hubbard and recorded 33 archaeological sites (Harris and Suhm 1963). This survey described 20 sites already known to the DAS membership (Hannah 1941; Hannah and Harris 1948), and located 13 previously unrecorded sites. Only limited excavations were subsequently conducted (Ross 1966; Lorrain and Hoffrichter 1968), but along with the previous DAS excavations, they did provide evidence of the way of life practiced by the prehistoric peoples who occupied this part of the East Fork valley.

Very limited work has been done in the East Fork of the Trinity River downstream from the Lake Ray Hubbard dam. R.K. Harris surveyed the area in 1930 and recorded a number of sites. Jay Blaine discovered site 41KF3 northwest of the study area. The site consisted of a knife, scraper and flakes located on the surface of a low rise at the end of a ridge that extended into the floodplain of the East Fork (TASA 2003). A survey of the river channel was done as part of planning for channelization (Richner 1976). This survey was limited in scope due to reliance on surface exposure of sites in areas where recent flooding, plowing, and erosion had removed vegetation or sediment. No shovel tests were excavated and it is likely that sites along the banks of the East Fork of the Trinity River and within its floodplain were overlooked. Several surveys have been done in conjunction with electric transmission and distribution lines for Kaufman County Electric Cooperative, Inc. One of these surveys recorded a shell lens site in the channel of the East Fork, and a historic house site on a low ridge at the eastern edge of the East Fork valley (Skinner 1992).

In 1998, a reconnaissance of a section of the Clements property north of US 80 and west of FM 460 was conducted; this survey included the survey area. One previously unrecorded prehistoric site was recorded, but no sites were discovered in the wastewater
treatment plant site (Skinner 1998). The recent survey of the Cobisa-Forney Electric Power Plant Site recorded no historic or prehistoric sites in the floodplain of Buffalo Creek just east of the study area (Price 2001). South of the study area and US 80, AR Consultants, Inc. (ARC) conducted a survey of a pipeline right-of-way and discovered a prehistoric site (41KF128) consisting of lithics, fire-cracked rock and mussel shells and a historic site (41KF129) consisting of a barn and well. ARC also reinvestigated a prehistoric site (41KF45) recorded by R. Harris in the 1930s. Harris discovered human bone, mussel shell, animal bone, pottery sherds, projectile points, drills and scrapers at the site. The site had subsequently been destroyed and only a few lithics and projectile points were found and no buried deposit was located (Trask and Skinner 2001).
RESEARCH DESIGN AND METHODOLOGY

Research Design

After looking at the soils and USGS maps and the Texas Archeological Sites Atlas, it was decided that the major focus of the investigation would be on the potential for prehistoric sites in the study area.

The first research question was,

Are there locations in the study area above flood level that would be likely for regular occupation and there are buried archaeological site deposits in the floodplain sediments?

The second research question was more basic to every study in archaeology. Simply stated, it asked,

How did the people utilize the area, what affect did they have on the area and what record of their presence did they leave behind?

Small scale surveys, such as the one described in this report, can provide information to the above questions.

Methodology

The survey area consists of 15 acres on which a wastewater treatment plant is to be built and two 1600 foot outflow pipeline right-of-ways, both of which are to be buried 4 feet beneath the surface and have an easement of 20 feet. One pipeline route is to be buried in the unnamed drainage’s east levee which stands approximately a meter above the present ground surface that leads to Thompson Slough, but an alternative route was also selected parallel to the unnamed drainage and is to be placed in the floodplain. The Council of Texas Archeologists (2002) recommends a shovel test per 2 acres which was adopted by the Texas Historical Commission and this was done in the plant area. No shovel testing was done in the levee because of disturbance and the banks were closely inspected for cultural materials, but none were found. The alternative outflow line right-of-way, however, is to be placed in an alluvial situation, a floodplain; therefore, shovel testing, supplemented by augering, was conducted every 100 meters as recommended by the Council of Texas Archeologists. The auger has a 6-inch bucket. The clay was not screened but was manually inspected for cultural materials, and the walls were visually inspected for artifacts. Shovel testing in the outflow pipeline route was stopped at approximately 45 centimeters and then augered to approximately 150 centimeters below the ground surface. Shovel testing in the plant area was limited to approximately 35 centimeters below the surface because there will be no deeper impact. No backhoe trenching was done because the proposed impact was within shovel and auger depths. In addition, notes on the terrain and vegetation were taken as were photographs.
Figure 2. Map of proposed wastewater treatment plant site with shovel test locations. Map provided by Carter & Burgess, Inc.
RESULTS

In this chapter, the proposed wastewater treatment plant area is presented first and is followed by a description of the initial proposed pipeline right-of-way and the alternative pipeline right-of-way. Shovel tests are discussed in the text and their locations are shown on Figures 1 and 2. Detailed descriptions are presented in Table 1 which is at the end of the chapter. A summary of the conclusions is presented at the end of the chapter.

Travis Ranch Development, LP intends to construct a wastewater treatment plant on 15 acres adjacent to Ray Hubbard Drive. Included in the fifteen acres are the main plant site which comprises approximately 10 acres and a 150 foot wide buffer zone surrounding the plant site which comprises approximately 5 acres. The plant site is covered with Johnson grass, buffalo grass, spear grass and various species of grasses along with wild tomatoes, hog weed and sunflower. Trees at the western end of the plant site include American elm, bois d'arc, cedar and pecan. Most of these trees have two to three foot diameter trunks. There are three human made terraces designed to prevent erosion that follow the slope of the ridge. The terraces bend north of the forested area. Each of the terraces is approximately a meter high. The middle terrace is shown in Figure 3. Since the plant site is on the slope of a ridge, fill will be placed on the plant site until the ground is level before construction begins. Additional disturbance to the buffer zone and plant site was done during the construction of a TXU gas pipeline that bisects the study area. Shovel tests excavated in the plant site area uncovered sterile loamy clays.

Figure 3. Middle terrace along the ridge in the study area. View is to the northwest.
A fence separates the proposed plant site area from the buffer zone. It has very young evergreen trees growing along it. Vegetation in the buffer zone includes Johnson grass, various species of grasses and hog weed. No impact will occur to the buffer zone except that the proposed pipeline right-of-ways will be excavated across it. A portion of the unnamed drainage is in the buffer zone. Shovel tests placed in the buffer zone encountered loamy clay except for shovel test 8 which uncovered clay. Shovel test 8 was placed west of the unnamed drainage and the clay may have been a result of fill from the levee. No cultural materials were found in the shovel tests. The loamy clay found in the other shovel tests suggest that soil had eroded from the ridge, probably a result of the terracing.

The initial proposed outflow pipeline right-of-way is to be placed “on top” of the east levee of the unnamed drainage which can be seen in Figure 1. The proposed right-of-way follows the drainage and then turns southwest and crosses another levee and runs into Thompson slough. The levee is approximately a meter high and is shown in Figure 4. No shovel tests were placed in the levee bank because of its elevation above the ground and the unnamed drainage’s banks were closely inspected for cultural materials, but none were found. The unnamed drainage is approximately a meter wide and ranges from one-half to a meter deep, with a clay substrate.

Figure 4. Levee on east bank of the unnamed drainage. View is to the west.

The alternative outflow pipeline right-of-way may be constructed in the floodplain adjacent to the levee. Since this right-of-way is in an alluvial setting, five shovel tests were excavated and were supplemented by augering. Shovel test 9 encountered 135+ centimeters of clay with very little calcium carbonate. Shovel test 10 encountered dark
grayish brown clay overlying very dark gray clay at 71 centimeters below the surface. From 71 to 149+ centimeters, the soil was the same, but it contained 20 percent calcium carbonate pebbles. The dark gray clay may have been Trinity clay. Dark grayish brown clay was uncovered to 121 centimeters below the surface in shovel test 11, and from 121 to 154+ centimeters, the soil consisted of black clay with very little calcium carbonate. Shovel test 12 uncovered 44 centimeters of dark gray clay overlying very dark gray clay. The very dark gray clay extended to 152+ centimeters but from 91 to 152 centimeters, the clay matrix consisted of 30+ percent calcium carbonate pebbles which indicates that decomposed bedrock was close. The last shovel test (13) encountered dark gray clay to 38 centimeters below the surface. From 38 to 90 centimeters, the soil consisted of very dark gray clay and from 90 to 147+ centimeters, the soil was also very dark gray clay but the matrix consisted of 30 percent white, dry clay inclusions and 10 percent red clay mottling. No cultural materials were discovered in any of the shovel tests.

Conclusions

No cultural materials were discovered during the pedestrian survey or the shovel testing. The floodplain contained no areas above flooding that were likely to have been occupied. If the ridge had been occupied historically, or even prehistorically, the soil disturbances due to burying pipeline and terracing probably removed any evidence of occupation and that evidence should have been found in the floodplain.

The soil descriptions resulting from the shovel testing in the site area appear to describe soil eroding from the terracing and the mixture of soils from the terracing. In the floodplain, the description of the soils suggest the A11- and A12-horizons of the Trinity clay are exposed, indicating that plowing over the years has allowed the topsoil to erode, and be replaced by eroding soil from the ridge.

Paul Price (2001:17) mentions that fine-grained clays derived from periodic flooding may be young in age. During the archaeological monitoring of an Oncor pipeline crossing in the East Fork, AR Consultants, Inc. (Skinner et. al 2002:9) discovered several bois d’arc stumps with the bottoms resting at 60 to 100 centimeters below the surface. One trunk was radiocarbon tested and yielded a date of 120 ± 50 BP (Beta-170374) indicating that the soils were indeed young. This tends to reinforce Richner’s findings that prehistoric sites would be found at 2 to 3 meters below the surface resulting from his work along the East Fork. Since the outflow pipeline is to be buried 4 feet, it is not likely to encounter any prehistoric cultural material since it is above the 2 meter mark suggested by Richner.
Table 1. Shovel test descriptions.

<table>
<thead>
<tr>
<th>ST No.</th>
<th>Depth (cm)</th>
<th>Description*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 – 37+</td>
<td>Dark brown (10YR3/3) loamy clay</td>
</tr>
<tr>
<td>2</td>
<td>0 – 39+</td>
<td>Dark brown loamy clay</td>
</tr>
<tr>
<td>3</td>
<td>0 – 35+</td>
<td>Dark gray (10YR4/1) loamy clay</td>
</tr>
<tr>
<td>4</td>
<td>0 – 37+</td>
<td>Dark gray loamy clay</td>
</tr>
<tr>
<td>5</td>
<td>0 – 33+</td>
<td>Very dark brown (10YR2/2) loamy clay</td>
</tr>
<tr>
<td>6</td>
<td>0 – 37+</td>
<td>Very dark brown loamy clay</td>
</tr>
<tr>
<td>7</td>
<td>0 – 35+</td>
<td>Very dark brown loamy clay</td>
</tr>
<tr>
<td>8</td>
<td>0 – 38+</td>
<td>Dark gray clay</td>
</tr>
<tr>
<td>9</td>
<td>0 – 135+</td>
<td>Very dark gray (10YR3/1) clay, few calcium carbonate pebbles present</td>
</tr>
<tr>
<td>10</td>
<td>0 – 39</td>
<td>Dark grayish brown (10YR4/2.5) clay</td>
</tr>
<tr>
<td></td>
<td>39 – 71</td>
<td>Very dark gray clay</td>
</tr>
<tr>
<td></td>
<td>71 – 149+</td>
<td>Very dark gray clay containing 20% calcium carbonate pebbles</td>
</tr>
<tr>
<td>11</td>
<td>0 – 121</td>
<td>Dark grayish brown clay, few calcium carbonate pebbles present</td>
</tr>
<tr>
<td></td>
<td>121 – 154+</td>
<td>Black (10YR2/1) clay</td>
</tr>
<tr>
<td>12</td>
<td>0 – 44</td>
<td>Dark gray clay</td>
</tr>
<tr>
<td></td>
<td>44 – 91</td>
<td>Very dark gray clay</td>
</tr>
<tr>
<td></td>
<td>91 – 152+</td>
<td>Very dark gray clay containing 30% calcium carbonate pebbles</td>
</tr>
<tr>
<td>13</td>
<td>0 – 38</td>
<td>Dark gray clay</td>
</tr>
<tr>
<td></td>
<td>38 – 90</td>
<td>Very dark gray clay</td>
</tr>
<tr>
<td></td>
<td>90 – 147+</td>
<td>Very dark gray clay with 30% white (10YR8/1) dry clay and 10% red (2.5YR4/8) clay mottling</td>
</tr>
</tbody>
</table>

* Munsell color chart numbers listed only the first time used.
RECOMMENDATIONS

The purpose of this investigation was to determine if significant cultural resources were present in the proposed wastewater treatment plant site and within the outflow pipeline right-of-ways. No cultural resources were discovered by the pedestrian survey or in 13 shovel tests.

Based upon the absence of cultural materials, AR Consultants, Inc. recommends that further cultural resource investigations are unwarranted and construction can proceed as planned. If, however, cultural materials are uncovered during construction of the wastewater treatment plant or in the trenching for the outflow pipeline, work in that area should stop and the Texas Historical Commission should be notified immediately.
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