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Archeological Trenching For The Proposed Big Fossil Creek Parallel Relief Sanitary Sewer Phase 1 And Haltom City Meter Station And Sewer Outfall Phase 3, Tarrant County, Texas

Melissa M. Green

Archeological Trenching For The Proposed Big Fossil Creek Parallel Relief Sanitary Sewer Phase 1 And Haltom City Meter Station And Sewer Outfall Phase 3, Tarrant County, Texas

ARCHEOLOGICAL TRENCHING FOR THE PROPOSED BIG FOSSIL CREEK PARALLEL RELIEF SANITARY SEWER PHASE 1 AND HALTOM CITY METER STATION AND SEWER OUTFALL PHASE 3, TARRANT COUNTY, TEXAS

Prepared by
Melissa M. Green, RPA (Principal Investigator)
Cox|McLain Environmental Consulting, Inc.
600 E. John Carpenter Freeway
Suite 380
Irving, TX 75062

For
City of Fort Worth
1000 Throckmorton Street
Fort Worth, Texas 76102

Under
Texas Antiquities Permit 7172

Cox|McLain Environmental Consulting, Inc. Archeological Report 092
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COX | McLAIN
Environmental Consulting

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Management Summary

On February 19-20, 2015, archeological trenching and reconnaissance survey was completed in order to evaluate potential archeological impacts associated with the proposed construction of the Big Fossil parallel relief sewer line and the Haltom City sewer meter station and outfall in central Tarrant County, Texas. Melissa M. Green (Principal Investigator) of Cox|McLain Environmental Consulting, Inc. (CMEC) carried out the survey for City of Fort Worth, a subentity of the State of Texas, under Texas Antiquities Permit 7172 as required under the Antiquities Code of Texas (9 TNRC 191). Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470; 36 CFR 800) also applied as a Nationwide 12 Permit will be obtained from the Fort Worth District of the U.S. Army Corps of Engineers (USACE).

Four trenches were excavated in undisturbed soils on either side of Big Fossil Creek in search of paleosols that might contain archeological deposits; none were identified. The remaining portions of the proposed sewer lines were subjected to reconnaissance survey as extensive disturbances and use of fill was apparent, including a long-closed Fort Worth landfill mound that the pipelines follow along its north and east boundaries.

All materials (notes, photographs, administrative documents, and other project data) generated from this work will be housed at the Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin where they will be made permanently available to future researchers as per 13 TAC 26.16-17.

If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and THC personnel should be notified immediately. During evaluation of the finds and coordination with the THC, clearing, preparation, and/or construction could continue in any other areas along the corridor where no such deposits or materials are observed.

The Texas Historical Commission (THC) concurred with the findings and recommendations in this report on April 16, 2015.

ARCHEOLOGICAL TRENCHING FOR THE PROPOSED BIG FOSSIL CREEK PARALLEL RELIEF SANITARY SEWER PHASE 1 AND HALTOM CITY SEWER OUTFALL PHASE 3, TARRANT COUNTY, TEXAS

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1.0 Introduction

Overview of the Project

The purpose of the investigation described in this document is to identify archeological resources within the footprint of proposed sanitary system upgrades northeast of Fort Worth and southeast of Haltom in central Tarrant County (**Figure 1**). Within the Big Fossil Creek drainage basin, structural and hydraulic deficiencies of the existing wastewater mains have been identified. To alleviate those deficiencies, the City of Fort Worth proposes to construct the Big Fossil Creek Parallel Relief Sanitary Sewer (Phase 1) and the Haltom City Meter Station and sewer outfall (Phase 3). Cox|McLain Environmental Consulting (CMEC) was contracted by AECOM to conduct the archeological trenching and reconnaissance survey prior to the construction.

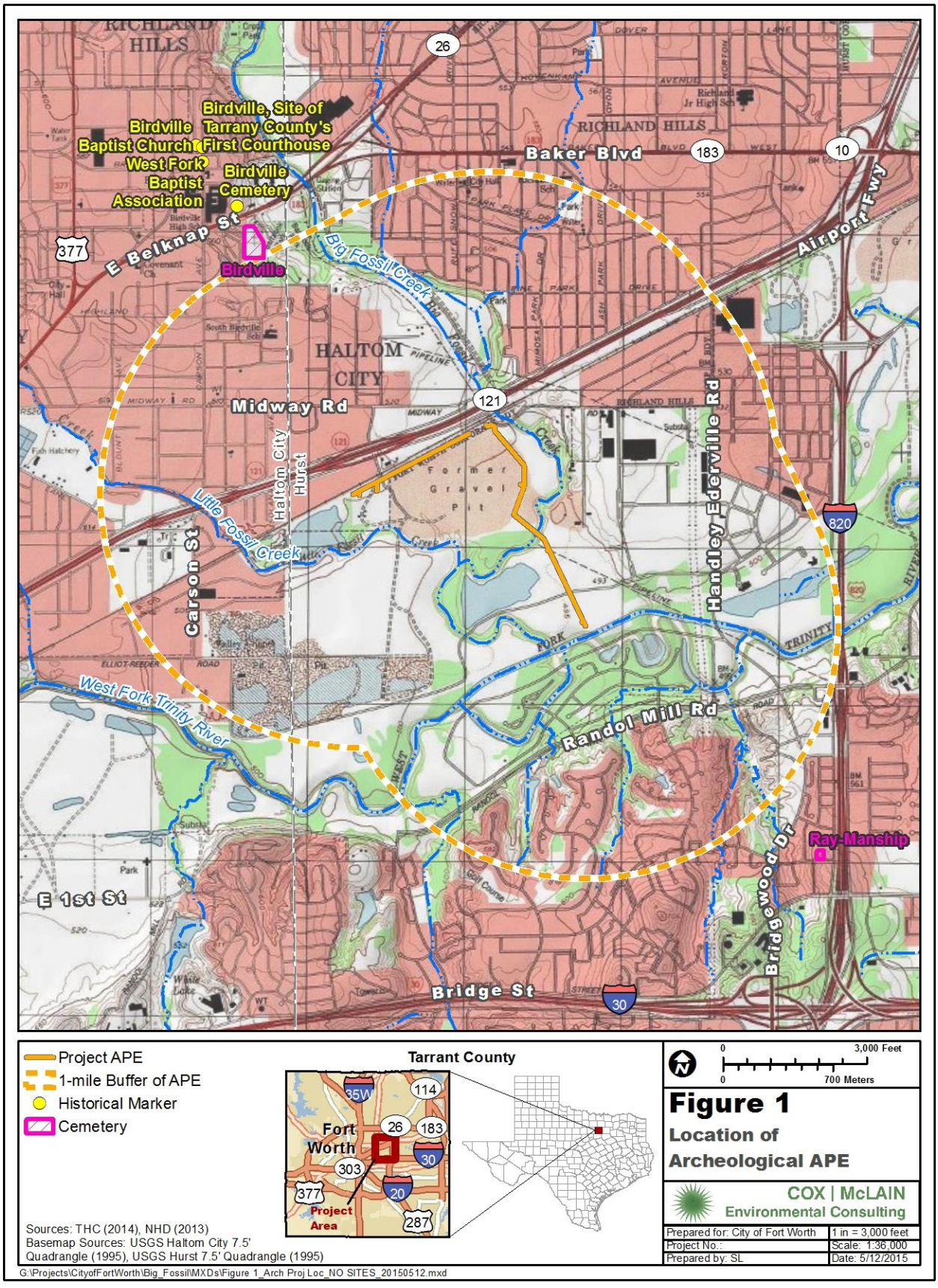
The archeological area of potential effects (APE) is conservatively established as approximately 24.3 acres or 9.8 hectares based on the maximum widths of excavations and disturbances associated with both permanent and temporary easements (detailed below). The Big Fossil Creek Parallel Relief Sanitary Sewer portion of the project will involve approximately 6.4 hectares (15.8 acres) and the Haltom City Meter Station and sewer outfall will involve 3.4 hectares (8.5 acres).

The Big Fossil Creek Parallel Relief Sanitary Sewer (66-inch diameter relief main) would be constructed roughly 30 feet (ft) or 9 meters (m) to the east of the existing concrete Main 402A beginning at the existing City of Fort Worth West Fork sewer interceptor, and would continue for approximately one mile or 1.6 kilometers (km) between Big Fossil Creek and a former municipal landfill, terminating at the Trinity Railway Express Commuter Rail (TRE) right-of-way. The width of excavation disturbance and removal would be approximately 2.3 to 3.0 m (7.5 to 10 ft) within a 9.1-m (30-ft) permanent easement; 15.2 m (50 ft) wide temporary construction easements would be located on either side of the permanent easement. The Haltom City Meter Station and sewer outfall (30-inch or 76.2-centimeter diameter line) would replace the existing 53.3 (21-inch) diameter outfall line. The outfall will connect to M402A and extend along the Trinity Railway Express (TRE) right-of-way and the north perimeter of the landfill site for approximately 0.8 km (0.5 mi) to the newly proposed meter station. The width of excavations along this portion would be approximately 1.4 m (4.3) within a 12.2-m (40-ft) permanent easement; 15.2 m (50 ft) wide temporary construction easements would be located on either side of the permanent easement. The depth of impact for this would range from 4.3 to 9.1 m (14 to 30 ft) below the ground surface.

Melissa M. Green of CMEC performed the fieldwork on February 19-20, 2015, and also served as Principal Investigator for the project. Four trackhoe trenches were placed along a section of the Big Fossil parallel sewer line where it crosses Big Fossil Creek. The remainder of the APE was subjected to reconnaissance survey.

Regulatory Context

This investigation was conducted in fulfillment of the City of Fort Worth's obligations as a political subdivision of the State of Texas under the Antiquities Code of Texas (9 TNRC 191). Antiquities Permit 7172 was assigned to this project by the Texas Historical Commission (THC). The project also has a federal nexus as a Nationwide 12 Permit will be obtained from the Fort Worth District of the U.S. Army Corps of Engineers (USACE). Therefore, the project is also subject to Section 106 of the National Historic Preservation Act (NHPA), as amended (16 USC 470; 36 CFR 800). All materials


RICHLAND HILLS
26
Birdville, Site of Tarrany County's First Courthouse
Birdville Baptist Church
West Fork Baptist Association
Birdville Cemetery
Baker Blvd
183
10
Airport Fwy
E Belknap St
377
Birdville
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Handley Ederville Rd
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Randol Mill Rd
Ray-Manship
E 1st St
Bridgewood Dr
Bridge St
30
Project APE
1-mile Buffer of APE
Historical Marker
Cemetery
Tarrant County
35W
114
Fort Worth
26
183
30
303
20
377
Project Area
287
Sources: THC (2014), NHD (2013)
Basemap Sources: USGS Haltom City 7.5' Quadrangle (1995), USGS Hurst 7.5' Quadrangle (1995)
0
3,000 Feet
0
700 Meters
Figure 1
Location of Archeological APE
COX | McLAIN Environmental Consulting
Prepared for: City of Fort Worth
1 in = 3,000 feet
Project No.:
Scale: 1:36,000
Prepared by: SL
Date: 5/12/2015
G:\Projects\CityofFortWorth\Big_Fossil\MXDs\Figure 1_Arch Proj Loc_NO SITES_20150512.mxd

generated from this work will be permanently housed at the Texas Archeological Research Laboratory (TARL) at the University of Texas at Austin.

Structure of the Report

Following this introduction, Chapter Two presents environmental parameters for the study area; Chapter Three presents a brief cultural context, including a summary of previous archeological research in and near the APE; Chapter Four discusses research goals, relevant methods, and the regulatory considerations underlying them; Chapter Five presents the results of the survey; Chapter Six summarizes the findings and provides recommendations; and Chapter Seven lists references.

2.0 Environmental Context

Topography and Drainage

The 9.8-hectare (24.3-acre) APE is located at approximately 150.8 to 155.4 m (495 to 510 ft) above mean sea level in central Tarrant County, Texas. The APE is situated northeast of Fort Worth, southeast of Haltom City, and crosses Big Fossil Creek, which flows into the West Fork Trinity River about 234.6 m (770 ft) southwest of the south terminus of this project. The southwest terminus of this project is 50.3 m (165 ft) northwest of the West Fork Trinity River.

Geology and Soils

Geologically, the project is underlain by Holocene-age Alluvium and Quaternary deposits undivided and Pleistocene-age Fluviatile terrace deposits (BEG 1987). According to the Natural Resources Conservation Service (NRCS) soils within the APE are primarily occasionally flooded Ovan-Urban land complex and frequently flooded Arents. A small sliver of frequently flooded Frio silty clay occurs on the south side of Big Fossil Creek (NRCS 2015).

Vegetation and Land Use

The project area is located within the Blackland Prairies Natural Region of Texas (Gould et al. 1960), characterized by deep, black, rich clay and clay loam soils on nearly level to gently rolling topography and experiencing 76.2 to 101.6 centimeters (30 to 40 inches) of rainfall per year (Correll and Johnston 1996).

According to the Texas Parks and Wildlife Department's *Vegetation Types of Texas* map and accompanying descriptions, the vegetation of the project area is mapped as "Urban" (McMahan et al. 1984). Urban vegetation generally consists of residential and commercial landscaping and maintained grasses in transportation right-of-way, along with various ornamental plantings. The vegetation observed on the APE property did not meet this characterization, although there is Urban landscape to the northeast, northwest, and due south of the APE. Invasive grasses, briar, thistle, and cedar trees were noted on the parcel along with some young hardwoods near the creek on the northwest side, similar to what would be expected in a fallow or undeveloped field in this area.

3.0 Cultural Context

Archeological Chronology

The APE lies within the western part of the North-central Texas archeological region (Perttula 2004a). The standard cultural chronology for the region has changed little in the last two decades; thus, the periods and date ranges established by Peter and McGregor (1988), Prikryl (1990), and Yates and Ferring (1986) still apply (**Table 1**). The general prehistoric framework for North-central Texas is similar to that used in other areas of Texas, and indeed throughout much of North America, with the first unequivocal human occupations occurring approximately 11,500 radiocarbon years before present (BP), or approximately 13,000 calendar years ago, and most of the prehistoric record is contained within a long Archaic period lasting nearly 8,000 years.

Table 1: Archeological Chronology for North-central Texas*

Period	Years Before Present (BP)**
Paleoindian	11,500 – 9,000
Archaic	9,000 – 1,300
Early Archaic	9,000 – 6,000
Middle Archaic	6,000 – 4,000
Late Archaic	4,000 – 1,300
Late Prehistoric	1,300 – 400
Late Prehistoric I	1,300 – 700
Late Prehistoric II	700 – 400
Protohistoric	400 – 200
Historic	200 – 50

* After Peter and McGregor (1988), Prikryl (1990), and Yates and Ferring (1986).
** Based on uncalibrated radiocarbon dates, which are typical in Texas archeology (see Perttula 2004a:14, Note 1).

PALEOINDIAN PERIOD

The Paleoindian occupation is the least known period in the prehistory of North-central Texas, due primarily to three factors: the light population density of Paleoindian peoples, the great age of the occupation (up to 13,000 calendar years), and taphonomic factors such as severe erosion and deep sedimentation, depending on location (Ferring 1989, 2001; Holliday 2004). Although initially seen as narrowly specialized big-game hunters, Paleoindian groups such as Clovis are being reevaluated in light of recent discoveries such as the Aubrey site north of Dallas-Fort Worth. At Aubrey, investigators found evidence of a more balanced, flexible subsistence strategy, with remains of big game such as bison and mammoth but also fish, birds, and other small game (Ferring 2001). Generally, Paleoindian people are thought to have been more mobile than subsequent populations, utilizing lithic and other resources from broad geographic areas.

ARCHAIC PERIOD

Usually divided into three more or less equal parts, the Archaic Period encompasses the bulk of North-central Texas prehistory. The Archaic record is clouded by mixed deposits (Hofman et al. 1989; Prikryl 1990) and possible large-scale erosion in the middle of the period (as has been documented further to the west by Blum and colleagues [1992]). Still, the available data show that Archaic peoples were more likely than their predecessors to make projectile points and other stone tools out of local raw materials, potentially indicating more spatially restricted territories and/or subsistence areas, perhaps reflecting seasonal rounds through a specific series of resource-gathering zones (Ferring and Yates 1997; Peter and McGregor 1988). Generally, population is thought to have increased throughout the Archaic Period, perhaps in response to stabilizing climatic conditions.

LATE PREHISTORIC PERIOD

The Late Prehistoric Period is defined technologically, as the beginning of the period is typically marked by the appearance of arrow points and ceramics. Aside from the addition of these extremely important technologies, the overall trajectory of subsistence lifeways in the Late Prehistoric is usually thought to represent a continuation of trends seen in the later part of the Archaic, with even more dramatic focus on very local resources and broad-spectrum foraging (Ferring and Yates 1997). In the latter part of the period (Late Prehistoric II), the picture shifts, with ceramic and lithic evidence indicating links to Plains populations to the north and west (Prikryl 1990).

PROTOHISTORIC AND HISTORIC PERIODS

The beginning of the Protohistoric Period is marked by the first appearance of Europeans in Texas: the Spanish explorers, priests, and speculators who began moving into the state from colonies to the south and west in the sixteenth and seventeenth centuries A.D. Although technically historic (i.e., characterized by the use of writing), this earlier phase is often separated from the more formally designated Historic Period due to the relative infrequency of direct Spanish incursions into North-central Texas, in contrast to the high-profile, early Spanish occupations in South and South-central Texas (Campbell 2003). Even without the missions, military outposts, and other facilities characteristic of the Spanish presence to the south, the effects of trade, disease, and other factors on native populations were still dramatic, and indigenous groups of the Protohistoric Period are little known apart from sporadic finds of European trade goods at native sites (Stephenson 1970). The last two centuries are considered the Historic Period. In brief, the landscape and material culture of North-central Texas during this time are characterized by the overwhelming dominance of European-derived populations and the expansion of railroads, the discovery and exploitation of petroleum resources, the supplanting of small tenant farming by mechanized agriculture and urban sprawl, and various waves of commercial and industrial development, the most recent example being the rise of the service and information economy (Campbell 2003).

For further general background information, particularly regarding prehistoric periods, the reader is referred to the major reports mentioned above, as well as to Perttula's recent statewide synthesis, *The Prehistory of Texas* (Perttula 2004b). Although the latter does not include a chapter devoted specifically to North-central Texas archeology, the introductory chapter includes an invaluable side-by-side comparison of cultural chronologies from all of the archeological regions in Texas (Perttula 2004a: Table 1.1). For later periods, the reader is referred to Randolph B. Campbell's *Gone to Texas: A History of the Lone Star State* (2003), now considered the standard comprehensive overview of historical events, demographic changes, social movements, industrial developments, and other aspects of Texas history.

Previous Investigations and Previously Identified Cultural Resources

A data search of the Texas Archeological Sites Atlas maintained by the THC and TARL was conducted in order to identify any previously recorded cemeteries, historical markers, National Register of Historic Places (NRHP) properties or districts, State Antiquities Landmarks (SALs), archeological sites, and previous surveys in the APE and within a one-mile buffer (the standard buffer zone for such searches) surrounding the APE.

According to Atlas survey coverage data, the APE has not been subject to an archeological survey (THC 2015). There are several small linear surveys located to the west of the project area and include a 1976 and a 1979 survey for the Environmental Protection Agency (EPA) and a survey for USACE in 2000. There has also been an areal survey (located at the very eastern edge of the study area) that the Atlas states was for UMTA, which is presumed to be the Urban Mass Transportation Act as the survey is located at a park and ride station for the TRE. There is also a survey for USACE performed by GTI Environmental in 2011 at the West Fork of the Trinity River, southeast of the APE.

Only one archeological site (41TR68) and one cemetery (Birdville Cemetery) are located within the study area. Site 41TR68 is located on the south side of the West Fork of the Trinity River approximately 840 ft (256 m) east southeast of the current project. The site was first recorded in 1942; the site was reported to contain rock hearths and large concentrations of mussel shells (THC 2015). Although there is a 1984 site form available on the Atlas, the majority of the information on that site form appears to be duplicated from the 1942 site form and little information on the site condition could be gathered. It appears from Google Earth Pro, that the site has likely suffered impacts due to the construction of an artificial pond associated with a subdivision (Google Earth Pro 2015).

The southern edge of the Birdville Cemetery is just inside the study area, north of the APE. The associated historical marker falls outside of the buffer area, but states that the earliest burial at the cemetery is from 1822 and was originally part of the George Akers Grant (THC 2015). The cemetery contains over 500 burials and is still in use today.

4.0 Research Goals and Methods

Purpose of the Research

The present study was carried out to accomplish three major goals:

1. To identify all historic and prehistoric archeological resources located within the APE defined in Chapter One;

2. To perform a preliminary evaluation of the identified resources' potential for inclusion in the NRHP and/or for listing as a SAL (typically performed concurrently); and

3. To make recommendations about the need for further research concerning the identified resources based on the preliminary NRHP/SAL evaluation and with guidance on methodology and ethics from the THC and the Council of Texas Archeologists (CTA).

Section 106 of the National Historic Preservation Act

Section 106 of the NHPA of 1966, as amended (16 USC 470; 36 CFR 800), directs federal agencies and entities using federal funds to "take into account the effect of their undertakings on historic properties" (36 CFR 800.1a), with "historic property" defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places [NRHP] maintained by the Secretary of the Interior" (36 CFR 800.16).

In order to determine the presence of historic properties (with this phrase understood in its broad Section 106 sense) an APE is first delineated. The APE is the area in which direct impacts (and in a federal context, indirect impacts as well) to historic properties may occur. Within the APE, resources are evaluated to determine if they are eligible for inclusion in the NRHP, and to determine the presence of any properties that are already listed on the NRHP. To determine if a property is significant, cultural resource professionals and regulators evaluate the resource using these criteria:

> …The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, material, workmanship, feeling, and association and
>
> a. that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> b. that are associated with the lives of persons significant in our past; or
>
> c. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> d. that have yielded or may be likely to yield, information important in prehistory or history (36 CFR 60.4).

Note that significance and NRHP eligibility are determined by two primary components: integrity *and* one of the four types of association and data potential listed under 36 CFR 60.4(a-d). The criterion most often applied to archeological sites is the last—and arguably the broadest—of the four; its phrasing allows regulators to consider a broad range of research questions and analytical techniques that may be brought to bear (36 CFR 60.4[d]).

Occasionally, certain resources fall into categories which require further evaluation using one or more of the following Criteria Considerations. If a resource is identified and falls into one of these categories, the Criteria Considerations listed below may be applied in conjunction with one or more of the four National Register criteria listed above:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance, or

b. A building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event, or

c. A birthplace or grave of a historical figure of outstanding importance if there is no other appropriate site or building directly associated with his or her productive life, or

d. A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events, or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived, or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own historical significance, or

g. A property achieving significance within the past 50 years if it is of exceptional importance (36 CFR 60.4).

Resources that are listed in the NRHP or are recommended eligible are treated the same under Section 106, and are generally treated the same at the state level as well.

After cultural resources within the APE are identified and evaluated, effects evaluations are completed to determine if the proposed project has no effect, no adverse effect, or an adverse effect on these resources. Effects are determined by assessing the impacts that the proposed project will have on the characteristics that make the property eligible for listing in the NRHP as well as its integrity. Types of potential adverse effects considered include physical impacts, such as the destruction of all or part of a resource; property acquisitions that adversely impact the historic setting of a resource, even if built resources are not directly impacted; noise and vibration impacts evaluated according to accepted professional standards; changes to significant viewsheds; and cumulative effects that may occur later in time. If the project will have an adverse effect on cultural resources, measures can be taken to avoid, minimize, or mitigate this adverse effect. In some instances, changes to the proposed project can be made to avoid adverse effects. In other cases, adverse effects may be unavoidable, and mitigation to compensate for these impacts will be proposed and agreed upon by consulting parties.

Antiquities Code of Texas

Because the City of Fort Worth is a political subdivision of the State of Texas, the project is subject to the Antiquities Code of Texas (9 TNRC 191), which requires consideration of effects on properties designated as—or eligible to be designated as—SALs, which are defined as:

> ...sites, objects, buildings, structures and historic shipwrecks, and locations of historical, archeological, educational, or scientific interest including, but not limited to, prehistoric American Indian or aboriginal campsites, dwellings, and habitation sites, aboriginal paintings, petroglyphs, and other marks or carvings on rock or elsewhere which pertain to early American Indian or other archeological sites of every character, treasure imbedded in the earth, sunken or abandoned ships and wrecks of the sea or any part of their contents, maps, records, documents, books, artifacts, and implements of culture in any way related to the inhabitants, prehistory, history, government, or culture in, on, or under any of the lands of the State of Texas, including the tidelands, submerged land, and the bed of the sea within the jurisdiction of the State of Texas. (13 TAC 26.2)

Rules of practice and procedure for the evaluation of cultural resources as SALs and/or for listing on the NRHP, which is also explicitly referenced at the state level, are detailed at 13 TAC 26. An archeological site identified on lands owned or controlled by the State of Texas may be of sufficient significance to allow designation as a SAL if at least one of the following criteria applies:

1. the site has the potential to contribute to a better understanding of the prehistory and/or history of Texas by the addition of new and important information;
2. the site's archeological deposits and the artifacts within the site are preserved and intact, thereby supporting the research potential or preservation interests of the site;
3. the site possesses unique or rare attributes concerning Texas prehistory and/or history;
4. the study of the site offers the opportunity to test theories and methods of preservation, thereby contributing to new scientific knowledge;
5. the high likelihood that vandalism and relic collecting has occurred or could occur, and official landmark designation is needed to insure [sic] maximum legal protection, or alternatively further investigations are needed to mitigate the effects of vandalism and relic collecting when the site cannot be protected (13 TAC 26.8).

For archeological resources, the state-level process requires securing and maintaining a valid Texas Antiquities Permit from the THC, the lead state agency for Antiquities Code compliance, throughout all stages of investigation, analysis, and reporting.

Survey Approach and Methods

Field methods complied with the requirements of the guidelines as set forth by the CTA and approved by the THC. The survey included a pedestrian walkover of the both proposed APE corridors taking numerous photographs showing all disturbances and fill. Mechanical trenching was employed on either side of Big Fossil Creek in areas where intact soils were evident. Each trench consisted of a central deep cut flanked by safety benches, with a single continuous exposure along one wall as well as one end of the trench. The center cut measured 3 ft (1 m) across, the width of the bucket. The trenching progressed in 50-cm (20-in) depth increments, and profiles and backdirt closely examined for the presence of cultural materials and features. Based on previous geoarcheological assessment (see below), the depth goal of the trenching was 6 m (20 ft), as allowed by drainage, soil stability, and other field constraints. The exposed deposits were examined and described using conventional texture classifications and Munsell color designations. All trenches were completely backfilled and leveled at the end of in-field analysis.

5.0 Results

Introduction

Prior to conducting the survey, a review of available historic aerials and topographic maps on Google Earth, the Nationwide Environmental Title Research (NETR) website (www.historicaerials.com), and purchased aerials from TelALL Corporation was undertaken to determine how the area was utilized over time and when major disturbances occurred. The earliest available aerial photograph was taken in 1942 where the area appears to be primarily agricultural fields. Subsequent aerial photograph years are 1952, 1956, 1963, 1968, 1970, 1974, 1979, 1984, 1990, 1995, 2001, 2004, and 2012. The agricultural land use continues and is shown on subsequent years of aerial photographs; the aerials also show gravel extraction adjacent to and near the APE on both sides of Big Fossil Creek beginning as early as 1942 and continuing today. Sometime after 1979, Fort Worth begins to use the area on the west side of Big Fossil Creek for a large landfill; soil from across the creek to the south was being used to fill and cover it between 1990 and 1995, and borrow soil adjacent to Big Fossil Creek on the east side of the landfill resulted in a small lake between 1995 and 2004. Additionally, the West Fork Trinity River at the southeast terminus of the APE was channelized and development of other industrial activities on the east side of Big Fossil Creek began as early as 1990. The large borrow pit/lake on the south side of the creek used to cover the landfill began to be refilled with soil sometime between 2000 and 2004 and today no evidence of the lake exists. Topographic maps from 1959, 1961, 1964, 1968, 1969, 1970, 1973, 1981, 1982, 1988, 1995, 2001, 2008, and 2012 were also reviewed. Similarly to the aerial photographs, extensive gravel extraction areas adjacent to the APE were noted.

A series of 18 geotechnical cores were collected for this project and the report shared with CMEC personnel. The core logs demonstrated that the majority of the corridor had been highly disturbed and/or contained considerable amounts of fill (HVJ Associates, Inc. 2013). The core samples generally showed fill as shallow as 0.4 m (1.5 ft) and as deep as 8.6 m (28.5 ft) depending on their locations along the pipeline corridors. Below the fill, ranging from 1.5 to 6 ft in most samples, except the three samples with fill extending as deep as 5.7 to 8.6 m (19 to 28.5 ft) below the surface, the profile was fairly consistent floodplain deposits of clay, sandy clay, gravel, and shaley clay.

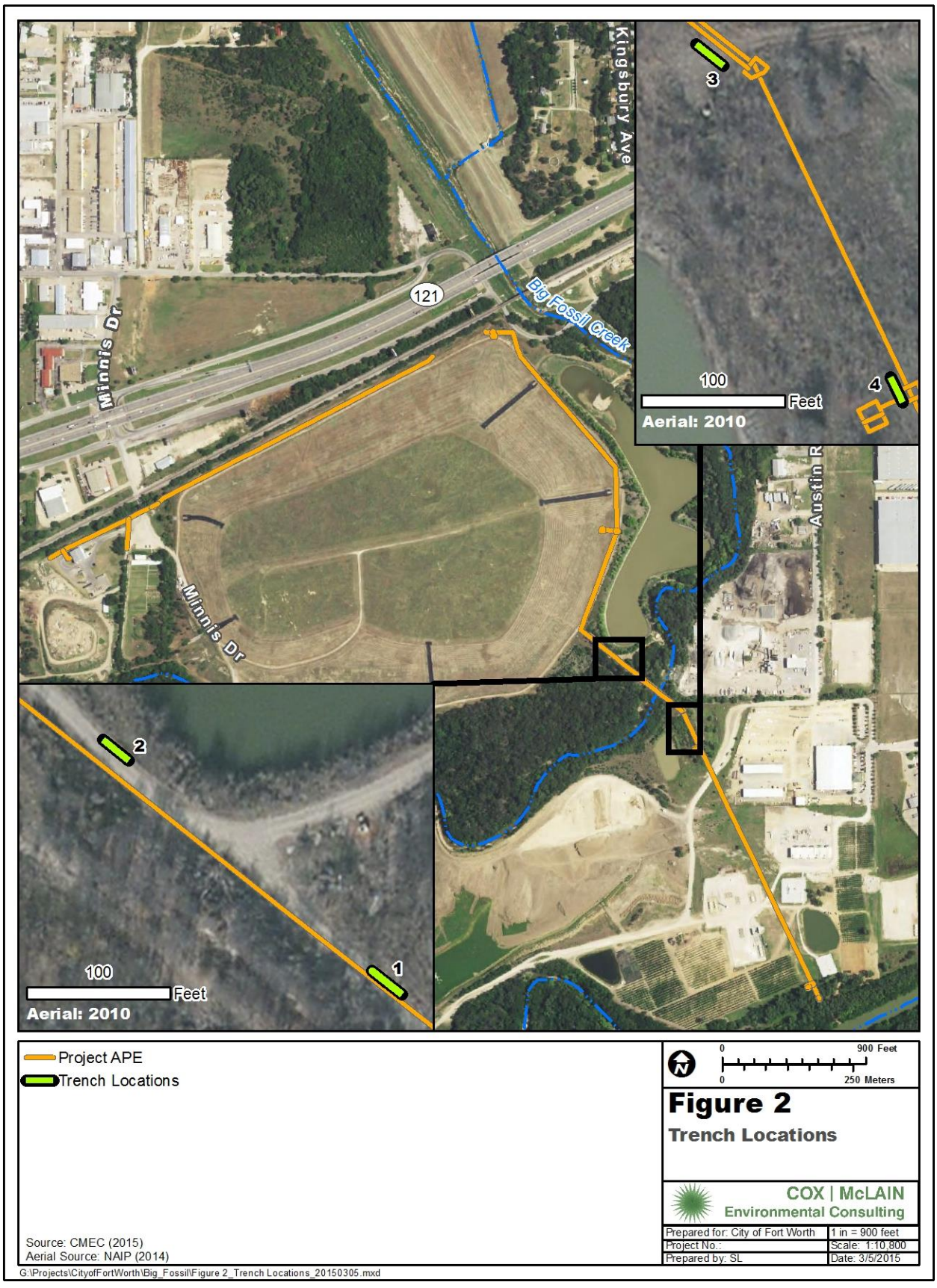
In addition to the geotechnical report, CMEC archeologists also reviewed a draft report of an archeological assessment prepared by URS. The report described the geologic potential for archeological deposits within the Late Quaternary alluvium, particularly the Holocene-age Pilot Point alluvium found in the upper Trinity River basin as developed by Dr. Reid Ferring at the University of North Texas. Ferring identified and formalized several alluvial-stratigraphic units and buried soils that could have potential for archeological deposits (Ferring 1990a, 1990b, 1991, 1994, 1995; Ferring and Yates 1997). Over the years, a number of archeological studies (e.g., Abbott, 2011; Caran 2000; Cliff et al. 1998, 1999) have occurred where it was found that archeological materials could be buried and preserved as deep as 6 m (20 ft) within the West Fork paleosol found in Pilot Point alluvium. The West Fork paleosol is described as an over-thickened, very dark gray, cumulic soil that serves as a prominent stratigraphic marker within the Trinity River basin alluvial sequence. A number of archeological investigations conducted in Tarrant County (e.g., Lintz et al. 2004; Peter and Harrison 2011; Osburn and Shanabrook 2005, and others) have identified archeological deposits and sites in the West Fork paleosol. Therefore, based on Ferring's framework and other studies done in the upper Trinity River basin, URS recommended very deep mechanical trenching (with a depth goal

of 20 ft or 6 m, if possible) along the Big Fossil Creek Parallel Relief Sanitary Sewer portion of the project (Ahr, Hartsfield, and Cox 2014).

Field Results

The mechanical trenching was conducted on February 19-20, 2015, with the reconnaissance survey completed on the afternoon of the 20th. As mentioned earlier, four trenches were excavated on either side of Big Fossil Creek where geotechnical coring indicated intact soils still existed. Each trench consisted of a central deep cut flanked by safety benches, with a single continuous exposure along one wall as well as one end of the trench. The center cut measured 1 m (3 ft) across, the width of the bucket. All four trenches were expected to be excavated to 6 m (20 ft) below the surface since the depth of the pipe trench at the creek is expected to be between 6.0 and 7.6 m (20 and 25 ft) below the surface. However, the water table was encountered in each trench before the 6-m (20-ft) mark. Trenches 1 and 2 were placed on the northwest side of Big Fossil Creek with Trenches 3 and 4 located on the southeast side (Figure 2).

Trench 1 was located close to the creek but just below the higher natural landform along the creek that has not suffered from any gravel excavation (see Figure 2). The natural landform is higher than the surrounding area. It had a northwest/southeast orientation, measured 8.2 m (26.9 ft) long, and was excavated to a final depth of 5.8 m (19.0 ft) below the surface (mbs). The trench was dug in two approximately 4-m (13.1-ft) increments that resulted in an east and west half examination. The east half of the south wall profile in Trench 1 (Figures 3-5) was very predictable and similar to the core sample previously taken in the same area, and was made up of clay peds and gravel that are presented in detail down to 490 cmbs (192.9 inbs) in Table 2; the last level in the table is from the west half of the trench. Water seepage on this end began at 4.9 mbs (16.0 ft) but did not interfere with the excavation or integrity of the trench. The west half of the south wall profile indicated a disturbed and fill gravelly clay layer to 60 cmbs (23.6 inbs) followed by 60 cm (23.6 in) of dark brown (10YR 3/2) hard gravelly clay with brown (10YR 4/2) and gray (10YR 5/1) mottles (Figure 6). This continues to 210 cmbs (82.6 inbs) where the gravels become more diffuse throughout to approximately 500 cmbs (196.8 inbs) where the clay turns gray (10YR 5/1) with dark yellowish brown (10YR 4/4) mottles and interspersed pea gravel. No real gravel lens as noted in the east half of the trench (Figure 7) was evident in the west half of the trench. Water seepage on this side of the trench began at 5.8 mbs (19 ftbs), or the base of the trench. No evidence of the West Fork paleosol was evident in Trench 1.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Trench Locations
COX | McLAIN
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Aerial Source: NAIP (2014)
Prepared for: City of Fort Worth
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Table 2: Trench 1 Description

Wall	Depth (cmbs)	Depth (inbs)	Description
South	0-40 cm	0-15.7 in	Brown (10YR 5/3) with yellowish brown (10YR 5/4) mottles loose clay fill
	40-100 cm	15.7-39.3 in	Very dark grayish brown (10YR 3/2) silty clay; small hard angular peds
	100-300 cm	39.3-118.1 in	Brown (10YR 5/3) dry clay angular peds with minor calcium carbonate inclusions which become denser at 200+ cm and peds more rounded
	300-360 cm	118.1-141.7 in	Brown (10YR 4/3) dense clay with some gravel and calcium carbonate
	360-385 cm	141.7-151.5 in	Brown (10YR 4/3) gravelly clay with calcium carbonate and some thin platy peds; moister the deeper it goes and gravel becomes larger
	385-490 cm	151.5-192.9 in	Brown (10YR 4/3) platy clay peds with dark gray (10YR 4/1) mottles; water seepage at 490 cmbs
	490-580 cm	192.9-228.3 in	Gray (10YR 5/1) platy clay with dark yellowish brown (10YR 4/4) mottles and small bits of pea gravel near the top

Figure 3. Top of Trench 1 south wall profile between about 0 and 105 cmbs (0 and 41.3 inbs), east half.

Figure 4. Midsection of south wall profile between approximately 165 and 305 cmbs (64.9 and 120.0 inbs).

Figure 5. Bottom of south wall profile in Trench 1. Note water seepage at bottom.

Figure 6. Upper portion of profile, west half, showing gravelly clay soil between 210 and 380 cmbs (82.6 and 149.6 inbs).

Figure 7. Gravel lens in southeast corner near base in east side of Trench 1.

Trench 2 was located about 70 m (229.6 ft) northwest of Trench 1 along an access road that circles around the south end of the small lake east of the landfill mound (see **Figure 2**). The trench measured 7 m (22.9 ft) long, was excavated to a final depth of 5.9 mbs (19.3 ft), and had a northwest/southeast orientation. It was thought that since this trench was located adjacent to the small lake that water seepage may be evident higher in this trench than in Trench 1. However, water seepage did not occur until the maximum depth of 590 cmbs (232.2 inbs) was reached and, as it was minor, did not interfere with the excavation or integrity of Trench 2. Details of Trench 2's north wall profile are presented in **Table 3** and **Figures 8-10**. Calcium carbonates were evident as shallow as 70 cmbs (27.5 inbs) and as deep as 500 cmbs (196.8 inbs). An extremely hard clay zone was encountered within the 210 and 260 cmbs (82.6 and 102.3 inbs; **Figure 11**). Otherwise the profile was similar to the core sample previously taken in this area. No evidence of the West Fork paleosol was evident in Trench 2.

Table 3: Trench 2 Description

Wall	Depth (cmbs)	Depth (inbs)	Description
South	0-40 cm	0-15.7 in	Very dark grayish brown (10YR 3/2) moist loose silty clay
	40-70 cm	15.7-27.5 in	Black (10YR 2/1) moist silty clay
	70-90 cm	27.5-35.4 in	Dark gray (10YR 4/1) clay with minor calcium carbonate inclusions
	90-400 cm	35.4-157.4 in	Brown (10YR 4/3) dense, dry, hard, slightly silty clay peds with some calcium carbonate that is heavier by 300 cmbs; very dense zone between 140 and 170 cmbs
	400-500 cm	157.4-196.8 in	Yellowish brown (10YR 5/4) moist, slightly silty clay with calcium carbonate
	500-590 cm	196.8-232.2 in	Yellowish brown (10YR 5/4) blocky clay peds with dark gray (10YR 4/1) mottles; water seepage is slight at base

Figure 8. Top of south wall profile between about 80 and 180 cmbs (31.4 and 70.8 inbs). The upper surface portion is fill.

Figure 9. Midsection between approximately 140 and 290 cmbs (55.1 and 114.1 inbs) of south wall profile.

Figure 10. Bottom of south wall profile in Trench 2. Note water seep at bottom of Trench 2.

Figure 11. Close-up of hard, dense clay zone between 140 and 170 cmbs (55.1 and 66.9 inbs) in east wall profile.

Located on the southeast side of Big Fossil Creek, Trench 3 was situated closer to the creek than Trench 1 since this immediate area of the APE is at its natural height resulting in no berm along this bank (see **Figure 2**). It also falls along the pipeline near a proposed junction box. The trench had a northwest/southeast orientation, measured 7.4 m (24.2 ft) long, and was excavated to a final depth of 5.2 mbs (17.0 ft; **Figure 12**). Moderate water seepage began at 4.0 mbs (13.1 ft) at the base of the heavy gravel layer beginning at about 320 cmbs (125.9 inbs) and ending at about 420 cmbs (165.3 inbs), but as in previous trenches, did not interfere with the excavation or integrity of the trench to this depth. The profile was made up of clay and gravel with large pieces of limestone cobble and slab bedrock occurring at the base of the dense gravel layer near the base of the trench. The details of the north wall in Trench 3 are presented in **Table 4** and **Figures 13-15**. No evidence of the West Fork paleosol was evident in any part of this trench.

Table 4: Trench 3 Description

Wall	Depth (cmbs)	Depth (inbs)	Description
North	0-25 cm	0-9.8 in	Very dark grayish brown (10YR 3/2) clay with pea gravel fill
	25-42 cm	9.8-16.5 in	Very dark gray (10YR 3/1) clay with some gravel and brown (10YR 4/3) mottles
	42-100 cm	16.5-39.3 in	Black (10YR 2/1) clay with minor calcium carbonate inclusions
	100-170 cm	39.3-66.9 in	Very dark grayish brown (10YR 3/2) compact, dry subangular clay peds
	170-270 cm	66.9-106.2 in	Brown (10YR 4/3) compact, dry subangular clay peds with some calcium carbonate
	270-320 cm	106.2-125.9 in	Yellowish brown (10YR 5/4) softer and smaller clay peds
	320-420 cm	125.9-165.3 in	Brown (7.5YR 4/4) gravel lens; large limestone bedrock fragments at interface with next layer
	420-520 cm	165.3-204.7 in	Brown (7.5YR 4/3, 4/4) moist, large, platy clay peds

Figure 12. Large limestone bedrock slab from near the base of Trench 3.

Figure 13. Top of Trench 3 north wall profile between 0 and approximately 185 cmbs (72.8 inbs).

Figure 14. Midsection between approximately 185 and 300 cmbs (72.8 and 118.1 inbs) of north wall profile.

Figure 15. Bottom of north wall profile in Trench 3. Note thick gravel layer near base of trench.

Trench 4 was situated on the landform between two previously gravel extraction areas (one now a pond) where the pipeline turns south southeast toward the southern terminus (see **Figure 2**). The trench had a northwest/southeast orientation, measured 5.0 m (16.4 ft) long, and was excavated to a final depth of 4.3 mbs (14.1 ft). Heavy water seepage began at 3.9 mbs (12.7 ft) at the base of the heavy gravel layer, and was heavy enough to undermine the integrity of the trench at this depth. The profile was made up of clay, sand, and gravel with pieces of limestone cobble and slab bedrock occurring near the base of Trench 4. The details of the north wall in Trench 4 are presented in **Table 4** and **Figures 16-19**. No evidence of the West Fork paleosol was evident in any part of this trench.

Table 5: Trench 4 Description

Wall	Depth (cmbs)	Depth (inbs)	Description
North	0-20 cm	0-7.8 in	Very dark gray (10YR 3/1) sitly clay with pea gravel fill
	20-83 cm	7.8-32.6 in	Black (10YR 2/1) clay
	83-135 cm	32.6-53.1 in	Dark grayish brown (10YR 4/2) clay with some calcium carbonate
	135-150 cm	53.1-59.0 in	Very dark grayish brown (10YR 3/2) clay subangular peds with dark grayish brown (10YR 4/2) mottles and increased calcium carbonate
	150-210 cm	59.0-82.6 in	Dark grayish brown (10YR 4/2) compact, dry subangular clay peds with brown (10YR 4/3) mottles; large limestone bedrock slab in southwest corner at 210 cmbs
	210-260 cm	82.6-102.3 in	Yellowish brown (10YR 5/4) softer, angular smaller clay peds gradually lightening to brown to pale brown (10YR 5/3 to 10YR 6/3)
	260-310 cm	102.3-122.0 in	Brown (10YR 6/3) sandy clay
	310-350 cm	122.0-137.7 in	Strong brown (7.5YR 5/6) wet, sandy gravel and cobbles
	350-430 cm	137.7-169.2 in	Strong brown (7.5YR 5/6) gravel to platy clay peds

Figure 16. Top of Trench 4 north wall profile between 0 and 85 cmbs (33.4 inbs).

Figure 17. Upper portion of north wall profile between approximately 30 and 101 cmbs (11.8 and 39.7 inbs).

Figure 18. Midsection of north wall profile between approximately 90 and 270 cmbs (35.4 and 106.2 inbs).

Figure 19. Bottom of north wall profile in Trench 4 at 390 cmbs (153.5 inbs). Note thick gravel layer and water seepage near base of trench.

Remaining portions of the pipeline APE were examined with a reconnaissance survey and photographic documentation only since these areas had been extensively disturbed previously through gravel excavation, landfill use, and previous utilities installations. Along the north and east sides of the landfill mound, the pipelines will be placed in areas previously excavated out or within deep amounts of fill (**Figures 20-21**). Although on level ground surfaces, the areas near the western and southern termini have aslo been heavily impacted though gravel prospection, utilities installation, and current and recent distrubances due to other industries such as a new small landfill facility (near/at western terminus) and oil/gas storage pipelines and facilites, tree farm, and other industrial endeavors near the southeastern terminus (**Figure 22**).

Figure 20. Pipeline corridor in swale between landfill mound and access road east of landfill mound. View north.

Figure 21. Pipeline corridor in fill along edge of landfill mound north of landfill mound. View southwest.

Figure 22. Pipeline corridor on southeast of Big Fossil Creek; south terminus is in treeline. View southeast.

Figure 23. Pipline corridor as is crosses Minnis Drive toward western terminus. Note large asphalt pad in center of photo and new landfill facility in rear. View southwest.

6.0 Summary and Recommendations

On February 19-20, 2015, archeological trenching and a reconnaissance survey was completed in order to evaluate potential archeological impacts associated with the proposed construction of the Big Fossil parallel relief sewer line and the Haltom City sewer meter station and outfall northeast of Fort Worth and southeast of Haltom in central Tarrant County, Texas. The project area covered approximately 9.8 ha (24.3 ac). The majority of the APE was subjected only to reconnaissance survey, as most of the pipeline corridors have suffered extensive ground altering disturbances, in some areas as deep as 6.0+ m (20+ ft) due to gravel extraction, landfill usage, multiple utility installations, and various other impacts. However, as the West Fork paleosol is known to exist in the upper Trinity River basin, of which Big Fossil Creek is a part, deep trenching was conducted in intact soils near Big Fossil Creek. **No evidence of the West Fork paleosol was observed in any of the trenches. Therefore, no historic or significant cultural resources were identified during the survey and no further work is recommended within the APE prior to any construction for the proposed sewer pipelines, outfall and meter station.**

Although no archeological materials were recovered, all notes, photographs, administrative documents, and other project data generated from this project will be housed at TARL where they will be permanently available to future researchers.

If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and THC personnel should be notified immediately. During evaluation of the finds and coordination with the THC, clearing, preparation, and/or construction could continue in any other areas along the corridor where no such deposits or materials are observed.

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Appendix A: Regulatory Correspondence

RECEIVED 22 April 15 CMEC

COX | McLAIN
Environmental Consulting

TRANSMITTAL MEMO	To: Mark Denton, THC MAR 2 4 2015 CC: Mano Pydipelly, AECOM
Cox|McLain Environmental Consulting, Inc. 6010 Balcones Drive, Suite 210 Austin, TX 78731 www.coxmclain.com (512) 338-2223	From: Missi Green, CMEC
	Date: 03/23/15
	RE: Draft Report Submittal: *Archeological Trenching For the Proposed Big Fossil Creek Parallel Relief Sanitary Sewer Phase 1 and Haltom City Meter Station and Sewer Outfall Phase 3, Tarrant County, Texas* (USACE)

Dear Mr. Denton:

Please find enclosed one (1) unbound copy of the draft report *Archeological Trenching For the Proposed Big Fossil Creek Parallel Relief Sanitary Sewer Phase 1 and Haltom City Meter Station and Sewer Outfall Phase 3, Tarrant County, Texas*. The work was carried out under Texas Antiquities Permit 7172 and Section 106 of the National Historic Preservation Act, as amended.

The majority of the 24.3-acre APE was subjected only to reconnaissance survey due to extensive previous ground-altering disturbances such as gravel extraction, landfill usage, multiple utility installations, and various other impacts extending to depths greater than 6 m (20 ft). However, as the West Fork paleosol is known to exist in the upper Trinity River basin, which includes Big Fossil Creek, four trenches extending up to 5.9 m (19 ft) in depth were excavated in intact soils near the creek. **No archeological materials or deposits or evidence of the West Fork paleosol were observed in any of the trenches. Therefore, no historic or significant cultural resources were identified during the survey and no further work is recommended within the APE prior to any construction for the proposed sewer pipelines, outfall and meter station.**

If any unanticipated cultural materials or deposits are found at any stage of clearing, preparation, or construction, the work should cease in that area and THC personnel should be notified immediately. During evaluation of the finds and coordination with the THC, clearing, preparation, and/or construction could continue in any other areas along the corridor where no such deposits or materials are observed.

Please do not hesitate to call or email if you have any questions or comments.

Sincerely,

Melissa M. Green

Melissa M. Green, MA, RPA
(469) 467 4866
missig@coxmclain.com

ANTIQUITIES CODE OF TEXAS REVIEW
NO SIGNIFICANT SITES
PROJECT MAY PROCEED
by
for Mark Wolfe
Executive Director, THC
Date 4/16/15
Track#

DRAFT REPORT
ACCEPTABLE