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Report for Archeological Survey

Intensive Archeological Survey of Farm-to-Market 148 in Kaufman County, Texas

Dallas District

Kevin Hanselka, Principal Investigator
Texas Antiquities Permit No. 8246

CSJ: 0751-02-027

January 12, 2018

The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated 12-16-14, and executed by FHWA and TxDOT.

Abstract

On behalf of the Texas Department of Transportation (TxDOT), SWCA Environmental Consultants (SWCA) conducted an intensive archeological survey on January 4, 2018, of 58.7 acres along and between Farm-to-Market Road (FM) 148 and U.S. Route (US) 175 in Kaufman County, Texas. Because the project will receive funding from the Federal Highways Administration, it qualifies as an undertaking as defined in Title 36 Code of Federal Regulations (CFR) Part 800.16(y) and, therefore, was conducted in compliance with Section 106 of the National Historic Preservation Act (54 U.S. Code 306108). Furthermore, the project must also comply with the Antiquities Code of Texas (9 Natural Resources Code 191). Kevin Hanselka served as Principal Investigator under Texas Antiquities Code Permit No. 8246.

The total area of potential effects (APE) comprises the existing 23.5 acres of state right-of-way (ROW), the 33 acres of proposed new ROW, and the 2.2 acres of proposed drainage easement within the project limits. The project extends approximately 1.6 miles from US 175 to the existing FM 148 near its crossing with Anthony Branch. The depth of impact is anticipated to be restricted to the surface for the majority of the project; however, specific areas within the APE will require mechanical grading, installation of bridge support piers, and the placement of box culverts. The areas with the deepest anticipated subsurface disturbance include the proposed culverted crossing of Anthony Branch and the US 175 main lane bridge spanning the FM 148 Bypass.

Background research did not identify any previously recorded cultural resources within the current APE, or any previously identified cultural resources within a 0.6-mile (1-kilometer) radius of the proposed APE. However, during the historic maps review, SWCA identified a historic railroad bed that intersects the northern portion of the APE. Modern aerial maps show that neither the railroad nor the railroad bed currently exist within the APE. The historic map review also identified four potential historic structures adjacent to the existing FM 148 ROW. Three of the four structures are still standing, but all are outside of the APE and should not be affected by the proposed construction and road improvements.

SWCA conducted field investigations in compliance with the Texas Historical Commission Archeological Survey Standards, and this document was produced consistent with the Council of Texas Archeologists guidelines for reporting. The field investigation of the proposed project APE consisted of an intensive pedestrian survey with limited shovel testing and backhoe trenching for deep testing of cultural materials, where access had been granted. SWCA has made a reasonable and good faith effort to locate and identify historic properties as per 36 CFR Part 800.4(b)(1), and cultural resources as per Subchapter A of Chapter 26 of the Texas Administrative Code, throughout the proposed project APE in which access was possible. Based on the results of the survey, SWCA recommends a finding of “no historic properties affected,” and no further archeological investigations are recommended within the surveyed APE. However, once access is granted, intensive archeological survey is recommended on a proposed survey area on the northern end of the APE to which access is presently denied, in order to address its potential for historic resources.

Project Identification

Date: January 12, 2018

Date(s) of Survey: January 4, 2018

Archeological Survey Type: Reconnaissance ☐ Intensive ☒

Report Version: Draft ☐ Final ☒

Jurisdiction: Federal ☒ State ☒

Texas Antiquities Permit Number: 8246

District: Dallas

County or Counties: Kaufman

USGS Quadrangle(s): Scurry (3296-422)

Highway: Farm-to-Market Road (FM) 148

CSJ: 0751-02-027

Report Author(s): Christopher Shelton and Steve Carpenter

Principal Investigator: Kevin Hanselka, Texas Department of Transportation (TxDOT)

Texas Historical Commission Approval

Signature Date

Project Description

Project Type: Roadway improvement

Total Project Impact Acreage: 58.7 acres

New Right of Way (ROW) Acreage: 33 acres

Easement Acreage: 2.2

Area of Pedestrian Survey: 29 acres

Project Description and Impacts: The proposed project is located between the existing FM 148, near Anthony Branch and U.S. Route (US) 175 to the north, southeast of Crandall in Kaufman County, Texas (Figure 1). The project would construct a new FM 148 alignment that will primarily consist of two 12-foot-wide lanes with 8-foot-wide shoulders. Additional 12-foot-wide turning lanes will be needed at the intersection of the proposed FM 148 connector road that will connect the proposed FM 148 alignment with the existing FM 148 roadway. Approximately 3,850 feet of US 175 would be reconstructed to create an overpass crossing of the FM 148 Bypass. The proposed FM 148 alignment is approximately 1.6 miles long, extending from US 175 to existing FM 148 near its crossing of Anthony Branch.

Area of Potential Effects (APE): The total APE encompasses approximately 58.7 acres and is defined as the footprint of the proposed project to the maximum depth of impact, including all easements and project-specific locations (Figure 2). The APE comprises 23.5 acres of existing state ROW and 33.0 acres of proposed new ROW. Road ROW ranges in width from 155 to 324 feet, but typically falls between 160 to 220 feet in width. The remaining 2.2 acres pertain to proposed drainage easements that extend outside existing and proposed state ROW. The majority of vertical impacts within the APE will be restricted to the ground surface; however, the proposed designs call for grading, the installation of bridge support piers within the existing US 175 ROW, and the placement of box culverts that will have deeper subsurface disturbances. The deepest subsurface impacts will occur at the proposed culverted crossing of Anthony Branch and at the US 175 main lane bridge spanning the FM 148 Bypass.

Project Area Ownership: The new ROW is currently privately owned; the existing ROW is owned and managed by TxDOT.

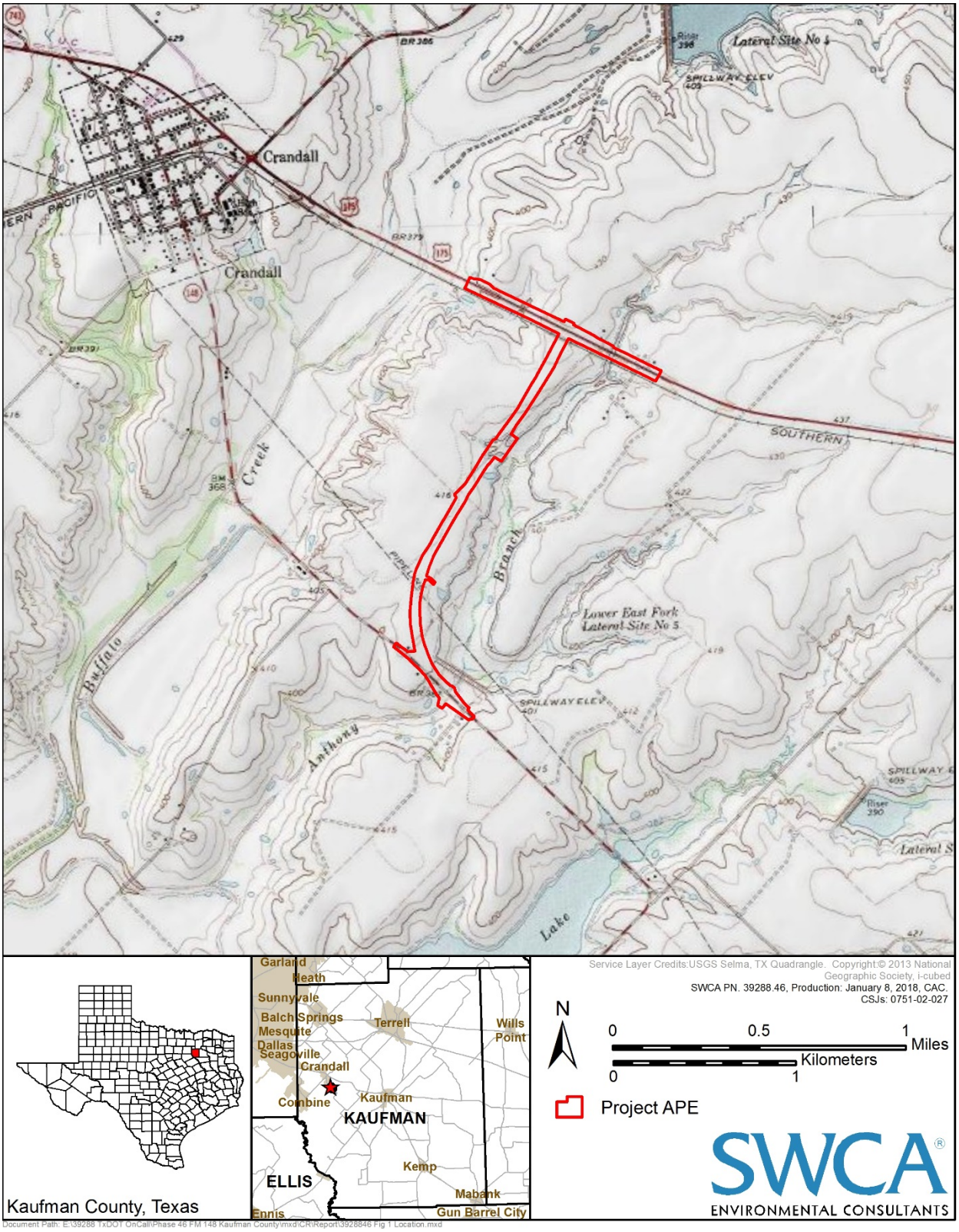

Figure 1. Project location map.

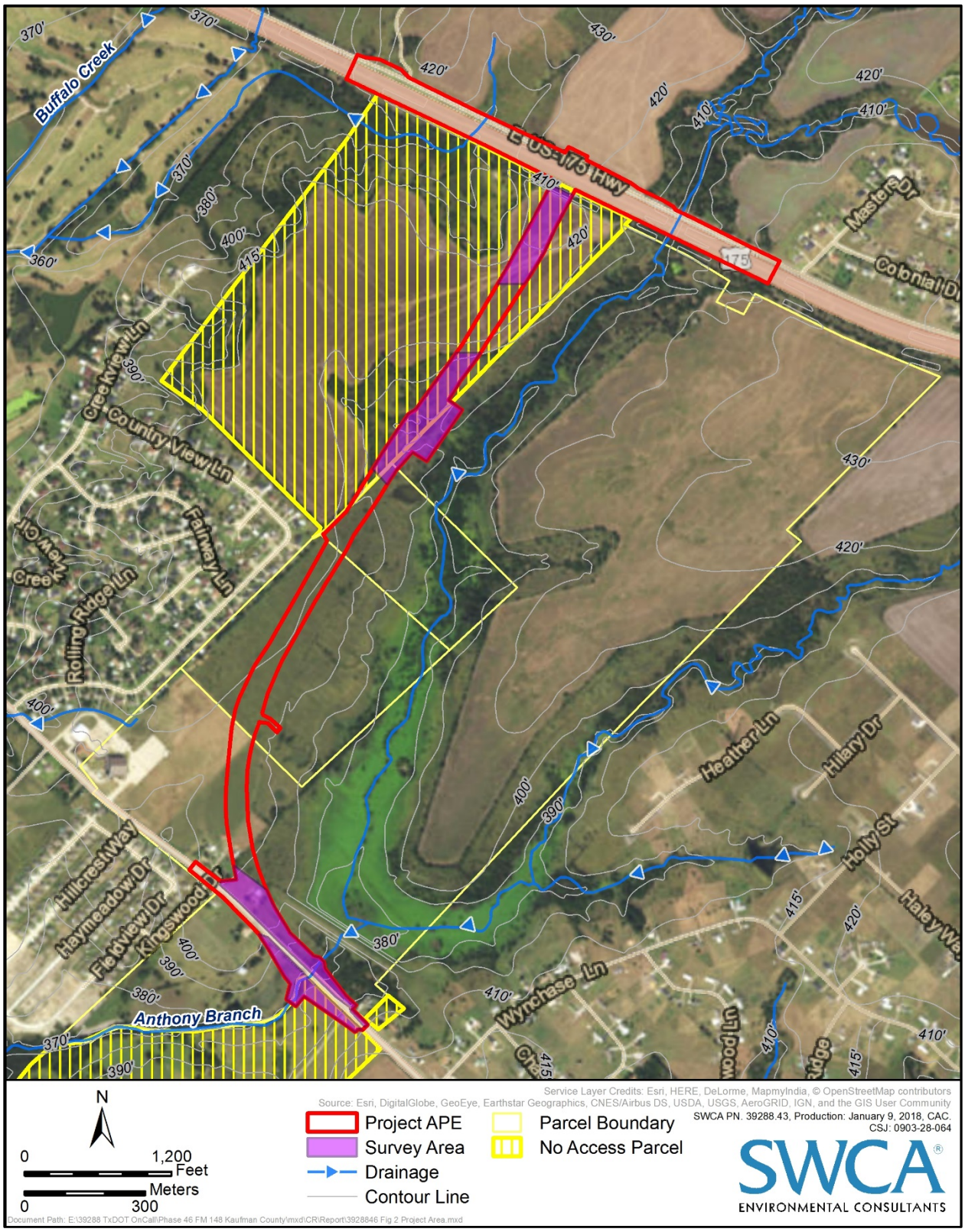

Figure 2. Project area.

Project Setting

Topography: The linear APE runs roughly southwest to northeast across gently rolling terrain, generally within the Anthony Branch floodplain and terraces. Elevation ranges from a maximum of 420 feet above mean sea level (amsl) near the northeastern portion of the APE, to a low of 383 feet amsl within the Anthony Branch floodplain in the southwestern portion of the APE.

Geology: According to the Geologic Atlas of Texas, Dallas sheet, the APE is underlain by Mesozoic-age Neylandville and Marlbrook Marl (Figure 3) (Barnes 1972). These predominantly clay deposits can reach thicknesses of 450 to 475 feet (Barnes 1972).

Soils: According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey, the APE consists of a mosaic of five soil series (Figure 4). From south to north, the APE crosses the Ferris-Heiden complex, Trinity, Houston Black, Heiden, and Ferris series (NRCS 2018).

The Ferris-Heiden complex consists of a deep, well-drained clayey residuum. The soils are typically found on back slopes and side slopes of ridges with slopes ranging from 1 to 20 percent. The soils are characterized as pale olive to olive clay (NRCS 2018).

The Trinity series consists of very deep, moderately well-drained soils formed in clayey alluvium sediments. The soils are typically found in floodplains with slopes ranging from 0 to 3 percent. The soils are characterized as very dark gray to dark gray clay (NRCS 2018).

The Houston Black series consists of a very deep, moderately well-drained clay, formed in clayey residuum. The soils are typically found in interfluves and side slopes on upland ridges, with slopes ranging from 0 to 8 percent. The soils are characterized as black to dark gray clay (NRCS 2018).

The Heiden series consists of deep well-drained soils formed in clayey residuum. The soils are typically found in nearly level to moderately steep sloping shoulders of interfluves, foot slopes, and back slopes with slopes ranging from 0.5 to 20 percent. The soils are characterized as dark grayish brown to very dark grayish brown clay (NRCS 2018).

The Ferris series consists of deep well-drained soils formed in clayey residuum. The soils are typically found on side slopes and back slopes of ridges in dissected plains. Slopes range from 1 to 20 percent. The soils are characterized as olive to a pale olive clay (NRCS 2018).

Land Use: The proposed APE is predominantly within pasture, agricultural land, and existing ROW. A small portion of the APE, near the southwestern terminus, is located near a residential area.

Vegetation: The majority of the vegetation within the APE consists of mixed tall and short grasses with sparsely scattered hardwood and coniferous trees and agricultural croplands. Tree growth becomes denser near fence lines and in the riparian areas along Anthony Branch.

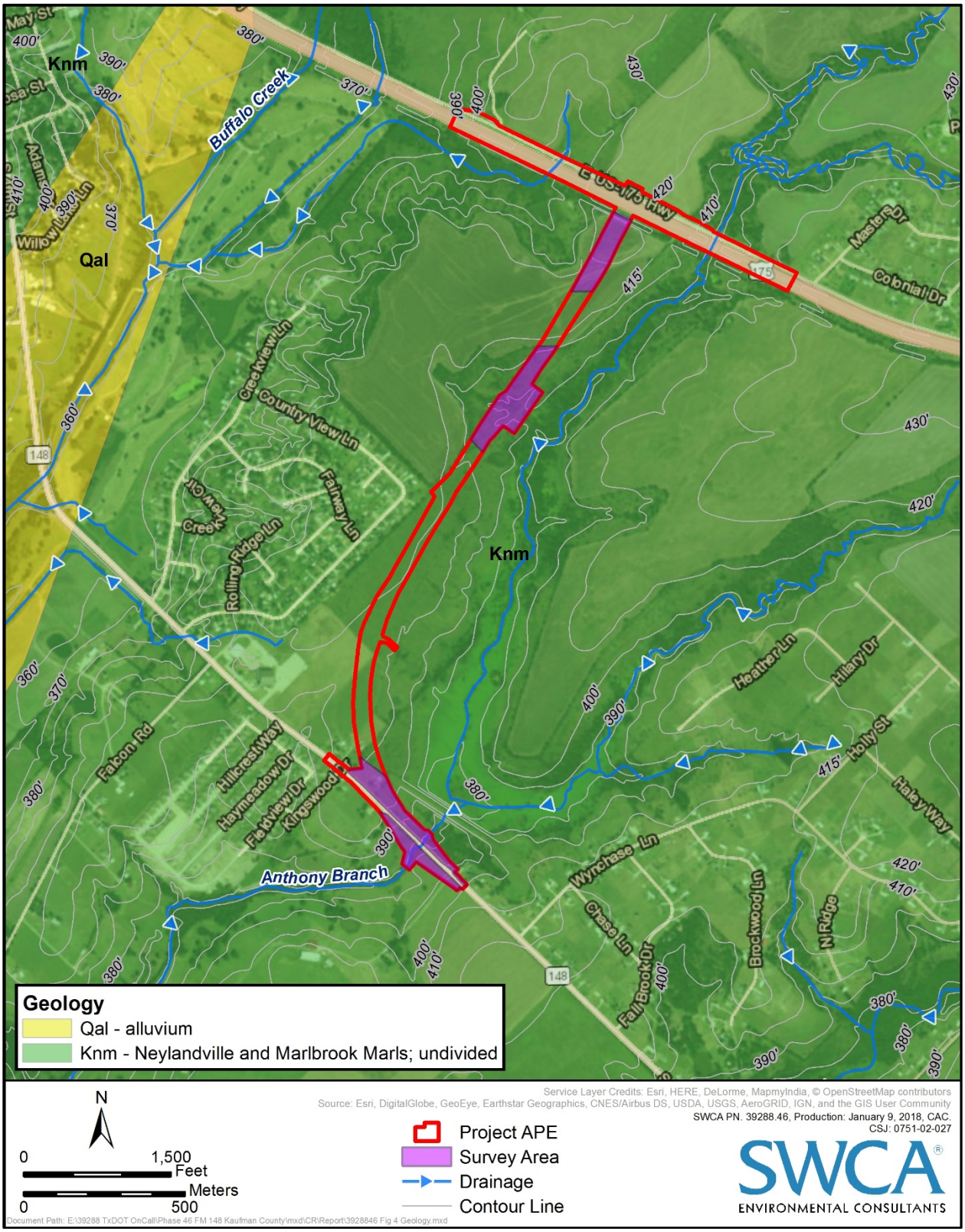

Figure 3. Project area geology.

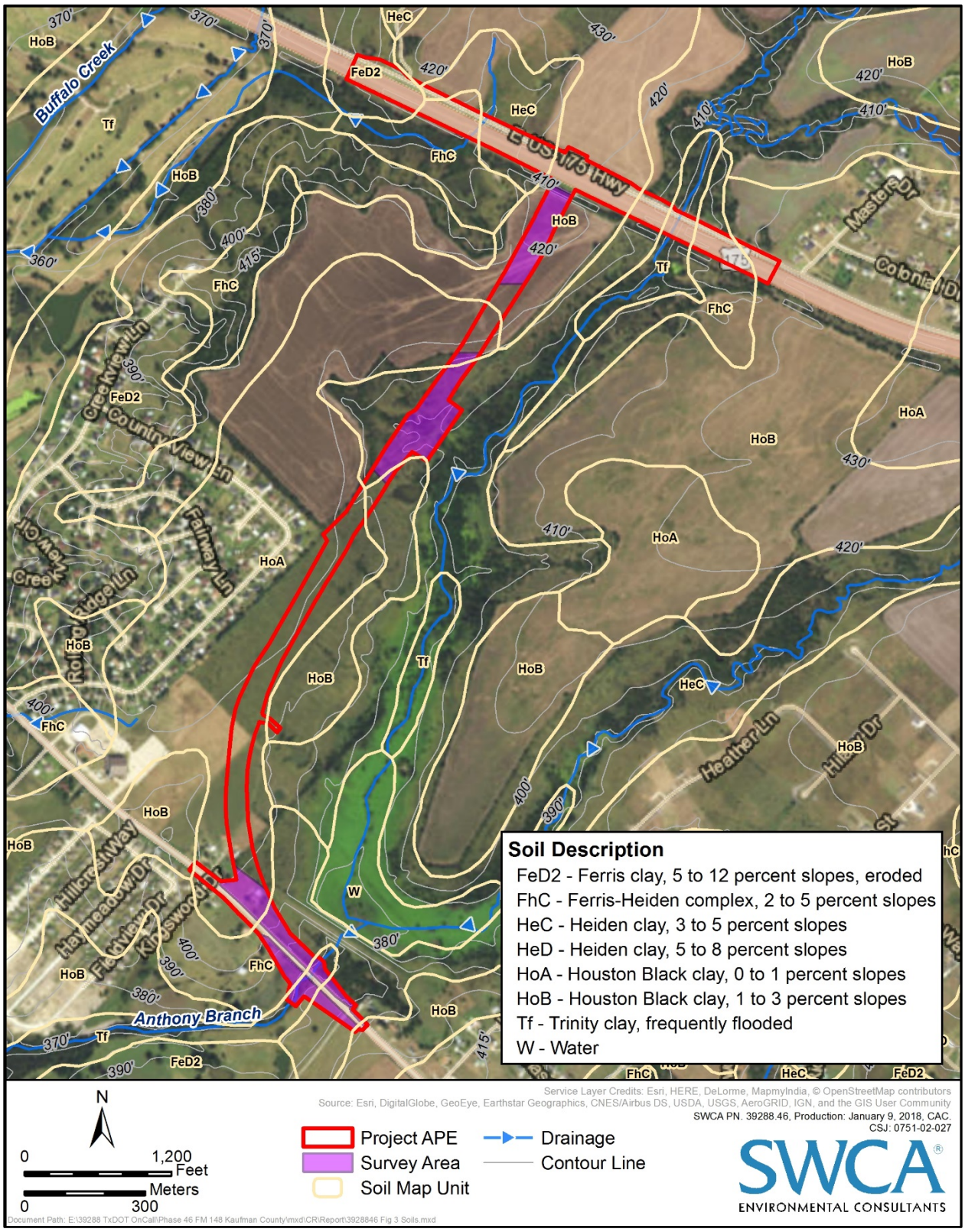

Figure 4. Project area soils.

Estimated Ground Surface Visibility: 0 to 20 percent, not including the existing roadway.

Previous Investigations and Known Archeological Sites: SWCA Environmental Consultants (SWCA) conducted a cultural resources background and historic map review of the project area in December 2017 and January 2018. To conduct the background review, an SWCA archeologist reviewed the Scurry (3296-422) U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map and records pertaining to the project area on the Texas Historical Commission's (THC's) Archeological Sites Atlas online database (Atlas) (THC 2018a). Additionally, SWCA reviewed maps contained in the TxDOT Historic Overlay, a mapping/geographic information system (GIS) database with historic maps and resource information covering most portions of the state (Foster et al. 2006). SWCA also reviewed historical USGS topographic maps available on USGS TopoView (USGS 2018). These sources contain information on the nature and location of previously conducted cultural resources investigations, previously recorded prehistoric and/or historic archeological sites, National Register of Historic Places districts and properties, State Antiquities Landmarks, Official Texas Historical Markers, Registered Texas Historic Landmarks, and local neighborhood surveys in, or within 0.6 mile (1 kilometer [km]) of, the proposed project APE. The review did not identify any cultural resources within the review area, and only one previously conducted survey within 0.6 mile (1 km) of the proposed project APE (THC 2018a).

The previously conducted survey intersects the APE and is located along the US 175 ROW (THC 2018a). This previous survey of the roadway was conducted in 2004 by Steven Ahr with Parsons Brinkerhoff on behalf of TxDOT. The 2004 survey resulted in no documented cultural resources near the APE.

The historic map review revealed a historic railroad bed intersecting with the northern portion of the APE, on the southern side of the US 175 ROW. The railroad is labeled as the Texas and New Orleans Railroad on both the 1919 and 1954 USGS 15-minute Kaufman topographic maps. However, the name changes to the Union Pacific Railroad on the 1962 USGS 7.5-minute Scurry topographic map, then later to the Southern Pacific on subsequent maps. A review of modern aerial imagery reveals that evidence of a railroad or railroad bed within the APE no longer exists. In addition, the historic map review revealed four potential historic standing structures adjacent to the existing FM 148 ROW in the southern portion of the APE. These structures were identified through the 1936 USDA Kaufman County Soils Map and the 1962 USGS 7.5-minute topographic map. Modern aerial imagery indicates that three of the four structures appear to still be standing. The position of the fourth potential historic structure is currently a plowed field and appears to have been located approximately 90 feet south of the existing FM 148 ROW on the southeastern terminus of the APE. All four of the potential historic structures are located outside of the proposed APE and, therefore, should not be affected by the proposed construction.

Comments on Project Setting: The APE within the existing ROWs of both FM 148 and US 175 has been extensively modified by previous and ongoing roadway construction and maintenance, as well as the installation of subsurface utilities. The portion of the APE within

and adjacent to the existing FM 148 ROW has been identified by TxDOT and SWCA as having a high potential for historic-age resources. The portion of the APE within the Anthony Branch floodplain approximately midway between the existing FM 148 and US 175 roadways has been identified by TxDOT as having a moderate potential for both shallow and deeply buried cultural resources. The portion of the APE that intersects with the existing US 175 ROW has also been identified by TxDOT and SWCA as having a high potential for historic-age resources; however, survey access has yet to be obtained for this parcel. As such, the southern portion of the APE and the Anthony Branch floodplain near the center of the APE were the primary focus for the cultural survey.

Survey Methods

Surveyors: Dan Rodriguez and Robert Brush

Methodological Description: The field investigations complied with the THC Archeological Field Survey Standards (THC 2018b). The investigations entailed an intensive pedestrian survey of accessible portions of the 58.7-acre APE, augmented with shovel testing and backhoe trenching in locations that appeared most favorable to contain intact cultural resources (e.g., areas with less visible disturbance or fewer utilities and were not inundated). Trench locations were chosen at the discretion of the project archeologist and focused on areas with the least disturbance within the APE, as well as areas with alluvial deposits and the potential for deeply buried cultural materials. Survey efforts resulted in the excavation of 10 shovel tests (STs) and nine backhoe trenches (BHTs) (Table 1).

Table 1. Excavations in Project APE

Method	Quantity in Existing ROW	Quantity in Proposed New ROW	Quantity in Temporary Easements	Total Number per Acre
Survey Shovel Test Units	10	N/A	N/A	0.34
Auger Test Units	0	N/A	N/A	0
Mechanical Trenching	9	N/A	N/A	0.31

SWCA archeologists excavated STs in arbitrary 4-inch (10-centimeter [cm]) levels and sifted all materials through ¼-inch mesh. Shovel tests measured 12 inches (30 cm) in diameter and were excavated to sterile soil strata, or in disturbed areas, into impenetrable layers. Archeologists recorded STs on data forms and included information on texture, consistency, color, and cultural materials collected. Soil colors were described as per Munsell soil color charts. Furthermore, archeologists photographed all STs and recorded ST locations on a handheld Global Positioning System (GPS) device with sub-meter accuracy.

In addition to the STs, nine BHTs were placed within the existing ROW within the APE, along the Anthony Branch floodplain. Archeologists thoroughly documented and photographed the entire excavation process. Archeologists recorded BHT locations on a handheld GPS device with sub-meter accuracy. Upon completion of the individual trenches, all BHTs were backfilled, levelled, and returned as much as possible to their original state. SWCA performed all work in accordance with Occupational Safety and Health Administration regulations (29 Code of Federal Regulations [CFR] 1926).

Other Methods: None

Collection and Curation: NO ☒ YES ☐ If yes, specify facility.

Comments on Methods: THC survey standards for a project of this size (i.e., >11–100 acres) require a minimum of one shovel test per every 2 acres, or 15 tests for a project of this size (only 29 acres were accessible). THC archeological survey standards do not specify a density of BHTs per unit area (THC 2018b). Due to the existing disturbances within the existing ROWs in the APE, the nine BHTs and 10 STs are considered to meet the required standards.

Survey Results

Project Area Description:

The project area setting is almost entirely within the Anthony Fork floodplain and associated terrace. The northeastern and southwestern termini of the APE are within the existing FM 148 and US 175 ROWs. The extent of proposed ROW is located in both pasture and agricultural land. Development in the area includes the existing FM 148 and US 175 roadways, various above and below ground utilities, and a small housing community near the southern terminus. Vegetation within the APE consists mainly of mixed grasses with sparse hardwood and coniferous tree growth; trees become more prevalent along fence lines and within the Anthony Creek floodplain.

SWCA archeologists conducted backhoe trenching, pedestrian survey, and shovel testing within the APE for which right-of-entry had been granted (Figure 5; Table 2). A total of nine BHTs were excavated, and trenching efforts were centered within the floodplain of Anthony Branch, both at the southern terminus and approximately midway between the existing FM 148 and US 175 roadways. These areas were identified as areas with a moderate to high probability for containing both shallow and deeply buried archeological deposits requiring survey based on various background review factors. Shovel testing efforts focused at the southern terminus, along the existing FM 148 where the historic map review indicated a high potential for historic resources. A total of 10 STs were excavated within the designated area. The northern terminus, near the intersection with the US 175 roadway was also identified as having a high potential for historic resources, but access for this portion of the project had yet to be granted at the time of the survey. The remaining accessible APE is either situated within existing ROW that has been heavily impacted by previous construction, or has been identified as having a low potential for buried cultural resources.

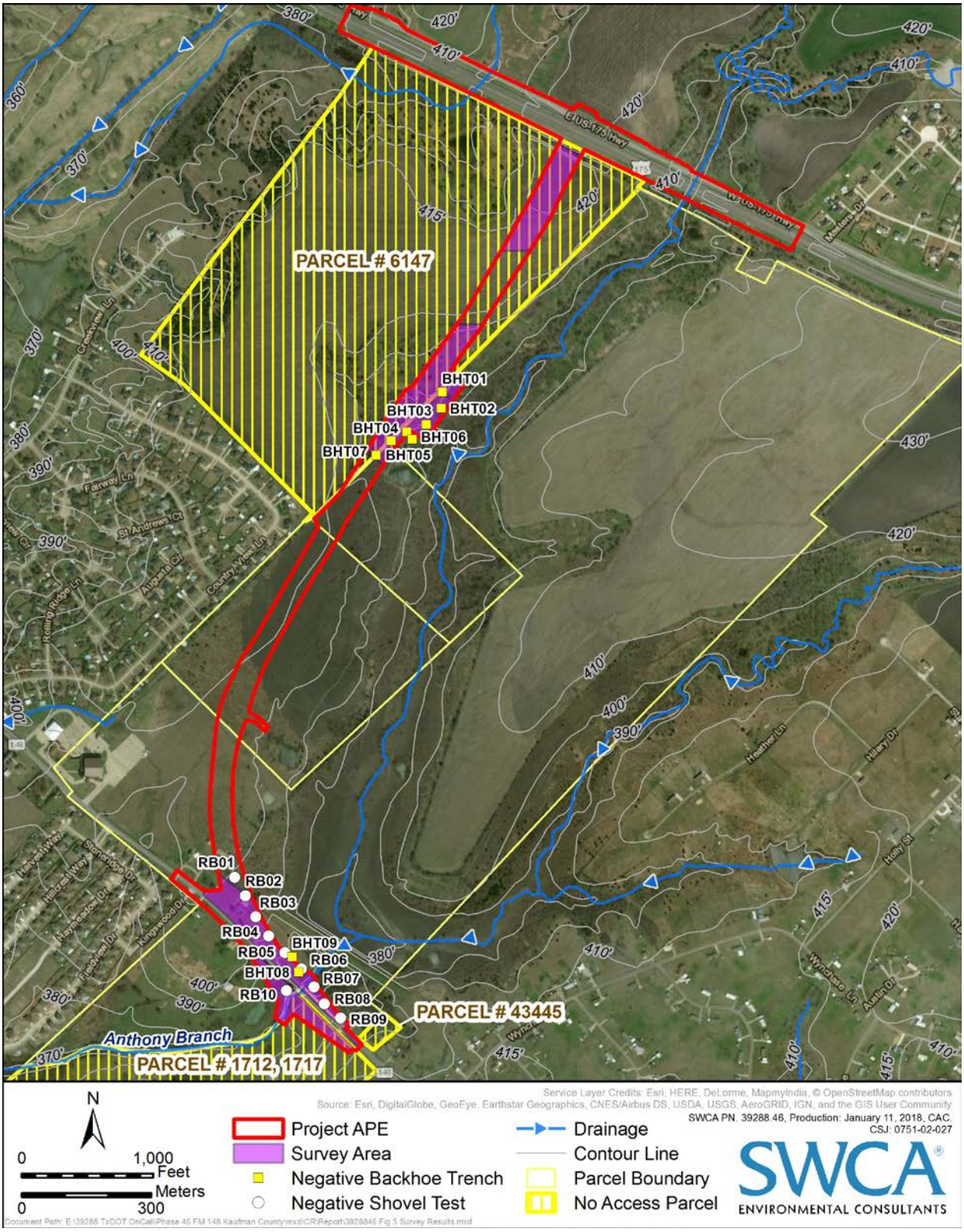

Figure 5. Survey Results Map

Table 2. Right-of-entry and Survey Status

Parcel No.	Right of Entry Status
6151	No survey required
51363	No survey required
43455	No Access
43456	Not in APE
6136	ROE Granted - Survey Complete
6137	ROE Granted - Survey Complete
6138	ROE Granted - Survey Complete
6143	ROE Granted - Survey Complete
6145	No survey required
6211	No survey required
6210	No survey required
191600	ROE Granted - Survey Complete
189626	ROE Granted - Survey Complete
6147	No Access
1712	No Access
1717	No Access

Backhoe Trenching

SWCA excavated a total of nine BHTs within the proposed project APE (Appendix A). Two of the trenches were excavated near the southern terminus within the Anthony Branch floodplain, and the remaining seven BHTs were excavated within the Anthony Branch floodplain approximately midway between the existing FM 148 and US 175 roadways. The BHTs ranged in depth from a minimum of 4 feet (125 cm) below surface to a maximum of 7.6 feet (230 cm) below surface and were excavated to encounter strata that predated human occupation in the area. Trench dimensions were typically 3 feet (90 cm) wide and 9 feet (2.7 meters [m]) long, with an average depth of 5 feet (156 cm) below surface.

SWCA excavated seven BHTs within the Anthony Branch floodplain approximately midway between the existing FM 148 and US 175 roadways (Figure 6). All seven BHTs have a similar profile with a black (10YR 2/1) clay to clay loam overlying a gray (10YR 5/1) clay to clay loam, and a bottom level of a light brownish gray (10YR 6/2) clay to clay loam. None of the seven trenches displayed any evidence of artificial soil disturbance; however, SWCA field archeologists recorded evidence of natural soil movement in nearly all of the seven BHTs.

Profiles contained vertical cracks with upper level soil infill. These cracks could be seen as deep as 5.6 feet (170 cm) in BHT 6. Calcium carbonate nodule inclusions generally occur around 2.6 feet (80 cm), increasing in frequency with depth.

SWCA also excavated two BHTs (8 and 9) near the southern terminus of the APE, within the Anthony Branch floodplain (Figure 7). Backhoe trenching locations were selected in areas with the least amount of visible indications of disturbance and care was taken to avoid buried utilities (Figure 8). Both BHTs 8 and 9 have a similar profile with gray (10YR 5/1) clay to clay loam overlying light brownish gray (10YR 6/2) clay to clay loam. BHT 8 contained modern buried trash, including barbed wire and metal wire fragments as deep as 3.6 feet (110 cm). This disturbance is due to the previous road construction, as well as buried and overhead utilities. Calcium carbonate nodules generally occur around 2.6 feet (80 cm) and increase in frequency with depth.

In summary, the trenches excavated within the APE contained the dense clay soils typical of the geology in the area. Only the two trenches (BHTs 8 and 9) excavated near the existing FM 148 roadway exhibited evidence of artificial soil disturbance. As indicated by the presence of calcium carbonate development, the bottom light brownish-gray layer is likely a pre-Holocene unit.

Figure 6. Overview near the center of the APE (BHT 1), facing south.

Figure 7. Overview of BHT 8 being excavated along the existing FM 148 ROW, facing southeast.

Figure 8. Example of buried utilities along the existing FM 148 ROW, facing north.

Shovel Test Results

Shovel testing was conducted within the southern portion of the APE, which had been identified as having a high to moderate potential for subsurface cultural resources and a high probability for historic-age resources. The pedestrian survey determined that most of the APE has been heavily modified by previous roadway construction and maintenance and the installation of buried utilities along the existing FM 148 roadway. Ten excavated STs (i.e., RB01–RB10) revealed a very compact gray (10YR 5/1) to brown (7.5YR 4/4) clay to clay loam (Table 3). All excavated STs were negative for subsurface cultural materials.

Table 3. Shovel Test Excavations in Project APE

Shovel Test No.	Level	Depth (cmbs)	Munsell	Color	Texture	Inclusions	Comments
RB01	1	0-65	10YR 5/1	gray	Clay Loam	1%-5% Roots and rootlets	No cultural material encountered. Terminated at compact soil.
RB02	1	0-65	10YR 5/1	gray	Clay Loam	1%-5% Roots and rootlets	No cultural material encountered. Terminated at compact soil.
RB03	1	0-35	7.5YR 4/4	brown	Clay Loam	10%-20% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.
RB04	1	0-35	7.5YR 4/4	brown	Clay Loam	10%-20% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.
RB05	1	0-65	10YR 5/1	gray	Clay Loam	1%-5% Roots and rootlets	No cultural material encountered. Terminated at compact soil.
RB06	1	0-65	10YR 5/1	gray	Clay Loam	1%-5% Roots and rootlets	No cultural material encountered. Terminated at compact soil.
RB07	1	0-35	7.5YR 4/4	brown	Clay Loam	10%-20% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.

Shovel Test No.	Level	Depth (cmbs)	Munsell	Color	Texture	Inclusions	Comments
RB08	1	0-35	7.5YR 4/4	brown	Clay Loam	10%-20% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.
RB09	1	0-35	7.5YR 4/4	brown	Clay Loam	10%-20% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.
RB10	1	0-40	10YR 5/1	gray	Clay Loam	1%-5% Calcium Carbonate, Gravels	No cultural material encountered. Terminated at compact soil.

Archeological Materials Identified: The pedestrian survey along with STs and BHTs identified no cultural materials or features within the accessible portion of the APE.

APE Integrity: The proposed APE within and adjacent to the existing FM 148 and US 175 ROWs exhibits evidence of prior disturbance, due to road and bridge construction and the installation of buried and overhead utilities, thereby compromising the integrity of the survey areas near the existing roadways. SWCA did not identify evidence of prior artificial disturbance within the backhoe-trenched portion of the APE approximately midway between the existing FM 148 and US 175 roadways.

Recommendations

Further Work: No further work is recommended within the surveyed portion of the APE. However, no access was granted for four parcels (see Figure 5), three of which (i.e., Parcels 1712, 1717, and 43445) are located along FM 148 at the southern end of the APE. The three parcels cover very minor portions of the APE. Based on assessments from adjacent accessible areas, no further work is recommended on these three southern inaccessible parcels.

The fourth inaccessible tract (Parcel 6147), located at the northern end of the APE along US 175, encompasses two areas (i.e., central and northern survey areas) within the APE scheduled for survey. Backhoe trenching in accessible areas within the central survey area yielded a low potential for archeological deposits, and based on these findings, no further work is recommended in the inaccessible portions of the central survey area. However, once access is granted, an intensive archeological survey is recommended on the northern survey area to address the potential for historic resources. In summary, SWCA recommends survey

of the northern area once access is granted. No further work in the other survey areas is recommended.

Justification: Investigators did not encounter any historic or prehistoric cultural materials during intensive investigations of the surveyed APE. Modern cultural materials were observed on the ground surface within the APE along the existing roadways, but all were recent in age. The backhoe trenching within the Anthony Branch floodplain encountered dense clay soils with pre-Holocene levels occurring between 2 feet (65 cm) and 4.3 feet (130 cm) below the surface.

Investigations were conducted in compliance with the Antiquities Code of Texas and Section 106 of the National Historic Preservation Act. As per the federal and state implementing regulations at 36 CFR 800.4(b)(1) and 13 Texas Administrative Code 26, SWCA has made a reasonable and good faith effort to identify all cultural resources within the surveyed APE and recommends no further cultural resources investigation prior to construction.

References Cited

Barnes, Virgil E.

1972 *Geologic Atlas of Texas: Dallas Sheet.* Bureau of Economic Geology, University of Texas, Austin.

Foster, T. R., T. Summerville, and T. Brown

2006 The Texas Historic Overlay: A Geographic Information System of Historic Map Images for Planning Transportation Projects in Texas. Prepared for the Texas Department of Transportation by PBS&J, Austin.

Natural Resources Conservation Service (NRCS)

2018 Web Soil Survey. U.S. Department of Agriculture. Available at: http://websoilsurvey.nrcs.usda.gov. Accessed January 2018.

Texas Historical Commission (THC)

2018a Texas Archeological Site Atlas restricted database. Available at: http://atlas.thc.state.tx.us/. Accessed January 2018.

2018b Archeological Survey Standards for Texas. Available at: http://www.thc.texas.gov/public/upload/publications/THC_SurveyStandards_2014.pdf. Accessed January 2018.

U.S. Geological Survey (USGS)

2018 The National Geologic Map Database (TopoView). Historical topographic map collection. Available at: http://ngmdb.usgs.gov/maps/TopoView/. Accessed January 2018.

Appendix A. BHT Excavations in Project APE

Trench	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Horizon Discussion	Lower Boundary	Comments
BHT01	0-30	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual	Sloping towards creek
	30-65	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	Sloping towards creek. Some vertical fissures infilled with material from upper level.
	65-145	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.
BHT02	0-70	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual	–
	70-125	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	Some vertical fissures infilled with material from upper level.
	125-155	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.
BHT03	0-60	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; rootlets (15%)	Gradual and irregular	–
	60-130	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	Some vertical fissures infilled with material from upper level.
	130-150	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.

Trench	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Horizon Discussion	Lower Boundary	Comments
BHT04	0-60	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual and irregular	–
	60-120	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	Some vertical fissures infilled with material from upper level. Calcium carbonate inclusions begin at 80 cmbs.
	120-145	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%), Mottled with 10YR 5/8 (20%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.
BHT05	0-70	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual and irregular	–
	70-90	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual and irregular	Some vertical fissures infilled with material from upper level. Calcium carbonate inclusions begin at 80 cmbs.
	90-140	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%), Mottled with 10YR 5/8 (20%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.

Trench	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Horizon Discussion	Lower Boundary	Comments
BHT06	0-20	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual - Highly undulating and irregular	Undulations can reach depths between 20 cm and 70 cm below surface
	20-80	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual - Highly undulating and irregular	Some vertical fissures infilled with material from upper level. Calcium carbonate inclusions begin at 80 cmbs. Lower boundary mirrors the lower boundary of level 1.
	80-170	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%), Mottled with 10YR 5/8 (20%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.
BHT07	0-50	10YR 2/1	Black	Clay loam	Loose to firm, subangular, and weak to moderate grade; roots (10%), rootlets (15%)	Gradual and irregular	–
	50-90	10YR 5/1	Gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual and irregular	Some vertical fissures infilled with material from upper level. Calcium carbonate inclusions begin at 80 cmbs. Level slopes to the southeast.
	90-140	10YR 6/2	Light brownish gray	Clay loam	Extra firm, sub-angular blocky, nearly massive; large slickensides (2-5 cm), calcium carbonate (5%-10%), Mottled with 10YR 5/8 (20%)	Unobserved	Vertical fissures continue through layer w/ infill still from level 1.

Trench	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Horizon Discussion	Lower Boundary	Comments
BHT08	0-90	10YR 5/1	Gray	Clay loam	Firm, subangular, and moderate grade; roots (2%), rootlets (5%), small slickensides	Regular and wavy	–
	90-200	10YR 5/1	Gray	Clay loam	Firm, subangular to blocky-slightly platey, and strong grade; snail shell (2%), calcium carbonate (1%, ~4 mm nodules), rootlets (3%)	Gradual	Observed from above after 160 cmbs. A modern piece of barbed wire was found at 95 cmbs, and a piece of metal wire was found at 110 cmbs.
	200-230+	10YR 6/2	Light brownish gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	–
BHT09	0-60	10YR 5/1	Gray	Clay loam	Firm, subangular, and moderate grade; roots (2%), rootlets (5%), small slickensides	Regular and wavy	–
	60-85	10YR 5/1	Gray	Clay loam	Firm, subangular to blocky-slightly platey, and strong grade; snail shell (2%), calcium carbonate (1%, ~4 mm nodules), rootlets (3%)	Gradual	–
	85-125	10YR 6/2	Light brownish gray	Clay loam	Loose to firm, subangular, and moderate grade; roots (10%), calcium carbonate (2%)	Gradual	–

This report was written on behalf of the Texas Department of Transportation by

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