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Intensive Archeological Survey for the Bridge Replacement Project on County Road 1511 at Resaca Creek, Leon County, Texas

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Report for Archeological Survey

Intensive Archeological Survey for the
Bridge Replacement Project on
County Road 1511 at Resaca Creek,
Leon County, Texas

Bryan District

Jon Budd, Principal Investigator

Texas Antiquities Permit No. 8365

CSJ: 1145-01-044

May 3, 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 April 16–17, 2018, of a potential bridge replacement consisting of approximately 1.5 acres of existing right-of-way (ROW) along Farm-to-Market (FM) Road 1511 in Leon 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, the work 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). Jon Budd served as Principal Investigator under Texas Antiquities Permit No. 8365.

The total area of potential effects (APE) is defined as the existing 100-foot-wide FM 1511 ROW beginning 200 feet north of the Resaca Creek channel centerline and extending 500 feet south. According to typical design, the depth of impacts would be up to 20 feet below the current ground surface for the bridge supports and up to 6 feet below ground surface for the rest of the project. The total APE is approximately 1.5 acres.

Background research identified no archeological surveys, archeological sites, cemeteries, or known historic resources within a 0.6-mile (1-kilometer) radius review area. However, six potentially historic structures are identified on 1964 USGS topographic maps along FM 1511. None of the structures are located within or immediately adjacent to the project area.

The field investigation of the proposed project APE consisted of an intensive pedestrian survey with both shovel testing and mechanical backhoe trenching. The existing ROW is heavily disturbed by existing roadway, utilities, and prior bridge construction activities; in addition, the APE is almost entirely wetlands with standing water or shallow water table. The investigations identified no archeological resources within the APE. 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. 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 APE.

Project Identification

Date: 05/02/2018

Date(s) of Survey: 04/16-17/2018

Archeological Survey Type: Reconnaissance Intensive

Report Version: Draft Final

Jurisdiction: Federal State

Texas Antiquities Permit Number: 8365

District: Bryan District

County or Counties: Leon County

USGS Quadrangle(s): Flo, Texas (3198-233) 7.5-minute quadrangle

Highway: Farm-to-Market (FM) 1511 at Resaca Creek

CSJ: 1145-01-044

Report Author(s): Dan Rodriguez

Principal Investigator: Jon Budd

Texas Historical Commission Approval

Signature

Date

Project Description

Project Type: Bridge replacement

Total Project Impact Acreage: 1.5 acres

New Right of Way (ROW) Acreage: 0 acre

Easement Acreage: 0 acre

Area of Pedestrian Survey: 1.5 acres

Project Description and Impacts: The proposed project would replace the existing bridge and approaches on FM 1511 in Leon County, Texas (Figure 1). The existing bridge measures 50 feet in length and 22 feet in width with 22-foot-wide approaches. The proposed bridge would be 75 feet long and 40 feet wide. The approaches would be widened to match the wider structure. All work would occur within the existing ROW. No new ROW or easements would be required.

Area of Potential Effects (APE): The APE is defined as the existing 100-foot-wide FM 1511 ROW beginning 200 feet north of the Resaca Creek channel centerline and extending 500 feet south. According to typical design, the depth of impacts would be up to 20 feet below the current ground surface for the bridge supports and up to 6 feet below ground surface for the rest of the project. The APE is approximately 1.5 acres.

Project Area Ownership: The existing ROW is owned and managed by Leon County and the Texas Department of Transportation (TxDOT).

Project Setting

Topography: The project area is centered on Resaca Creek and, as such, consists predominantly of a low floodplain and wetlands. Elevation ranges from a maximum of 311 feet above mean sea level (amsl) on the eastern end to about 304 feet amsl at the Resaca Creek channel.

Geology: The project area is located within the Queen City Sand formation (Figure 3). The Queen City Sand formation consists of quartz sand and clay as well as fine- to medium-grained sand. The sand weathers red and white with mottles of ironstone concretions (Barnes 1967).

Soils: According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey, the APE is located within Hatliff fine sandy loam (Figure 4). The Hatliff series consists of very deep, well-drained soils formed in loamy alluvial deposits of Holocene age. These soils are located on natural levees and point bars with slopes ranging from 0 to 1 percent (NRCS 2018).

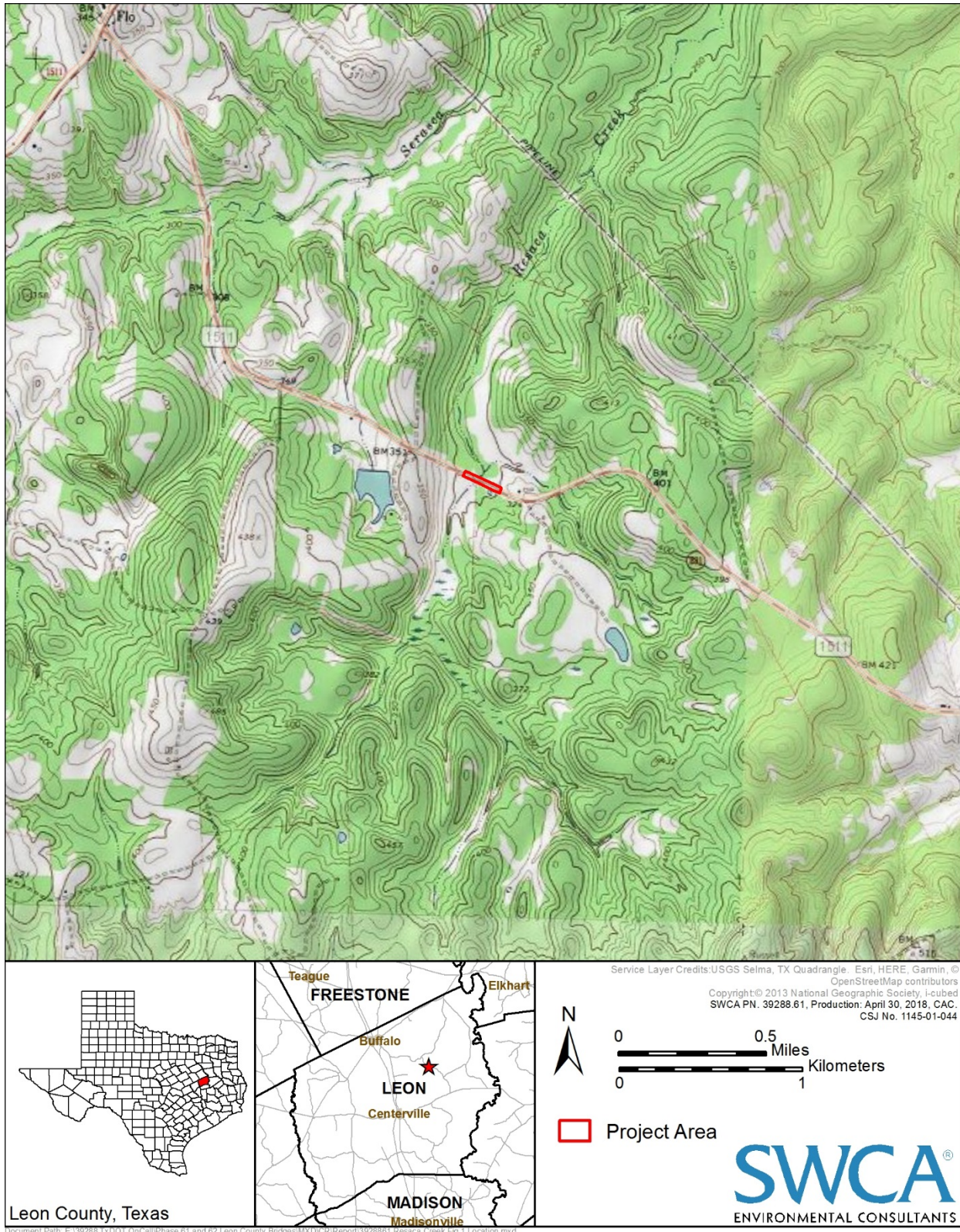


Figure 1. Project location map.



Figure 2. Project area map.

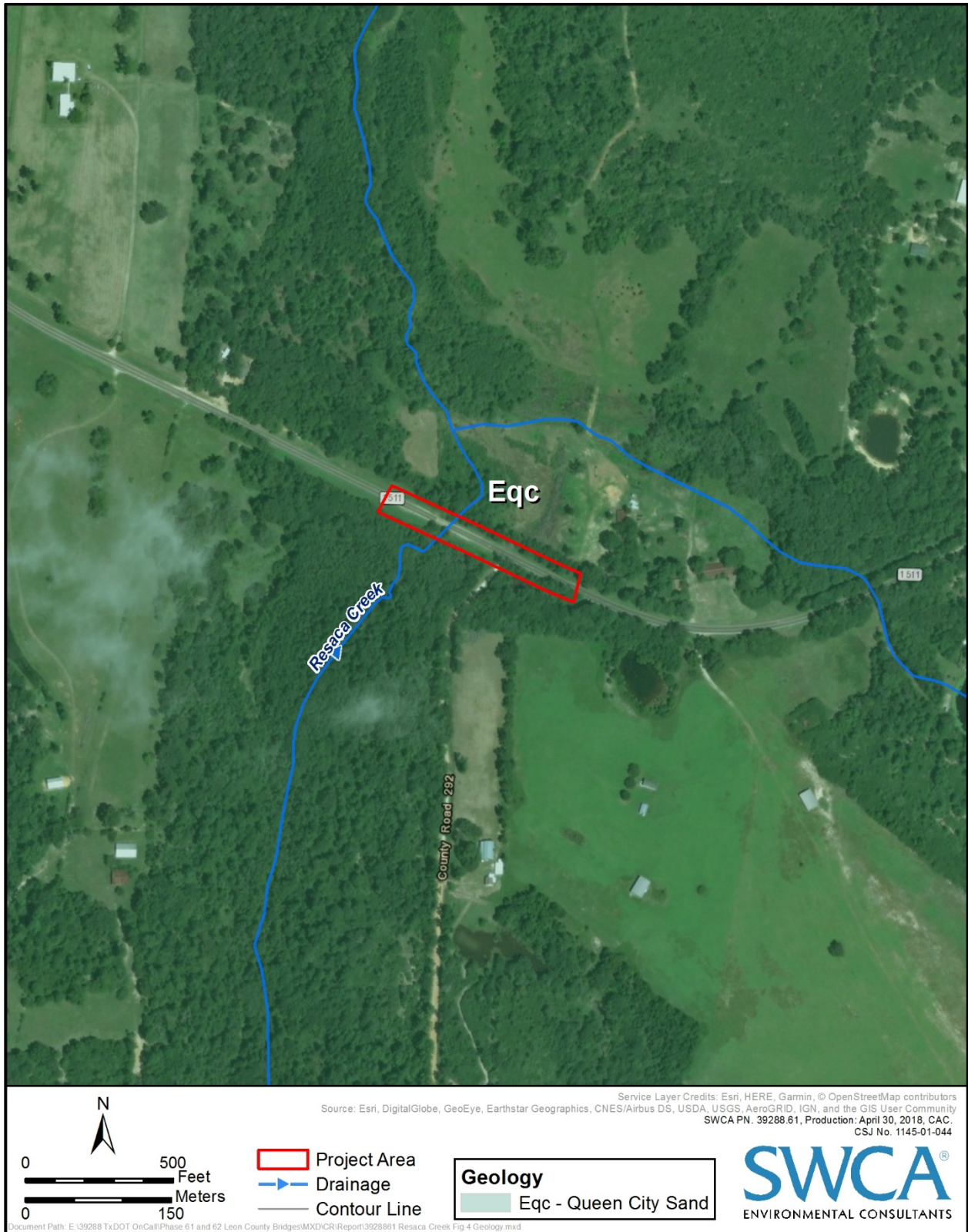


Figure 3. Project area geology.

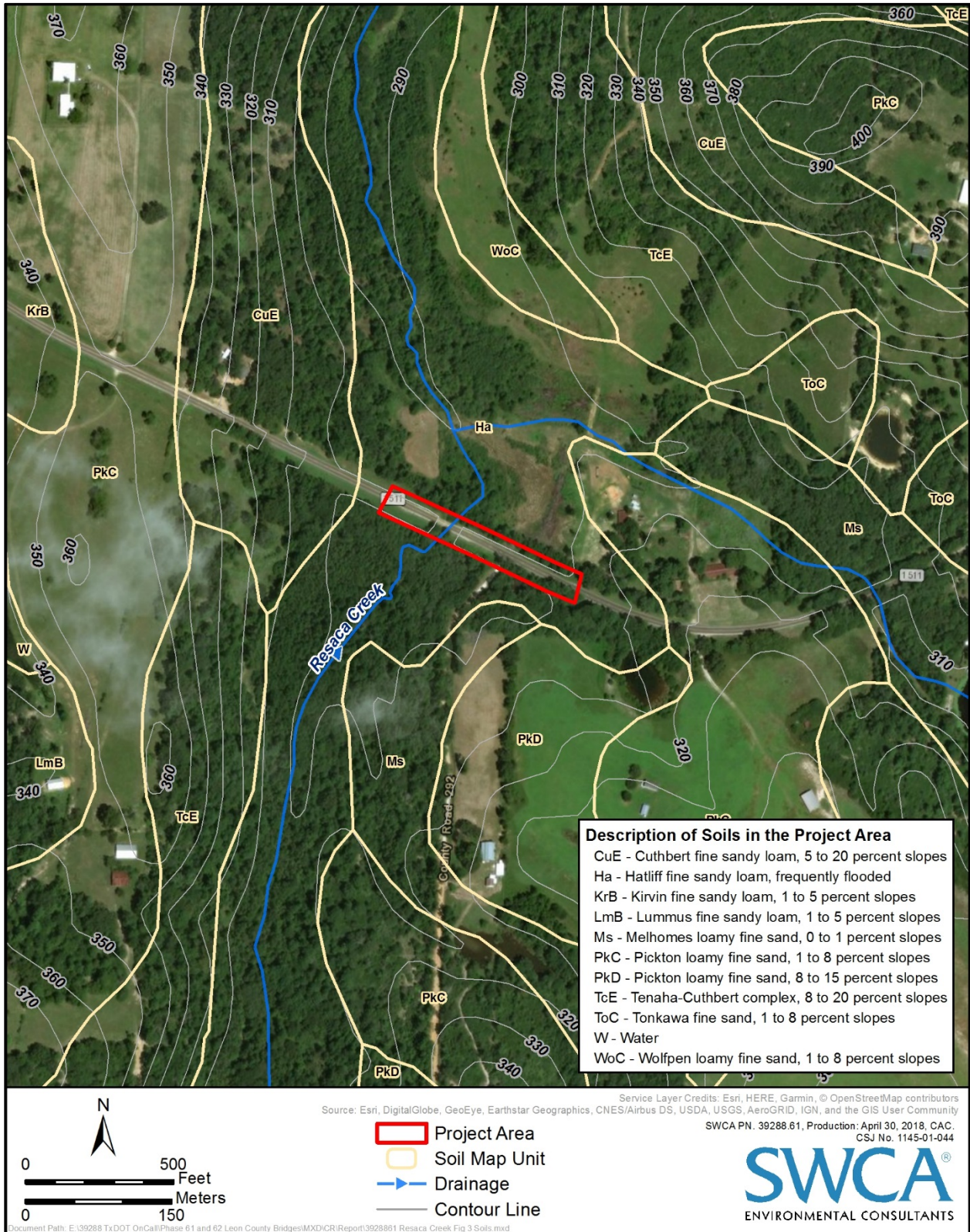


Figure 4. Project area soils.

Land Use: The immediate project area is a wooded creek and wetland with a county road bridge. Surrounding the project area is mainly mixed older woods with cleared mixed grass fields to the north and south.

Vegetation: Vegetation in the project area is a mix of pine, cedar, pecan, and oak with short grass along the TxDOT easement.

Estimated Ground Surface Visibility: 0–30 percent

Previous Investigations and Known Archeological Sites: A review of the Texas Historical Commission's (THC's) (2018a) online Texas Archeological Sites Atlas database showed no previous cultural surveys, archeological sites, or cemeteries recorded within 1 kilometer (km) (0.6 mile) of the project area. Additionally, SWCA Environmental Consultants (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 U.S. Geological Survey (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 (SAL), Official Texas Historical Markers, Registered Texas Historic Landmarks, and local neighborhood surveys in, or within 1 km (0.6 mile) of, the proposed project APE. The review did not identify any previously recorded cultural resources or previously conducted surveys within the APE; however, a 1964 USGS Topographic Quadrangle map depicts six potentially historic resources within 1 km (0.6 mile) of the project area. None of the potential historic structures are located within or immediately adjacent to the APE.

Comments on Project Setting: The APE within the existing ROW has been extensively modified by previous roadway/bridge construction and maintenance, as well as two buried telephone utility lines.

Survey Methods

Surveyors: Daniel Rodriguez, Michael Golden

Methodological Description: The field investigations complied with the THC Archeological Field Survey Standards (THC 2018b). The investigations entailed an intensive pedestrian survey of 1.5 acres, augmented with the excavation of a backhoe trench (BHT) and shovel tests in accessible locations that appeared most favorable to contain intact cultural resources (e.g., areas with less visible disturbance, fewer utilities, and/or not inundated). Survey efforts resulted in the excavation of one BHT and five shovel tests (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
Shovel Test Units	5	0	0	3.33
Auger Test Units	0	0	0	0
Mechanical Trenching	1	0	0	0.66

One BHT was placed within the existing ROW within the APE along the Resaca Creek floodplain. Archeologists thoroughly documented and photographed the entire excavation process and recorded BHT location on a handheld global positioning system (GPS) device with sub-meter accuracy. Upon completion of the trench, the BHT was backfilled, levelled, and returned as much as possible to its original state. SWCA performed all work in accordance with Occupational Safety and Health Administration regulations (29 Code of Federal Regulations [CFR] 1926).

In areas deemed inaccessible for a backhoe because of wetlands or utilities, SWCA archeologists excavated shovel tests in arbitrary 20-centimeter (cm) levels and sifted all materials through ¼-inch mesh. Shovel tests measured 30 cm in diameter and were excavated to sterile soil strata, disturbed deposits, or impenetrable layers. Archeologists recorded shovel tests on data forms and included information on texture, consistency, color, and cultural materials collected. Soil colors were described as per Munsell soil color charts.

Other Methods: None.

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

Comments on Methods: THC archeological survey standards do not specify a density of BHTs per unit area; however, the THC does require a minimum of three shovel tests per acre for projects between 0 and 2 acres in size (THC 2018b). The one BHT and five shovel tests therefore exceed the required standards.

Survey Results

Project Area Description: The project area setting is entirely within the Resaca Creek floodplain within the existing FM 1511 ROW (Figures 5–9). The ROW has been disturbed by road and bridge construction and maintenance (including grading, fill, and runoff culverts), as well as two buried telephone utility lines. Vegetation within the APE consists mainly of short grasses with areas of wetland vegetation and standing water on both sides of the raised road bed. Beyond the ROW, vegetation includes older pine, red cedar, pecan, oak, dense areas of wetland vegetation, and areas of standing water.

SWCA archeologists conducted backhoe trenching within the accessible portion of the APE (see Figure 5; Table 2). One BHT was excavated, on the southern side of the existing ROW, west of Resaca Creek. The extensive wetlands and soft saturated ground conditions precluded additional BHTs in the project area. In lieu of trenching, SWCA archeologists conducted five shovel tests along the northern side of the existing ROW for which there was no marked buried telephone utilities and standing water.

Backhoe Trenching:

SWCA excavated BHT1 on the southwestern side of the existing Resaca Creek bridge approach, on the southern side of Resaca Creek (Figure 10). Measuring approximately 3 m (10 feet) long, 0.6 m (2 feet) wide, and 1.8 m (6 feet) deep, the trench was placed on the bottom of the raised road bank to avoid as much of the artificial disturbances as possible, while also avoiding the saturated wetlands immediately south of the slope. The top 71 cm (28 inches) of the trench consisted of a brown (7.5YR 4/3) fill with a sandy loam containing 10 percent pebbles and imported gravel inclusions. Below this, from 71 to 91 cmbs (28–36 inches below surface) was a strong brown (7.5YR 5/8) sandy clay with a blocky structure containing 10 percent angular gravels, 2 percent pin holes, and 2 percent worm casts. This second stratum likely represents the remainder of the original A horizon prior to bridge construction. Between 91 and 104 cmbs (36–41 inches below surface), the soil became a light yellowish brown (10YR 6/4) sandy clay. Beneath this was a 10YR 4.2 dark grayish brown sandy clay loam containing 10 percent manganese and iron redoximorphic mottling and water table flowing in the trench at various depths (Figure 11); this stratum extended between 104–183 cmbs (41–72 inches below surface). Trench BHT1 was negative for cultural materials.

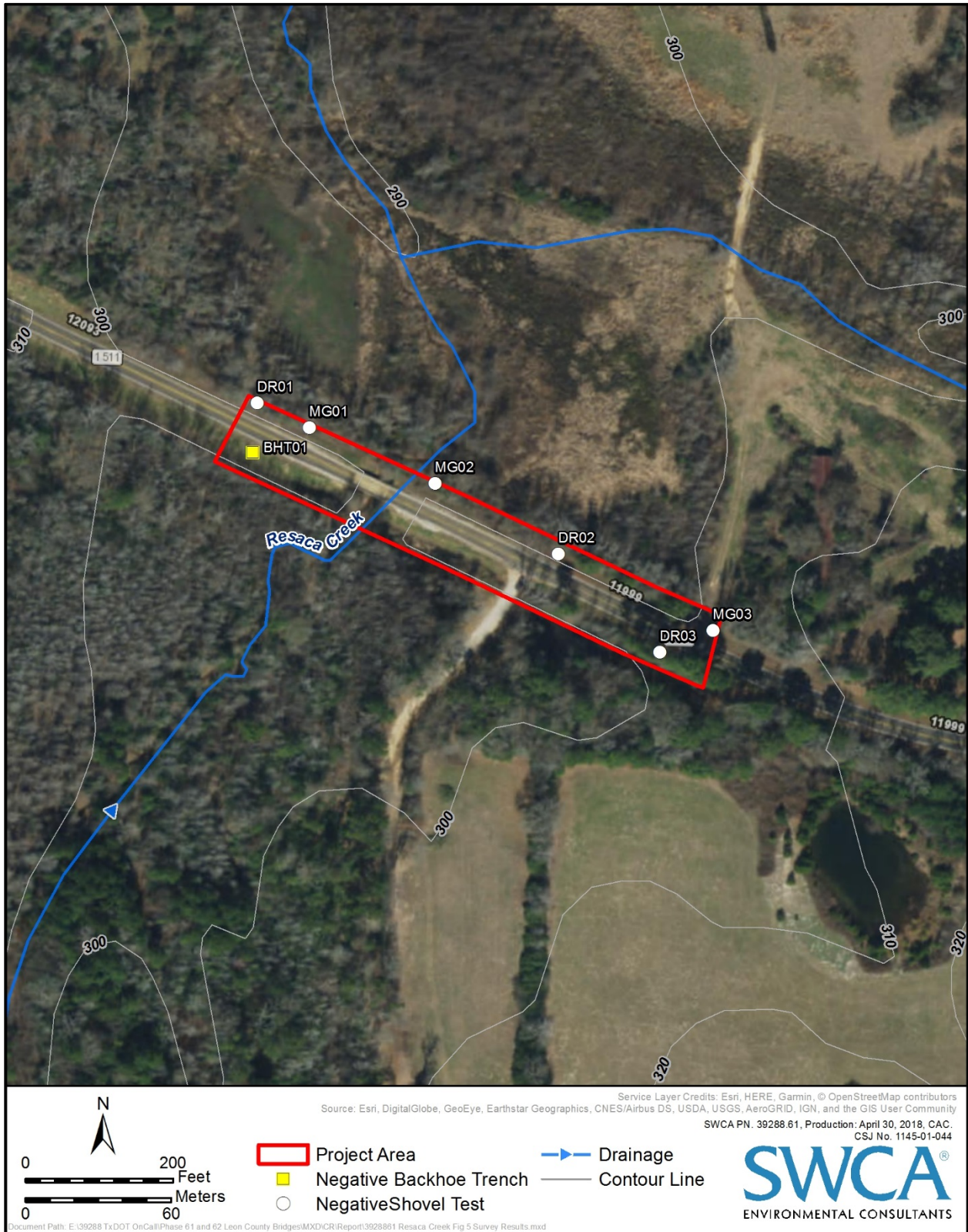


Figure 5. Results map. Wetlands prevented trenching throughout APE.



Figure 6. South side of FM 1511, on the west bank of Resaca Creek, with flagged utilities in foreground, standing water wetlands (left), and backhoe at BHT1 location, facing northwest.



Figure 7. North side of FM 1511, on the west bank of Resaca Creek, with bare mud and wetland grasses (right) and raised road bed (left), facing northwest.



Figure 8. South side of FM 1511, on the east bank of Resaca Creek facing southeast. Note the steep raised road grade with standing water wetlands at base (right), utilities are marked along this side, but are not visible in this picture.



Figure 9. North side of FM 1511, on the east bank of Resaca Creek facing southeast. Note the steep raised road grade. The saturated ground and wetland grasses (right) are located near a standing waterbody (just left of view) from a culvert just east of the bridge.

Table 2. Backhoe Trenching Results

BHT	Depth (cmbs)	Munsell	Soil Color	Soil Texture	Inclusions	Lower Boundary	Comment
BHT1	0-71	7.5YR 4/3	Brown	Sandy Loam	Friable, structureless; 7.5YR 5/3 Sandy Clay nodules, rootlets 5%, gravels 10%, pebbles 10%	Abrupt, Wavy	Negative for cultural materials. Likely disturbed fill zone.
	71-91	7.5YR 5/8	Strong Brown	Sandy Clay	Friable to firm, blocky, medium size, moderate grade; Angular gravels 10%, rootlets 2%, pin holes 2%, worm casts 2%	Abrupt, Wavy	Negative for cultural materials.
	91-104	10YR 6/4	Light Yellowish Brown	Sandy Clay	Friable, granular, fine size, moderate grade; Rootlets 2%, insect burrows 1%	Clear, Smooth	Negative for cultural materials.
	104-183	10YR 4/2	Dark Grayish Brown	Sandy Clay Loam	Friable, sub-angular to blocky, fine size, weak; Rootlets 3%, Manganese redox 10%	Unobserved	Water table flowing in at various depths. Negative for cultural materials.



Figure 10. BHT1 north trench wall profile composed of overlapping photographs. The trench began to collapse before an adequate profile overview with scale could be taken.



Figure 11. BHT1 trench floor with wall collapse and water table filling the trench, facing northwest.

Shovel Testing: SWCA excavated five shovel tests (i.e., MG01–03 and DR01–02) on the north side of FM 1511 Road, on either side of Resaca Creek (Table 3). Extensive road grading, marked buried telephone lines, and wetlands with standing water precluded shovel testing on the south side of existing ROW. All five shovel tests were terminated between 30 and 40 cmbs (12–16 inches below surface) due to encountering the water table. No cultural materials were observed during the shovel test survey.

Table 3. Shovel Testing Results.

Shovel Test	Depth (cm)	Munsell Value	Munsell Description	Soil Texture	Inclusions (%)	Inclusion Type	Shovel Test Comments
MG01	0-15	10YR 3/2	very dark grayish brown	Sandy Clay Loam	5-10%	Roots, rootlets	No cultural materials encountered.
	15-60	7.5YR 7/2	pinkish white	Sandy Clay Loam	1-5%	Manganese and iron redox	No cultural materials encountered. Terminated at water table.
MG02	0-40	10YR 3/2	very dark grayish brown	Sandy Clay Loam	5-10%	Roots, rootlets	No cultural materials encountered.
MG03	0-30	10YR 5/1	gray	Sandy Clay Loam	>20%	Cobbles, Gravels, Mottles, Pebbles, Roots, rootless, leaf litter	No cultural materials encountered. Terminated at heavily disturbed.
DR01	0-15	10YR 3/2	very dark grayish brown	Sandy Clay Loam	5-10%	Roots, rootlets	No cultural materials encountered.
	15-40	7.5YR 7/2	pinkish white	Sandy Clay Loam	1-5%	Manganese and iron redox	No cultural materials encountered. Terminated at water table.
DR02	0-10	10YR 3/2	very dark grayish brown	Sandy Clay Loam	5-10%	Roots, rootlets	No cultural materials encountered.
	10-35	7.5YR 7/2	pinkish white	Sandy Clay Loam	1-5%	Manganese and iron redox	No cultural materials encountered. Terminated at water table.

Archeological Materials Identified: No cultural materials were observed.

APE Integrity: The proposed APE within and adjacent to the existing FM 1511 ROW exhibits evidence of prior heavy disturbance caused by road and bridge construction and maintenance, extensive standing water, and wetland vegetation, thereby compromising the integrity of the survey areas near the existing roadways.

Recommendations

Comments on Evaluations: None.

Further Work: No further work is recommended within the APE.

Justification: Investigators did not encounter any historic or prehistoric cultural materials during intensive investigations of the APE. The backhoe trenching and shovel testing across the APE encountered common disturbances at depths ranging from ground surface to 71 cmbs (26 inches below surface). Soil disturbances were likely caused by road and bridge construction, road fill, and flood erosion and deposition. The extensive disturbances throughout the existing ROW has greatly decreased the potential for encountering intact cultural deposits. Beneath the disturbed upper sandy loam soils, the deep excavations encountered saturated sandy clays with redoximorphic staining indicative of long-term saturated conditions. Consistent with the soil description, these sandy clays contained a high constant water table. No further investigations are recommended to assess deep impacts from project construction within the 1.5-acre APE.

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 APE and recommends no further cultural resources investigation prior to construction.

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



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