

APPENDIX C: Cultural Resources

KSR&C # 22-08-040
September 28, 2022

Terry Blackwell
KDOT
Via Email

Re: 54-106 KA-6535-02
NHPP-A653(502)
Butler and Sedgwick County

We have reviewed the project description and plans regarding project 54-106 KA-6535-02 in accordance with 36 CFR Part 800. This project will consist of highway improvements along US 54: from east of I-35/127th Street east to 0.5 mile east of S Prairie Creek Road. Following an architectural review of structures in the project area, the SHPO has determined that the project will not adversely affect any property listed or determined eligible for listing in the National Register. As far as this office is concerned, the project may proceed.

Thank you for giving us the opportunity to comment on this proposal. Please refer to the Kansas State Review & Compliance number (KSR&C#) listed above on any future correspondence. Please submit any comments or questions regarding this review to Lauren Jones at lauren.jones@ks.gov.

Sincerely,



Patrick Zollner
Director, Cultural Resources Division
State Historic Preservation Officer

Patrick Zollner, Acting Executive Director

Laura Kelly, Governor

KSR&C # 22-08-040
September 27, 2022

Cliff Ehrlich, Chief
Environmental Services Section
KDOT

Via Email

Re: 54-106 KA-6535-02
NHPP-A653(502)
Butler and Sedgwick Counties

Staff review of the above referenced project has been completed at the Phase II level. Pursuant to 36 CFR 800.4, we concur with the finding of no historic properties affected for the above referenced undertaking. We therefore have no objection to implementation of the project.

Sincerely,



Patrick Zollner, Acting Executive Director and
State Historic Preservation Officer

Archeological Survey of KDOT Project #54-106 KA-6535-02 (KA-6535-RCNS-01), in Sedgwick and Butler Counties, Kansas

By: Chris Herriage
 Contract Archeology Program, Cultural Resources Division
 Kansas Historical Society
 September 22, 2022

Introduction

The Kansas Department of Transportation (KDOT) proposes to carry out KDOT project number 54-106 KA-6535-02. The proposed project (Project) is described as highway improvements along U.S. 54: from east of I-35/127th Street east to 0.5 miles east of S. Prairie Creek Road in Sedgwick and Butler Counties, KS. (Figure 1)(Table 1). The Contract Archeology Program (CAP) of the Kansas Historical Society (KSHS) recently completed an archeological field survey investigation of the Project. The purpose of this investigation was to determine whether any significant archeological resources would be affected by the proposed project. This work is done in compliance with laws governing the treatment of cultural resources, particularly Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. This work was conducted following procedures outlined in a Memorandum of Agreement between the KSHS and KDOT, effective July 1, 2021.



Figure 1. Location of the Project, outlined in red (adapted from Gottsfield and Harris 2022).

Sections	Township	Range
22, 23, 24, 26, 27	27 South	2 East
19, 20, 21, 28, 29, 30	27 South	3 East

Table 1. A summary of the sections, townships, and ranges of the Project.

A Phase I investigation (archival research) was requested by KDOT on August 18, 2022. In response, CAP submitted a Phase I report on August 18, 2022, to the SHPO recommending that a Phase II field survey investigation be performed (KSR&C # 22-08-040). SHPO concurred with that recommendation August 19, 2022, and CAP notified KDOT of the recommendation. CAP archeologist Chris Herriage carried out the recommended fieldwork on September 12-13, 2022. This report is submitted to KDOT and the Kansas SHPO. It describes the investigation and provides recommendations for project clearance regarding archeological resources.

Environmental Setting

Regional

The Project area is located within the Osage Cuestas division of the Osage Plains section of the Central Lowland province of the Interior Plains division of North America (Schoewe 1949:283-286). The bedrock of the region consists of interbedded limestone, shale, and sandstone formations of Pennsylvanian age. Exposure and differential erosion of the unequally resistant, westward sloping strata at the ground surface has created a series of low parallel ridges. These landforms, referred to as cuestas, have steep, rugged, east facing escarpments that front on broad, gently inclined, westward sloping vales. Thus, the topography consists of long, low rolling hills and wide, shallow valleys. In general, the escarpments exhibit an irregular northeast-southwest trend. The major stream courses, however, flow to the east and southeast, transverse to the direction of the escarpments and against the westward dip of the rock formations.

The vegetation of the Osage Cuestas region prior to the encroachment of people engaged in an industrialized economy was open prairie penetrated by thin ribbons of riverine forest. Kuchler (1974) lists the Cuestas as part of the tall grass bluestem prairies, described more specifically as an area with extensive mixing of forest and prairie. Soil survey data and early historical accounts indicate that the wooded areas were confined to the floodplains and valley edges of the major stream courses and their tributaries. The timber consisted of medium tall to tall broadleaf deciduous forests, often with dense undergrowth. Oak, black walnut, hickory, hackberry, cottonwood, willow, and elm were common along with a variety of smaller species such as persimmon, papaw, elderberry, serviceberry, chokecherry, and wild grape. Forestation was apparently not pervasive even in bottomland locations, however, since many of the common stream course soils have characteristics indicating that they developed under a native vegetation of both tall grasses and hardwood trees. The forest belts and nearby prairies of the Osage Plains provided shelter and food for plentiful mammalian fauna, including bison, elk, deer, antelope, and bear, while the streams yielded an abundance of edible fish and shellfish. Wild turkey, prairie chicken, ruffed grouse, and quail were also available, and ducks and geese were present on a seasonal basis (Wedel 1959:14).

Local

The Project location is primarily in an urban environment along US-54/400 extending from the east end of Wichita to the east side of Andover. Residential and commercial development is common throughout the area with occasional pastures and agricultural fields interspersed within. Intermittent drainages dissect the area draining into Fourmile Creek to the southeast, which joins

the Walnut River roughly 8km (5mi) south of Augusta. Forested areas are mainly confined to the drainages. Within the residential and commercial areas, highway embankments, ditches, driveways, and landscaped yards are typical. The occasional field or pasture is usually covered in mixed grasses and sometimes contains a hedgerow. Small and large ponds also dot the landscape.

Cultural-Historical Setting

Archeological research in this region of Kansas has yielded evidence of human occupation dating from more than 12,000 years ago up to the modern era and has the potential for yielding more evidence. Sites in the region include habitation areas, work areas, and human burials, as well as other types of sites. While the full extent of the area's archeological resources has yet to be determined, the region contains materials from all of the major cultural periods thus far identified in Kansas. These are general categories, and there is some temporal overlap between periods. Summaries of Kansas archeology include Brown and Simmons 1987, Hoard and Banks 2006, Lees 1989, Thies 1987, and Wedel 1959. The cultural sequence for Kansas is shown in Table 2 on the following page.

Previous Investigations

Several archaeological surveys have taken place within a 1.6km (1mi) radius of the Project and beyond, which have identified and recorded a number of archaeological sites (Figures 2 and 3). Three of these intersect the proposed construction limits: 14SG315, 316, and 317. Site 14SG315 is recorded as an Historic European/American/Afro-American domestic site from circa 1900-1954. A house foundation and domestic debris are all that remain as the house was likely destroyed by a tornado in the 1990s, although the investigator notes that it was probably abandoned earlier (Waggoner 2010). Site 14SG316 is an historic period site that contains a well surrounded by trees. The site's location may correspond to structures indicated on the 1882 and 1905 plat maps of Sedgwick County (Waggoner 2010). Site 14SG317 consists of a concrete porch, windmill, and pump, and is listed as an agrarian/domestic historic site (Waggoner 2010). Outside of the proposed construction limits is one historic site, 14SG314, consisting of a hand dug limestone well with no associated features.

Approximately 1.6-2.4km (1-1.5mi) south of the project just west of the Sedgwick/Butler County line is a small cluster of five sites: 14SG522, 529, 530, 531, and 539. Sites 14SG529 and 531 were recorded as Prehistoric American Indian camp sites containing scant information. Unfortunately, these sites were destroyed by housing development. The remaining three were recorded as Prehistoric American Indian camp sites, mostly containing thin scatters of lithic and/or bone debris. Several more sites can be seen further to the east and slightly south along Fourmile Creek.

Cultural Period		Dates	Area of Kansas and Physiographic Provinces				Subsistence	
			Northeast: Glaciated Region	Southeast: Osage Cuestas, Chautauqua Hills, Cherokee Lowlands	Central: Smoky Hills, Flint Hills, Red Hills, Wellington-McPherson Lowlands, Arkansas River Lowlands	West: High Plains, Smoky Hills, Arkansas River Lowlands		
Historic	Modern	Present	Americans, including Indian Nations, and immigrants of many cultures				Service economy, light industry, mineral & petroleum exploitation, farming, ranching	
		1900 CE	Industrialization, Mechanized Agriculture					
	Historic	1870 CE	Kansa, Iowa, Sac & Fox, Kickapoo, Potawatomi, Delaware, Wyandotte, Shawnee	Kansa, Shawnee, Ottawa, Peoria & Kaskaskia, Wea & Piankeshaw, Chippewa, Miami, Quapaw	Pawnee, Osage, Kansa	Comanche, Cheyenne, Arapahoe, Kiowa, Kiowa-Apache, Sioux, Pawnee	Reservations, Equestrian Bison Hunting; Maize-based Horticulture East; Equestrian Nomads West	
		1800 CE	Immigrant Tribes				Equestrian Bison Hunting, Equestrian Nomadism; Maize-based Horticulture & Trapping East	
			Kansa	Osage, Kansa, Wichita	Pawnee, Kansa, Wichita, Comanche, Kiowa, Kiowa-Apache	Comanche, Cheyenne, Arapahoe, Kiowa, Kiowa-Apache, Pawnee		
			Late Prehistoric Oneota		Pawnee, Kansa, Wichita	Dismal River aspect		
	Prehistoric	Proto-historic	1700 CE		Neosho focus, Great Bend aspect	Great Bend aspect	Great Bend aspect	Hunting, Gathering; Maize Horticulture East; Some Supplemental Horticulture West
			1400 CE	White Rock phase		White Rock phase	White Rock phase	
		Middle Ceramic		Pomona variant, Nebraska & Steed Kisker phases	Pomona variant	Smoky Hill & Solomon River phases, Pratt & Bluff Creek complexes	Upper Republican & Odessa phases	
			1000 CE	Grasshopper Falls phase, Kansas City Hopewell	Grasshopper Falls & Cuesta phases	Grasshopper Falls & Greenwood phases, Valley variant,	Keith phase	Hunting, Gathering; Cultivation & Domestication of Native Plants East
1 CE			Nebo Hill phase	Nebo Hill & El Dorado phases	Walnut & El Dorado phases	Unclassified Archaic Cultural Manifestations	Hunting, Gathering; Incipient Cultivation of Native Plants East	
3000 BCE					Chelsea phase			
4000 BCE					Munkers Creek phase	McKean complex		
Archaic			7000 BCE	Logan Creek phase	Stigenwalt complex	Logan Creek phase	Logan Creek phase	
		PaleoIndian	10,000 BCE	Dalton, Cody Complex, Allen, Frederick				Hunting, Gathering
			11,500 BCE	Clovis, Folsom, Plainview				

Table 2. Cultural sequence of Kansas by region. Adapted from Hoard and Banks 2006.

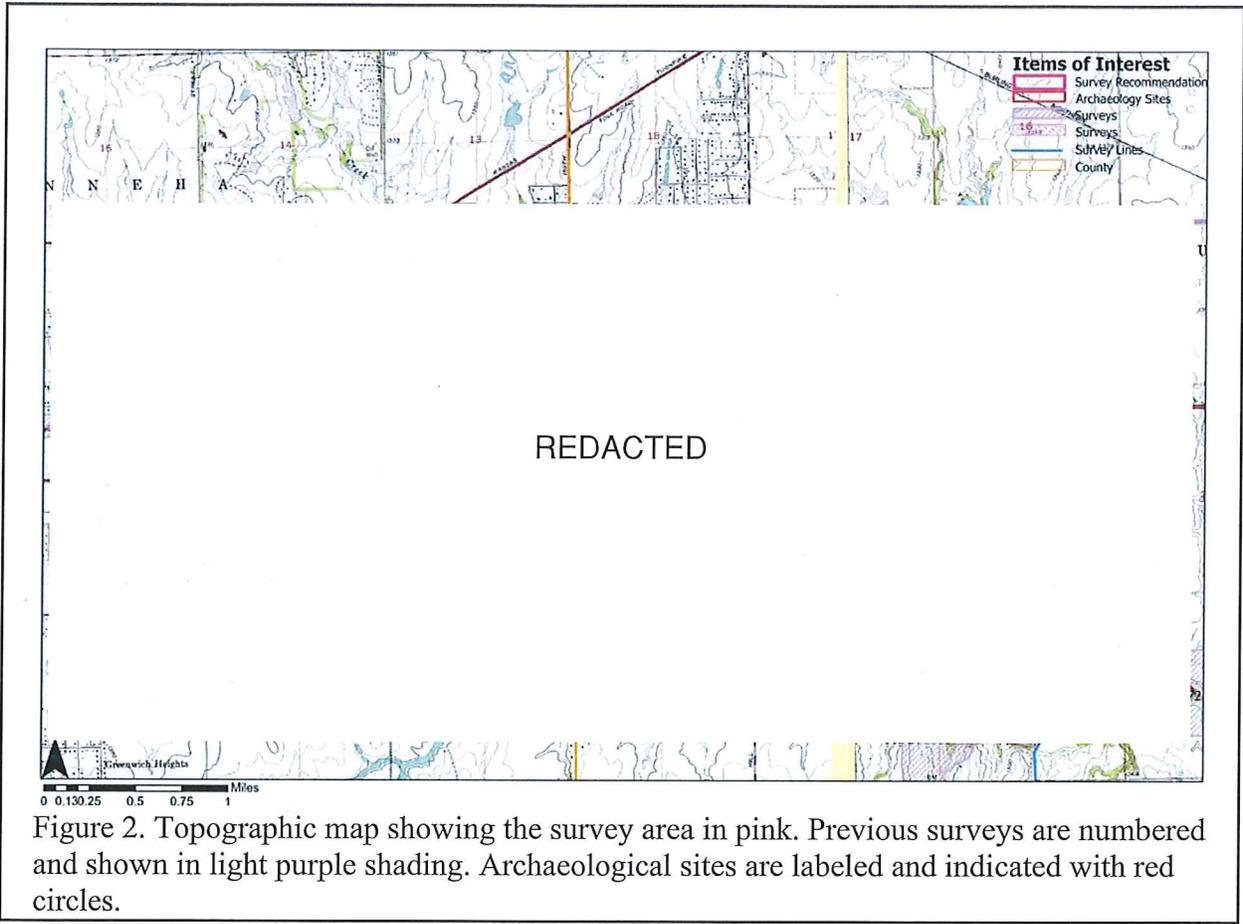


Figure 2. Topographic map showing the survey area in pink. Previous surveys are numbered and shown in light purple shading. Archaeological sites are labeled and indicated with red circles.

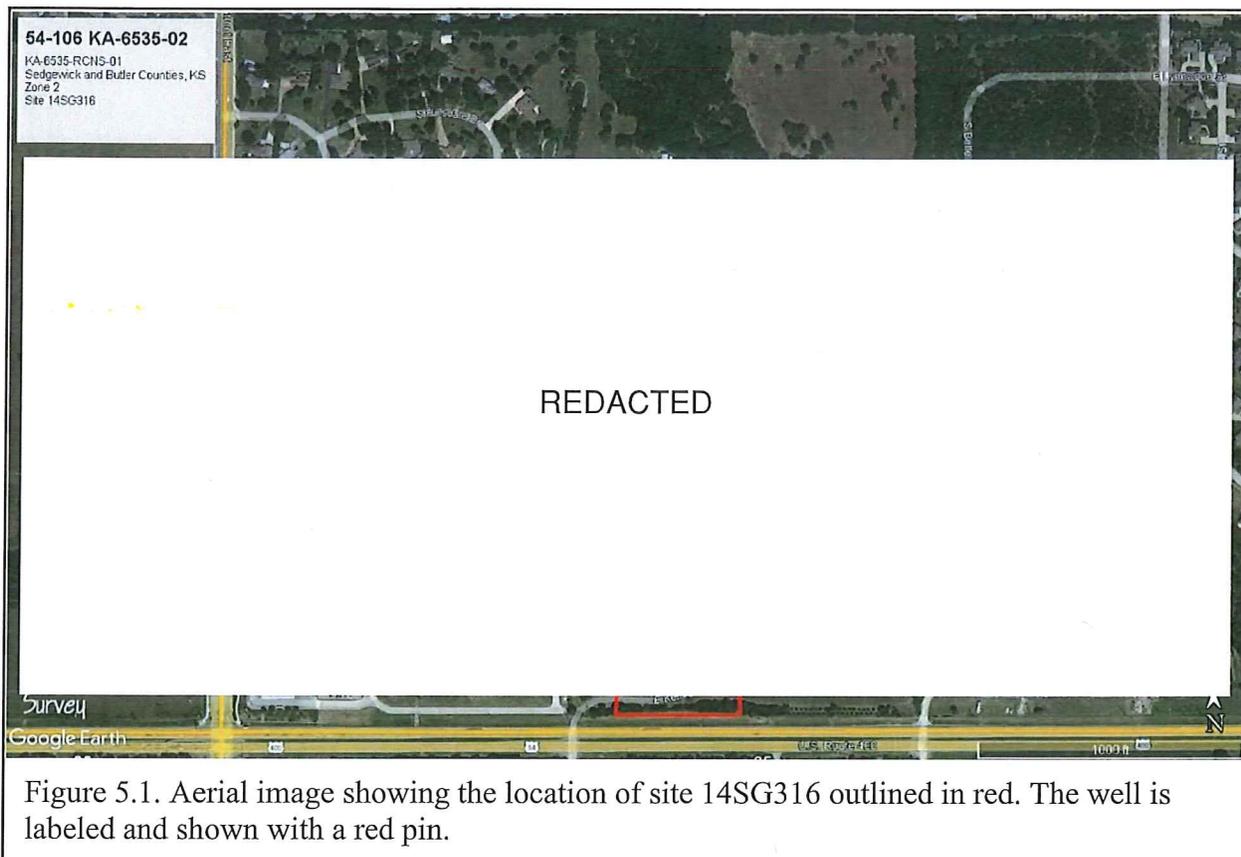


Figure 5.1. Aerial image showing the location of site 14SG316 outlined in red. The well is labeled and shown with a red pin.

landowner who uses it for watering the trees and lawn, the well has been modernized with spigots, electric pumps and electrical outlets (Figure 5.2). Underneath the sheet metal cover and wood siding, it is a plain concrete box.

The landowner mentioned that the property used to be a farmstead, and the house, now gone, was probably in the vicinity of the well and trees. Sedgwick County plat maps from 1882 and 1905 show structures in the general location of the site (Figure 5.3). However, no other materials were observed that could verify that they are one and the same. The site is well outside of the proposed construction limits and would not be adversely affected by the Project. In the author's opinion, the site lacks integrity and offers too little data to be eligible for NRHP nomination.

The small tract north of US-54/400 east of N 159th Street E (Figure 5) is in the lot where a fireworks stand and activities center is located. A northwest to southeast trending hedge row is east of the surveyed tract. Ground conditions were conducive to pedestrian survey as the area was covered in sparse short grass with 60% GSV. No cultural materials were observed.

The longer tract south of US-54 east of S 159th Street E (Figure 5) was a well-established dirt and gravel path extending from N Haney Court through a small north-south trending drainage and connects to W Clyde Street. The area consists of landscaped yards and a 150m (490ft)

Survey Results and Findings

For the purposes of description and clarification in this report, the surveyed areas are described as belonging to one of three zones (Figures 4-6). Zone 1 consists of surveyed areas between S 127th Street E and S 143rd Street E (Figure 4). Zone 2 consists of surveyed areas between S 143rd Street E and S Andover Road (Figure 5). Zone 3 consists of surveyed areas between S Andover Road and S Prairie Drive (Figure 6).

Zone 1

Survey began on the west side of K-96, north of the Kansas Turnpike/K-96 intersection (Figure 4). The tract immediately west of K-96 was disturbed by a ditch, an east-west trending drainage, and the highway embankment (Figure 4.1). GSV was 40% or better, and was pedestrian surveyed. The only materials found were modern trash such as plastics, glass bottles, and some metal fragments.

The tract to the west was partially disturbed at the north end and was pedestrian surveyed until the tree line. Within the trees, GSV was roughly 10% and was shovel tested on a single transect at 30m (98ft) intervals. Shovel tests revealed compacted, blocky, and friable clayey soils with mixed gravel indicating that this area had been disturbed. A single shovel test in the tract east of K-96 near the turnpike intersection showed similar, disturbed soil. Obvious disturbances included the highway embankment, a rock lined drainage, ditch, and a graded/leveled landform to the east (Figure 4.2).

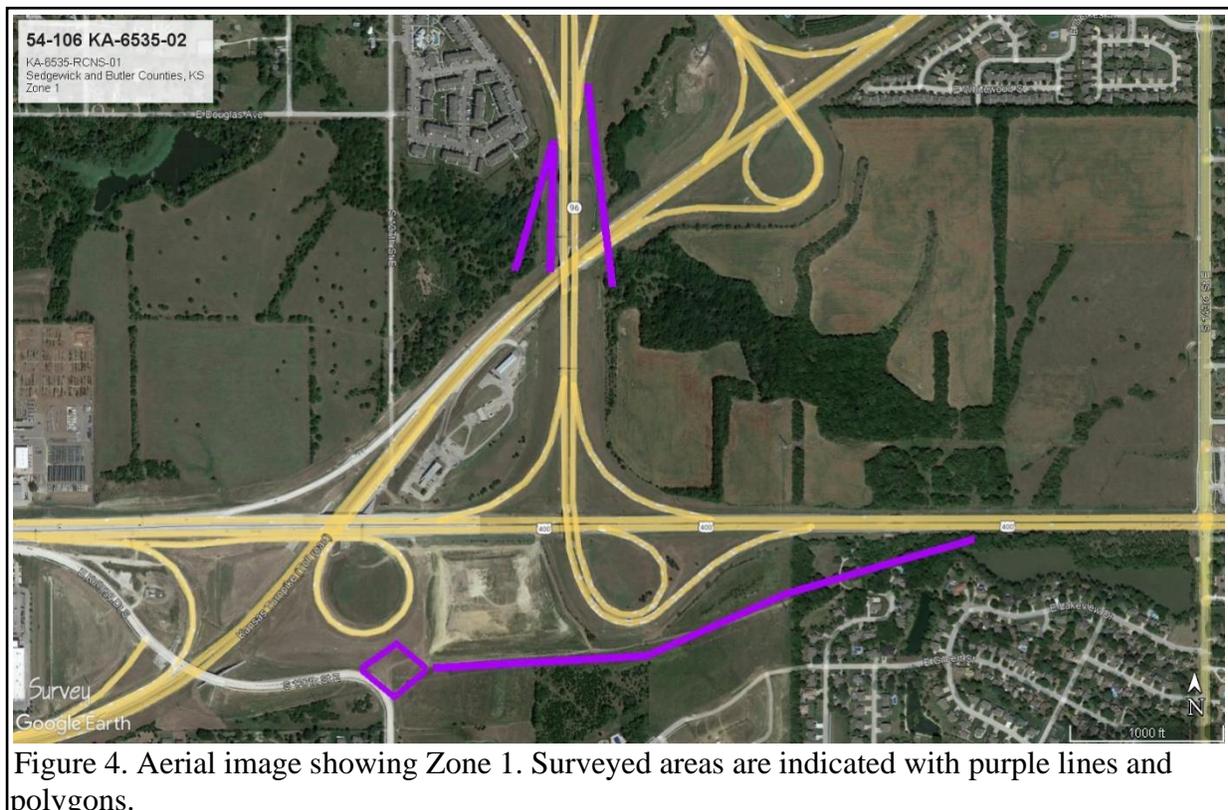




Figure 4.1. Image showing disturbances on the west side of K-96, facing south.

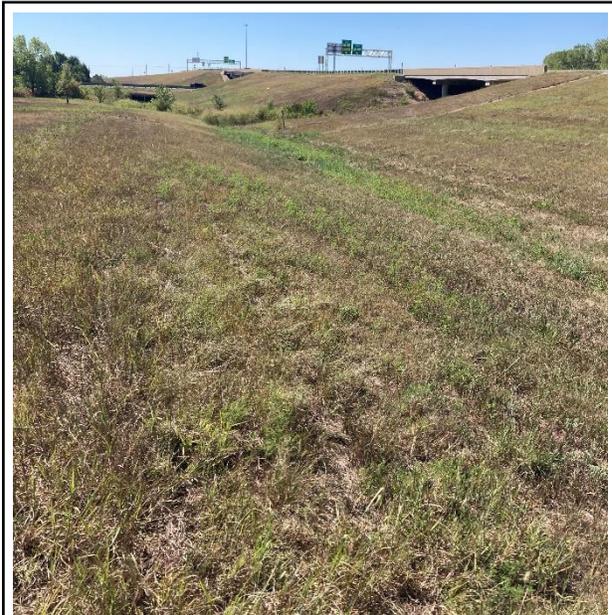


Figure 4.2. Image showing disturbances on the east side of K-96, facing south.

The tract south of US-54/400 that extends east off S 127th Street E (Figure 4) contained ground surface conditions conducive to pedestrian survey with 50% GSV on average. The area was largely disturbed by embankments on the north side, an access road, and high voltage overhead powerlines and poles on the south side (Figure 4.3). Asphalt and gravel were commonly seen on the surface. One sherd of glazed whiteware was found on the surface (Figure 4.4). Further to the east and just east of the quarter section line marked by a hedgerow, a handpump, cinder blocks, bricks, fencing materials, shingles, and a large oval-shaped sewer were found (Figures 4.4 and 4.5). Except for the hand pump and sewer which were fixed in the ground, the other materials were spread out over an area approximately 50m (164ft) in diameter. None of these materials contained maker's marks, or any other diagnostic information, and appeared to be fairly modern. The location of these items does not correspond to the location of any structures on the 1882 or 1905 county atlas plat maps.

No significant cultural materials were found in Zone 1.

Zone 2

Zone 2 consists of three survey tracts between S 143rd Street east and Andover Road (Figure 5) Site 14SG316 is located in the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 24 Township 27 South Range 2 East (Figure 5.1). The site consists of a well surrounded by trees on private property. The area was covered in short grass with 40% GSV and was pedestrian surveyed. The well was located, photographed, and its UTM coordinates were recorded. Still in use by the current



Figure 4.3. Image showing disturbances on the tract south of US-54/400 in Zone 1.

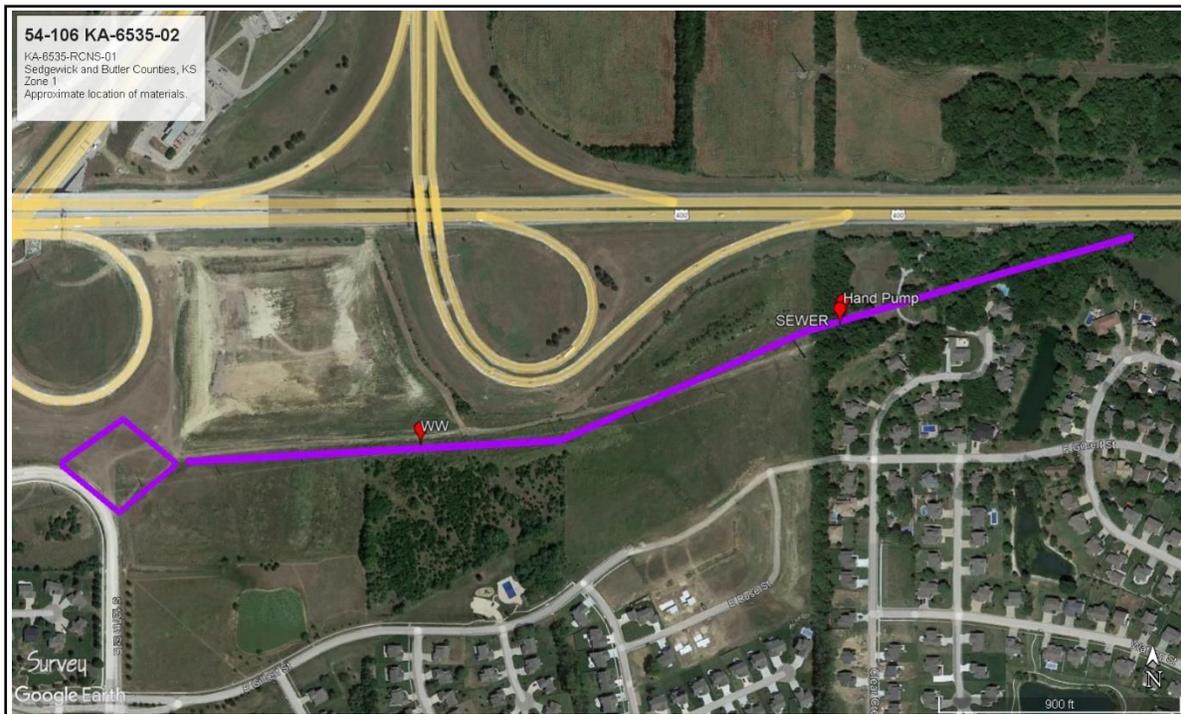


Figure 4.4. Aerial image showing the approximate location of the materials found in Zone 1 marked with red pins. The survey tract is marked in purple.



Figure 4.5. Two images showing a concrete, oval-shaped sewer (left), and a hand pump (right). Shovel is shown for scale.

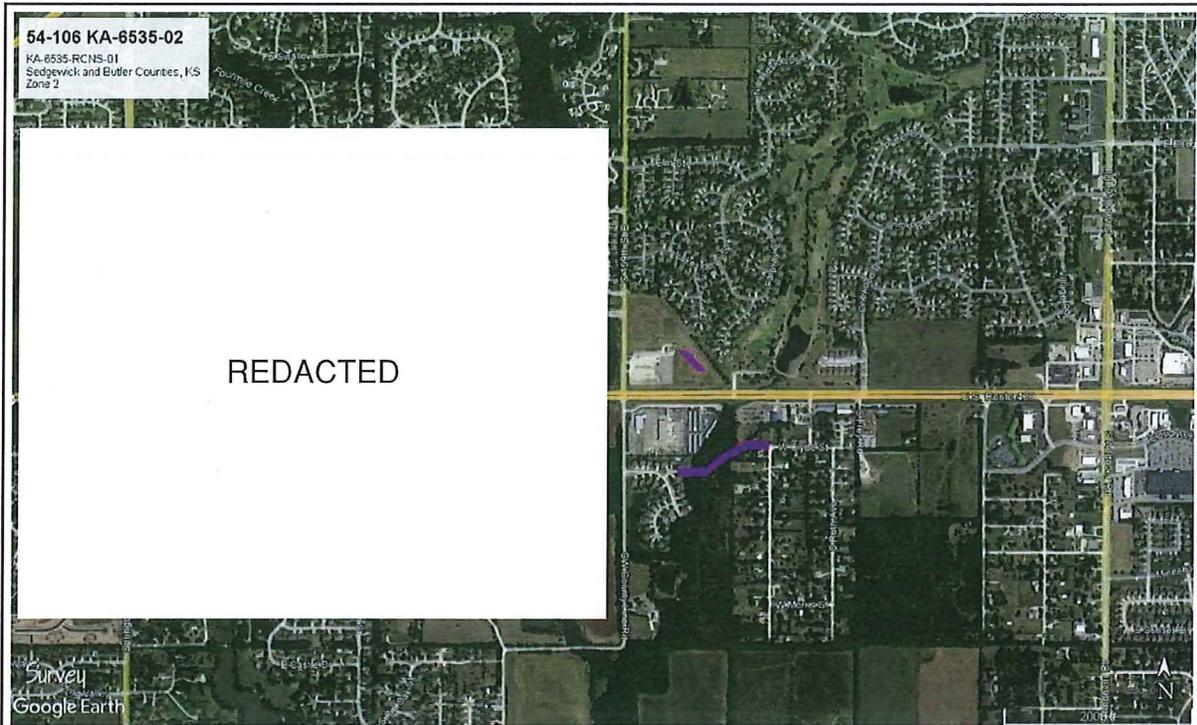


Figure 5. Aerial image showing Zone 2. Surveyed areas are shown in purple. Site 14SG316 is outlined in red.

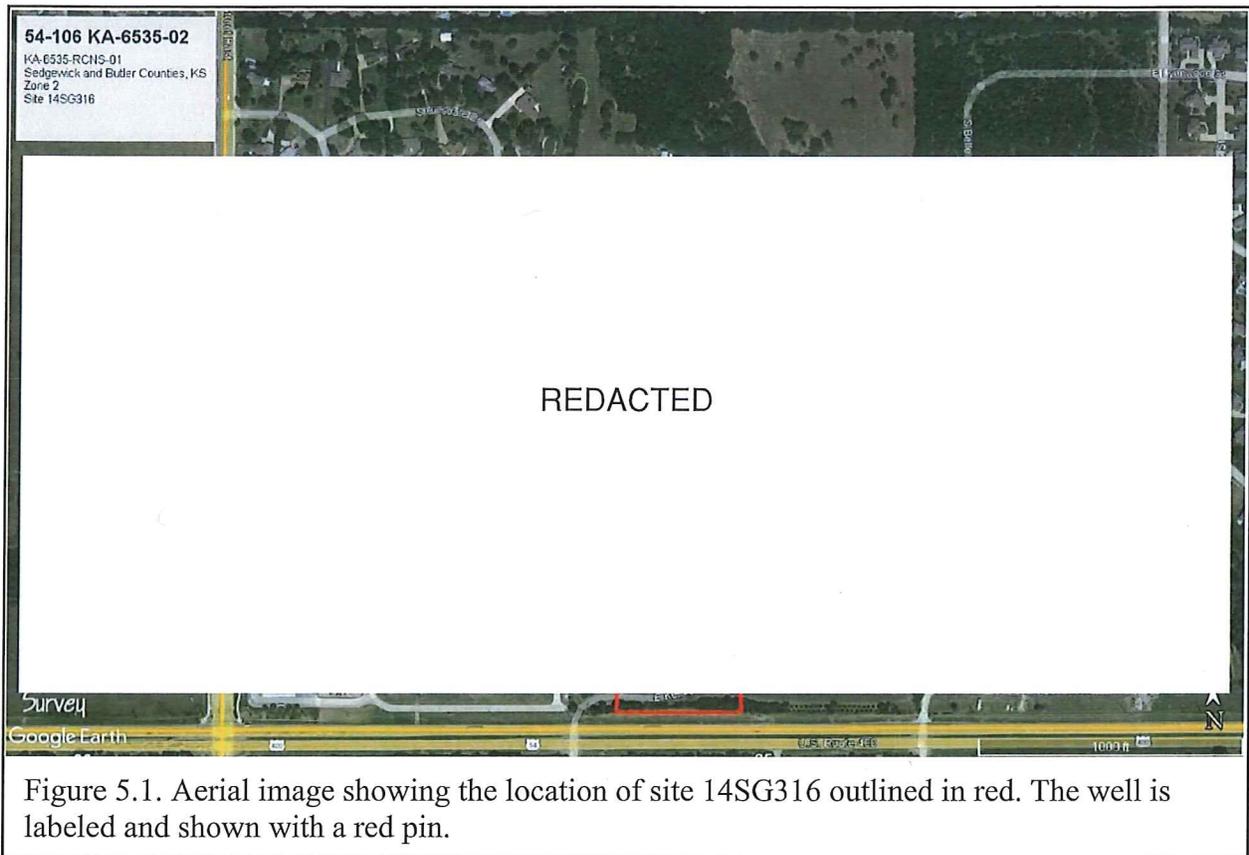


Figure 5.1. Aerial image showing the location of site 14SG316 outlined in red. The well is labeled and shown with a red pin.

landowner who uses it for watering the trees and lawn, the well has been modernized with spigots, electric pumps and electrical outlets (Figure 5.2). Underneath the sheet metal cover and wood siding, it is a plain concrete box.

The landowner mentioned that the property used to be a farmstead, and the house, now gone, was probably in the vicinity of the well and trees. Sedgewick County plat maps from 1882 and 1905 show structures in the general location of the site (Figure 5.3). However, no other materials were observed that could verify that they are one and the same. The site is well outside of the proposed construction limits and would not be adversely affected by the Project. In the author's opinion, the site lacks integrity and offers too little data to be eligible for NRHP nomination.

The small tract north of US-54/400 east of N 159th Street E (Figure 5) is in the lot where a fireworks stand and activities center is located. A northwest to southeast trending hedge row is east of the surveyed tract. Ground conditions were conducive to pedestrian survey as the area was covered in sparse short grass with 60% GSV. No cultural materials were observed.

The longer tract south of US-54 east of S 159th Street E (Figure 5) was a well-established dirt and gravel path extending from N Haney Court through a small north-south trending drainage and connects to W Clyde Street. The area consists of landscaped yards and a 150m (490ft)



Figure 5.2. Image showing the well associated with site 14SG316, facing east.

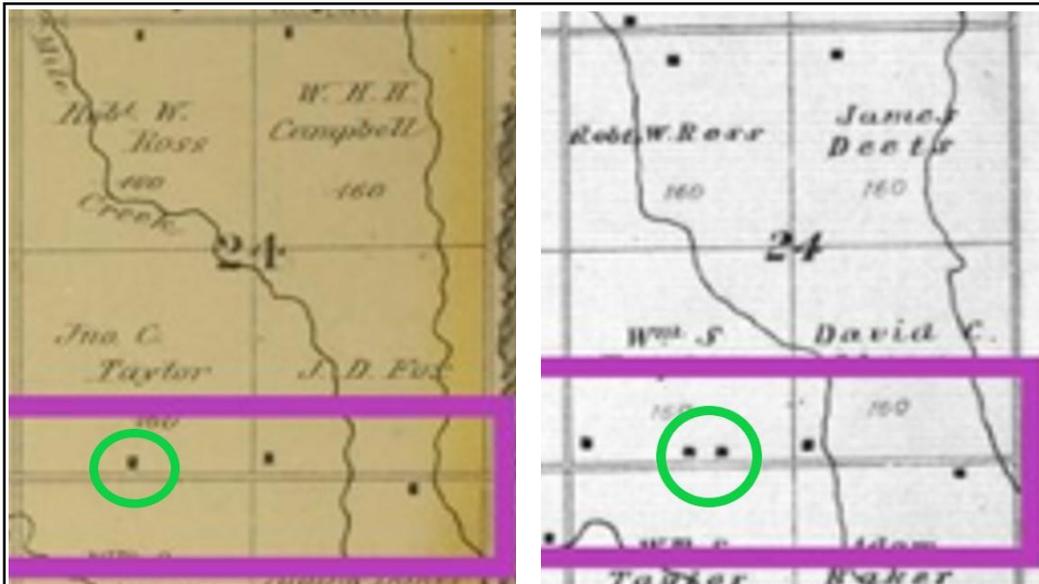


Figure 5.3. Two Sedgwick County plat maps from 1882 (left) and 1905 (right) showing structures in the vicinity of 14SG316 circled in green. The Project area is outlined in purple. T27S R2E

forested area around the drainage. The dirt/gravel path matched the survey tract exactly and contained 100% GSV (Figure 5.4). This tract was pedestrian surveyed. The path was not level or mechanically graded and small rises and falls in elevation were noted along the way. Two recently made campfires were found in this area, as local residents probably use this wooded area for recreation.



Figure 5.4. Image showing the dirt and gravel road.

Other than the well at site 14SG316 described above, no significant cultural materials were found in Zone 2.

Zone 3

Zone 3 contains eight survey tracts between Andover Road and South Prairie Drive (Figure 6). Immediately east of Andover Road there are two tracts: one just north of US-54/400, and another just south of US-54/400. Both tracts were obviously disturbed and contained highway embankment, ditch, overhead powerlines and poles, buried utility lines, a pond, and commercial landscaping (Figure 6.1) These tracts were pedestrian surveyed. No cultural materials were observed.

Another tract in this area is north of US-54/400 in the approximate center between Andover Road and Yorktown Road (Figure 6). This tract was in a field that appeared to consist of recently dumped soil, was mechanically raked, and leveled and covered with loose hay. (Figure 6.2). The soil was tan and mixed with gravel. GSV was 70% on average. Approximately 50m (164ft)

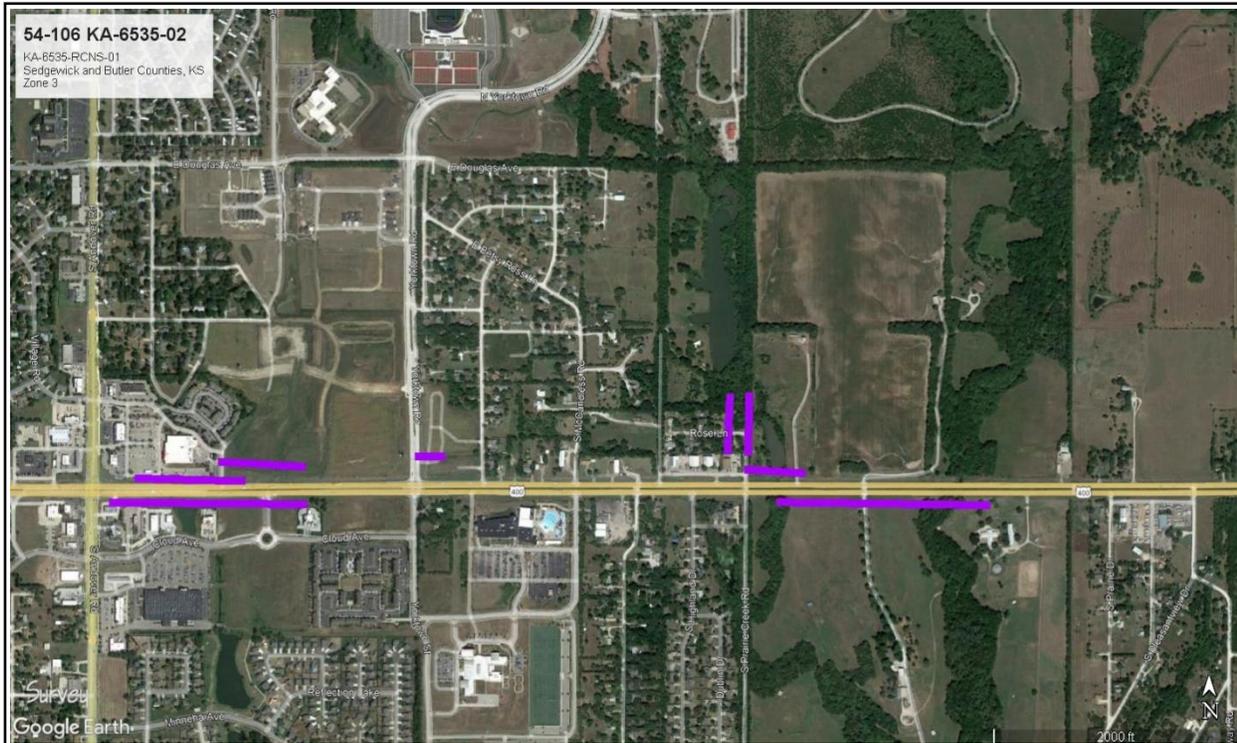


Figure 6. Aerial image showing Zone 3. Survey tracts are indicated with purple lines.



Figure 6.1. Four images showing embankment, ditch, pond, power line poles (bottom right) and buried utilities (indicated with yellow and orange pin flags, top and bottom left).

north of the survey tract was a recently made pond (Figure 6.2). No cultural materials were found in this tract.

The small tract north of US-54/400 immediately east of Yorktown Road (Figure 6) was in a milo field with 80% GSV (Figure 6.3). Five small shards of thin, flat, aqua glass were found spread out across the field with no apparent patten or clustering. No significant cultural materials were found in this tract.



Figure 6.2. Two images showing a field (left) and a recently made pond (right).



Figure 6.3. Image showing a milo field.

The tract north of US-54/400 immediately west of S Prairie Creek Road was a vacant lot that contained a gravel driveway. The area was covered in short grass with 50% GSV. This tract was pedestrian surveyed. A diffuse scatter of domestic and construction materials was found consisting of thick, curved, green bottle glass, two sherds of glazed whiteware, brick, brick spalls, construction tile fragments, asphalt, chunks of concrete, shingle fragments, one shard of flat, thin aqua glass, and a piece of black rubber. To the east of the scatter is a small bridge oriented east-west over a small wide drainage. Figure 6.4 illustrates the approximate locations of the driveway, scatter, and bridge.

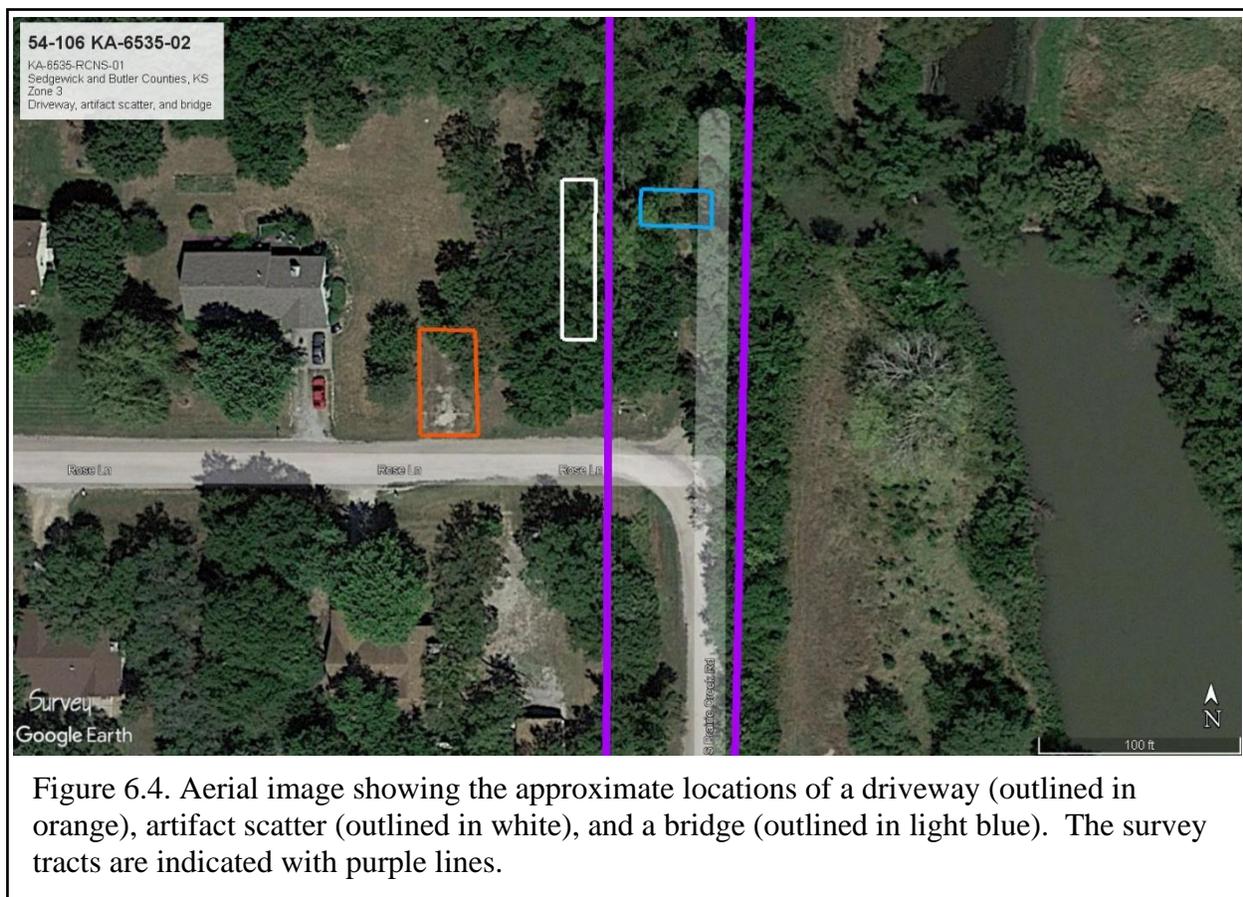


Figure 6.4. Aerial image showing the approximate locations of a driveway (outlined in orange), artifact scatter (outlined in white), and a bridge (outlined in light blue). The survey tracts are indicated with purple lines.

North of US-54/400 and east of S Prairie Creek Road are two tracts: one heading north-south, and the other heading east-west (Figure 6). The former tract consisted of a thick hedge row along the road and short grass on the east. GSV was ~50% and was pedestrian surveyed. The latter tract was also covered in short grass with ~60% GSV. This tract was pedestrian surveyed. A diffuse scatter of glazed whiteware with colored motifs, cobalt glass, limestone blocks, bricks and miscellaneous building materials were found (Figures 6.5 and 6.6). Most of the building materials appeared to have been pushed into piles in the hedgerow.

The plat maps from 1882 and 1905 show structures in the vicinity of the two historic period artifact scatters previously mentioned (Figure 6.7). However, none of the cultural materials found contained diagnostic information that could verify if they are one and the same.

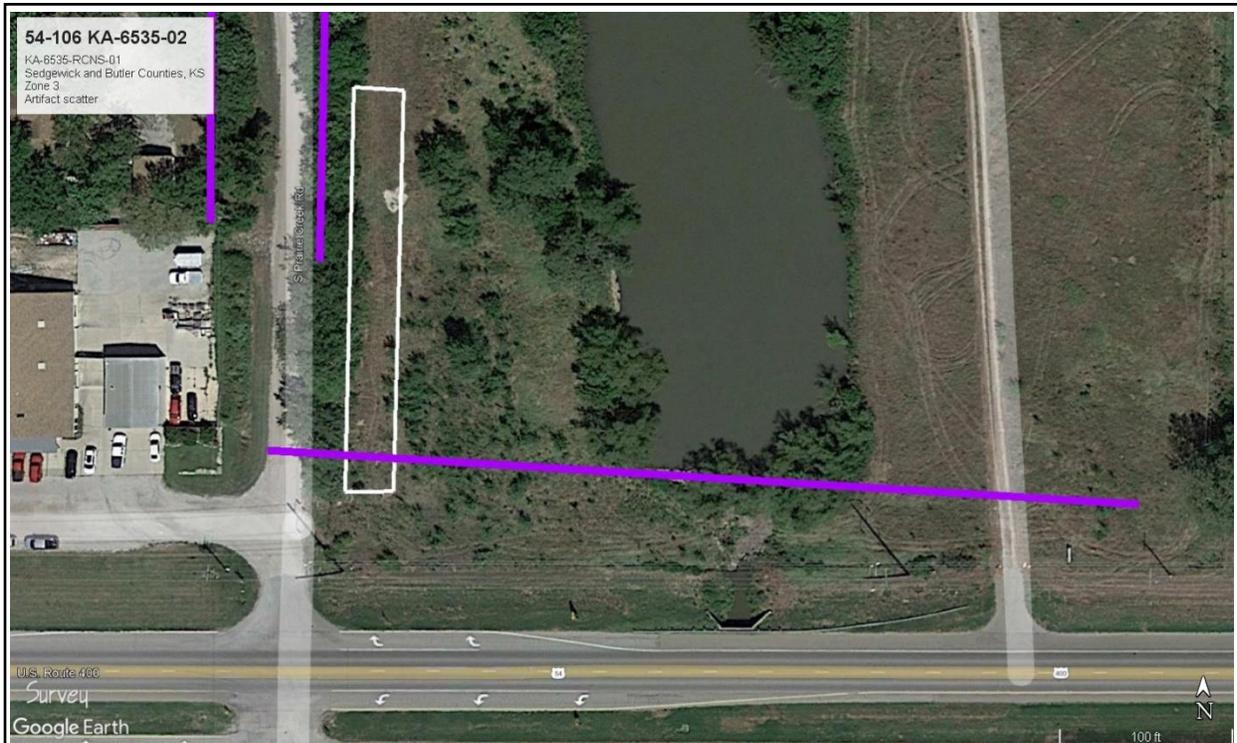
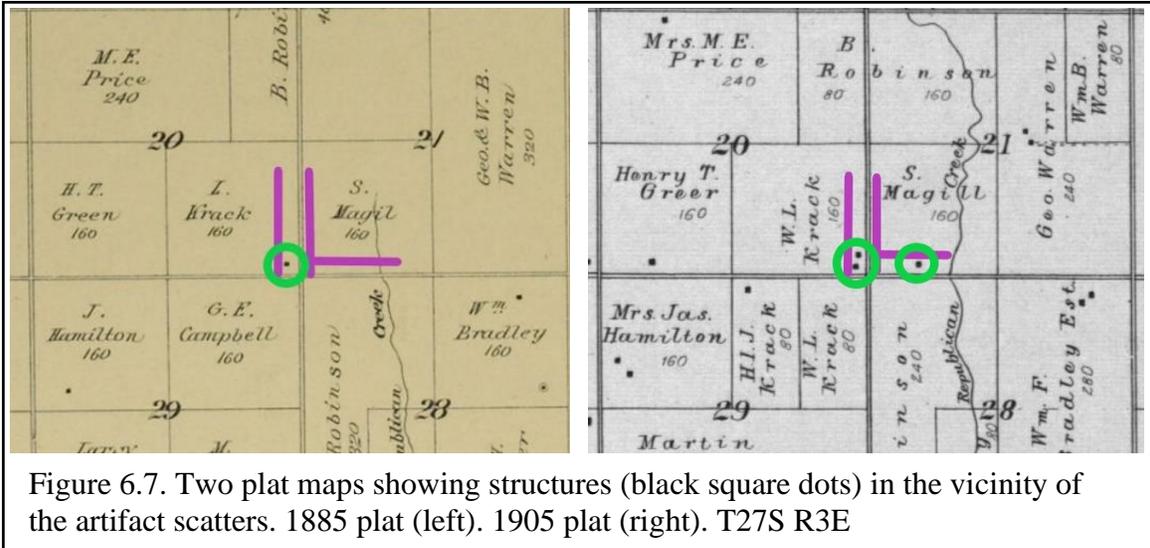


Figure 6.5. Aerial image showing the approximate location of the artifact scatter outlined in white. Survey tracts are indicated with purple lines.



Figure 6.6. Images showing glazed whiteware with colored motifs (left and center-left), cobalt glass (center-right) and miscellaneous building materials (right).



The long tract south of US-54/400 between S Prairie Creek Road and S Prairie Creek Drive (Figure 6) is primarily pasture for horses. The landform was high in the middle and sloped evenly towards drainages on the east and west ends (Figure 6.8). The drainage on the east end is Republican Creek. The pasture was pedestrian surveyed as the survey tract was in recently mowed short grass with 40% GSV. No cultural materials were found in the pasture.



Figure 6.8. Image showing the western portion of the pasture (left). Image showing the east side of the pasture (center). Image showing GSV (right).

The western drainage was dry and had roughly 1m (3.3ft) high cutbanks. The cutbanks and bottom was inspected for cultural materials that may have become exposed due to erosion. None were found. The eastern drainage, Republican Creek, had shallow standing water in some parts and the bottom was sometimes exposed. To the south, there was a 2-3m high cutbank providing a geological profile (Figure 6.9). Other than modern garbage, no cultural materials were found.



Figure 6.9. Image showing a cut bank of Republican Creek.

No significant cultural materials were found in Zone 3.

Summary

In total, this Phase II survey included 7.3ha (18ac) of land in which a combination of pedestrian survey and shovel testing were used. Site 14SG316 was located, described, and determined ineligible for NRHP nomination. No significant cultural resources were found within the surveyed area. In terms of 36 CFR 800.4, the investigation produced a finding of “no historic properties affected.”

Recommendations

Based on the extensive survey and the lack of cultural materials, we recommend that the proposed project proceed as planned, with no additional investigations unless archeological discoveries are made during the course of the project. We request the concurrence of the State Historic Preservation Office with this recommendation.

Due to the nature of archeological manifestations, it is always possible that buried cultural deposits could be encountered that were not detected during the Phase II investigation. If that occurs, construction must stop within five meters of the find spot and the Kansas State Historic Preservation Office must be notified.

REFERENCES CITED

- Brown, Kenneth L. and Alan H. Simmons, editors
1987 Kansas Prehistoric Archeological Preservation Plan. Unpublished report prepared for the Historic Preservation Department, Kansas State Historical Society, by the Office of Archeological Research, Museum of Anthropology, University of Kansas, Lawrence. Manuscript on file, Kansas Historical Society, Topeka.
- Gottsfeld, A. and Brandy Harris
2022 Phase I Cultural Resources Desktop Review for Kansas Department of Transportation US 54/East Kellogg Expansion Project in Sedgwick and Butler Counties, Kansas KA-6535-02
- Hoard, Robert J. and William E. Banks
2006 Kansas Archaeology. University Press of Kansas, Lawrence and Kansas State Historical Society, Topeka.
- Kuchler, A. W.
1974 A New Vegetation Map of Kansas. *Ecology* 55(3):586-604.
- Lees, William B.
1989 Kansas Preservation Plan, Section on Historical Archeology. Unpublished report prepared for the Historic Preservation Department, Kansas State Historical Society, by the Archeology Department, Kansas State Historical Society. Manuscript on file, Kansas Historical Society, Topeka.
- Schoewe, W. E.
1949 The Geography of Kansas, Part II, Physical Geography. *Transactions of the Kansas Academy of Science* 52(3): 261-333.
- The Living New Deal
2022 The Living New Deal. Accessed online at [https://livingnewdeal.org/glossary/civilian-conservation-corps-ccc-1933/\(9/16/22\)](https://livingnewdeal.org/glossary/civilian-conservation-corps-ccc-1933/(9/16/22)).
- Thies, Randall M.
1987 Kansas Culture History. In *Amateur Archeological Handbook for Kansas*, Kansas Anthropological Association Journal 7(1-9):35-51.
- United States Department of Agriculture
2022 Natural Resources Conservation Service, Soil Survey. Accessed online at <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> (8/12/22)
- United States Geological Survey
2022 7.5 minute Topographic Map, Andover and Santa Fe Lake Quadrangles. Accessed online at <https://maps.kgs.ku.edu/kshs/ims/viewer/kshs.cfm> (9/22/22).
- Waggoner, Tricia:
2010 Archeological Survey of KDOT Project 54-87 KA-1163-01 and 54-87 KA-1164-01, Sedgwick County, Kansas. Submitted to KDOT. Manuscript on file, Kansas Historical Society, Topeka.

Wedel, Waldo R.
1959 An Introduction to Kansas Archeology. Smithsonian Institution, Bureau of American Ethnology,
Bulletin 174.

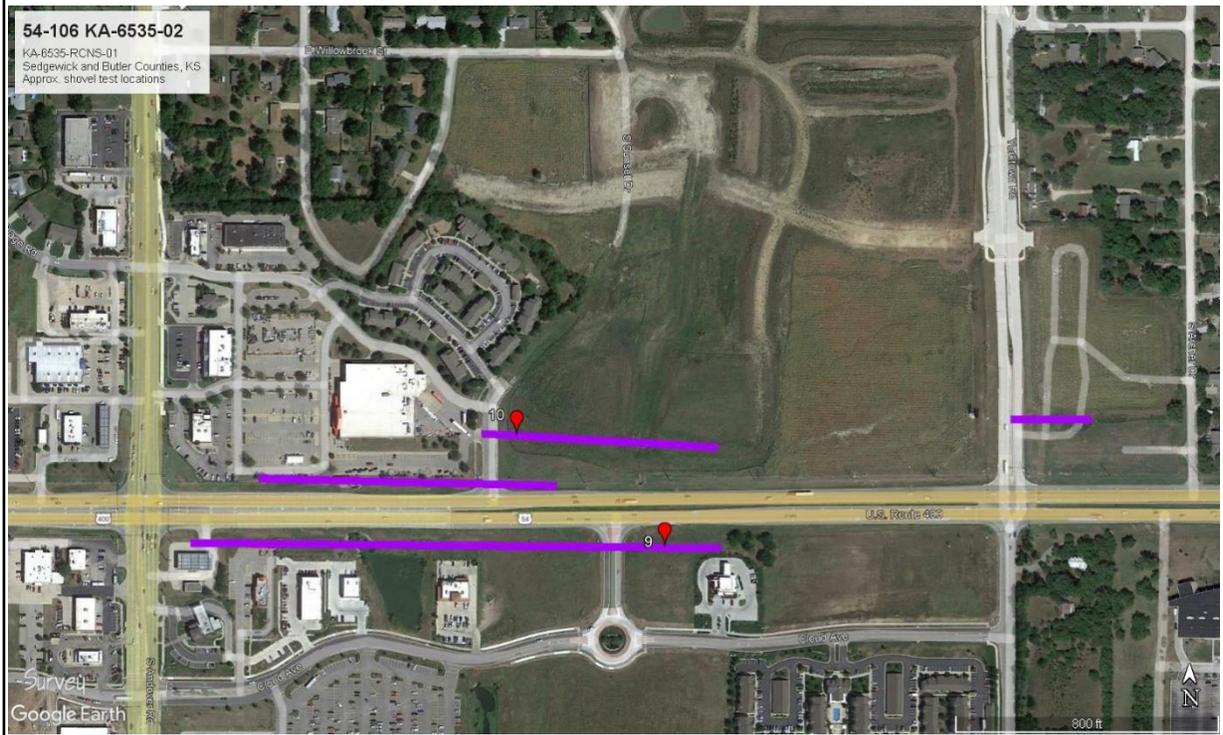
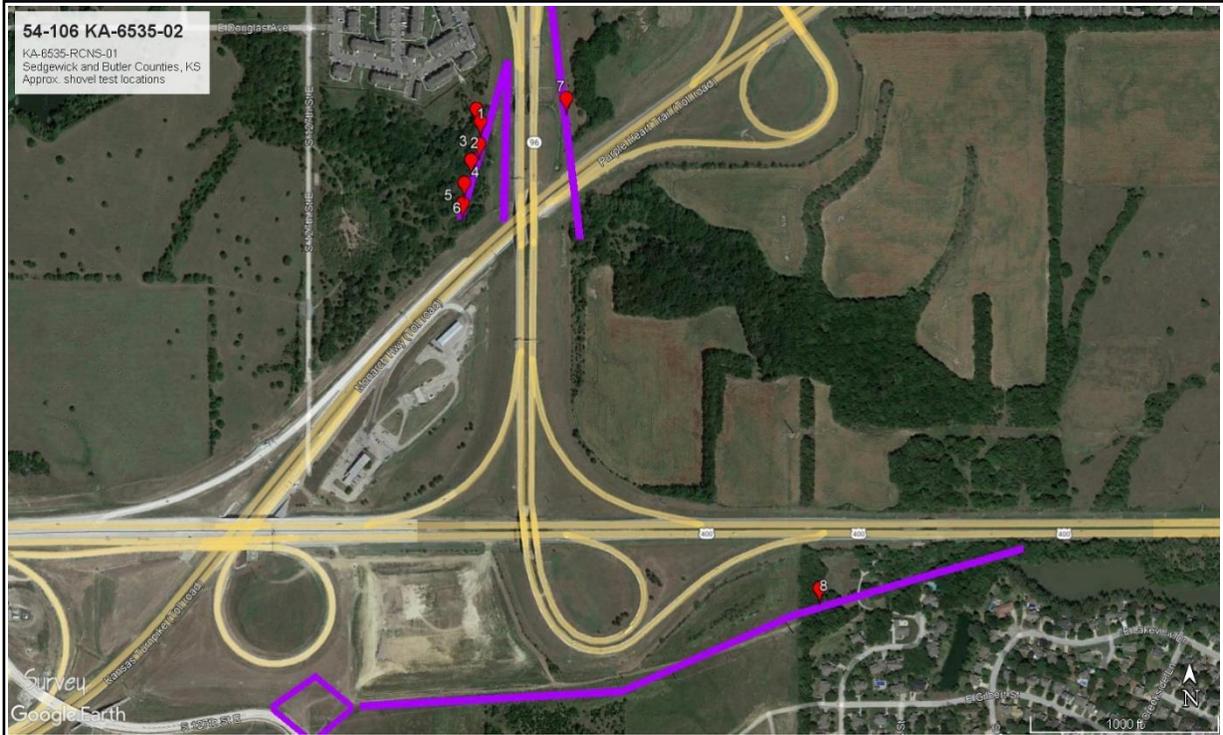


Figure 7. Two aerial images showing the approximate locations of shovel tests.

Shovel Test Log

1	Zone: 14S	N: 4172437	E: 659908
0-30cmbs: gray-brown silty clay loam with white pebbles			
2	Zone: 14S	N: 4172417	E: 659915
0-25cmbs: gray-brown silty clay loam with white pebbles @25cmbs: impassable roots			
3	Zone: 14S	N: 4172381	E: 659914
0-35cmbs: gray-brown silty clay loam with white pebbles			
4	Zone: 14S	N: 4172355	E: 659901
0-20cmbs: gray-brown silty clay loam with angular gravel			
5	Zone: 14S	N: 4172318	E: 659891
0-30cmbs: dark gray clayey loam, blocky and friable			
6	Zone: 14S	N: 4172285	E: 659889
0-30cmbs: dark gray clayey loam, blocky and friable			
7	Zone: 14S	N: 4172457	E: 660053
0-30cmbs: dark gray clayey loam, blocky and friable			
8	Zone: 14S	N: 4171678	E: 660477
0-30cmbs: dark gray clayey loam, blocky and friable			
9	Zone: 14S	N: 4171865	E: 664914
0-30cmbs: multi-colored clayey loam, blocky and friable. Mixed angular gravel.			
10	Zone: 14S	N: 4171965	E: 664775
0-10cmbs: light tan silty clay loam, gravel @10cmbs: gravel			