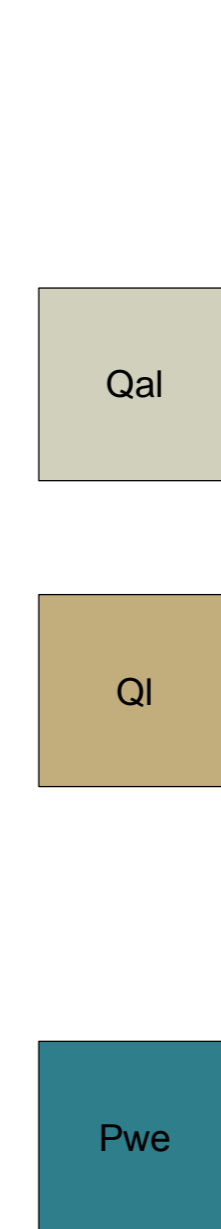
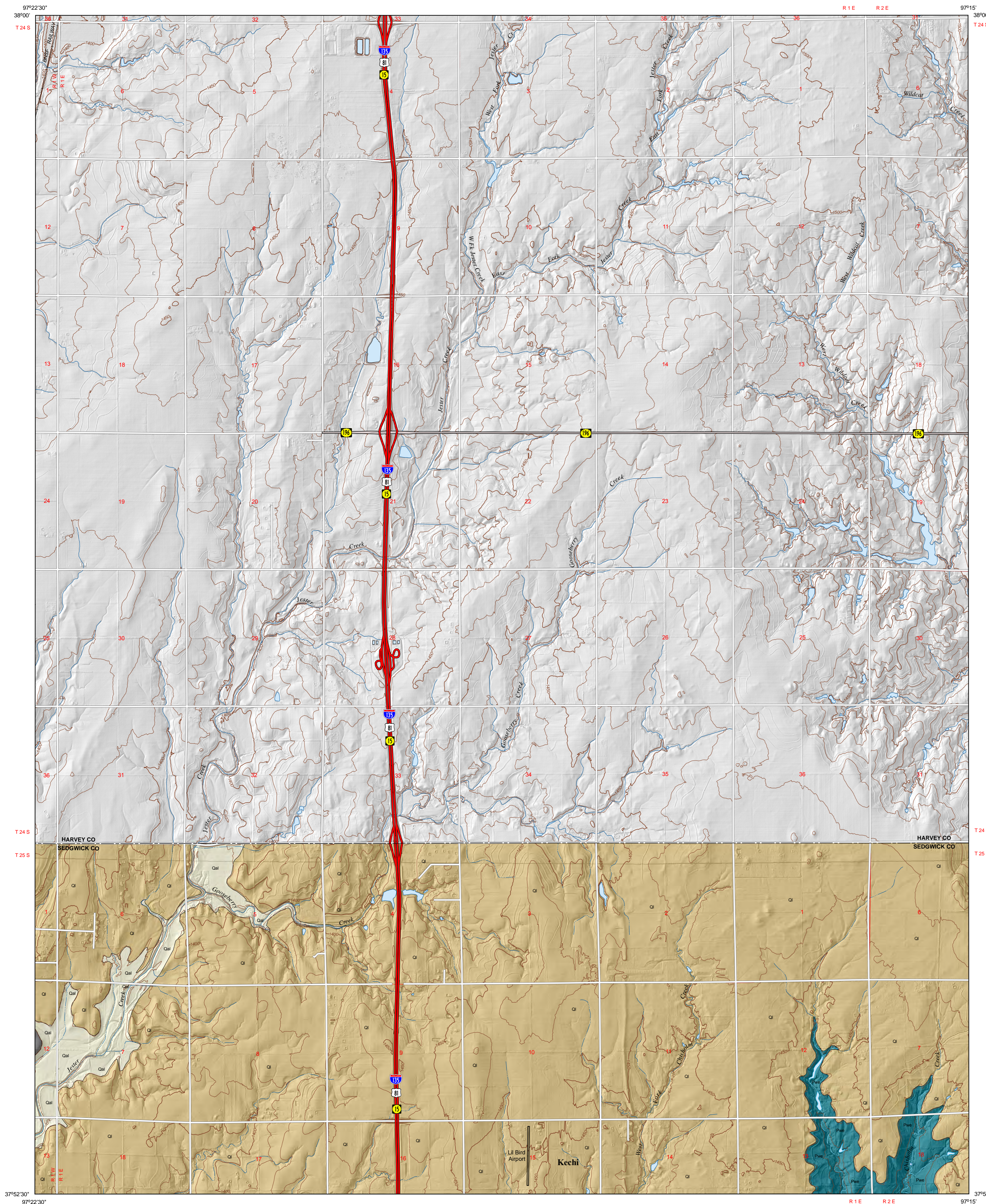


PRELIMINARY SURFICIAL GEOLOGY OF THE SEDGWICK COUNTY PORTION OF THE SEDGWICK NE QUADRANGLE, KANSAS

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2017

Open-File Report 2017-28

Funded in part by the
USGS National Cooperative
Geologic Mapping Program



GEOLOGIC UNITS
CENOZOIC
Quaternary System
Pleistocene-Holocene

Alluvium — Alluvium in Sedgwick County is fine to coarse sand and fine to coarse arkosic gravel containing minor amounts of silt and clay that grades upward into clayey silt. Alluvium from the Arkansas River is composed of unconsolidated gravel, sand, and silt and has an estimated thickness of 75 feet (Williams and Lohman, 1949). Pleistocene-age alluvium is present to a depth of nearly 50 feet and Pleistocene to possibly Pliocene to a depth of more than 180 feet (Lane and Miller, 1965). Alluvium of Quaternary age lines the floodplain of the Little Arkansas River with limited extension up smaller creeks. In certain areas, alluvium may form low terraces of 10-20 feet above the floodplain (Aber, 1991). Alluvium found in smaller creeks is composed of finer sediments and is variable in lithology (Moore, Jewett, and O'Connor, 1951). Its source is the shales and carbonates in the Permian Wellington Formation and Pleistocene loess.

Loess — Wind-blown loess deposits in Sedgwick County are tan to pink-tan calcareous silt with zones of caliche and fine sand (Bevans, 1989). The loess ranges from Pleistocene to Holocene in age. Loess covers many of the upland surfaces in Sedgwick County (Welch and Hale, 1987) and rests unconformably on the Permian Wellington Formation and stratigraphically below thick (>5ft) soils.

PALEOZOIC

Wellington Formation — The Wellington Formation in Sedgwick County is predominantly soft, calcareous, gray and blue-gray shale with thin beds of gypsum, argillaceous limestone, and minor siltstone (Ver Wiebe, 1937). In northeastern Sedgwick County, minor beds of gypsum crop out where the Wellington is exposed along streams or lakes. The thick Hutchinson Salt Member, present in western Sedgwick County (Bass, 1929), is missing in the eastern portion of the county due to dissolution (Schumaker, 1966). Thin beds of the Carlton Limestone Member, a lenticular, dolomitic limestone with fossil insects, crops out in the eastern portion of the mapping area (Williams and Lohman, 1949). The uppermost member of the Wellington, the Milan limestone, is not present in central Kansas. The contact between the Wellington Formation and overlying Ninnescah Shale is placed where the shale changes color from gray to brick red (Zeller, 1968). The Wellington Formation in the western Kansas subsurface can be up to 700 feet thick, but in south-central Kansas, the exposed formation is 150 to 200 feet thick (Williams and Lohman, 1949). Outcrops of Wellington closely follow drainage system patterns where streams have cut through loess deposits to expose the underlying bedrock. In non-drainage areas, the Wellington is overlain by either Quaternary alluvium deposits or Pleistocene loess.

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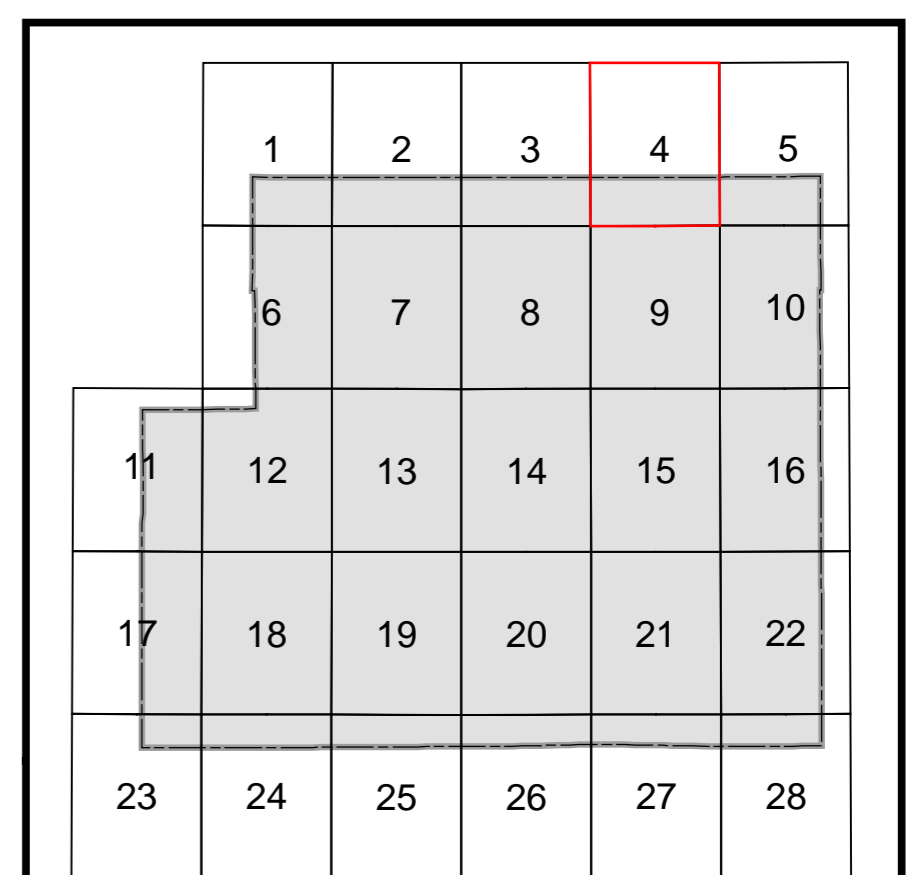
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EXPLANATION

- Boundaries and Locations**
- County boundary
 - Township/range line
 - Section line
- Transportation**
- Interstate, U.S., and state highway
 - State highway
 - Local road
 - Railroad
 - Airport runway
- Hydrology and Topography**
- Perennial stream
 - Intermittent stream
 - Water body
 - Water body (manmade shoreline)
 - Elevation contour (50-foot interval)
 - Elevation contour (10-foot interval)
 - Depression contour (50-foot interval)
 - Depression contour (10-foot interval)
- Geologic Unit Boundaries**
- Observed contact



SEDGWICK COUNTY QUADRANGLES

1 Patterson	15 Wichita East
2 Bentley	16 Andover
3 Sedgwick	17 Cheney SE
4 Sedgwick NE	18 Lake Afton
5 Whitewater	19 Clearwater
6 Mount Hope	20 Bayneville
7 Colwich	21 Derby
8 Maize	22 Rose Hill
9 Valley Center	23 Norwich
10 Greenwich	24 Conway Springs
11 Cheney	25 Millerton
12 Garden Plain	26 Zyba
13 Goddard	27 Belle Plaine
14 Wichita West	28 Mulvane

Elevation contours are presented for general reference. Used in the U.S. Geological Survey's current US Topo 1:24,000-scale topographic map series, they were generated from hydrographically improved 1/3 arc-second National Elevation Dataset (NED) data and smoothed during processing for use at 1:24,000 scale. In some places, the contours may be more generalized than the base data used for compilation of geologic outcrop patterns. Outcrop patterns on the map will typically reflect topographic variation more accurately than the associated contour lines. Repeated fluctuation of an outcrop line across a contour line should be interpreted as an indication that the mapped rock unit is maintaining a relatively constant elevation along a generalized contour.

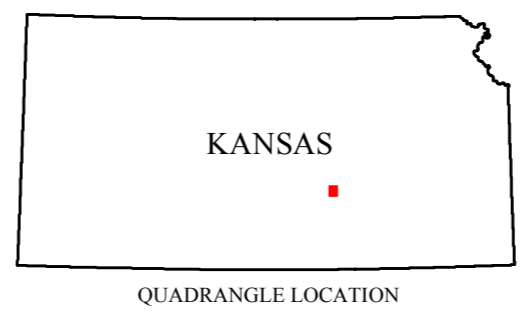
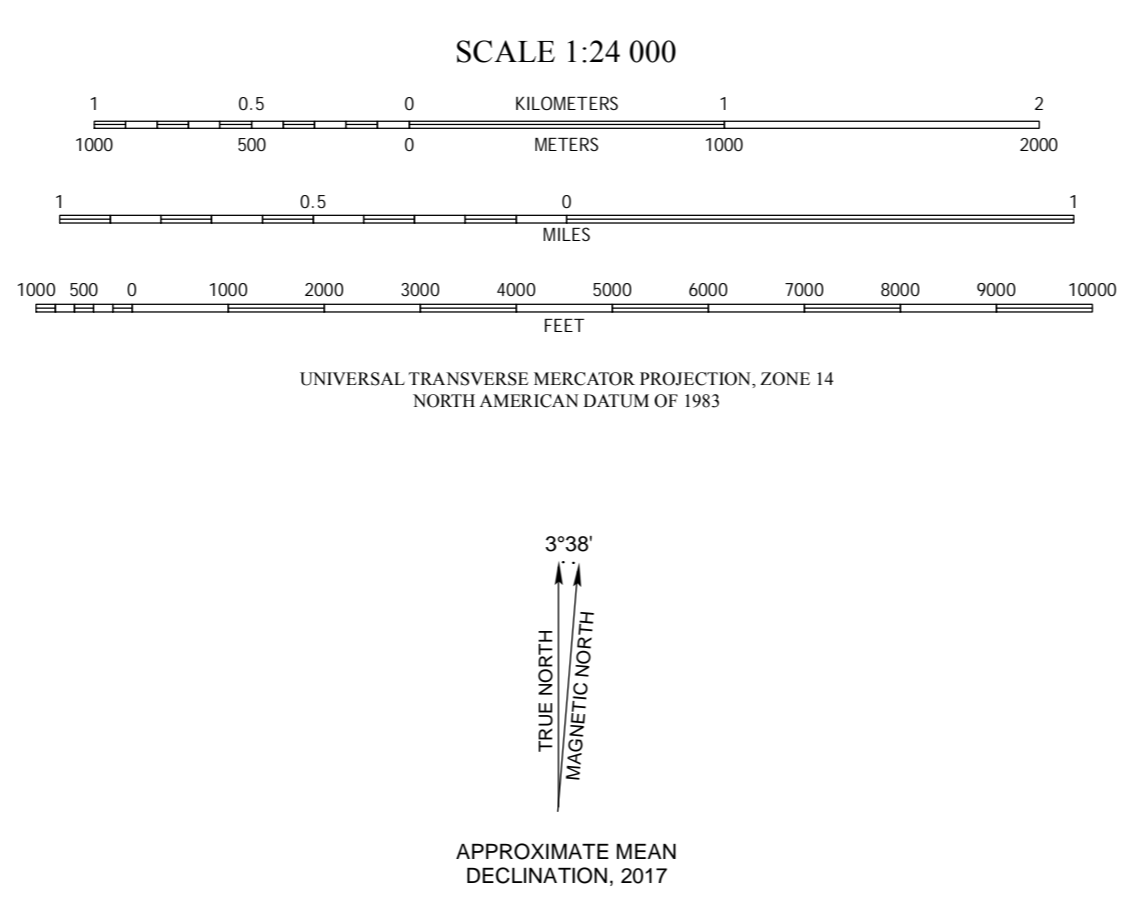
USGS National Elevation Dataset 1/3-arc-second 15 x 15 minute hillshade grids and 1-meter 2009 U.S. Department of Agriculture-Farm Services Agency (USDA-FSA) National Agriculture Imagery Program (NAIP) digital imagery were used as references in the digital mapping. USGS 7.5-minute 1:24,000-scale topographic maps, USDA-Natural Resources Conservation Service (NRCS) Web Soil Survey Geographic Database (SSURGO), and other geologic maps and bulletins were used to supplement the mapping. Roads and highways are shown on the base map as represented by data from the Kansas Department of Transportation (KDOT), U.S. Census Bureau, and other sources. U.S. Department of Agriculture-Farm Services Agency (USDA-FSA) National Agriculture Imagery Program (NAIP) imagery also was used to check road locations.

Shaded relief is based on 1-meter hydroflattened bare-earth DEMs from the City of Wichita-Sedgwick County LiDAR project. The original 1-meter DEM images, in ERDAS IMAGINE format, State Plane Kansas-South projection, North American Datum of 1983 (NAD 83), were resampled to 3-meter resolution, mosaicked into a single output DEM, which was reprojected to Universal Transverse Mercator (UTM) Zone 14. The output DEM was then converted to a hillshade, a multidirectional shaded-relief image using angles of illumination from 0°, 225°, 270°, and 315° azimuths, each 45° above the horizon, with a 4x vertical exaggeration.

This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program, award number G16AC00195 (FY2016).

This map was produced using the ArcGIS system developed by Esri (Environmental Systems Research Institute, Inc.).

This map is a preliminary product and has had less scientific and cartographic review than the Kansas Geological Survey's M-series geologic maps. KGS does not guarantee this map to be free from errors or inaccuracies and disclaims any responsibility or liability for interpretations made from the map or decisions based thereon.



SUGGESTED REFERENCE TO THE MAP
Parcell, W. C., Dinkel, G. L., Post, S. D., and Dunham, J. W., 2017, Preliminary surficial geology of the Sedgwick County portion of the Sedgwick NE quadrangle, Kansas: Kansas Geological Survey, Open-File Report 2017-28, scale 1:24,000, unpublished.