AASG Association of American State Geologists

KU Kansas Geological Survey, The University of Kansas

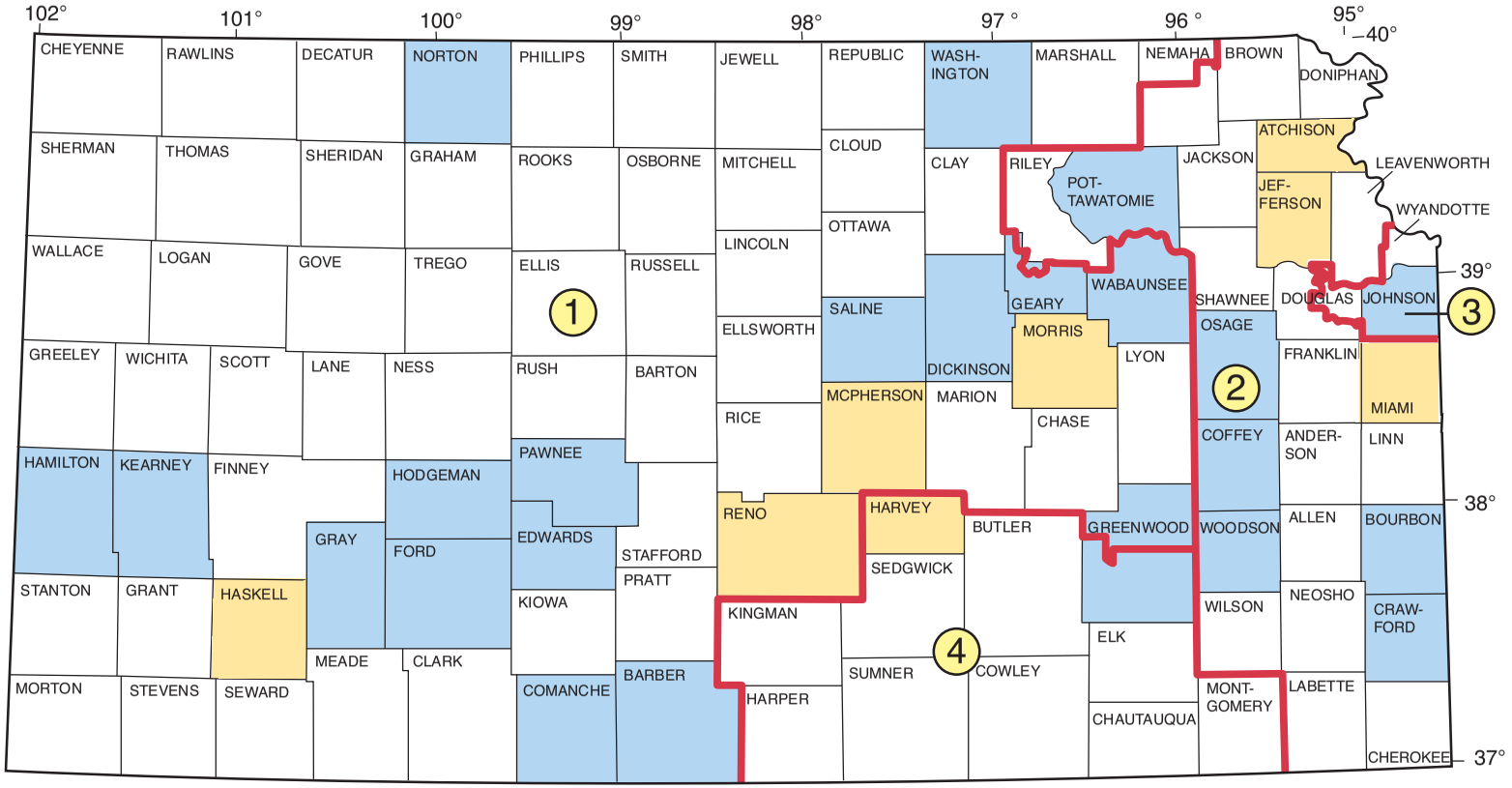
United States Geological Survey

USGS science for a changing world

National Cooperative Geologic Mapping Program

STATEMAP Component: States compete for federal matching funds for geologic mapping

KANSAS



STATEMAP Funding (FY1993 through FY2010)

1 Congressional Districts

Completed geologic mapping

Geologic mapping in progress

Map scale: 1:24,000

North

0 100 mi

0 100 km

Contact information

Kansas Geological Survey
Interim Director: Rex Buchanan (785/864-2106)
STATEMAP Contact: Greg Ludvigson (785/864-2734)
http://www.kgs.ku.edu/

U.S.G.S. Geologic Mapping Program Office
Program Coordinators: Peter T. Lyttle (703/648-6943)
Randall C. Orndorff (703/648-4316)
http://ncgmp.usgs.gov/

SUMMARY OF STATEMAP GEOLOGIC MAPPING PROGRAM IN KANSAS

Federal Fiscal Year	Project Title	State Dollars	Federal Dollars	Total Project Dollars
93	Greenwood, Clark, Comanche, Bourbon, and Ford counties; compilation of digitized data base for state	$131,496	$64,385	$195,881
96	Greenwood and Bourbon counties continued; Comanche, Hamilton, and Kearny counties begun	70,565	70,000	140,565
97	Bourbon, Comanche, Hamilton, and Kearny counties continued	61,101	61,000	122,101
98	Bourbon, Comanche, Hamilton, and Kearny counties continued	74,545	74,544	149,089
99	Barber, Crawford, and Gray counties; compilation of digital geologic bases from existing maps in Johnson and Osage counties	62,460	50,000	112,460
00	Barber, Crawford, and Gray–Hodgeman counties; compilation of digital geologic base from existing map in Pottawatomie County	61,618	60,839	122,457
01	Barber, Crawford, and Hodgeman counties; compilation of digital geologic map bases from existing maps in portions of Pottawatomie and Wabaunsee counties, and 30 × 60-minute El Dorado quadrangle	139,834	139,690	279,524
02	Crawford, Pawnee and Edwards, and Saline counties; compilation of geologic map bases from existing map in Wabaunsee County	150,544	150,516	301,060
03	Crawford, Saline, Washington, Pawnee, and Edwards counties	106,796	106,123	212,919
04	Geologic mapping and compilation of digitized county data bases in Saline, Geary, Washington, Pawnee, and Edwards counties	107,976	107,951	215,927
05	Geologic mapping and compilation of digitized county data bases in Geary, Washington, Norton, and Dickinson counties	82,288	82,405	164,693
06	Geologic mapping and compilation of digitized county data bases in Geary, Washington, Norton, and Dickinson counties	98,706	98,698	197,404
07	Geologic mapping in Kansas for FY2007	153,888	153,798	307,686
08	Geologic mapping in Kansas for FY2008	207,043	206,164	413,207
09	Geologic mapping in Kansas for FY2009	200,235	198,628	398,863
10	Geologic mapping in Kansas for FY2010	235,063	221,092	456,155
	TOTAL	**$1,944,158**	**$1,845,833**	**$3,789,991**

What Is a Geologic Map?

Geologic maps are an important source of natural-resource information, depicting the bedrock (solid rock at or near the earth's surface), as if the soil and vegetation had been removed. Geologic maps show the distribution, rock type, age, and horizontal distribution of bedrock near the earth's surface. In Kansas, bedrock includes limestone, sandstone, and shale. Geologic maps also show related geologic structures (faults, fractures, and folds). Thick, surficial materials brought in by wind, water, or ice (e.g., alluvium, sand dunes, glacial drift) also are mapped. Alluvium—thick deposits of unconsolidated sand, gravel, clay, and silt in stream valleys—is younger than underlying bedrock. In some areas, bedrock is covered by wind-blown sand (sand dunes) or silt (called loess). Glacial drift is material transported by glacier and deposited directly on the land.

Benefits and Uses of Geologic Maps

Geologic maps are usually the starting point for any geologically related investigation and are useful in construction and engineering projects, city and county planning, and environmental activities. Large projects (dams, roads, bridges, buildings) require detailed geological analysis because of monetary, health, and safety concerns. Smaller projects, such as surface-water impoundments, houses, and water wells, also benefit from understanding surface bedrock. Other examples of how geologic maps can be used include

- Evaluating of geologic hazards (landslides, earthquakes, land subsidence)
- Planning transportation and utility routes
- Selecting sites for public facilities (landfills, treatment facilities, waste-disposal sites, schools)
- Developing and protecting ground water
- Assessing, exploring, developing, and managing natural resources (oil, gas, coal, salt, sand and gravel, aggregate)
- Basic earth-science research.

In Kansas, geologic maps primarily are used to assess geologic resources and geologic hazards, in construction, in siting of landfills, as an aid in mineral and ground-water exploration, for academic research, and for other uses. Recent outcomes include

- The geologic map of **Johnson County** provided the beginning point for a major study of aggregate, the rock material used to make concrete and asphalt, in the Kansas City metropolitan area.
- The maps of **Hamilton**, **Kearny**, **Gray**, **Ford**, **Edwards**, and **Pawnee** counties provided geologic information on the corridor of the Arkansas River, a critical area where streamflow is low and ground-water levels are declining.
- New maps of **Bourbon** and **Crawford** counties provided information about the surface geology in a heavily mined area of southeastern Kansas.
- The geologic map of **Pottawatomie County** showed the location of geologic faults in the subsurface, information with implications for existing structures, such as dams, and new construction.
- The geologic map of **Wabaunsee County** has been used for planning the engineering design of bridge foundations for new highway construction.