Association of American State Geologists

Kansas Geological Survey

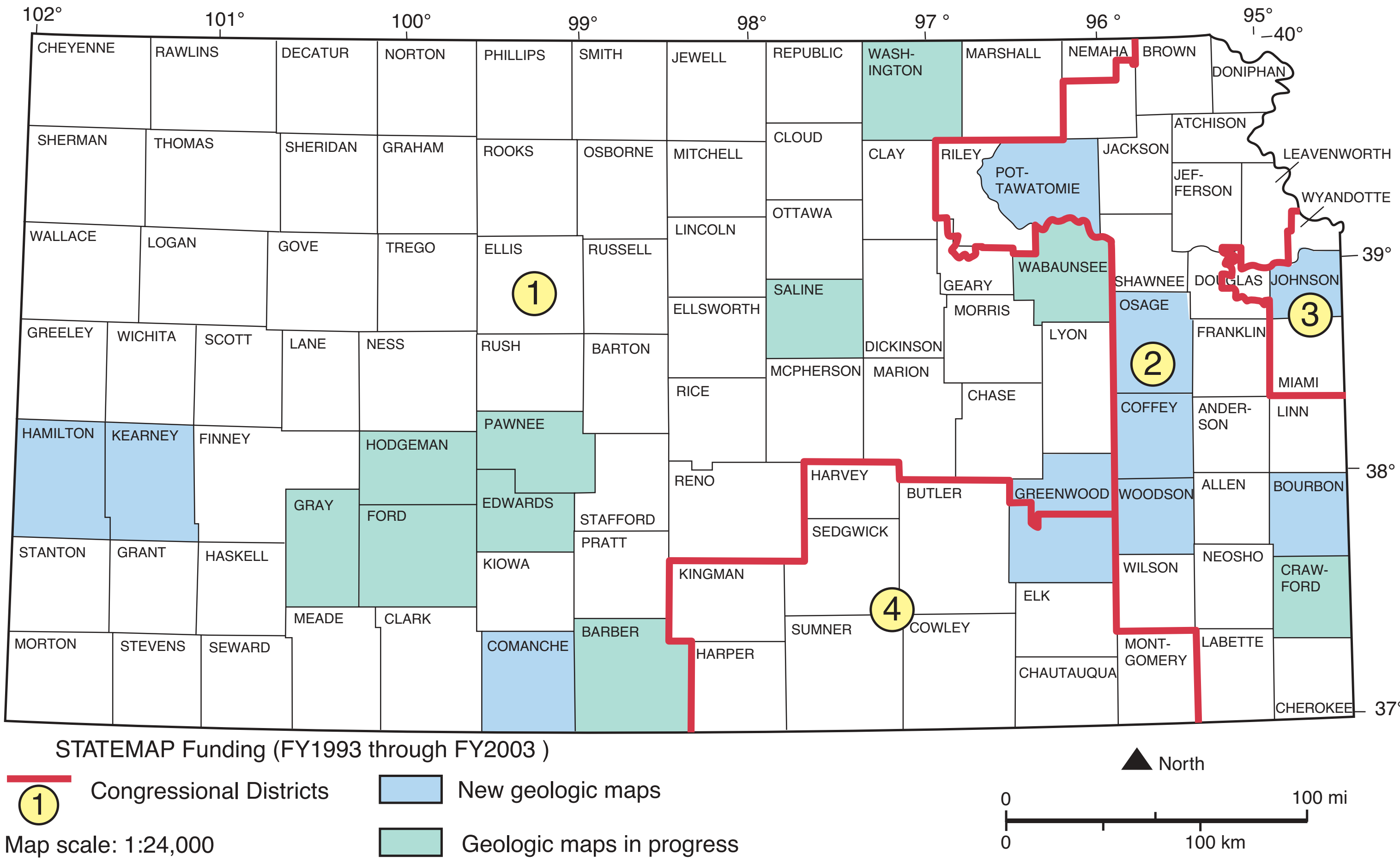
United States Geological Survey

science for a changing world

National Cooperative Geologic Mapping Program

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

KANSAS



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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 Kearney 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
	TOTAL	**$858,959**	**$777,097**	**$1,636,056**

What Is a Geologic Map?

Geologic maps are an important source of natural-resource information. They depict the bedrock (solid rock at or near the earth's surface), as if the residual soils and vegetation had been removed. Technically, these maps should be called bedrock geologic maps.

Geologic maps graphically 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 the related geologic structures (faults, fractures, and folds) that would be exposed if the soils were stripped away. Thick, surficial materials that have been transported in by wind, water, or ice (e.g., alluvium, loess, sand dunes, glacial drift) also are mapped. Alluvium—thick deposits of unconsolidated sand, gravel, clay, and silt in stream valleys—is younger than the underlying bedrock. In some areas, the bedrock is covered by thick deposits of windblown sand (sand dunes) or silt (called loess). Glacial drift is material transported by glaciers and deposited directly on the land.

A geologic map shows the distribution of rock units and other geologically related information within a specific geographic area. Each rock unit is identified and named based on distinctive characteristics that can be mapped over large distances. Geologic maps provide a way of presenting the three-dimensional shape of the bedrock geology on a flat piece of paper using lines, symbols, and colors.

Benefits and Uses of Geologic Maps

Geologic maps are usually the starting point for any geologically related investigation. They are useful in construction and engineering projects, city and county planning, and in a variety of 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 an understanding of the surface bedrock. For example, if a farm pond is located in a porous bedrock unit (such as sandstone), that unit may function as a drain and the pond will not hold water. If placed in a nonporous unit (such as shale), the pond should not leak. This basic information about the local geology can be ascertained from a geologic map. Other examples of how geologic maps can be used are listed below.

- Evaluation of geologic hazards (landslides, earthquakes, land subsidence)
- Planning transportation and utility routes
- Site selection for public facilities (landfills, treatment facilities, waste-disposal sites, schools)
- Land-use planning and evaluation of land-use proposals
- Regulatory decision-making
- Environmental assessment and protection planning (underground storage tanks, landfills, aquifer contamination)
- Development and protection of ground water
- Natural-resource assessment, exploration, development, and management (oil, gas, coal, salt, sand and gravel, aggregate)
- Basic earth-science research

Geologic maps can be used to evaluate and predict the consequences of natural and human-induced activities on the environment. Using the information on geologic maps during a project's planning and design stage produces long-term benefits and reduces problems that may develop after the project is completed.