KANSAS GEOLOGICAL SURVEY
THE UNIVERSITY OF KANSAS
MAP M-29

GEOLOGIC MAP OF PHILLIPS COUNTY, KANSAS

1993

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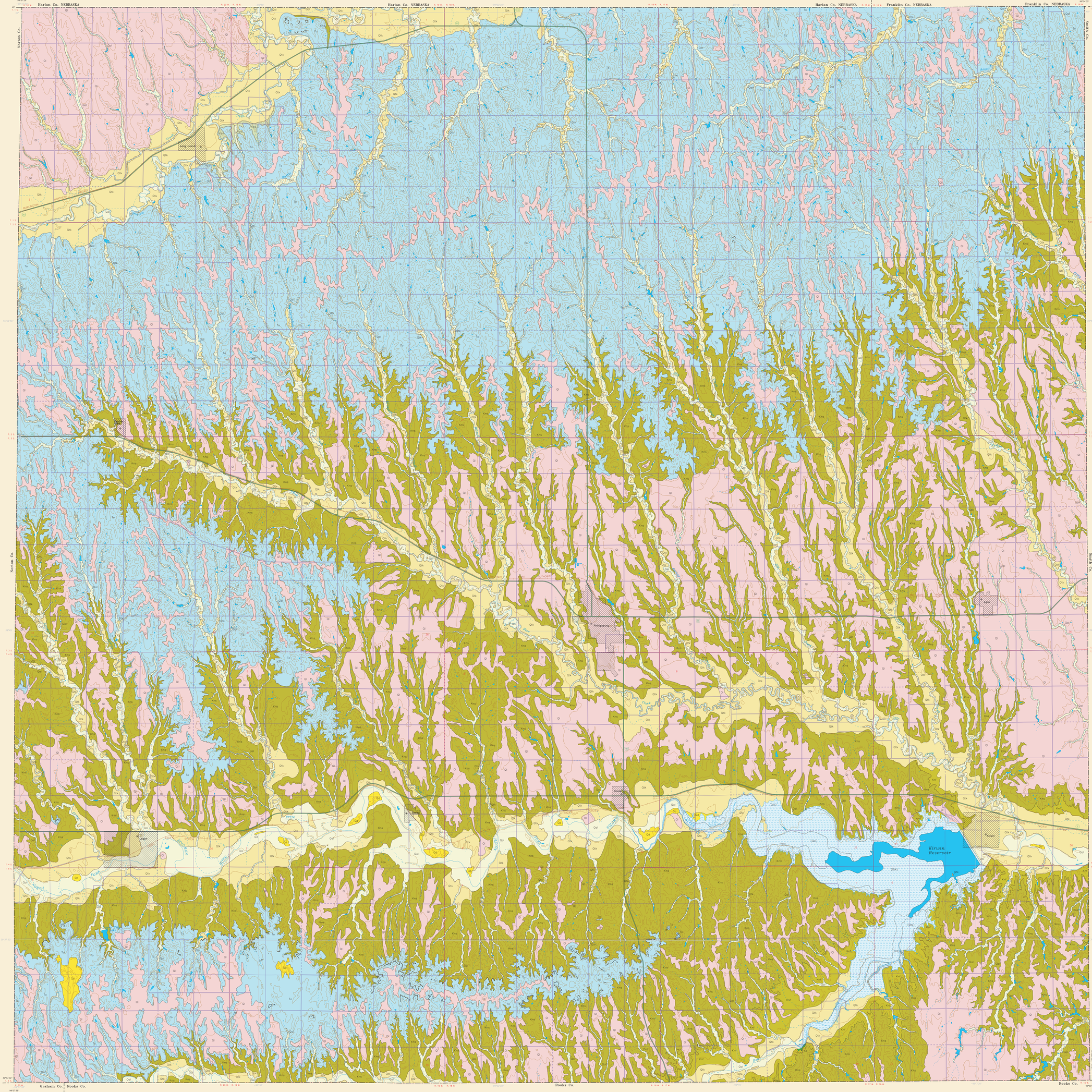


Composite Stratigraphic Section	Formation	Group	Series	System
Qal	Fluvial deposits		HOLOCENE	QUATERNARY
Qd	Eolian sand			
Qtk	loess		PLEISTOCENE	
	High-Terrace deposits			
To	Ogallala		PLIO - MIOCENE	TERTIARY
Kps	Pierre Shale	Montana		CRETACEOUS
Kns	Niobrara Chalk	Colorado	GULFIAN	
Knf				
Kc	Carlile Shale			

Alluvium: Undifferentiated floodplain and low-terrace deposits ranging in composition from coarse gravel to clay. Thickness 0-50 ft.

Dune Sand: Medium and fine sands derived from Recent alluvium or the Ogallala Formation. Thickness 0-80 ft.

Loess: Undifferentiated, wind-deposited, fine-grained sediments, dominantly silt sized. Includes Loveland, Peoria, and Bignell Formations. Thickness 0-60 ft.

High terrace(including the Kirwin and Almena Terraces) deposits ranging in composition from coarse gravel to clay. A thin loess cap is present locally in the North Fork Solomon River. Thickness 0-25 ft.

Ogallala Formation (undifferentiated): Calcareous gravel, sand, silt, and clay. Mostly unconsolidated, but with varying degrees of cementation at all localities. Members undifferentiated. Thickness 0-150 ft. Silica-cemented sandstone lentils forming an erosion-resistant caprock or ledge at many outcrops. Thickness 0-12 ft.

Sharon Springs Shale Member: Black to dark gray-brown fissile, platy, noncalcareous shale with numerous thin beds of bentonite and zones of chalky shale. The shale typically contains localized gypsum and limonite. Thickness 46 ft.

Smoky Hill Chalk Member: Gray, shaly chalk and interbedded shale and chalk that weathers white, yellow, and orange. It contains thin bentonite beds and limonite concretions throughout. Fossiliferous. Thickness 100 ft.

Fort Hays Limestone Member
Massive beds of gray to cream-colored chalk or chalky limestone separated by thin beds of light to dark gray, chalky shale. Fossiliferous. Thickness 50 ft.

Blue Hill Shale and Codell Sandstone Members (undifferentiated): Blue-gray to black, thin-bedded, clayey shale with limonite nodules and selenite crystals. A thin, fine to medium silty sandstone poorly cemented with limonite caps the section. Fossiliferous. Thickness 34 ft.

EXPLANATION

- Sand and gravel, conglomerate, or "mortar beds"
- Sandstone or sand
- Siltstone
- Unconsolidated silt and clay
- Shale or claystone
- Shale with ironstone concretions
- Calcareous concretions
- Limestone
- Cherty limestone
- Shaly limestone
- Dolomite
- Bentonite
- Volcanic ash

Index reference features

1 - 1:24,000 map edge
2 - Line of cross section*
* Does not appear on this map

Diagram of a township showing numbering of sections.

6	5	4	3	2	1	
7	8	9	10	11	12	
18	17	16	15	14	13	
19	20	21	22	23	24	
30	29	28	27	26	25	
31	32	33	34	35	36	

INDEX TO PUBLIC LAND SURVEY
Range: 23W 22W 21W 20W 19W

Township	1S	2S	3S	4S	5S

Hydrology and topography

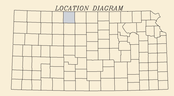
1 - Intermittent stream
2 - Perennial stream
3 - Areal hydrology
4 - Land subject to inundation
5 - Elevation contours (10-meter interval)
6 - Elevation contours (50-meter interval)

INDEX TO 1:24,000-SCALE MAPS

	1	2	3	4	5	
6	7	8	9	10	11	
12	13	14	15	16	17	
18	19	20	21	22	23	
24	25	26	27	28	29	

1 Stamford SE-1957
2 Alma SW-1974
3 Alma-1974
4 Republican City-1974
5 Bloomington-1973
6 Almena-1967
7 Long Island-1967
8 Woodruff-1968
9 Stuttgart NE-1973
10 Kensington NW-1973
11 Kensington NE-1973
12 Almena SW-1978
13 Prairie View-1978
14 Stuttgart-1973
15 Phillipsburg North-1973
16 Gretna-1973
17 Kensington-1973
18 Densmore-1978
19 Logan-1978
20 Speed-1972
21 Phillipsburg South-1972
22 Kirwin Reservoir-1972
23 Kirwin-1972
24 Logan SW-1979
25 Logan SE-1979
26 Glade SW-1972
27 Glade SE-1972
28 Kirwin SW-1961
29 Kirwin SE-1961

LOCATION DIAGRAM



Transportation

1 - Interstate highway
2 - Federal highway
3 - State highway
4 - Medium-duty secondary road
5 - Light-duty secondary road
6 - Unimproved secondary road
7 - Railroad

Convergence (GN) and 1986 magnetic declination (MN) at center of map
Diagram is approximate

Geologic unit boundaries

1 - Observed geologic contact
2 - Inferred geologic contact
3 - Concealed geologic contact *
* Does not appear on this map

CONVERSION TABLE

feet	meters	kilometers	miles
1	0.3048	0.0003	0.00019
3.2808	1	0.001	0.00062
3280.8	1000	1	0.6212
5280	1609.4	1.6094	1

To convert feet to meters multiply by 0.3048
To convert meters to feet multiply by 3.2808
To convert kilometers to miles multiply by 0.6212
To convert miles to kilometers multiply by 1.6094

Boundaries and locations

1 - State line
2 - County line
3 - Township/Range line
4 - Section line
5 - Locality
6 - Populated area population >500

Lambert Conformal Conic Projection
with standard parallels at 33° and 45°
Scale 1:50,000

0 1 2 3
Kilometers
0 1 2
Miles

Elevation contours are presented for general reference. They are taken from USGS Digital Line Graph (DLG) files compiled from base maps at a scale of 1:100,000. In some places the contours from the DLGs may be more generalized than the base maps 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.

The geology was mapped using the U.S.G.S. 7.5-min. topographic 1:24,000 scale maps, black and white aerial photography, and field survey. Published materials consulted include the U.S. Department of Agriculture Soil Survey of Phillips County, Kansas (Palmer and Hamilton, 1987), U.S. Geological Survey Circular 21 (Byrnes et al., 1948), and Kansas Geological Survey Bulletins 81 (Frye and Leonard, 1949) and 98 (Leonard, 1952).

This map was produced by computer-aided cartography using the GMMAP (Geodata Interactive Management Map Analysis and Production) system developed at the Kansas Geological Survey.

Suggested reference to this map:
Johnson, W. C., and Arbogast, A. F., 1993, Geologic Map, Phillips County, Kansas: Kansas Geological Survey, Map M-29, scale 1:50,000