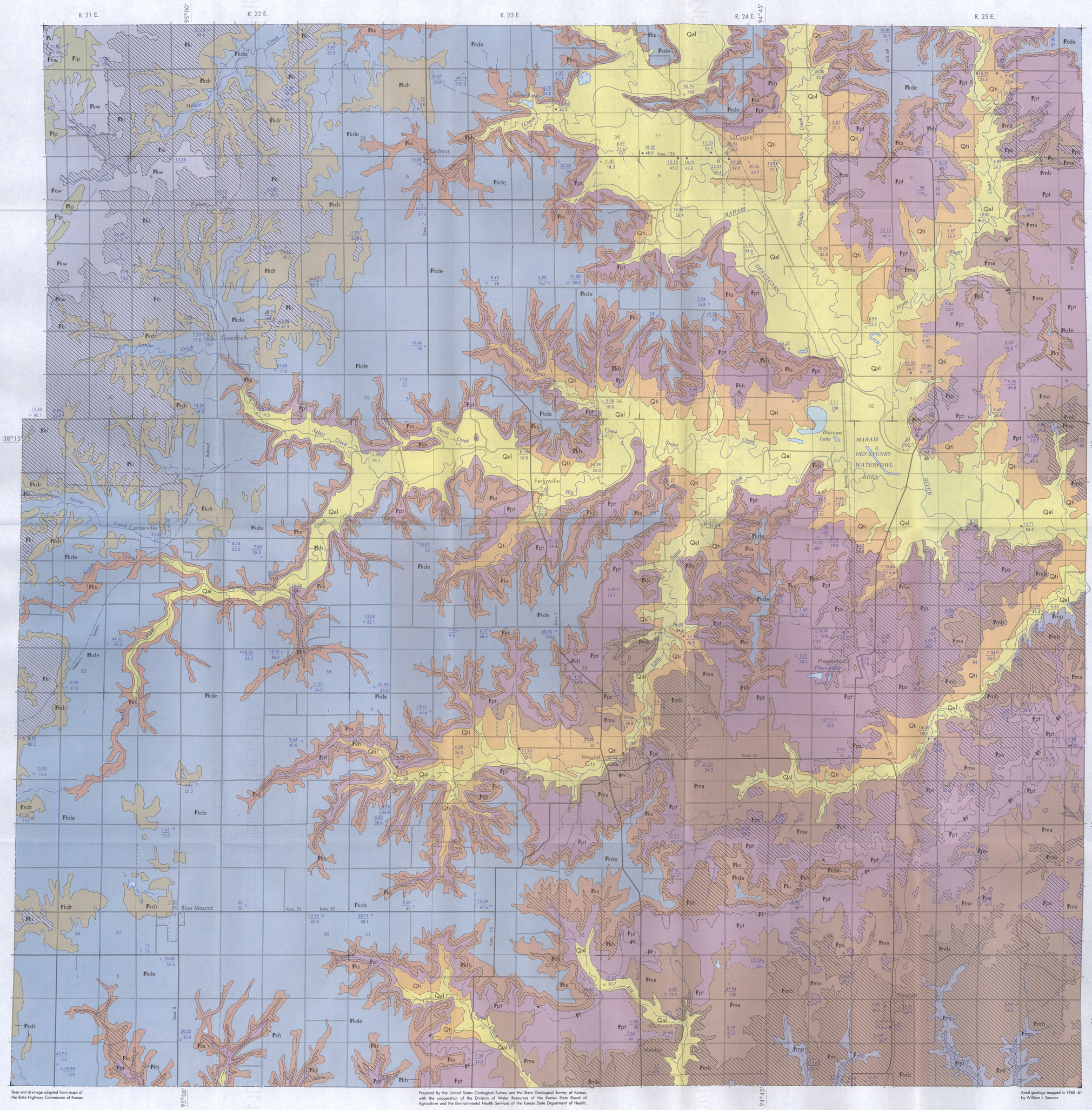
State Geological Survey
of Kansas

GEOLOGIC MAP OF LINN COUNTY, KANSAS

Bulletin 193
Plate 1



EXPLANATION

QUATERNARY SYSTEM

Pleistocene Series

Qal

Wisconsinan and Recent alluvial deposits

Silt, clay, sand, and gravel in and adjacent to present streams and underlying the surface of a low terrace in the principal stream valleys. Generally small supplies of water are available; however, locally yields up to 100 gpm can be obtained.

Qti

Illinoisan terrace deposits

Silt, clay, sand, and gravel underlying a prominent intermediate terrace adjacent to the major stream valleys. Yields commonly 10 gpm or less; however, yields of 30 gpm can be obtained locally.

PENNSYLVANIAN SYSTEM

Upper Pennsylvanian Series

LANSING GROUP

Plp

Plattsburg Limestone

Erosional remnants of a fine- to medium-crystalline and fossiliferous limestone. Generally only small quantities of water are available from this unit.

KANSAS CITY GROUP

Pkw

Wyandotte Limestone and Bonner Springs Shale

The Wyandotte Limestone is best developed in the northwestern part of the area where it is a light bluish-gray, wavy-bedded limestone. This unit thins southward. The Bonner Springs Shale is a gray to buff shale with a persistent sandstone bed in the basal part. The Wyandotte yields only small supplies of water. Small quantities of water are available to wells from the sandstone of the Bonner Springs in local areas.

Pki

Iola Limestone and Lane Shale

The Iola Limestone consists of two limestone members and an intervening shale member. The lower member is a dense blue massive limestone, and the upper member is a thin wavy-bedded light-gray limestone. The middle shale member is gray clay shale in the upper part and dark platy shale in the lower part. The Lane Shale is a noncalcareous bluish-gray clay shale. Only meager supplies of water are available from these units in the area.

Pkdr

Drum Limestone and Chanute Shale

The Drum Limestone consists of two limestone members locally separated by a thin shale. The lower member is brown massive-bedded fossiliferous limestone. The upper member is a reddish-brown oolitic limestone. The Chanute Shale consists of sandstone in the upper part and an olive-green clay shale in the lower part. The two beds are separated by a coal bed. Little or no water is available from the Drum Limestone, but locally small supplies of water are available from the sandstone in the Chanute.

Pkde

Dennis Limestone and Cherryvale Shale

The Dennis Limestone is composed of two limestone members separated by a shale member which is a gray blocky shale in the upper part and a black platy shale in the lower part. The lower limestone member is a thin dense blue limestone displaying vertical joints. The upper limestone member is a thick wavy-bedded cherty limestone. The Cherryvale Shale is composed of three shale members and two limestone members. The lower limestone is a thin dense bluish-gray limestone. The upper limestone is discontinuous. The shales are gray and olive-green. Small to moderate supplies of water are available from the Dennis Limestone.

Pks

Swope Limestone and Galesburg Shale

The Swope Limestone is composed of two limestone members separated by a black fissile shale. The lower limestone member is a dark-blue dense limestone. The upper member is massive to thin-bedded, cherty limestone with a thin oolitic limestone at the top. The Galesburg Shale is a thin gray shale locally containing a thin sandstone bed in the basal part. Small to moderate supplies of water are available from the Swope Limestone.

Pkh

Hertha Limestone and Ladore Shale

The Hertha Limestone is composed of two limestone members separated by a gray to dark-gray shale member. The lower limestone member is a silty, nodular brown limestone, but locally it is composed of an algal limestone. The upper member is a brown massive-bedded limestone. The Ladore Shale is a brown-weathering calcareous shale locally containing a thin limestone bed. Little or no water is obtained from these units.

PLEASANTON GROUP

Ppt — Pf —

Tacket Formation

The Tacket Formation is composed primarily of gray to buff, thin-bedded, micaceous siltstone but locally contains sandstone beds in the upper part and a flaggy limestone bed, the base of which is mapped as Pf. Only very small quantities of water are obtained from wells in this formation.

Pps

Seminole Formation

This formation is composed primarily of sandstone having a considerable range in thickness over the area. Small supplies of water are available where the sandstone is favorably situated to receive recharge.

Middle Pennsylvanian Series

MARMATON GROUP

Pma — Pn —

Altamont Limestone, Nowata Shale, Lenapah Limestone, and Holdenville Shale

This unit is composed of two limestone formations and two shale formations. Pn marks the base of the Lenapah Limestone. Each of the limestone formations is divided into two limestone members and an intervening shale member. The Nowata Shale is a light-gray shale locally containing a fine-grained sandstone in the basal part. The Holdenville Shale is a gray clay shale which locally contains a coal bed in the lower part. Small quantities of water may be obtained locally from weathered limestones in this unit.

Pmb

Bandera Shale

Thick beds of sandy siltstone and sandstone comprise this unit. A persistent coal occurs near the base of the unit, and sandstone is common in the upper part. Little or no water is obtained from the Bandera.

Pmp

Pawnee Limestone

This formation is composed of two shale members and two limestone members. The lower shale member is black fissile shale and gray clay shale. The upper shale member is gray containing carbonaceous streaks and a persistent limestone near the top. The lower limestone member is dense blush-gray limestone, and the upper limestone is a light-gray crystalline limestone. Little water is available from the Pawnee limestone.

Pml

Labette Shale

The Labette Shale is composed of gray sandy shale and black shale. Little or no water is obtained from this unit in the area.

Geologic contact (dashed where approximate)

- Test hole
- Domestic or school well
- Public supply well
- Observation well
- Spring

True North / Magnetic North

APPROXIMATE MEAN DECLINATION, 1966

5.90
14.5

Upper number is depth to water below land surface, in feet. Reported depths shown to nearest foot; measured depths shown to nearest hundredth of foot. Lower number is depth of well below land surface, in feet. Reported depths shown to nearest foot; measured depths shown to nearest tenth of foot.

Base and drainage adapted from maps of the State Highway Commission of Kansas

Prepared by the United States Geological Survey and the State Geological Survey of Kansas, with the cooperation of the Division of Water Resources of the Kansas State Board of Agriculture and the Environmental Health Services of the Kansas State Department of Health.

Areal geology mapped in 1960–61 by William J. Seevers