EXPLANATION

QUATERNARY

Qal
ALLUVIUM
(Water-laid clay, sand, and gravel. Dug wells yield small quantities of water for domestic and stock use.)

Qt
TERRACE DEPOSITS
(Alluvial clay, sand, and gravel.)

PENNSYLVANIAN

Krebs Group

Pb
BOGGY FORMATION
(Bluejacket sandstone member only. Light buff, medium-grained standstone; occurs as rock fragments capping hills. Not water-bearing.)

Pss
Ps
SAVANNA FORMATION
(Gray, dark gray, and black shale with clay-ironstone lenses. Includes Doneley limestone, Rowe coal, and a sandstone 12 feet thick, Pss. Yields only meager quantities of water at best.)

Pm
Pmw
McALESTER FORMATION
(Dark gray to black shale with clay-ironstone concretions and coal zones. Warner sandstone member, Pmw, at base, is 10 feet thick and may yield small quantities of water.)

Ph
HARTSHORNE FORMATION
(Mainly gray to black shale. Yields only small quantities of water at best.)

MISSISSIPPIAN

Mf
FAYETTEVILLE SHALE
(Black, fissile shale, drab clay shale, with interbedded limestone and sandstone. Limited supplies of ground water.)

Mbv
BATESVILLE SANDSTONE
(Fine-grained, calcareous sandstone, friable where weathered. Small supplies of ground water.)

Mh
HINDSVILLE LIMESTONE
(Flaggy, crystalline limestone, in part massive, oolitic, arenaceous, or porous, and interbedded shale. Small to moderate supplies of ground water.)

Mb
Mbs
BOONE FORMATION
(Limestone and chert; limestone in part oolitic, sandy, shaly, or crystalline. Mbs, Short Creek oolite member. Yields hard water in moderate to large amounts; many springs.)

Fault

Axis of syncline

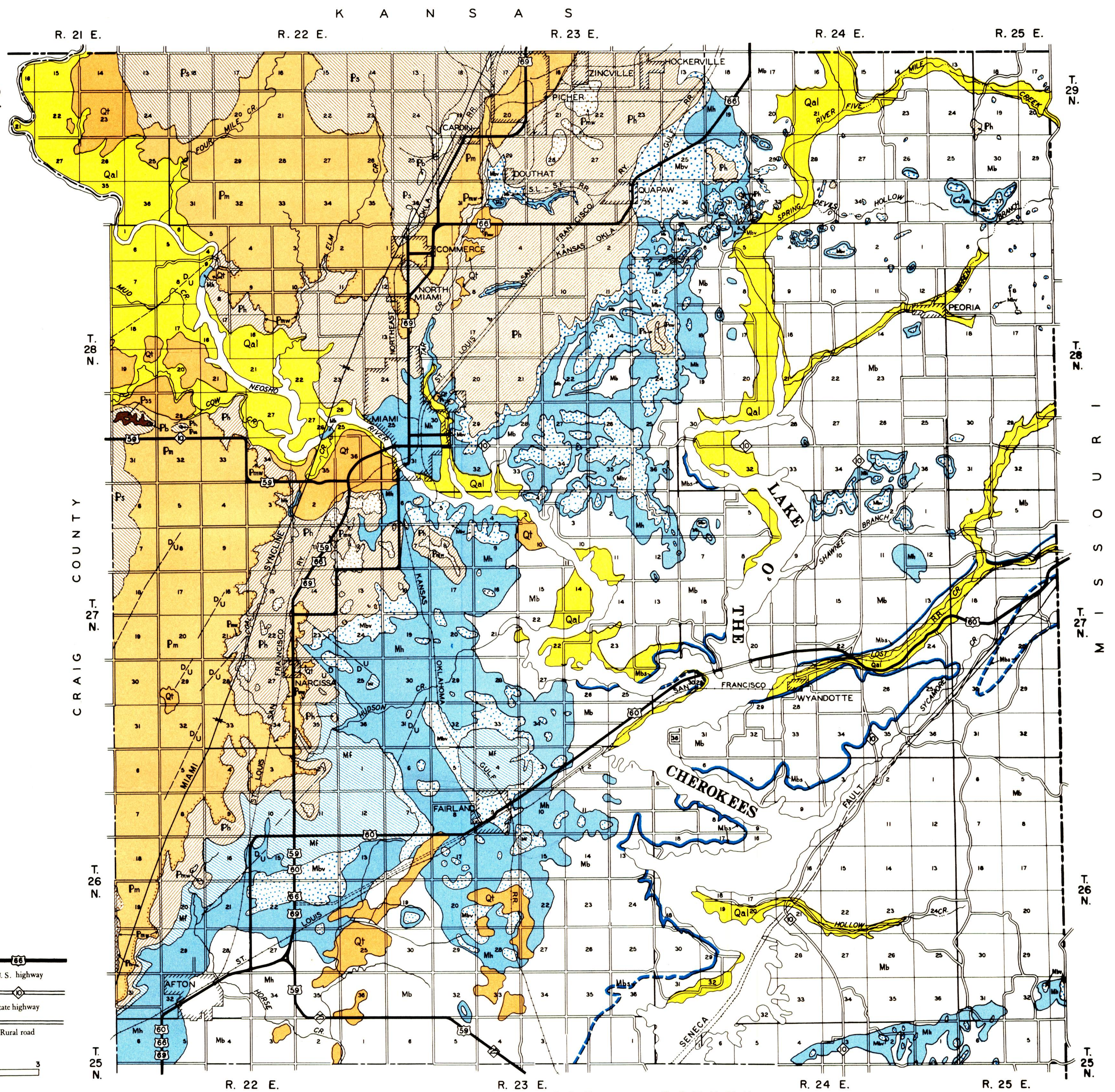
Railroad

U. S. highway

State highway

Rural road

1 0 1 2 3
Scale of miles



MAP SHOWING GEOLOGY OF OTTAWA COUNTY, OKLAHOMA

1954

Base from county highway map of Oklahoma State Highway Department; drainage in part modified on basis of aerial photographs.

Geology east of north-south line through Fairland by C. E. Siebenthal and R. D. Messler, 1907, with outcrop of Short Creek oolite member of Boone limestone by J. H. Speer, 1951. Geology west of Fairland by Carl C. Branson, 1950-51 and 1953.