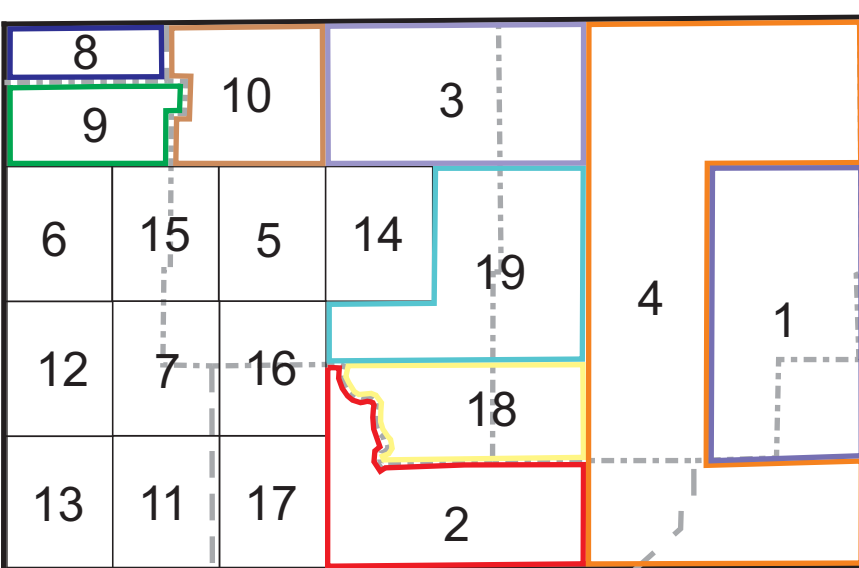


	<p>BL The Bloyd is a medium gray, thin bedded fossiliferous limestone interbedded with dark gray fossiliferous shale. The Bloyd consists of a medium gray, medium to thick (locally massive) bedded, argillaceous and fossiliferous limestone, which becomes increasingly sandy toward the base of the interval. Thin-peaked weathering very distinct. All thin conglomerate may occur locally at base.</p> <p>Thickness of interval varies from 50 to 105 meters, due to post-Morrowian erosion across this northern half of the quad.</p>
Mpt	<p>PITKIN LIMESTONE—Consists of a gray to bluish gray, thin-bedded, locally to skeletal wackestones and packstones; colitic and skeletal granitoides occur locally. Dark gray fossil calcareous shale and argillaceous limestone are common.</p> <p>As with the overlying Morrowian units, the Pitkin varies in thickness from 10 to 25 meters, due to Morrowian erosion in the northern part of the map area.</p>
Ms	<p>FAYETTEVILLE SHALE—Mostly a separation of thin gray, well-laminated to fissile, fossiliferous and argillaceous shale. Interbedded with thin-bedded, thick-bedded, fossiliferous limestone throughout. Large septarian concretions may occur in the lower two-thirds of formation.</p> <p>Thickness ranges from 10 to 56 meters.</p>
Mhn	<p>HINDSVILLE FORMATION—Medium gray, thin- to medium-bedded, locally massive, skeletal fossiliferous limestone and argillaceous shale cross-bedded granitoides common in middle third of formation. Thickness from 10 to 15 meters.</p>
Inf	<p>MOOREFIELD FORMATION—Upper half of unit consists of medium to dark gray, thin, planar bedded, whole fossil carbonate mudstones, minor chert nodules occur locally along base of interval. The lower half of unit gray, thin to medium bedded, fossiliferous limestone-crystalline limestone, collic textures. Chert conglomerates common near lower contact with the Boone Group.</p> <p>Thickness of unit ranges from 10 to as much as 30 meters.</p>
	<p>MISSISSIPPIAN UNDIFFERENTIATED—Isolated outcrops occur along the Mayes-Deleware County line in the south of Reynolds, Oklahoma, consisting of all, or parts of the Fayetteville Shale, Hindsville Formation, and Moorefield Formation.</p> <p>Thickness about 10 to 15 meters.</p>
btg	<p>BOONE GROUP—Where original depositional texture is preserved, the upper part (sometimes massive) of the Kokopli Limestone is laminated, thin-bedded to massive, fine to medium crystalline limestone to a skeletal mudstone; tripolitic weathering chert nodules common throughout. The lower part of unit (mapped as the Reeds Spring Formation in older reports) is a light gray, thin- to medium bedded, fine-crystalline limestone with bedded chert.</p> <p>Thickness varies from 55 to 75 meters.</p>
Msj	<p>ST. JOE LIMESTONE—Consists of a light gray, fine- to medium-crystalline limestone with an olive green, calcareous cherty shale in the middle. Limestones tend to weather into a distinct nodular texture.</p> <p>Thickness a uniform 8 meters, slightly thicker on map for representation.</p>
Mid	<p>MISSISSIPPIAN-DEVONIAN, ORONOVITIAN UNDIFFERENTIATED—In the Tulsa sheet, unit most represented by the Mississippian-Devonian Chattanooga Shale, a dark gray to black, well-laminated argillaceous shale. In the Mayes-Deleware County area, the unit may also include the Devonian-Tyner Formation, a green sandy claystone with sandy dolomite interbedded, overlying the Burger Formation, a buff to yellow brown, friable, fine- to medium-grained quartzite.</p> <p>Where exposed, thickness averages 10 to 15 meters.</p>
Oct	<p>COTTER FORMATION—Light gray, thick-bedded, fine-crystalline dolomite.</p> <p>Thickness - 25 meters, base exposed.</p>
	<p>SPAWNAN GRANITE—Red, coarse-grained granite, with orthoclase being the main mineral component; quartz crystals are present but near microscopic. Small, isolated exposures occur just west of the Spawnan dam.</p> <p>Thickness unknown.</p>

Heckel, P.H., 1991. Lost Branch Formation and revision of upper Desmoinesian stratigraphy along midcontinent Pennsylvanian outcrop belt: Kansas Geological Survey Geology Series, 4, 67 p.



1) Gore, C.E., 1951. The geology of a part of the drainage basins of Spavinaw, Salina, and Spring Creeks, northeastern Oklahoma: University of Tulsa unpublished M.S. thesis, 79 p.

Produced by the Oklahoma Geological Survey. Geology by Thomas M. Starkey and Calum M. Ertter, 2011. Data base from USGS topographic map of the Tulsa quadrangle, dated 1985. Unofficial Transverse Mercator projection, zone 15. 1927 North American Datum. Rectangular coordinates under G21440000. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Cartography prepared Thomas M. Starkey and G. Russell Standridge, 2007.

**GEOLOGIC MAP OF THE TULSA 30X60-MINUTE QUADRANGLE,
CHEROKEE, DELAWARE, MAYES, ROGERS, TULSA, WAGONER, AND WASHINGTON COUNTIES, OKLAHOMA**

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