OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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Oklahoma Geologic Quadrangle **OGQ-32**
Geologic Map of the Horseshoe Lake 7.5′ Quadrangle
(previously Open-File Report OF2-2003)

CORRELATION OF MAP UNITS

Qal	Qacy	HOLOCENE	QUATERNARY
	Qacm		
Qgco	Qaco	PLEISTOCENE	
UNCONFORMITY			
Pgr		LEONARDIAN	PERMIAN
Pwe			

DESCRIPTION OF UNITS

Qal ALLUVIUM (Holocene)–Clay, silt, sand, and gravel in channels and on flood plains of modern streams. Includes terrace deposits of similar composition located directly above and adjacent to modern channels and flood plains. Thickness: 0 to about 30 ft

Qacy ALLUVIUM OF NORTH CANADIAN RIVER (Holocene)–Clay, silt, sand, and gravel in channels and on modern flood plain of North Canadian River. Area probably subject to frequent flooding. Thickness: generally 0 to about 40 ft, rarely over 40 ft

Qacm ALLUVIUM OF NORTH CANADIAN RIVER (Holocene)–Clay, silt, sand, and gravel on Recent flood plain of North Canadian River about 5-10 ft above Qacy. Area rarely subject to flooding. Thickness: unknown, possibly as much as 50 ft

Qaco ALLUVIUM OF NORTH CANADIAN RIVER (Holocene and Pleistocene(?))–Clay, silt, sand, and gravel in valley of the North Canadian River and about 10 ft above Qacm. Present only as small remnants. Thickness: unknown, at least 20 ft

Qgco REMNANTS OF OLDER TERRACE DEPOSITS (Holocene and Pleistocene(?))–Clay, silt, sand, and some gravel adjacent to the flood plain of the North Canadian River. Sand commonly is medium- to coarse-grained and very light colored; when present, gravel locally consists of concentrations of distally derived pebbles and cobbles, mostly subrounded quartz and quartzite. Base of unit is about 0-100 ft above the modern flood plain and ranges in elevation from 1090 ft above sea level in center of quadrangle to 1140 ft above sea level on east side. The top of the unit is as much as 60 ft above the modern flood plain and is as high as 1185 ft above sea level. Thickness: 0 to 140 ft

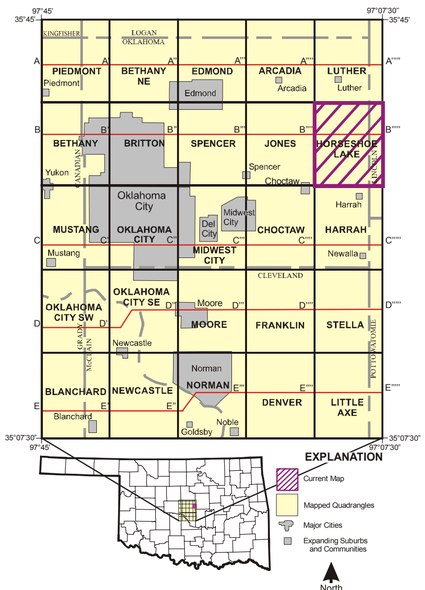
Pgr GARBER FORMATION (Permian)–Sandstone with minor shale and siltstone. Sandstone mostly fine-grained to less commonly medium-fine-grained; moderate reddish brown (10R4/6) and moderate reddish orange (10R6/6). Sandstone typically porous and friable; weathers to smooth, rounded outcrops. Large- and small-scale crossbeds, trough crossbeds common; many outcrops characterized by inclined beds and channelform deposits. Shale and siltstone intercalated, very sandy, occurring as thin (less than 3 ft thick) intervals laterally and above thicker channelform sandstone intervals; siltstone and shale moderate red (5R5/4) to pale red (5R6/2); may contain evidence of paleosol development such as blocky weathering, fractures with fracture surfaces marked by small slickensides, or through-going curved fractures; and calcarous concentrations. Thickness: about 100 ft, top not exposed

Pwe WELLINGTON FORMATION (Permian)–Interbedded sandstone and shale, with minor siltstone. Sandstone mostly fine- to very fine-grained, moderate orange pink (10R7/4) to moderate reddish brown (10R4/6), moderate reddish orange (10R6/6) to pale red (5R6/2), mostly porous and friable, locally with variable amounts of hematite and calcite cement. Shale is moderately to very silty and sandy; moderate reddish brown (10R4/6), moderate red (5R5/4), with local light greenish gray (5GY8/1) streaks; concretions and septarian nodules with conspicuous calcite, dolomite and possible barite crystals lining vugs and radiating fractures common; dolomite-breccia and conglomerate may occur at base of sandstone lenses and channelform deposits; concertionary shale more common in upper two-thirds of formation. Siltstone typically color-banded consisting of pale reddish brown (10R5/4) and light greenish gray (5GY8/1) streaks. Sedimentary structures include large- and small-scale crossbeds, trough crossbeds, locally steeply inclined stratification and less common channelform features. In places, weathers to “slickrock” appearance.

Principal difference between Garber and Wellington Formations is generally coarser grain size of Garber, although lower part of Garber appears to contain finer-grained sandstones and more siltstone and shale than middle part. Top of Wellington based on the first occurrence of a thick Garber-like sandstone interval above in conjuction with the last occurrence of a concretionary shale interval below. Thickness: 710 to 850 ft, based on cross section, but only upper 400 ft exposed in quadrangle

SYMBOLS

- Unit contact; dashed where approximate
- Outcrop, geologic observation
- Petroleum well. Includes oil, gas, oil and gas, dry service (water supply or injection), junked and abandoned, unknown. Modified from Natural Resources Information System database
- Municipal water well



Base Map Credits

The base map was compiled by the U.S. Geological Survey. Topography from aerial photographs by Kelsh plotter. Aerial photographs taken 1954. Field checked 1956. Revisions shown in purple compiled from aerial photographs taken 1969 and 1975. Universal Transverse Mercator (UTM) projection.1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, south zone. 1,000-meter UTM grid, zone 14.

Geologic Map Credits

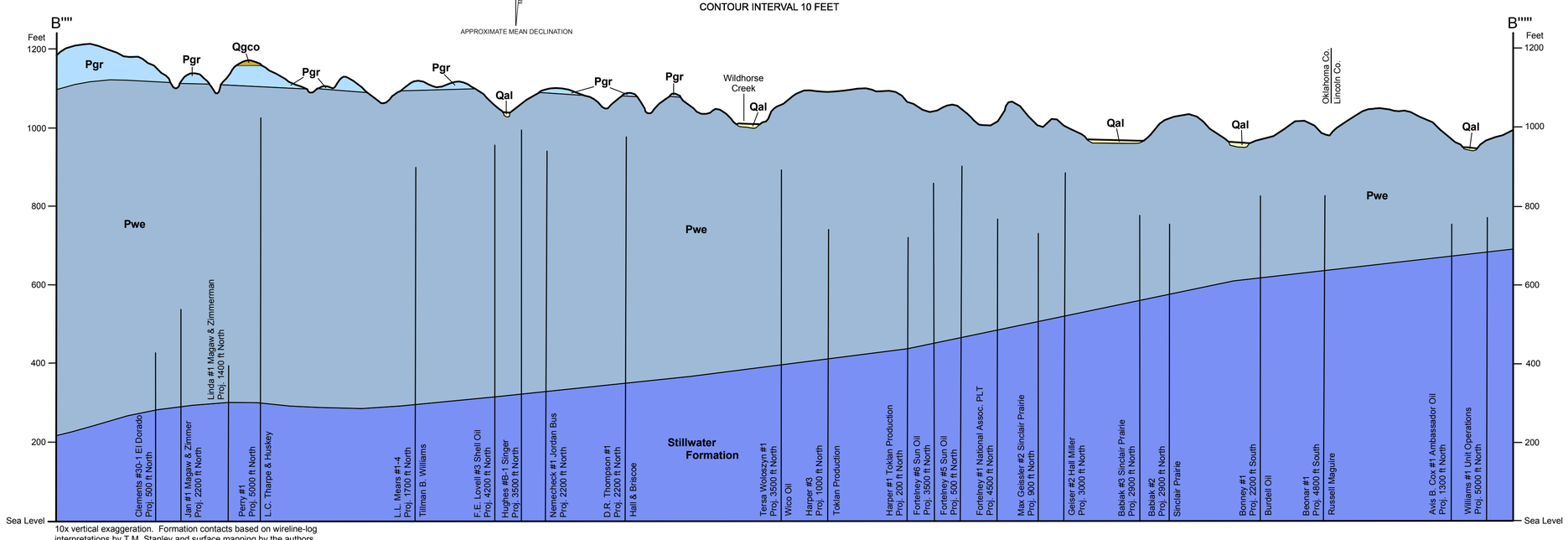
Geology by Thomas M. Stanley and Galen W. Miller, 2002-2003. Assisted by Nicole Baylor and Lori Bryan. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 02HQAG0052. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. Originally published as Open-File Report OF2-2003. Map revised and published as OGQ-32. Cartography and layout prepared by G. Russell Standridge, 2003.

SCALE 1:24000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 10 FEET

APPROXIMATE MEAN DECLINATION



10x vertical exaggeration. Formation contacts based on wireline-log interpretations by T.M. Stanley and surface mapping by the authors. Vertical lines show logs used in interpretations.

GEOLOGIC MAP OF THE HORSESHOE LAKE 7.5′ QUADRANGLE, LINCOLN AND OKLAHOMA COUNTIES, OKLAHOMA

Thomas M. Stanley and Galen W. Miller

2003