OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

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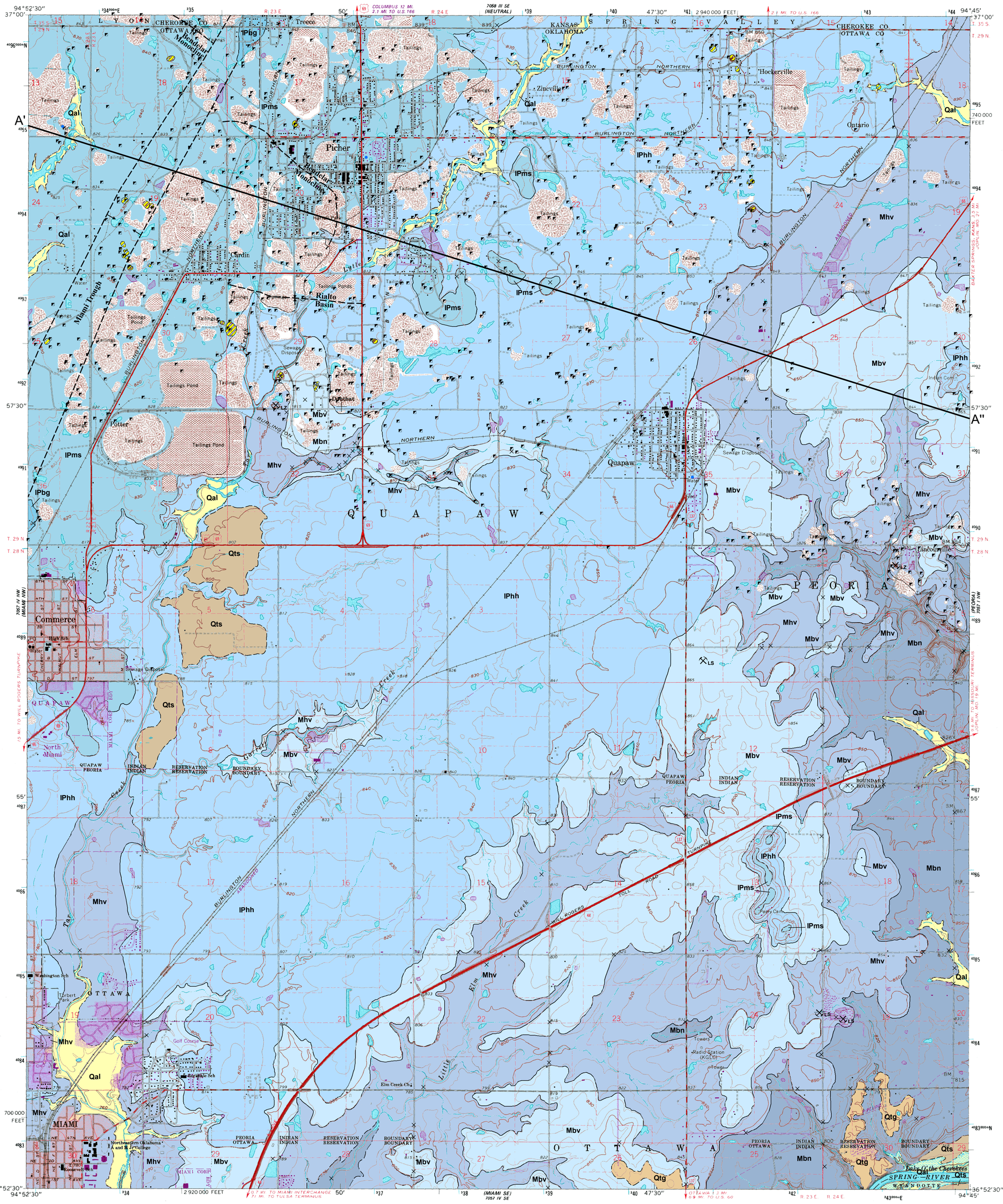
Oklahoma Geologic Quadrangle **OGQ-66**
Geologic Map of the Picher
7.5 Quadrangle



CORRELATION OF MAP UNITS

QUATERNARY	HOLOCENE	Qal
	HOLOCENE? PLEISTOCENE?	Qts
		Qtg
UNCONFORMITY		
PENNSYLVANIAN	DESMOINESIAN	lPbg
		lPms
		lPhh
UNCONFORMITY		
MISSISSIPPIAN	CHESTERIAN	Mbv
UNCONFORMITY		
		Mhv
UNCONFORMITY		
	MERAMECIAN	Mbn

DESCRIPTION OF UNITS

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

Qts UPPER TERRACE SANDS (Holocene and Pleistocene(?))—Consists mostly of unconsolidated fine- to medium-grained quartz sand, silt, and clay. Situated just above modern flood plains and drainages. Thickness: 0 ft to as much as 20 ft; averages closer to 8 ft thick.

Qtg UPPER TERRACE GRAVELS (Pleistocene(?))—Older terrace development associated with the Spring River drainage; consists of unconsolidated well-rounded, ovoid-shaped, chert and limestone pebbles, set within a medium- to coarse-grained sand matrix. Color of clasts a grayish orange (10YR7/4) to dark yellowish orange (10YR6/6). Thickness 0–10 ft.

lPbg BOGGY FORMATION (Pennsylvanian, Desmoinesian)—Represented by small isolated outliers of the Bluejacket Sandstone within the Miami Trough. Sandstone is moderate olive brown (5Y4/4), weakly to moderately indurated, medium- to coarse-grained, feldspathic, and argillaceous. Coarser grained material near base of unit, fining upward. Hematite cement common. Thickness from 5–10 ft.

lPms McALESTER-SAVANNA FORMATIONS Undivided (Pennsylvanian, Desmoinesian)—Poorly exposed in map area. Consists of dark gray to medium dark gray, well-laminated, concretionary, silty clayshales, a thin limestone bed (Doneley Limestone), and several thin coal beds (one of which is the Rowe Coal) (Reed et al., 1955). Base of interval mapped at the base of the Warner Sandstone: dusky yellow (5Y6/4) with characteristic MnOx splotches, moderately indurated, planar laminated to thin-bedded (bedding from 0.5”–1.0” thick), fine-grained, siliceous sandstone; sandstone member about 10 ft thick, and generally well exposed throughout map area. Overall thickness of McAlester-Savanna interval about 60 ft. based on cross section.

lPhh HARTSHORNE FORMATION (Pennsylvanian, Desmoinesian)—Dark gray (N3) to medium dark gray (N4), well-laminated to fissile, slightly silty clayshale. Rare coal beds with underclay, and concretionary horizons occur locally in upper part of unit (Reed et al., 1955). Appears that Hartshorne Formation contains proportionately less coarse terrigenous material than overlying McAlester-Savanna Formations. Major erosional unconformity occurs at base of formation. Thickness about 40–50 ft.

Mbv BATESVILLE FORMATION (Mississippian, Chesterian)—Interbedded sandstone and mudstone, with minor limestone. Predominant outcropping lithology a pale yellowish orange (10YR8/6) to yellowish gray (5Y7/2) weathering, very light gray (N8) fresh, indurated, planar laminated to thin-bedded (bedding from 0.5” to 1.5” thick), fine- to very fine-grained, clean, siliceous sandstone; mudstone typically moderate greenish yellow (10Y7/4), blocky bedded, and weakly calcareous, shrinkage cracks and slickenside bedding common at top of shale intervals; limestone rare, typically a pale olive (10Y6/2), thin, wavy bedded (beds 1”–2” thick), slightly argillaceous, unfossiliferous carbonate mudstone that are more common toward base of formation. Shale intervals as much as 5 ft thick, while sandstone intervals typically between 1–3 ft thick; total thickness of formation from 0–30 ft, variable due to erosional unconformities at the top and bottom of formation.

Mhv HINDSVILLE FORMATION (Mississippian, Chesterian)—Overall a dark yellowish orange (10YR6/6), very pale orange (10YR8/2), to medium light gray (N6) weathering, medium light gray (N6) to medium gray (N5) fresh limestone having wackestone to grainstone textures. Formation can be subdivided into 2 basic members: 1) an upper 0–24 ft thick interval of cross-laminated, sandy grainstone, interbedded with medium- to thin-bedded whole-fossil wackestones and packstones; Waulsortian mound facies, with accompanying flank beds, may occur at top of this interval, mounds typically 2–3 ft in diameter and 6 “ in height, and contain abundant fenestrate bryozoans; small, well-rounded chert pebbles commonly found as lag at base of cross-bedded sequences; and 2) a lower, 10–30 ft thick interval of thin- to medium-bedded, well-rounded, skeletal, crinoidal grainstone that may contain shark’s teeth and disarticulated fish plates. A 12” thick dark gray (N3), fissile, very calcareous clayshale separates the upper and lower intervals; a corresponding 1”–2” thick sulfide zone occurs just below clayshale at the top of the lower interval. Predominate interval mapped in quad was the lower skeletal grainstone facies, while the upper interval with Waulsortian facies rarely observed outside of quarries due to local pre-Batesville erosion. Maximum thickness of formation was measured at 54 ft, but averages closer to 20 ft thick; thickness variable due to erosional unconformities at the top and bottom of formation.

Mbn BOONE FORMATION (Mississippian, Meramecian)—Formation consists of intervals of carbonate wackestone, packstone and grainstone, alternating with bedded chert. Carbonates typically medium gray (N5) to medium light gray (N4), wavy, thin-bedded to laminated (with bedding from 0.25” to 3” thick); intervals may either contain predominat whole-fossil wackestone textures with local nodular chert, or consist of cross-laminated, skeletal and oolitic grainstones and packstones. Wackestone intervals usually thicker bedded than grainstone intervals, and are more common in stratigraphically lower parts of the section. Limestone intervals vary from 2–10 ft thick. Chert is medium light gray (N5), very light gray (N8), light bluish gray (5B7/1), to bluish white (5B9/1), with pale yellowish orange (10YR6/1) to dark yellowish orange (10YR8/6) staining common along fracture surfaces; chert intervals thin- to medium-bedded, but bedding obscured by extensive stockwork fracturing that does not extend into limestone intervals; silica-replaced fossils and fossil molds may occur; thickness of chert intervals varies from individual beds of 3” thick to 10–20 ft horizons. Contacts between chert- and limestone-dominated horizons appear to be sharp, but slightly wavy. In some locations on the east-central part of the quad the top of the Boone may include the Quapaw Limestone of McKnight and Fisher (1970). Overall, at least 100 ft of the upper Boone Formation is exposed in the quad.

SYMBOLS

- Miami Trough; approximately located
- Axial trace of synclinal structure; approximately located*
- Axial trace of monoclinal structure; approximately located*
- Fault, U, upthrown side; D, downthrown side
- Unit contact; dashed where approximate
- Outcrop, geologic observation
- Mine shaft (for complete inventory see Luza and Keheley, 2006)
- Large collapse features associated with abandoned underground mines (Luza and Keheley, 2006)
- Water well identified on cross section
- LZ, LS — Abandoned lead-zinc (LZ) open pit or limestone (LS) quarry
- LS — Active limestone (LS) quarry

*The Bendelar and Rialto structures only effect the underlying Mississippian formations.

APPROXIMATE MEAN DECLINATION
TRUE NORTH
MAGNETIC NORTH

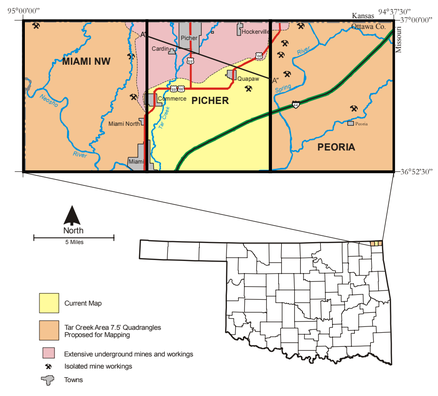
SCALE 1:24 000
1 MILE
7000 FEET
1 KILOMETER
CONTOUR INTERVAL 10 FEET

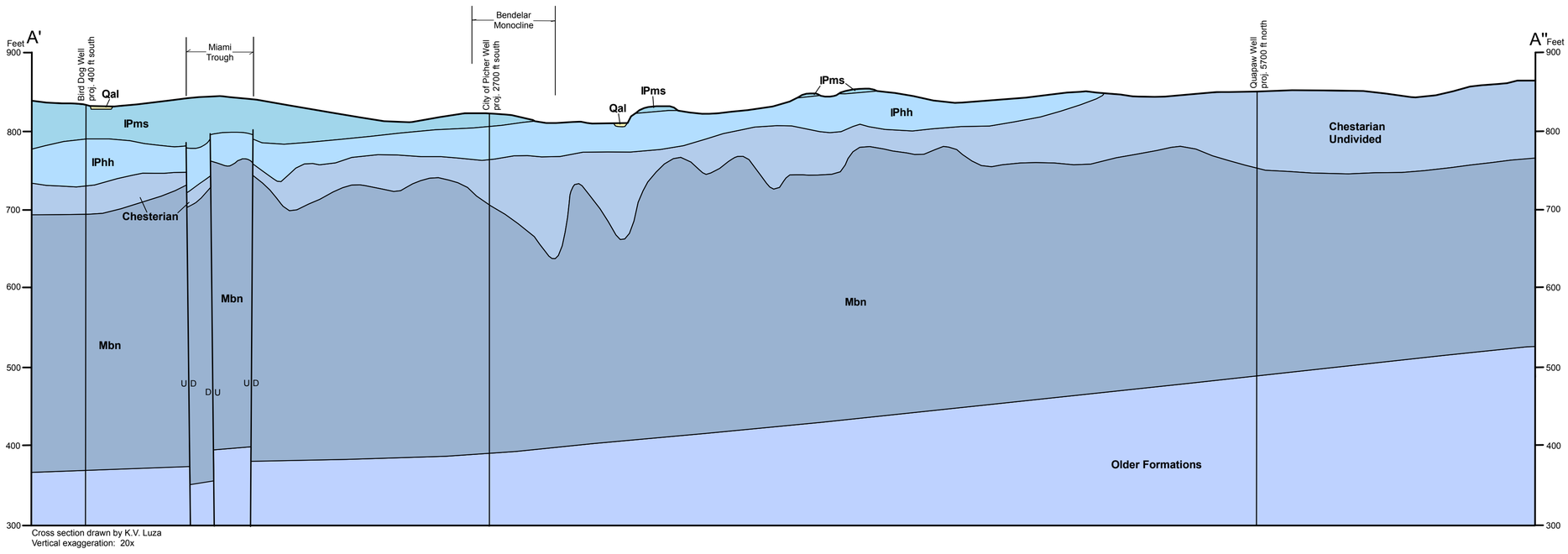
Base Map Credits

Base map compiled by the U.S. Geological Survey. Topography by photogrammetric methods from aerial photographs taken 1958. Field checked 1961. Revisions from aerial photographs taken 1980 and other sources. Map edited 1982. Universal Transverse Mercator (UTM) projection. 1927 North American Datum. 10,000-foot grid ticks based on Oklahoma coordinate system, north zone. 1,000-meter grid, zone 15.

Geologic Map Credits

Geology by Thomas M. Stanley and Kenneth V. Luza, 2005-2006. Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under Assistance Award Number 05HQAG0048. The northern part of the quadrangle includes the southern part of Cherokee County, Kansas. 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 and layout prepared by G. Russell Standridge, 2006.





Cross section drawn by K.V. Luza
Vertical exaggeration: 20x

GEOLOGIC MAP OF THE PICHER 7.5′ QUADRANGLE, OTTAWA COUNTY, OKLAHOMA

Thomas M. Stanley and Kenneth V. Luza

2006

REFERENCES CITED

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