OKLAHOMA GEOLOGICAL SURVEY
Charles J. Mankin, *Director*

Prepared in cooperation with the
U.S. GEOLOGICAL SURVEY

CIRCULAR 85 PLATE 1
Geology and Ground-Water Data

MAP SHOWING GEOLOGY AND GROUND-WATER DATA IN VICINITY OF WICHITA MOUNTAINS, SOUTHWESTERN OKLAHOMA

By
John S. Havens
1983

EXPLANATION

The stratigraphic nomenclature and determinations used herein are those accepted by the Oklahoma Geological Survey and do not necessarily agree with those of the U.S. Geological Survey.

QUATERNARY

Qal — ALLUVIUM—Sand, clay, and gravel along flood plains, as much as 32 ft (16 m) thick. Yields 5 to 500 gal/min (0.3 to 32 L/s) of hard water to wells. Shown only along major streams and tributaries.

Qt — TERRACE DEPOSITS—Sand, clay, and gravel of limited extent, less than 50 ft (15 m) thick. Probably yields less than 5 gal/min (0.3 L/s) to wells.

PERMIAN — Custerian

Pcc — CLOUD CHIEF FORMATION—Gypsum, about 30 ft (9.1 m) thick. May yield water to wells.

Pwr / Pwrw / Pwr / Pwm — WHITEHORSE GROUP
Pwr—*Rush Springs Formation*—Fine-grained, crossbedded sandstone, 136 to 300 ft (41 to 90 m) thick. Yields 50 to 300 gal/min (3.2 to 19 L/s) of water to wells.
Pwrw—*Weatherford Bed*—Gypsum and dolomite, as much as 60 ft (18 m) thick, about 15 ft below top. Probably yields less than 5 gal/min (0.3 L/s) of water to wells.
Pwm—*Marlow Formation*—Sandy or silty shales, 90 to 130 ft (27 to 40 m) thick. Yields less than 100 gal/min (6.3 L/s) of water to wells.

PERMIAN — Cimarronian, Sumner Group

Pe — EL RENO GROUP—Includes *Chickasha Formation* (above): sandstone, shale, and siltstone, 400 to 580 ft (120 to 180 m) thick, which yields 50 to 300 gal/min (3.1 to 19 L/s) of water to wells; and *Duncan Sandstone* (below): sandstone with some shale, 100 to 250 ft (30 to 76 m) thick, which yields less than 10 gal/min (0.6 L/s) of water to wells.

Pp / Ph / Pg — POST OAK CONGLOMERATE, HENNESSEY SHALE, AND GARBER SANDSTONE
Pp—*Post Oak Conglomerate*—Limestone conglomerate, about 40 ft (12 m) thick near limestone outcrops. Yields as much as 200 gal/min (13 L/s) of water. Sand, gravel, cobbles, silt, clay, and shale, as much as 500 ft (150 m) thick near igneous outcrops. Yields less than 10 gal/min (0.6 L/s) of water to wells.
Ph—*Hennessey Shale*—Red-brown to gray shale, 130 to 680 ft (40 to 60 m) thick. Yields less than 10 gal/min (0.6 L/s) of water to wells.
Pg—*Garber Sandstone*—Red-brown fine-grained sandstone and mudstone conglomerate, 160 to 210 ft (49 to 64 m) thick. Yields less than 10 gal/min (0.6 L/s) of water to wells.

Pwe — WELLINGTON FORMATION—Maroon shale with a basal sandstone bed, about 130 ft (40 m) thick. No known water production in project area.

CAMBRIAN AND ORDOVICIAN

OCat — ARBUCKLE AND TIMBERED HILLS GROUPS—Limestone, dolomite, sandy dolomite, mudstone, and conglomerate approximately 6,000 ft (1,800 m) thick. Yields 90 to 600 gal/min (5.7 to 38 L/s) to wells, which may flow; springs may flow or yield as much as 200 gal/min (13 L/s) when pumped. Water in the Limestone Hills may contain hydrogen sulfide gas; water in the Cache-Lawton area generally contains from 1.6 to 12 mg/L fluoride.

CAMBRIAN

Cig — IGNEOUS ROCKS—Granite, rhyolite, gabbro, anorthosite, and diorite, as much as 10,000 ft (3,000 m) thick. Yields insignificant quantities of water.

Contact, dashed where gradational

Fault, dashed where inferred, dotted where concealed; U, upthrown side; D, downthrown side

Anticline, showing direction of plunge; dashed where inferred

Syncline; dashed where inferred; dotted where concealed

200 — Contour line of equal altitude on top of Arbuckle Group, approximately located. Contour interval, 100 ft (30 m). Datum is mean sea level

Well; upper number is depth of well, in feet; middle number is depth to water, in feet below land surface; lower number is yield of well, in gallons per minute. If two numbers separated by a single line are shown, the values are well depth and water level; e = estimated; r = reported; f = flowing well; u = unknown; p&a = plugged and abandoned

−646 — Well location; number indicates altitude of top of Arbuckle Group in well, in feet above or below mean sea level

100e — Spring; number indicates yield in gallons per minute; e = estimated yield

1140 — Outcrop point; number indicates altitude of Arbuckle Group, in feet above or below mean sea level

INDEX MAP SHOWING MAPPED AREA

BASE MODIFIED FROM U.S. GEOLOGICAL SURVEY
1:250,000 SERIES: LAWTON QUADRANGLE, 1955

SCALE 1:125 000
2 0 2 4 6 8 10 MILES
2 0 2 4 6 8 10 KILOMETERS

COMPILED BY JOHN S. HAVENS
U.S. GEOLOGICAL SURVEY, 1975

SOUTH A — A′ NORTH

VERTICAL EXAGGERATION ×10
MODIFIED FROM HAYES, 1955, AND HAM AND OTHERS, 1964