

EXPLANATION

Geologic formations and their water-bearing characteristics

UNCONSOLIDATED DEPOSITS

Recent alluvium
Recent alluvium and recent deposits on surface of flood plain, terrace, and other recent deposits. This material may be subject to heavy erosion during floods and is usually subject to rapid changes in elevation. It is usually composed of sand, silt, and clay, and is usually deposited in the flood plain, terrace, and other recent deposits. It is usually deposited in the flood plain, terrace, and other recent deposits. It is usually deposited in the flood plain, terrace, and other recent deposits.

BECKROCK

Beckrock
Beckrock is a type of igneous rock that is composed of a mixture of quartz, feldspar, and mica. It is usually found in the flood plain, terrace, and other recent deposits. It is usually deposited in the flood plain, terrace, and other recent deposits. It is usually deposited in the flood plain, terrace, and other recent deposits.

PERMIAN ROCKS, UNDIFFERENTIATED

Permian rocks, undifferentiated
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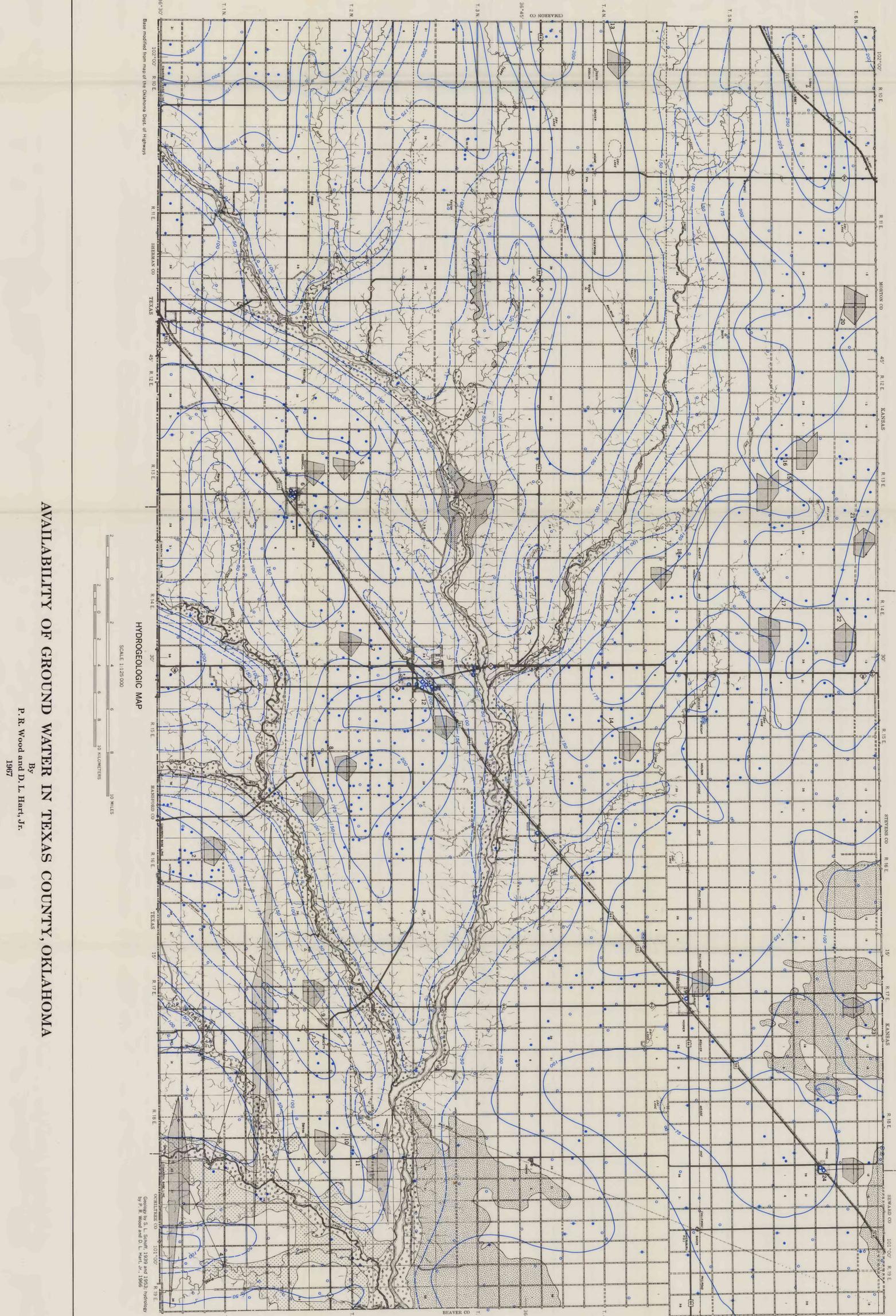
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Line of equal depth to water March, 1939
Domestic, stock, or unlined well
Industrial well
Municipal well
Intrusion well
Contact
Dams and well



INTRODUCTION

Texas County, in the Oklahoma Panhandle, depends chiefly on ground water for its water supply. Texas County and areas in Oklahoma in which ground water is an important source of water for irrigation and other uses are included in this report. The Oklahoma Water Resources Board requested the U.S. Geological Survey to conduct an analytical geologic, hydrologic, and engineering study of the water resources of Texas County. This study was completed in 1958 and is presented in this report. The study was conducted in cooperation with the Oklahoma Water Resources Board and the Oklahoma State Department of Agriculture.

Future investigations will include reconnaissance studies of adjacent counties and a comprehensive study of the irrigated areas in the entire Panhandle to determine the annual change in the volume of water stored in the ground-water reservoir and the total quantity of water that may be safely withdrawn in any given year.

The illustrations and the text accompanying the illustrations outline geologic and hydrologic conditions that govern the distribution of ground water in Texas County. The geologic map shows the distribution of the principal geologic units that control the occurrence and availability of ground water. The hydrogeologic map shows the distribution of the principal geologic units that control the occurrence and availability of ground water. The hydrogeologic map shows the distribution of the principal geologic units that control the occurrence and availability of ground water.

The data used in compiling maps for this report were obtained from many sources. Although the maps show only the results of the study, they are based on the following sources:

(1) The approximate thickness of the unconsolidated deposits in Texas County, (2) the approximate thickness of the Permian rocks, (3) a generalized section showing the relation of the unconsolidated deposits, the Permian, and the water table.

The maps on sheet 3 show (1) areas irrigated by ground water as of January 1958, (2) areas favorable for irrigation development, and (3) areas where ground-water levels are low. The maps on sheet 4 show (1) areas where ground-water levels are low, (2) areas where ground-water levels are high, and (3) the chemical character of ground water. Explanatory material accompanying the map outlines geologic characteristics and hydrogeologic conditions that govern the distribution of ground water in the county.

The map on sheet 2 shows (1) the approximate thickness of the unconsolidated deposits in Texas County, (2) the approximate thickness of the Permian rocks, (3) a generalized section showing the relation of the unconsolidated deposits, the Permian, and the water table.

FOR MORE INFORMATION ABOUT—

Basic Water Facts, Principles and Problems, B. Langbein, U.S. Geological Survey Miscellaneous Report, 50 pages, 1950, U.S. Government Printing Office, Washington, D. C. 1950.

Geology of Texas County, Oklahoma, by S. L. Schott, U.S. Geological Survey Miscellaneous Report, 27 pages, U.S. Government Printing Office, Washington, D. C. 1958.

Water Quality, by H. A. Sorenson and H. L. Baldwin, U.S. Department of Agriculture Yearbook of Agriculture, 1956, 701 pages, U.S. Government Printing Office, Washington, D. C. 1956.

The Permian and Pleistocene Deposits of Texas County, Oklahoma, by S. L. Schott, Oklahoma Geological Survey Bulletin, 1956, volume 84, pages 149-169, 1956.

Permian Rocks on Gulf Coast, Texas County, Oklahoma, by D. L. Hart, Jr., Oklahoma Water Resources Board, 1956, Texas County, Oklahoma, 1953. (Ground-water levels in Texas County based on pages 149-169, Oklahoma, 1956-60.)

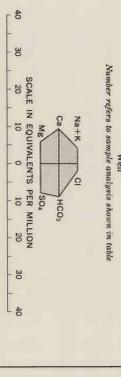
Ground-water Levels in Observation Wells in Oklahoma, 1948-54, by P. R. Wood and M. D. Koster, Oklahoma Water Resources Board, 1956, Oklahoma City, Oklahoma, 1954. (Ground-water levels in observation wells in Oklahoma, 1948-54.)

Cooperation of water-level fluctuations with climatic cycles in the Oklahoma Panhandle, by P. R. Wood, U.S. Geological Survey, Oklahoma City, Oklahoma, 1953. (U.S. Government Printing Office, Washington, D. C. 1953.)

Soil survey of Texas County, Oklahoma, by H. C. Mathers and P. R. Wood, U.S. Government Printing Office, Washington, D. C. 1951.

WATER-QUALITY DIAGRAMS

Diagrams show general chemical character of ground water and are based on analyses of water from wells at indicated locations. The diagrams show the relative concentrations of calcium, magnesium, sodium and potassium, the bicarbonate, sulfate, chloride, and nitrate ions. The diagrams show the relative concentrations of calcium, magnesium, sodium and potassium, the bicarbonate, sulfate, chloride, and nitrate ions. The diagrams show the relative concentrations of calcium, magnesium, sodium and potassium, the bicarbonate, sulfate, chloride, and nitrate ions.



The analyses of waters in the Panhandle and Pleistocene deposits indicate the water is fairly uniform in chemical character, calcium-magnesium-chloride type, with moderate to low amounts of sulfate and chloride. Examples of this type are shown by diagram number 1 and 2. The water is generally very hard, and contains considerable sulfate and chloride ions. The water is generally very hard, and contains considerable sulfate and chloride ions. The water is generally very hard, and contains considerable sulfate and chloride ions.

ANALYSIS OF WATER QUALITY

Sample Number	Well number	Depth (feet)	Date	Discharge (gpm)	Geologic source
1	1N-10E-20N11	215	3-17-52	338	QTZ
2	1N-10E-20N12	302	3-17-52	500	QTZ
3	1N-10E-20N13	312	3-17-52	500	QTZ
4	1N-10E-20N14	401	1-25-57	290	QTZ
5	1N-10E-20N15	417	1-25-57	325	QTZ
6	1N-10E-20N16	405	1-25-57	340	QTZ
7	1N-10E-20N17	405	1-25-57	340	QTZ
8	1N-10E-20N18	405	1-25-57	340	QTZ
9	1N-10E-20N19	405	1-25-57	340	QTZ
10	1N-10E-20N20	390	3-30-50	1,100	QTZ
11	1N-10E-20N21	317	3-30-50	775	QTZ
12	1N-10E-20N22	317	3-17-59	786	QTZ
13	1N-10E-20N23	317	3-17-59	786	QTZ
14	1N-10E-20N24	317	3-17-59	786	QTZ
15	1N-10E-20N25	297	4-27-59	793	QTZ
16	1N-10E-20N26	297	4-27-59	793	QTZ
17	1N-10E-20N27	307	1-2-54	246	QTZ
18	1N-10E-20N28	307	1-2-54	246	QTZ
19	1N-10E-20N29	307	1-2-54	246	QTZ
20	1N-10E-20N30	307	1-2-54	246	QTZ
21	1N-10E-20N31	307	1-2-54	246	QTZ
22	1N-10E-20N32	307	1-2-54	246	QTZ
23	1N-10E-20N33	307	1-2-54	246	QTZ
24	1N-10E-20N34	307	1-2-54	246	QTZ
25	1N-10E-20N35	307	1-2-54	246	QTZ
26	1N-10E-20N36	307	1-2-54	246	QTZ
27	1N-10E-20N37	307	1-2-54	246	QTZ
28	1N-10E-20N38	307	1-2-54	246	QTZ
29	1N-10E-20N39	307	1-2-54	246	QTZ
30	1N-10E-20N40	307	1-2-54	246	QTZ
31	1N-10E-20N41	307	1-2-54	246	QTZ
32	1N-10E-20N42	307	1-2-54	246	QTZ
33	1N-10E-20N43	307	1-2-54	246	QTZ
34	1N-10E-20N44	307	1-2-54	246	QTZ
35	1N-10E-20N45	307	1-2-54	246	QTZ

QTZ: Permian and Pleistocene deposits
MKT: Permian or Pleistocene (bedrock)

