EXPLANATION

Alluvium and Terrace Deposits (Quaternary in age). Unconsolidated deposits of sand, silt, clay, and gravel that occur along or adjacent to modern and ancient rivers and streams. Thickness generally ranges from 10 to 50 ft. (locally as much as 100 ft.). Wells generally yield 10 to 500 gpm of water (locally several thousand gpm), and most water is of good quality (less than 1,000 mg/L). Recharge areas are essentially the same as distribution of the alluvium and terrace deposits.

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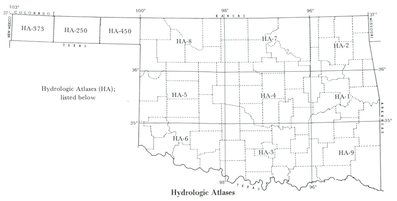

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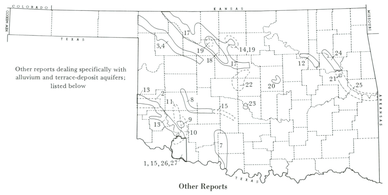

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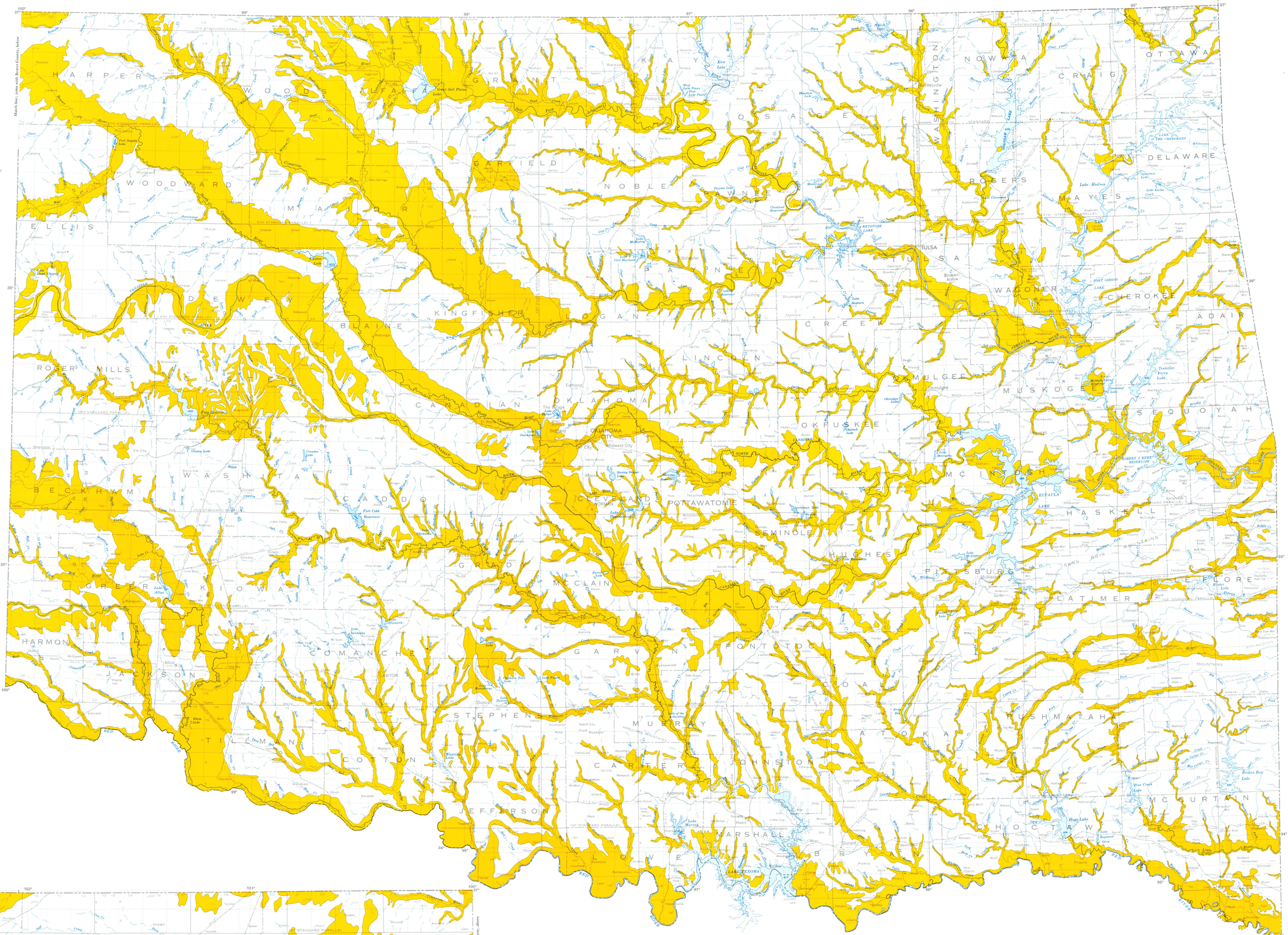

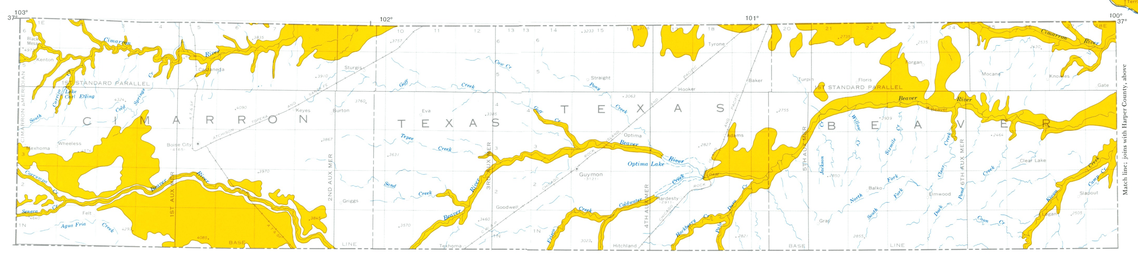

Scale 1:500,000
1 inch equals approximately 8 miles

Base map modified from U.S. Geological Survey, 1:500,000 series, dated 1972

Cartography by David M. Deering

This map shows the distribution of the principal Quaternary alluvium and terrace deposits in Oklahoma. The deposits consist mainly of unconsolidated sand, silt, clay, and gravel laid down by rivers and streams that flow generally to the east and southeast across the State. The term "alluvium" refers to sediments in stream channels or flood plains of modern-day rivers and streams, whereas the term "terrace deposits" refers to older flood-plain or alluvial deposits that have been left behind after a river shifts position or cuts deeply into underlying rocks. Alluvium and terrace deposits are the youngest (most recent) of all geologic deposits, and therefore they overlie most of the bedrock formations in the State. In Oklahoma, alluvium and terrace deposits typically are 10 to 50 feet thick, although they are as much as 100 feet thick along some of the major rivers.

Many of the alluvial and terrace deposits contain sand and gravel layers that are highly porous and permeable, and these deposits typically contain important ground-water resources. Although not all alluvial or terrace deposits contain important ground-water aquifers, such aquifers are common enough that each deposit should be considered a potential water resource until proved otherwise.

Recharge areas for ground-water resources in alluvium and terrace deposits are essentially the same as the distribution of the deposits themselves, because almost all ground water contained in these deposits results from downward percolation of water from the land surface. Surface waters that recharge these deposits result from precipitation, surface runoff, and streams and rivers that flow across the unconsolidated material. The other principal source of ground water in alluvium and terrace deposits is upward or lateral flow from underlying bedrock formations.

The quality of ground water in alluvium and terrace deposits is normally quite good (less than 1,000 milligrams per liter of dissolved solids), and the waters generally are suitable for most purposes. Where deposits are recharged by rivers or bedrock formations containing highly mineralized waters, the quality of this ground water is naturally much poorer.

The quantity of water that can be produced from wells completed in alluvium or terrace deposits is highly variable, but many wells produce from 10 to 500 gallons per minute. Some exceptional wells produce several thousand gallons per minute.

Owing to the importance of alluvium and terrace deposits as recharge areas and as potential ground-water aquifers, special care must be taken in the utilization of lands underlain by these deposits. In particular, special attention must be exercised in storage or disposal of waste materials that contain leachable contaminants that could degrade the quality of water within or flowing across the alluvium or terrace deposits.

The accompanying map of alluvium and terrace deposits is compiled mainly from a series of hydrologic atlases prepared cooperatively by the Oklahoma Geological Survey and the U.S. Geological Survey (see references). These atlases, which are reconnaissance studies of the water resources of Oklahoma, can be referred to by the reader for more detailed information on the distribution of alluvium and terrace deposits, and on the quality and quantity of ground water that is being produced from these deposits. Mapping in the three Panhandle counties is from hydrologic atlases prepared cooperatively by the U.S. Geological Survey and the Oklahoma Water Resources Board, and also from work done by the Oklahoma Geological Survey that was released as part of the "Geologic Atlas of Texas" (see references). Hydrologic reports dealing specifically with alluvium or terrace-deposit aquifers have been prepared mainly by the Oklahoma Water Resources Board, the U.S. Geological Survey, and the Oklahoma Geological Survey, and these are listed as "Other Reports" in the references. Additional county and area reports dealing in part with alluvium and terrace-deposit aquifers are included in the reference section on Sheet 2 – Bedrock Ground-Water Resources and Recharge Areas.

MAPS SHOWING PRINCIPAL GROUND-WATER RESOURCES AND RECHARGE AREAS IN OKLAHOMA:

SHEET 1— UNCONSOLIDATED ALLUVIUM AND TERRACE DEPOSITS

Compiled by
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Oklahoma Geological Survey

1983