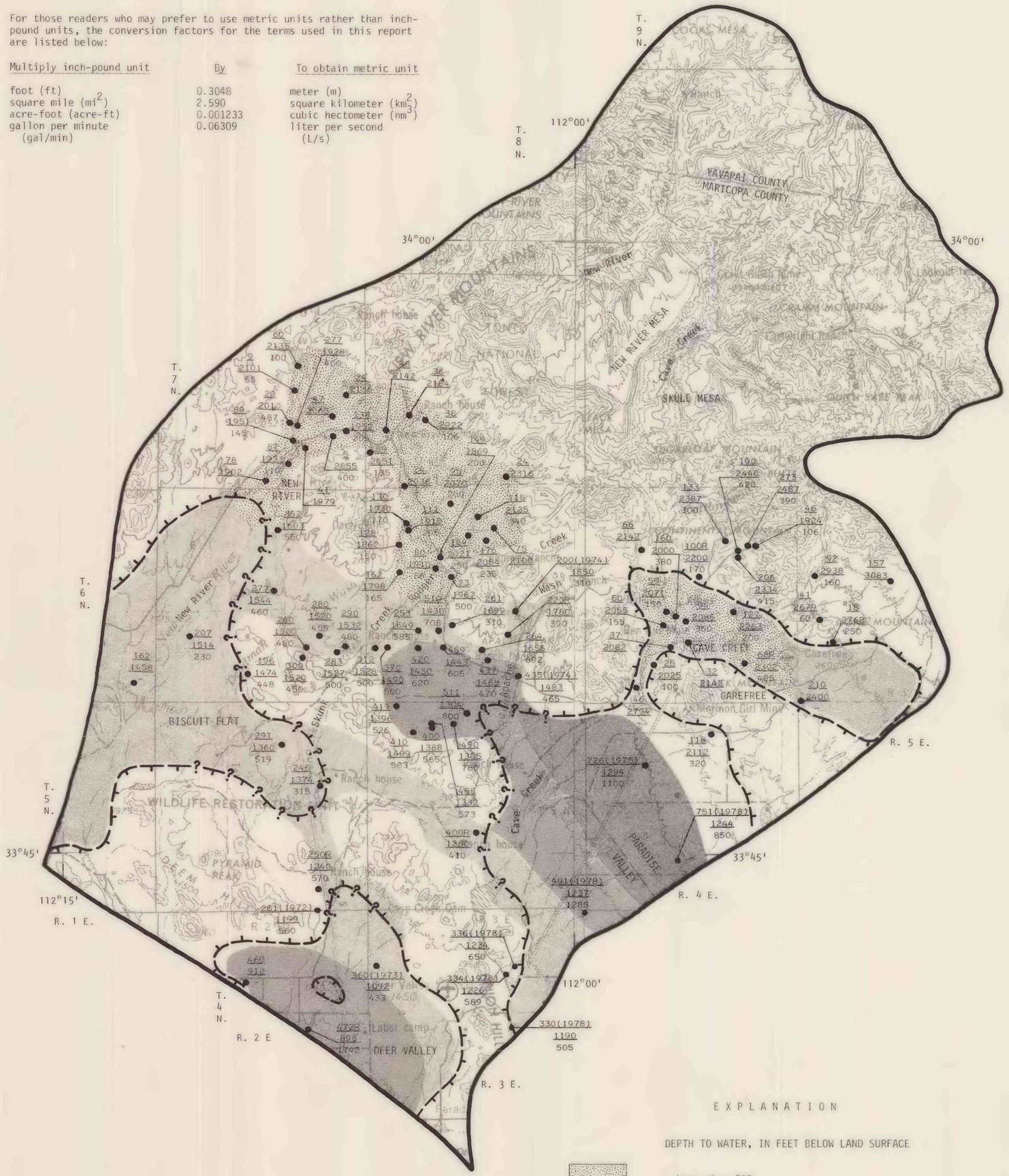
CONVERSION FACTORS

For those readers who may prefer to use metric units rather than inch-pound units, the conversion factors for the terms used in this report are listed below:

Multiply inch-pound unit	By	To obtain metric unit
foot (ft)	0.3048	meter (m)
square mile (mi^2)	2.590	square kilometer (km^2)
acre-foot (acre-ft)	0.001233	cubic hectometer (hm^3)
gallon per minute (gal/min)	0.06309	liter per second (L/s)



The New River-Cave Creek area includes about 500 mi^2 in central Arizona. Water from wells and springs is used mainly for domestic, stock, and public supplies. Few long-term water-level measurements and pumpage data are available for the area. On the basis of the available data and recent population figures (Arizona Department of Economic Security, 1976), ground-water withdrawals probably were about 1,500 acre-ft in 1976—an increase of about 50 percent since 1972.

The water-bearing characteristics of the units that make up the aquifers vary greatly owing to large differences in rock type and extent of fracturing. The main water-bearing unit consists of unconsolidated to semiconsolidated silt, sand, and gravel. Minor water-bearing units consist of conglomerate; interbedded basalt flows; rhyolitic to basaltic volcanic rocks; and schist, gneiss, and granite.

The unconsolidated silt, sand, and gravel unit yields from less than 1 to 50 gal/min of water to wells along Cave Creek, Skunk Creek, New River, and their major tributaries. The well yield depends on the saturated thickness of the unit. In Paradise Valley east of Apache Wash and in the Biscuit Flat and Deer Valley areas south of New River, heterogeneous deposits of unconsolidated to semiconsolidated silt, sand, and gravel yield from less than 1 to 1,600 gal/min of water to wells. Generally, the deposits are more than 800 ft thick (Cooley, 1973); however, in the New River area between Rodger Creek and New River the deposits are a thin veneer and probably will not yield water.

The conglomerate, which is overlain by basalt flows in places, is present north of the town of New River and may yield as much as 10 gal/min of water to wells. The conglomerate is present in much of the Cave Creek-Carefree area and may yield as much as 25 gal/min of water to wells. The yield depends on the degree of saturation and the extent of fracturing.

Basalt flows cap New River and Skull Mesas and a few small scattered mesas. The basalt may collect and transmit water where sufficiently fractured, and, if the underlying unit is impermeable, contact springs may be present at or near the base of the basalt. The unit may yield as much as 10 gal/min of water to wells through fractures.

Basalt flows are interbedded with the silt, sand, and gravel unit in the Cave Creek-Carefree, Biscuit Flat, and Deer Valley areas. Where fractured, the basalt flows may transmit water effectively.

Schist, gneiss, and granite, and, in places, rhyolitic to basaltic volcanic rocks make up the mountains in the New River-Cave Creek area. The rocks generally yield less than 10 gal/min of water to wells and springs through fractures. Between Cave Creek and the town of New River, ground water is derived mainly from the schist and gneiss. Well yields generally are less than 10 gal/min; however, as much as 30 gal/min has been reported.

The depth to water ranges from less than 10 to more than 600 ft below the land surface and depends to some extent on the topography. Large differences in depth to water, well productivity, and chemical quality of the water occur in short distances, which indicate the diverse hydrologic conditions in the area. The depth-to-water zones shown on the map are inferred and may not be hydrologically continuous, particularly in the New River-Rodger Creek area. In areas of high well density only selected wells are shown on the map.

The hydrologic data on which these maps are based are available, for the most part, in computer-printout form for consultation at the Arizona Water Commission, 222 North Central Avenue, Suite 800, Phoenix, and at U.S. Geological Survey offices in: Federal Building, 301 West Congress Street, Tucson, and Suite 1880, Valley Center, Phoenix. Material from which copies can be made at private expense is available at the Tucson and Phoenix offices of the U.S. Geological Survey.

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EXPLANATION

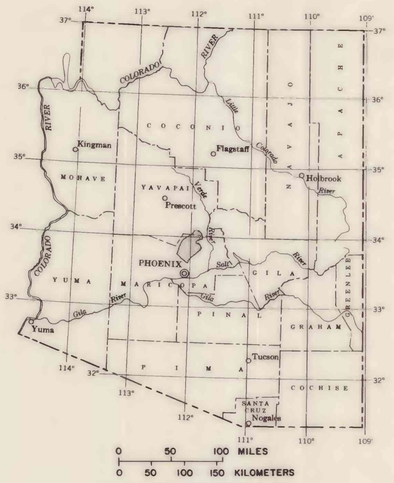
DEPTH TO WATER, IN FEET BELOW LAND SURFACE

- Less than 200
- 200 to 400
- 400 to 600
- More than 600
- Insufficient data

● 360(1973) / 1092 / 433 — WELL IN WHICH DEPTH TO WATER WAS MEASURED IN 1976-77—Upper number, 360, is depth to water in feet below land surface [(1973), year in which measurement was made if other than 1976-77; R, depth to water reported]. Middle number, 1092, is altitude of the water level in feet above mean sea level. Lower number, 433, is depth of well in feet

APPROXIMATE BOUNDARY OF THE MAIN WATER-BEARING UNIT—The main water-bearing unit consists of unconsolidated to semiconsolidated silt, sand, and gravel. Minor water-bearing units consist of conglomerate; interbedded basalt flows; rhyolitic to basaltic volcanic rocks; and schist, gneiss, and granite. Queried where uncertain

ARBITRARY BOUNDARY OF GROUND-WATER AREA



INDEX MAP SHOWING AREA OF REPORT (SHADED)

5 0 5 MILES
5 0 5 10 KILOMETERS

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100-FOOT INTERVALS
DATUM IS MEAN SEA LEVEL

BASE FROM U.S. GEOLOGICAL SURVEY
PHOENIX 1:250,000, 1954,
MESA 1:250,000, 1954,
PRESCOTT 1:250,000, 1954, AND
HOLBROOK 1:250,000, 1954

DEPTH TO WATER, ALTITUDE OF THE WATER LEVEL, AND WELL DEPTH

MAPS SHOWING GROUND-WATER CONDITIONS IN THE NEW RIVER-CAVE CREEK AREA, MARICOPA AND YAVAPAI COUNTIES, ARIZONA—1977

By

G. R. Littin