EXPLANATION

QUATERNARY

Pleistocene and Recent

Qs — Streamwash
Unconsolidated gravel, sand, silt, and clay; mostly deposited by recent streams; good but shallow aquifers along perennial streams; generally above the water table

Pleistocene

Qg — Gravel
Unconsolidated and semiconsolidated gravel, some sand, silt, and clay; forms talus deposits, alluvial-fan deposits, and the alluvial veneer on sediment surfaces; generally above water table and not known to yield water to wells or springs

UNCONFORMITY

Qv — Volcanic rocks
Rhyolite, rhyodacite, and associated tuffaceous sedimentary rocks; not water bearing

UNCONFORMITY

TERTIARY OR QUATERNARY

Pliocene(?) or Pleistocene

QTvl / QTv — Verde Formation
QTv, sedimentary rocks, consolidated and semiconsolidated lacustrine and fluviatile deposits. QTvl, limestone of the thick limestone facies where exposed. QTvv, basalt flows and tuffaceous sedimentary rocks. Limestone beds are the chief aquifers and in many places supply large quantities of water to wells. Also, some clastic rocks are good aquifers

UNCONFORMITY

TERTIARY

Miocene(?) and Pliocene(?)

Tv — Volcanic rocks
Basaltic lava flows, dikes, necks, tuffs, cinders, and intercalated fluviatile sediments; locally contain quantities of water adequate for stock wells; generally above water table

UNCONFORMITY

Miocene(?)

Ts — Sedimentary rocks
Conglomerate, gravel, and sandstone; in Dry Beaver Creek include siltstone, clay, and limestone; symbol queried where sedimentary rocks not investigated. Generally above water table; poor aquifer owing to very low permeability

UNCONFORMITY

PERMIAN

Aubrey Group

Pk — Kaibab Limestone
Limestone or dolomitic limestone containing nodules and thin beds of chert; not known to yield ground water in this area

UNCONFORMITY

Pt — Toroweap Formation
Sandstone throughout most of the valley; not an aquifer in this area

Ptc — Toroweap Formation and Coconino Sandstone undifferentiated

Pc — Coconino Sandstone
Sandstone, very fine to fine-grained, large-scale cross-beds. Is an aquifer north and east of Verde Valley, yielding water in deep canyons to springs that maintain perennial streamflow

PENNSYLVANIAN AND PERMIAN

PPs — Supai Formation
Sandstone and silty sandstone with some mudstone, limestone, siltstone, and dolomitic conglomerate; sandstone beds are permeable and yield substantial amounts of water to wells and springs

UNCONFORMITY

MISSISSIPPIAN

Mr — Redwall Limestone
Crystalline limestone containing lenses and nodules of chert; fractures and solution channels make the formation a potential aquifer; yields water to several springs

UNCONFORMITY

DEVONIAN

Middle(?) and Upper Devonian

Dm — Martin Limestone
Dolomite and dolomitic limestone; contains thin beds of mudstone, shale, and sandstone; some beds are very fossiliferous; not water bearing

CAMBRIAN

Lower and Middle Cambrian

Ct — Tapeats(?) Sandstone
Upper part is siltstone and mudstone, lower part is sandstone and conglomerate; not water bearing

UNCONFORMITY

PRECAMBRIAN

Yavapai
Ash Creek Group

pC — Metamorphic and igneous rocks
Diorite and quartz porphyry igneous rocks; metamorphosed extrusive rocks of the Yavapai Series including basalt, andesite, dacite, and rhyolite flows, breccia and agglomerate, and tuffaceous sedimentary rocks; not known to yield water to wells, locally yields small quantities of water to springs

Contact
Dashed where approximately located; short dash where gradational; dotted where concealed

High-angle fault
Dashed where approximately located; dotted where concealed. U, upthrown side; D, downthrown side

3600 — Generalized water-table contour
In feet above mean sea level, for the period 1957–60; contour interval is 100 feet

Strike and dip of beds

Horizontal beds

3725 — Domestic or stock well

3400 — Domestic or stock well (flowing)

3636 — Domestic or stock well (not used)

3176 — Irrigation well

3460 — Irrigation well (flowing)

Public supply

Oil-test hole

3575 — Spring

Stream-gaging stations and measurement sites

(10) — Location of measured sections discussed in text

Number beside well and spring symbols is approximate altitude of water level for the period 1957–60

112°00′ — 111°50′ — 34°45′ — 34°30′ — R. 3 E. — R. 4 E. — R. 5 E. — R. 6 E. — R. 7 E. — T. 17 N. — T. 16 N. — T. 15 N. — T. 14 N. — T. 13 N.

BLACK MTN. — SEDONA — OAK CREEK FAULT — CATHEDRAL ROCK FAULT — FAULT — COCONINO COUNTY — YAVAPAI COUNTY — BIG PARK — HOUSE MTN. — BEAVER TAIL BUTTE — MINGUS MTN. — VERDE FAULT — WHITE HILLS — SACRED MTN. — WINGFIELD MESA — SQUAW PEAK — GYPSUM MINE — Sedona — Grasshopper Flats — Lobo Butte — Anderson Butte — Munds Mtn. — Red Rock Crossing — Bell Rock — Clarkdale — Cottonwood — Jerome — Camp Verde — McGuireville — Montezuma Castle National Monument — Montezuma Well — Soda Spring — Walker Mtn. — Bull Pen Ranch — Chasm gaging station — Observation well — Recorder well 3260 — Spring Creek Spring — Bubbling Pond — Page Springs — Sheepshead Canyon Spring — Hells Canyon Spring — Cottontail Spring — Nasabal Spring — Grace Flant Spring — Phoenix Cement Co Plant — Pecks Lake — Verde River — Oak Creek — Dry Beaver Creek — Rattlesnake Canyon — Copper Canyon — Chasm Creek — Walker Spring — Ranger Station — Sedona Ranger Station — Camp Verde — Cottonwood — Sedona — Verde River

After C. A. Anderson and S. C. Creasey (1958); simplified from detailed map
After R. E. Lehner (1958); simplified from detailed map
F. R. Twenter and D. G. Metzger
F. R. Twenter

MAP SHOWING SOURCE OF GEOLOGIC DATA: HYDROLOGY BY F. R. TWENTER, D. G. METZGER, AND R. S. STULIK

Base modified from Forest Service aerial planimetric maps

APPROXIMATE MEAN DECLINATION, 1963

WEST — A — A′ — EAST

Thick limestone facies
Subsurface geology in this area is diagrammatic
Section by F. R. Twenter, 1961

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—W63435

GEOLOGIC MAP AND SECTION OF VERDE VALLEY, ARIZONA, SHOWING ALTITUDE OF GROUND WATER AND LOCATION OF WELLS, SPRINGS, AND GAGING STATIONS

SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS