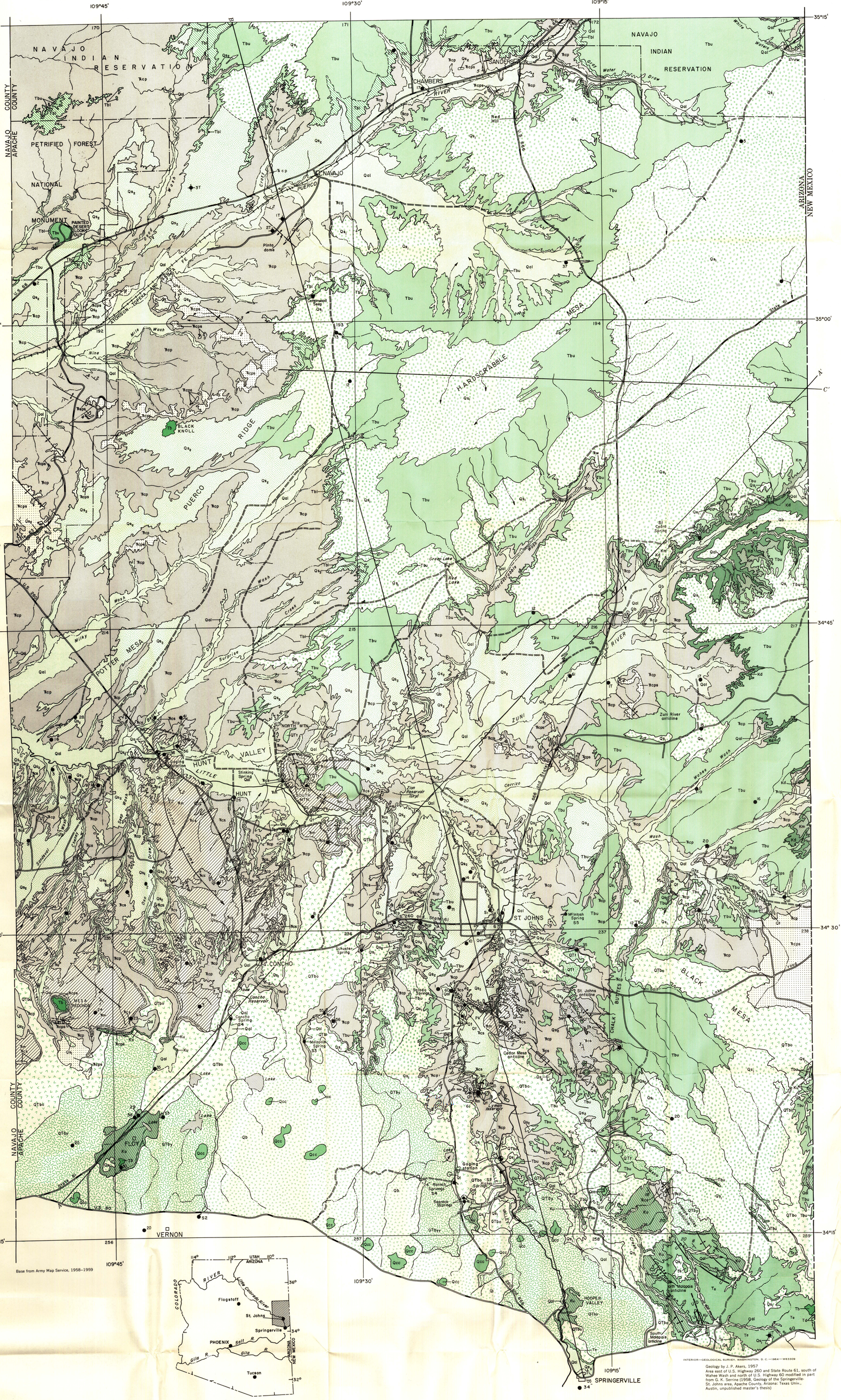

EXPLANATION

SEDIMENTARY ROCKS

Qal — Alluvium
Shown only where of appreciable significance. Contains water

Qt — Travertine deposits
Associated with Wupatki surfaces. Do not contain water in most areas

Qs₂, Qs₁ — Quaternary sediments
Qs₂, *sediments on Black Point surfaces*
Qs₁, *sediments on Wupatki surfaces. Locally contain water*

Pliocene to Pleistocene — QUATERNARY

QTt — Travertine deposits
Associated with older Black Point surfaces. Do not contain water

Pliocene to Pleistocene — TERTIARY AND QUATERNARY

UNCONFORMITY

Tbu, Tbv, Tbl — Bidahochi Formation
Tbu, *upper member, consists of sandstone with subordinate travertine, gravel, and, in the lower part, tuff. Contains water*
Tbv, *middle volcanic member, consists of lava flows and volcanic detritus. Does not contain water*
Tbl, *lower member, consists of interbedded sandstone and claystone. Locally contains water*

Pliocene — TERTIARY

UNCONFORMITY

Td — Datil Formation
Consists of tuff, rhyolite, sandstone, and conglomerate. Does not contain water in area mapped

Miocene(?) — TERTIARY

UNCONFORMITY

Te — Sedimentary rocks
Consists of arkosic sandstone and conglomerate interbedded with sandy mudstone. Conglomerate contains rounded pebbles and cobbles of quartzite, jasper, granite, sandstone, and limestone. Probably equivalent in part to Baca Formation of New Mexico. Yields water in Springerville area

Eocene(?) — TERTIARY

UNCONFORMITY

Ks — Sedimentary rocks, undifferentiated
Include all Cretaceous rocks in the southern part of the area where the Mesaverde Group, Mancos Shale, and Dakota Sandstone were not differentiated. Consist of sandstone, siltstone, and carbonaceous mudstone. Some sandstone beds contain water

Km — Mancos Shale
Consists mainly of siltstone and mudstone, but contains a few thin beds of fine-grained sandstone. Does not contain water

Kd — Dakota Sandstone
Consists of an upper and lower sandstone unit separated by a medial carbonaceous siltstone unit. Contains water

Upper Cretaceous — CRETACEOUS

UNCONFORMITY

Ŧw — Wingate Sandstone
Consists of interbedded sandstone and siltstone. Includes an isolated outcrop of sandstone in Hardscrabble Wash 2 miles southwest of the junction of U.S. Highway 666 and State Route 61 which could be Dakota Sandstone or a sandstone of Jurassic age. Does not contain water

UNCONFORMITY

Ŧco, Ŧc, Ŧcp, Ŧcps, Ŧcs — Chinle Formation
Ŧc, *Chinle Formation, undifferentiated. (Shown only in section)*
Ŧco, *Owl Rock Member, present only in the extreme northeastern part of the area, consists of interbedded limestone and siltstone. Does not contain water*
Ŧcp, *Petrified Forest Member, consists of claystone, siltstone, and minor amounts of sandstone; split in most areas into an upper and lower part by the Sonsela Sandstone Bed. Some sandstone beds contain salty water*
Ŧcps, *Sonsela Sandstone Bed. Locally contains water*
Ŧcs, *Shinarump Member, consists of conglomerate, sandstone, and siltstone. Locally contains water*

Upper Triassic — TRIASSIC

UNCONFORMITY

Ŧm — Moenkopi Formation
Consists of interbedded siltstone and sandstone. Locally contains salty water

Lower and Middle(?) Triassic — TRIASSIC

UNCONFORMITY

Pk — Kaibab Limestone
Consists of limestone with a few lenticular beds of sandstone. Contains water where fractured

Pc — Coconino Sandstone
Consists of fine to medium well-sorted quartz grains. Contains water (Shown only in section)

Lower Permian — PERMIAN

PPs — Supai Formation
Consists of interbedded sandstone, siltstone, mudstone, limestone, and evaporite deposits. Some units contain salty water (Shown only in section)

PENNSYLVANIAN AND PERMIAN

UNCONFORMITY

pC — Precambrian rocks, undifferentiated
Consist of crystalline igneous rocks in most of the area. Probably do not contain water (Shown only in section)

PRECAMBRIAN

IGNEOUS ROCKS

Qcc, Qb — Quaternary volcanic rocks
Qcc, *cinder-cone deposits. Do not contain water.*
Qb, *basalt flow. Locally contains water*

Pleistocene to Recent — QUATERNARY

QTby, QTbo — Quaternary or Tertiary volcanic rocks
QTby, *younger basalt flow. Contains water.*
QTbo, *older basalt flow. Contains water*

Pliocene to Pleistocene — TERTIARY

Tb — Basaltic lava flow
Overlying Zuni-Hopi Buttes, or older erosion surfaces. Does not contain water

Miocene to Pliocene — TERTIARY

Contact
Dashed where approximately located

Double contact
Used to show change in horizon of a contact due to intertonguing of units

D
U
Fault
Dashed where approximately located. D, downthrown side; U, upthrown side

Anticline
Showing trace of axial plane and direction of plunge. Dashed where approximately located

Syncline
Showing trace of axial plane. Dashed where approximately located

Monocline
Showing trace of axial plane. Longer arrow indicates flatter dip

Strike and dip of beds
Number indicates degree of dip

9
Well and serial number of well

3T
Oil or gas exploration well and serial number of well

Spring

A — A'
Geologic section
Section C-C' is text figure

Numbers in upper right-hand corner of 15-minute quadrangles are those assigned by the U.S. Soil Conservation Service to corresponding 15-minute aerial mosaics

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1964—W63309

Geology by J. P. Akers, 1957
Area east of U.S. Highway 260 and State Route 61, south of Wahee Wash and north of U.S. Highway 60 modified in part from G. K. Serrine (1958, Geology of the Springerville-St. Johns area, Apache County, Arizona: Texas Univ., Austin, unpublished master's thesis)

GEOLOGIC MAP AND SECTIONS OF THE CENTRAL PART OF APACHE COUNTY, ARIZONA

SCALE 1:125 000

2 1 0 2 4 6 MILES

2 1 0 2 4 6 KILOMETERS