

**GEOLOGIC MAP OF THE PAINTED ROCK MOUNTAINS,
MARICOPA COUNTY, ARIZONA**

Steve Skotnicki
Arizona Geological Survey
845 N. Park Ave.
Tucson, AZ 85719

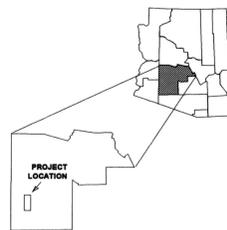
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UNIT DESCRIPTIONS

- Qs** **Quaternary sedimentary deposits**—Includes talus, alluvial fan deposits, river terrace deposits and caliche and alluvial deposits. Well-sorted fluvial deposits outcrop on the north and northwestern sides of the range.
- QTB** **Quaternary basalt**—Fresh, fine-grained, vesicular, resistant dark gray olivine and pyroxene basalt. Phenocrysts of green and yellow olivine less than 1 mm in diameter, are locally altering to iddingsite. Plagioclase laths are also visible. This basalt locally forms cliffs and gently-sloping caliche-covered plateaus. Overlies Quaternary sediments and, locally, older volcanic rocks. Includes rocks of the Sentinel Volcanic Field to the west and a small shield volcano northeast of Painted Rock Road.
- Tb** **Basalt**—Fine-grained, dark to medium gray basalt. Contains plagioclase phenocrysts from 1 to 4 mm long. Groundmass is locally trachytic. Very resistant, and occurs as mesa-capping flows. Vesicles are locally filled with quartz and calcite.
- Tva** **Rhyodacitic welded tuff**—Contains phenocrysts of quartz, plagioclase, and abundant, large, subhedral, fresh biotite crystals. Matrix is light brown. In thin section, small subhedral olivine crystals have altered to iddingsite and are commonly surrounded by pyroxene or calcite. Biotite contains some zircon. Quartz phenocrysts are actually composed of many radiating quartz crystals. Weathers light tan. Forms small, blocky, well-bedded cliffs. Outcrops are everywhere overlain by Tb. The unit northeast of Painted Rock Dam is underlain by basalt as well, and is tentatively classified as Tva. This unit may be the same age as the overlying basalt. K/Ar age on biotite 20.0 ± 0.6 m.y. at lat $32^{\circ}59'15''N$, long $113^{\circ}01'20''E$. (Gray, 1993).
- Tvap** **Pumice**—Gray, crumbly pumice. Bedding is parallel to contact with basalt. Exposed only in a small quarry one mile north of the spillway.
- Tg** **Painted Rock Granodiorite**—(Informal name) Fine- to medium-grained non-foliated granodiorite. Light gray on a fresh surface, dark gray to tan on a weathered surface. Contains fresh biotite crystals less than 1 mm wide, and dark green to black amphibole crystals from 1 to 4 mm long. Locally contains pyroxene garnet (up to 1% of rock). In thin section, zircon and apatite are abundant. Forms rounded light-colored hills. Rich in epidote near intrusive contact with volcanic rocks. Rarely contains lenses of dark green hornblende gabbro.
- Tvagu** **Upper Agglomerate**—Irregularly shaped lenses of red, brown, black and yellow tuff and tuff breccia, with blocks of pumice and glass.
- Tv** **Dacite**—Hard, dense, platy dacite flows. Typically maroon or gray. Locally contains phenocrysts of plagioclase. In thin section, phenocrysts of pyroxene and opaques are visible. Commonly aphanitic and platy. Forms the south side of the spillway. Locally highly fractured yet resistant, and forms laminated outcrops. Locally vitrophyric, such as the hill downstream from the dam.
- Tvgb** **Volcanic glass**—Black, glassy vitrophyre. Contains phenocrysts of clear to pink plagioclase and possibly orthoclase (about 10% of rock). Matrix is black glass. In thin section, the matrix is perlitic and contains phenocrysts of plagioclase, pyroxene, and small euhedral olivine and opaques. Plagioclase crystals stick out in relief on a weathered surface. Very resistant. Difficult to break. Forms cliffs and blocky slopes.
- Tvt** **Tuff**—Light yellow, green and pink tuff. Poorly to moderately welded. Generally well-bedded. Contains biotite phenocrysts locally.
- Tvagn** **Middle Agglomerate**—Subangular fragments of various volcanic rocks imbedded in a tuff matrix. Hard, dense, gray, red, maroon or brown clasts. Predominantly dacite and rhyodacite. Matrix is hard to soft, tan, gray, green, white or yellow. Locally contains vitrophyre lenses.
- Tgb** **Tuff, agglomerate and vitrophyre**—Younger group. Undivided.
- Tkv** **Dacitic welded tuff**—Mostly pink to light brown rhyodacitic welded tuff. Includes dacitic flows in the north side of the spillway. Contains phenocrysts of subhedral plagioclase and hornblende, from 1 to 3 mm long. Hornblende crystals are commonly altered to hematite and limonite. Matrix is pink to brown. In thin section phenocrysts of plagioclase, amphibole and pyroxene are visible. Many of the pyroxene crystals have altered to a red opaque and are rounded and rimmed by opaques. Some apatite is visible as well as small, rare euhedral olivine. Welded tuff contains very abundant flattened lapilli clasts which are lighter in color than the matrix. Lapilli clasts appear to increase in abundance southward towards the large pyramidal peak north of Painted Rock Road.
- Tvga** **Volcanic glass**—Same as Tvgb, but is much thicker. Locally it is over 20 meters thick.
- Tta** **Tuff**—Light pink to yellow-tan tuff. Poorly to moderately welded. Contains angular granule- to pebble-size clasts of dark gray rhyolite, pumice and minor red scoria. Biotite phenocrysts are visible locally. About three meters thick, but discontinuous. Locally grades upward into black glass.
- Tvag** **Lower Agglomerate**—Same as Tvagn, but overlain by a thick cliff-forming vitrophyre (map unit Tvga).
- Tga** **Tuff, agglomerate and vitrophyre**—Older group. Undivided.
- Tvg** **Volcanic glass**—Undifferentiated.
- Tt** **Tuff**—Undifferentiated.
- Tau** **Dacite(?)**—Massive, hard, resistant dacite. Fine-grained. Very small (< 1 mm) phenocrysts of plagioclase. In thin section, the rock is a roughly equigranular mass of plagioclase, pyroxene and opaques, with rare phenocrysts of plagioclase, and olivine. Some clinopyroxene crystals exhibit undulatory extinction. Medium gray on fresh surfaces, light blue-gray on weathered surfaces. Base is tan to pink, locally brecciated and forms a small well-stratified cliff. Yellow tuff outcrops locally below the cliff. The whole unit forms two resistant buttes which outcrop only in the south-central part of the range.
- Tal** **Dacitic(?) vitrophyre**—Black glassy matrix containing 1-3 mm long phenocrysts of plagioclase (about 2% of rock). In thin section, plagioclase, pyroxene, and rare euhedral amphibole phenocrysts are visible. Forms very steep slopes and cliffs. Over 200 feet thick locally. Outcrops only in the south-central part of the range.
- Tbo** **Older basalts**—Highly vesicular dark gray and brown basalt with rare plagioclase phenocrysts 1-2 mm long. Gray to purple aphanitic groundmass. Vesicles lined with calcite and a light green powdery mineral. Weathers tan and from a distance resembles the locally overlying Tkv.
- Td** **Dacite**—Mostly flow-banded dark purple and dark gray dacite. Contains phenocrysts of quartz, plagioclase and minor hornblende. Predominantly aphanitic. Dense, hard and platy. Forms resistant knobs and small cliffs, as well as low hills. Contains some welded tuff locally.
- Tvp** **Rhyodacite to andesite**—Dark brown to purple flows. Contains white tabular plagioclase phenocrysts about 2 mm long, quartz and rare hornblende. Forms dark resistant cliffs and steep ridges at the south end of the range. Bedding is visible and is steeply inclined to the southwest. Some layers are massive and platy while others are vesicular. Vesicles are locally filled with quartz. Caves are visible in the steep walls locally. K/Ar age on biotite 23.8 ± 8 m.y. and on whole rock 25 m.y. (Gray et al., 1987).

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INDEX MAP OF ARIZONA
Showing Location of Maricopa County



MAP SYMBOLS

- Contact
- - - - - Fault, dashed where approximate, dotted where concealed
- Strike and Dip of Bedding**
- ↘ 25 inclined
- horizontal
- ↕ vertical
- PR 493-1 Locality and number of age dating sample
- ***** Felsic dike (Tdf)
- +++++++ Mafic to intermediate dike (Tdm)

