

DESCRIPTION OF MAP UNITS

Qa Alluvium (Holocene)-Poorly sorted gravel, sand, and silt deposits; gravels contain fragments of Tertiary volcanic rock. Thickness generally less than 30 ft (9 m)

Qig Pediment and terrace gravel (Holocene and Pleistocene)-Cobble and gravel deposits that consist chiefly of rounded andesite (Tdbb) cobbles. Pediment gravels are most extensive along the interfluves on southwest side of Sycamore Creek, where the gravels are as much as 80 ft (25 m) thick and are about 150 ft (45 m) above the present drainage. Other smaller terrace gravel deposits occur along the upper tributaries of Sycamore Creek

Qf Fan deposits (Holocene and Pleistocene)-Chiefly subangular to angular, poorly sorted fragments of Tertiary volcanic rock that have been deposited by sheetflood processes. Fan deposits are most extensive in the Bear Valley area where they are as much as 150 ft (45 m) thick

Trm Rhyolite flow member with vitrophyre-Very light gray to white, flow-laminated, aphanitic to slightly porphyritic rhyolite flows that are locally autocretaceous. Rhyolite generally contains less than 10 percent phenocrysts of sanidine and biopyramidal quartz. The groundmass is feldted to spherulitic and locally shows a slightly yellowish-gray sericitic alteration at the contact with vitrophyre. This (0-15 ft), black, slightly perlitic vitrophyres (vm) are locally intercalated within the rhyolite but are more common at the base. An X-ray spectroscopic analysis of the rhyolite from near Rock House Canyon (SE1/4 sec. 24, T. 16 S., R. 19 W.) showed 75.5 percent SiO₂, 2.98 percent Na₂O, and 5.20 percent K₂O (analysis: A.J. Bartel, K. Stewart, and J. Taggart, written commun., 1983). The rhyolite probably correlates with the rhyolite west of Mule Creek, dated by Weber and Bassett (1963) which yielded a K-Ar age of 18.6 m.y. from obsidian nodules. More recently Marvin and others (1987) reported an age of 17.7±0.5 m.y. from the same rhyolite. A biotite concentrate from a rhyolite flow in sec. 18, T. 16 S., R. 18 W., in the adjoining Cliff quadrangle to the east, yielded a K-Ar age of 21.3±0.7 m.y. and was called the Rhyolite of Sycamore Camp (Finnell, 1987). The total aggregate thickness of rhyolite and vitrophyre is about 200 ft (60 m)

Trm Rhyolite plug and radial dikes-Light gray, sugary-textured rhyolite plug near Sycamore Tank has a radial dike system (rd) that is slightly north of the central plug. The rhyolite plug has evenly disseminated biotite plates 1 mm or less across that impart a "salt and pepper" texture to the rhyolite. Stubby oligoclase (An₂₅₋₃₀) phenocrysts, about 1 mm across, comprise as much as 15 to 20 percent of the rock and biotite about 2 to 3 percent. There are two varieties of biotite, a dusky brown and a pale-green biotite. The dikes contain lesser amounts of phenocrysts and are commonly aphyric. Most dikes are less than 50 ft (15 m) across

Trm Pyroclastic unit-Very light gray to light-pinkish-gray to light-greenish-gray, thin-bedded to massive air-fall tuff with thin interbeds of tuffaceous sandstone. Tuff contains abundant non-collapsed pumice fragments up to 2 cm across; some pumice is altered to light greenish gray. Generally less than 10 percent crystal fragments of sanidine and quartz. Reddish-brown, angular, dacitic lithic fragments are abundant in the basal part of the air-fall tuff. Maximum thickness about 250 ft (75 m)

Trss Sandstone-Yellowish-gray to brownish-gray, thin-bedded, coarse-grained sandstone with interbeds of conglomerate. Some crossbedding with cut and fill structures suggest a fluvialite origin. Discontinuous unit with a maximum thickness of about 50 ft (15 m)

Trnb Sedimentary breccia-Dark-brownish-gray, thick-bedded to massive, poorly sorted, sedimentary breccias with abundant angular clasts of basaltic andesite up to 5 cm across. Outcrop near Rock House Tank is about 40 ft (12 m) thick

Tbdb Bearallow Mountain Andesite (Miocene and Oligocene)
Andesite-Dark-gray, medium-gray, and dark-purplish-gray, porphyritic lava flows that comprise the shield volcano of Brushy Mountain and the extensive outflow apron to the southeast. Lava flows contain 15 to 35 percent labradorite (An₆₀₋₆₅) phenocrysts up to 2 mm across and 4 to 7 percent clinopyroxene phenocrysts less than 1 mm across. Some flows contain as much as 6 percent olivine as granules interstitial to the feldspar microlites. The groundmass is feldted to pilotaxitic. Two chemical analyses from andesite collected in the Crookson Peak quadrangle indicate 61.0 and 63.0 percent SiO₂, 3.8 and 3.8 percent Na₂O, and 3.1 and 3.3 percent K₂O (analysis: N. Skinner, U.S. Geological Survey, written commun., 1979). Two whole rock K-Ar ages from the Brushy Radar dome site in the Crookson Peak quadrangle were 23.7±0.5 m.y. and 25.6±0.5 m.y. (Strangway, Simpson, and York, 1976, p. 121; Marvin and others, 1987)

Thx Basaltic andesite autobreccias-Dark-gray, massive breccias with angular blocks of basaltic andesite up to 30 cm across. The coarse sandy interstitial material consists of comminuted basaltic andesite fragments and minor amount of phenocrysts. Lens-like unit near base of flows west of Rock House Tank has a maximum thickness of about 50 ft (15 m)

Tcob Coarsely porphyritic andesite lava flows-Dark-gray to medium-light-gray, coarse-grained lava flows with a "turkey-track" texture formed by abundant euhedral plagioclase laths as much as 2 cm long. Basal member of Bearallow Mountain Andesite weathers dusky reddish brown and has a distinctive vuggy groundmass. Rock typically contains 25 to 27 percent andesine (An₄₀₋₄₅) phenocrysts, 1 percent hematite pseudomorphs after oxyhornblende(?), and 0.3 to 2 percent

clinopyroxene in a finely pilotaxitic groundmass. Accessory apatite is common. The andesite laths have a pitted texture owing to the abundance of ferric oxide inclusions. One chemical analysis from the Crookson Peak quadrangle indicates 56.1 percent SiO₂, 4.1 percent Na₂O, and 4.2 percent K₂O (analysis: N. Skinner, U.S. Geological Survey, written commun., 1979). Flows are as much as 200 ft (60 m) thick within the quadrangle

Trtb Rhyolite plug of Blue Creek (Oligocene)-Very light gray, aphanitic, flow-laminated rhyolite with thin vitrophyric chilled margins. In the adjacent Walker Canyon quadrangle the rhyolite plug is overlain by a basal sandstone (Tbss) of the Bearallow Mountain Andesite

Tipc Lava flows of Crookson Peak (Oligocene)-Brownish-gray, grayish-red-purple to grayish-red, porphyritic dacite and andesite flows that comprise the lower part of an extensive sequence that becomes more siliceous to the northwest. Flows typically contain 8 to 20 percent calcic oligoclase-andesine (An₂₅₋₃₀) phenocrysts 1 to 4 mm across that locally display a distinctive radial cluster habit. Other phenocrysts include 4 to 5 percent clinopyroxene, and 1 percent oxyhornblende; accessory minerals are biotite, iron oxides, and iddingsite(?). The groundmass is feldted and contains abundant disseminated iron oxides. Locally at the top of the formation there are thin discontinuous sandstone (cs) and tuff units (tc). The sandstone is yellowish-gray, thin-bedded to laminated, medium-grained, and lamination, as much as 40 ft (12 m) thick. The tuff unit is a very light gray, laminated air-fall tuff with a maximum thickness of 30 ft (9 m)

REFERENCES CITED

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Strangway, P.W., Simpson, J.W., and York, D., 1976, Paleomagnetic studies of volcanic rocks from the Mogollon Plateau area of Arizona and New Mexico, in Cenozoic volcanism in southwestern New Mexico: New Mexico Geological Society Special Paper no. 5, p. 119-124

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Table 1.-Chemical analyses of Miocene and Oligocene volcanic rocks from the Applegate Mountain quadrangle

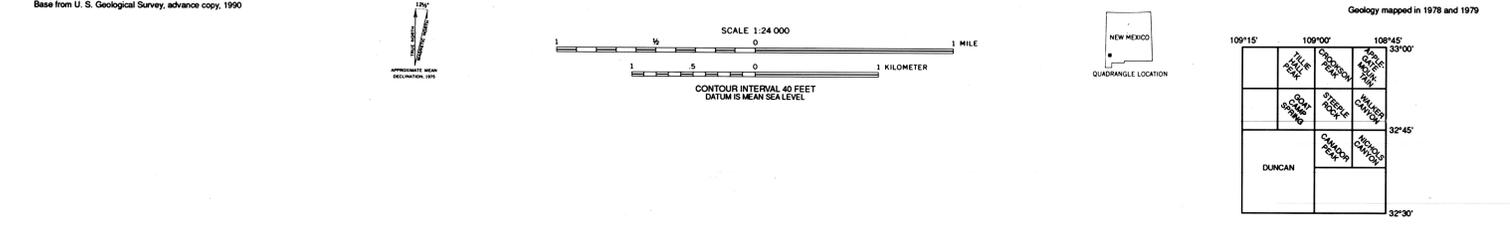
[N=not determined; *Total iron reported as Fe₂O₃ (LOI)-loss on ignition-900 °C. Analyses by X-ray spectroscopy and single solution methods by N. Skinner, 1979, and P. Briggs, 1980, U.S. Geological Survey]

Rock Type	Rhyolite	Andesite
Field No.	SR-37-83	SRX-124-78
Map Unit	Trm	Tbdb
sp. gr.	N	2.66
SiO ₂	75.5	61.0
Al ₂ O ₃	12.7	16.2
Fe ₂ O ₃	*1.01	3.5
FeO	N	2.1
MgO	.17	2.3
CaO	.62	4.9
Na ₂ O	2.98	3.8
K ₂ O	5.20	3.1
TiO ₂	.16	.90
P ₂ O ₅	<.05	.33
MnO	.02	.05
H ₂ O	N	.98
H ₂ O	N	.06
(LOI)	0.57	N
Total	99	100

SAMPLE LOCATIONS

Sample SR-37-83: Rhyolite of Mule Creek
Location - Rock House Canyon; SE1/4SE1/4 sec. 24, T. 16 S., R. 19 W.

Sample SRX-124-78: Andesite of Bearallow Mountain
Location - Road cut near North Fork of Sycamore Creek; SE1/4SW1/4 sec. 27, T. 15 S., R. 19 W.



PRELIMINARY GEOLOGIC MAP OF THE APPLAGATE MOUNTAIN QUADRANGLE, GRANT COUNTY, NEW MEXICO
by
D.C. Hedlund
1990

This map is preliminary and has not been reviewed for conformity with U. S. Geological Survey editorial standards nor with the North American stratigraphic code.