

Geologic Map of the Monica Saddle Quadrangle, Socorro County, New Mexico.

By

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*Open-file Digital Geologic Map OF-GM 217***

Scale 1:24,000

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MONICA SADDLE UNIT DESCRIPTIONS

Geologic mapping by G. R. Osburn 1984, 2011

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af **Man-made deposits (Holocene)** – Earthen dams for tanks along active gulleys or valleys.

Qv **Active alluvium (Holocene)** - Active and recently active alluvium, usually along stream ways, typically incised <1m.

Qt **Terrace deposits (Holocene to Quaternary)** – Remnant areas of alluvium with flat upper surfaces more than 1m above active drainages.

Qbs **Eolian deposits (Quaternary)** – Deposits consist of active and vegetated dunes (fine to medium-grained sand) and silt (loess).

Qpl **Pluvial and lacustrine deposits (Quaternary)** – Deposits are fine grained playa muds and silts locally mantled with eolian sand.

Qca **Colluvium and other slope deposits (Quaternary)**

Qtc **Talus and other slope deposits on steep slopes(Quaternary)**

Qf **Alluvial fan and piedmont deposits (Quaternary)** - Deposits are typically incised <5m. clasts are derived from a local source.

Ted **East Red dacite (Miocene – Oligocene)** – dark purple dacite intrusions containing 5 to 20 percent large plagioclase phenocrysts. Occurs as discrete dikes and small stocks within the South Canyon Tuff exposures in southeastern third of the quadrangle

Tsc **South Canyon Tuff (Oligocene)** – Rhyolitic ash-flow tuff containing 4-30% phenocrysts of plagioclase, sanidine, quartz, and biotite. Lithic-lapilli are generally <5%, and pumice lapilli 5-25%. Thickness: 0 - >1000m. Phenocryst content in South Canyon is zoned from about ~5 % at the base increasing abruptly to 30% in the upper parts. Mapped as **Tscl** and **Tscu** respectively in outflow exposures where thickness and exposure permit. Within the caldera (SE part this quadrangle) five subdivisions are sometimes mapped. **Tsc1**- 4 -10% phenocrysts of sanidine and quartz in sub equal amounts, **Tsc2**- 10-15% phenocrysts of sanidine and quartz usually with abundant lithic fragments, **Tsc3**- 15-30% phenocrysts of sanidine, quartz and minor plagioclase and biotite, **Tsc4**- 30-40% phenocrysts similar to Tsc3 but containing noticeable amounts

dark-red, quartz-poor pumice (plagioclase, biotite and hornblende), **Tsc5** – 30-40% phenocrysts of feldspar biotite and hornblende, no quartz.

Tlpc Basalt to basaltic andesite (Oligocene) – Vesicular basalt and basaltic andesite lavas containing < 10% phenocrysts of plagioclase, olivine, and pyroxene. Occurs between rhyolite of Durfee Canyon and tuff of Caronita Canyon, between tuff of Caronita Canyon and Lemitar Tuff and above Lemitar Tuff.

Tll/Tlu Lemitar Tuff (Oligocene)- Densely welded rhyolite to rhyodacite ash flow tuff containing 10-35% phenocrysts and 5-25% pumice lapilli. Unit is complexly zoned from phenocryst-poor rhyolite (10-15%) in lower parts (**Tll**) to crystal rich rhyodacite to rhyolite (25-35%) in upper (**Tlu**). Upper member consists of a lower dk-red rhyodacite (20-35 % plagioclase, sanidine, and biotite) which grades upward into a phenocryst-rich rhyolite (30-35% sanidine, plagioclase, quartz, and biotite).

Txc Caronita Canyon (tuff of) - Rhyolite to rhyodacite ash flow tuff (10-35%) , Crystal-poor (biotite, plagioclase) lower member; crystal-rich (sanidine, quartz, plagioclase, biotite) upper member.

Tar rhyolite of Durfee Canyon - Rhyolite lavas containing 2-8% phenocrysts, chiefly sanidine up to 5 mm. Occasionally contains secondary pseudobrookite and bixbyite in gas cavities. Lava often underlain by tuffs, and minor flow breccias, and volcanoclastic sedimentary rocks (**Tdrt**).

Tir rhyolite dikes- Rhyolite dikes similar in mineralogy to rhyolite of Durfee Canyon.

Tvp Vicks Peak Tuff (Oligocene) – Densely welded rhyolitic ash-flow tuff containing 1-15% phenocrysts, chiefly sanidine up to 4mm, lesser plagioclase up to 2mm, and sparse pyroxene, hornblende, and biotite <2mm. The tuff contains 2-25% strongly flattened pumice lapilli up to 1m long, and sparse <10cm lithic lapilli. The tuff is typically light gray and the pumice lapilli are commonly recessive on weathered surfaces. Thickness: up to 150m.

Tj La Jencia Tuff (Oligocene) – Densely welded rhyolitic ash-flow tuff containing 2-10% phenocrysts of sanidine (1-4mm) and plagioclase (1-2mm), and minor biotite, pyroxene, and hornblende, and quartz. The tuff is generally light to dark gray and contains 5-15% strongly flattened pumice lapilli up to 1m long, and up to 5% lithic lapilli. Thickness: up to 120m.

Tia mafic dikes – rhyolite dikes and sills within southwestern third of quadrangle. Stratigraphic position is unclear.

Thm Hells Mesa Tuff (Oligocene) – Densely welded phenocryst-rich rhyolitic to trachytic ash-flow tuff containing 20-35% phenocrysts of plagioclase (≤ 3 mm), sanidine (≤ 3 mm), quartz (≤ 4 mm), hornblende (≤ 2 mm), and biotite (≤ 2 mm). The tuff is reddish

brown to orange in color and contains sparse lithic lapilli and generally <10% pumice lapilli <10cm long. Thickness: Up to 400m.

Tdbc Blue Canyon Tuff (Oligocene) – Moderately phenocryst-rich ash-flow tuff containing 10-20% 1-4mm plagioclase phenocrysts, and abundant 1-3mm biotite. Thickness: Up to 150m.

Tdrh Rock House Canyon Tuff (Oligocene) – Phenocryst-poor mafic lava contains less than 5% < 3mm feldspar phenocrysts, and a trace of mafics. Thickness: Up to 150m.