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James Doyle Sell Mining Collection

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with an evenly textured quartz-feldspar groundmass. In some instances occasionally large feldspar phenocrysts were noted. The only megascopically visible mafic mineral is biotite which occurs as distinct booklets. Muscovite may be an associated mineral. Epidote is sporadically distributed throughout the groundmass, but more frequently occurs as distinct veinlets or as fracture coatings as in sections 16, 17 and 18 (T5S, R3E).

Within the Laramide granite are gneissic shear zones. These zones are characterized by sub-parallel layers of muscovite and occasionally some biotite, separated by a fine to medium grained matrix of quartz and feldspar. Quartz lenses and occasionally some epidote are contained within these zones as drawn out or contorted lenses. Some of the larger shears observed contain highly crushed and elongated Laramide granitic fragments. The average strike is N. 70° E. and dips either vertically or steeply to the northwest (75° - 83° where observed). The adjacent granite exhibits frequently a strong gneissic texture by a marked parallelism and elongation of the micas, yet retaining their bright coloration. The gneissic zones in sections 19, 20 and 21 (T6S, R3E) vary in width and continuity, but are generally from 2 to 10 feet in width. The ones noted on the map are quite closely spaced and hence have been indicated as single discontinuous lines.

In the southwestern portion of section 16 is a biotite-rich shear zone striking N. 50° E. and appears to dip 60° S.

None of the aforementioned zones are mineralized.

Basic (diabase ?) dike rocks trending N. 40° W. and dipping 50° NE cut the Laramide granite. In general they are of too small a magnitude to be mapped at this scale. The isolated hill in the northern part of section 16 and the larger hill to the northwest contain several of these dikes. The granitic outcrops in these areas show a similar mineralogy as to the Laramide granite but are locally coarser grained and have a vague gneissic pattern, quite similar in aspect to the granites comprising Black Butte and Signal Peak north of Casa Grande, as mapped by Mr. D. Beck. (Sacaton Mountains - field sheets. This feature has been indicated as gneissic granite on the accompanying map - map symbol: gn-gr.)

The Haley Hills are for the main part characterized by muscovite gneiss and Laramide granite. The gneiss occurs as distinct bands but are variable in width and strike on the average N. 70° E. and dip steeply to the northwest. In the southwest corner of section 19 a pronounced schistose area occurs which strikes N. 35° W. It has gradational and indistinct contact with the adjacent gneiss; contains irregular pods and lenses of muscovite gneiss and granite and occupies a topographic low relief.

The most conspicuous feature in the southern part of the Palo Verde Mountains is the presence of prominent quartz pegmatite dikes bearing N. 15° W. and dip steeply to the southwest (sections 15 and 16, T5S, R2E - Antelope Peak quadrangle, and section 9, T5S, R1E - Maricopa quadrangle). These dikes vary in width from 3 to 15 feet and are characterized by a massive quartz groundmass containing erratically distributed large (up to 6 inches in size) feldspar phenocrysts. Muscovite crystals occur throughout and frequently are quite large. A few garnets were noted in some instances. The rocks bordering the dikes have a mixed appearance and range from gneiss to gneissic granite.

In the southwestern corner of section 14 (T4S, R1E) the pegmatite dikes become less prominent and grade into a coarse grained granite containing pods and discontinuous lenses of barren quartz or quartz-feldspar-muscovite. At the same time the distribution of gneiss becomes irregular and now occur as spindle-shaped inclusions. The typical granite of the northern half of the range is medium grained, equigranular containing prominent muscovite booklets. A small gneissic shear zone was noted in the central part of section 32, bearing approximately N. 45° E. Some weakly altered granite float showing copper stain was noted in this area, however, the surrounding granite showed no evidence of alteration or mineralization.

The extreme northern part of the Palo Verde Mountains, the Laramide granite abuts Pinal Schist. The contact strikes N. 65° E. and dips 55° NW.

R. H. Luning

R. H. Luning

RHL:bam
Attachment
cc: 2-extra

E X P L A N A T I O N

Qal — Valley alluvium

gn-gr — Gneissic granite

pegm — Quartz pegmatite dikes

Lgr — Laramide (Coolidge) granite

gn — Muscovite gneiss

sch — Pinal schist

Shear zone

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Scale: 1" = 1 mile
(approx)

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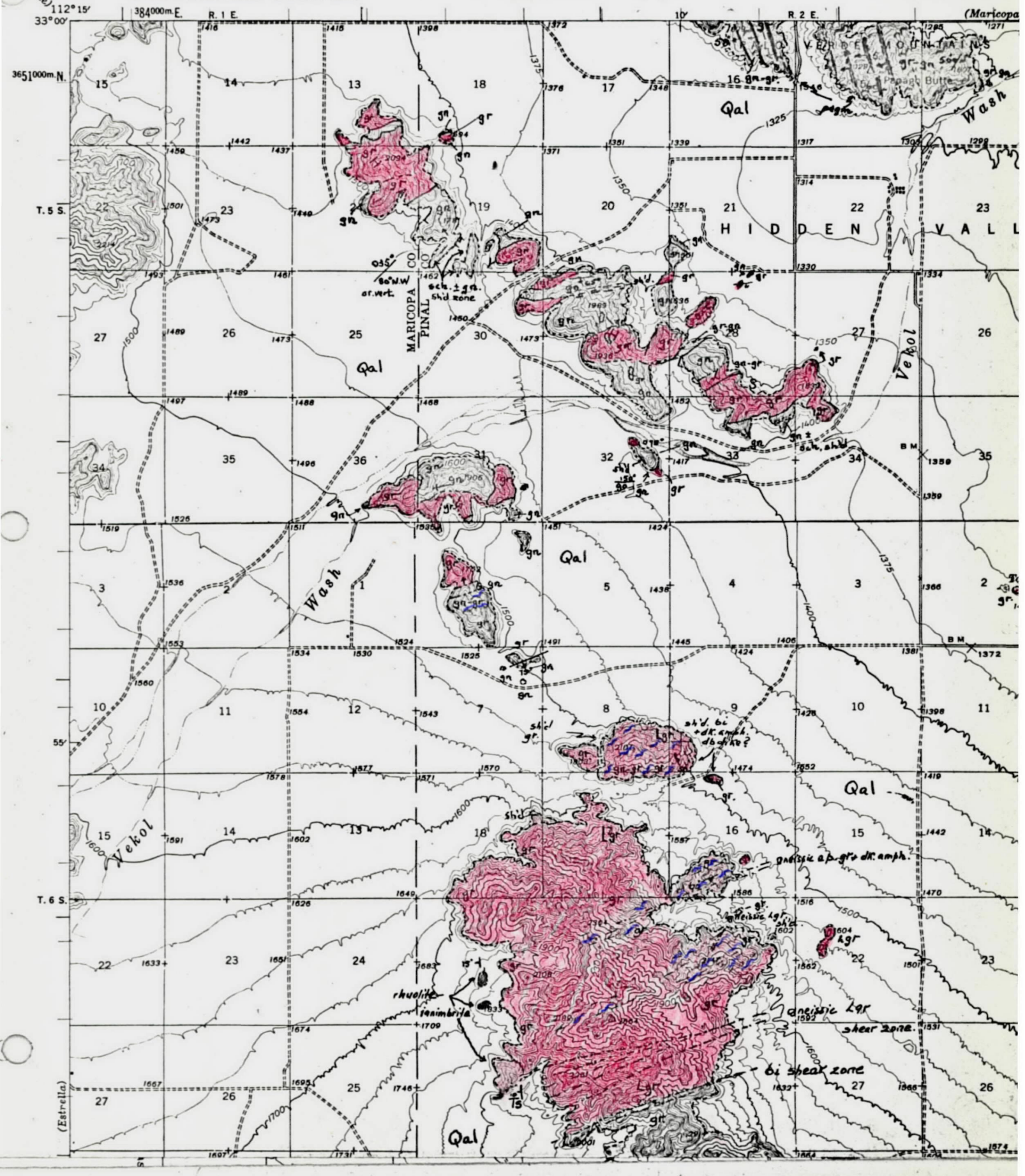
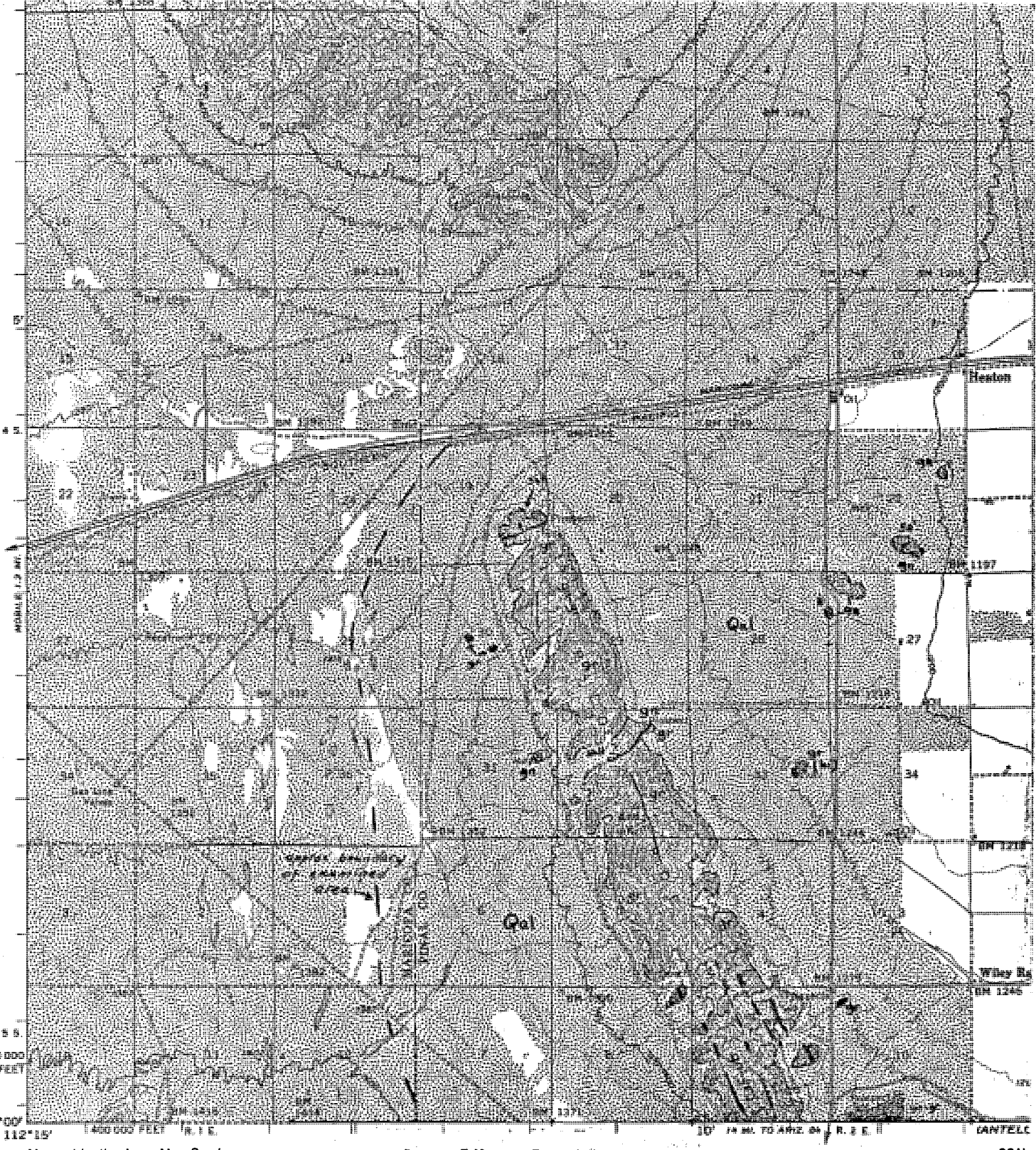




(ESTRELLA)

Mapped by the Army Map Service
Edited and published by the Geological Survey

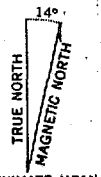
Control by USGS, USC&GS, and USCE

Compiled in 1958 from 1:24 000-scale maps of
Pima Butte, Montezuma Peak, Enid, and Maricopa
7.5 minute quadrangles, surveyed 1952
Topography from aerial photographs by photogrammetric methods
Aerial photographs taken 1951.

Polyconic projection. 1927 North American datum
10,000-foot grid based on Arizona coordinate system, central zone
1000-meter Universal Transverse Mercator grid ticks,
zone 12, shown in blue

Unchecked elevations are shown in brown

Scale: 1" = 1 mile
(approx)



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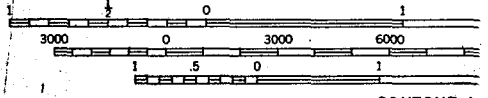
DECLINATION, 1952

SCAL



CONTOUR I
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DATUM IS

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A FOLDER DESCRIBING TOPOGRAPHIC M