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**THE VOLCANIC GEOLOGY OF THE
CASTLE HOT SPRINGS AREA, YAVAPAI COUNTY, ARIZONA**

by

Michael Bruce Ward

**A Thesis Presented in Partial Fulfillment
of the Requirements for the Degree
Master of Science**

ARIZONA STATE UNIVERSITY

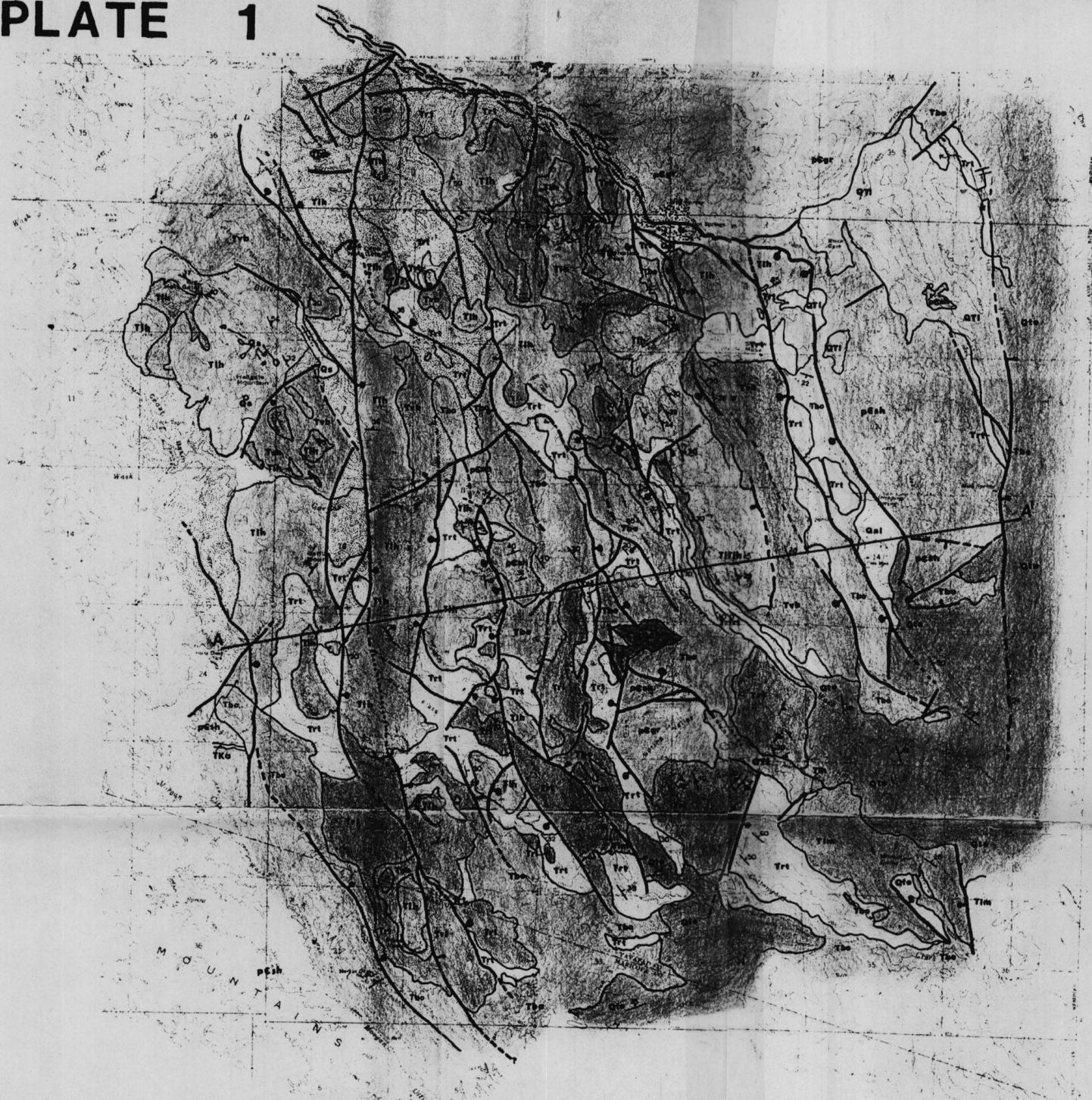
December 1977



DEKALB Mining, Inc.
390 Freeport Blvd., #12
Sparks, Nevada 89431

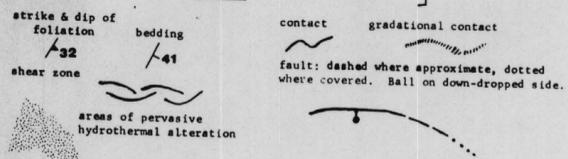
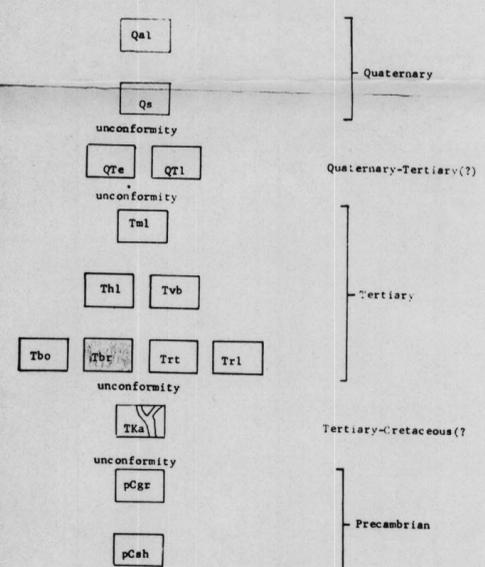


GARY A. PARKISON, GEOLOGIST
DEKALB Mining, Inc.
958 Antelope Avenue NE
Albuquerque, New Mexico 87122

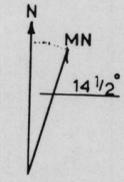


- DESCRIPTION OF MAP UNITS
- Qal ALLUVIUM-Unconsolidated gravel, sand, and silt. Not mapped in present washes.
 - Qs SINTER-Quartz, calcedony, and opaline silica, hot springs deposits.
 - QTe EPICLASTIC BRECCIA-Water-lain volcanoclastic material, clasts of Precambrian and Tertiary rocks in a sandy to tuffaceous matrix.
 - QTI YOUNGER LATITE-Medium gray. Altered pyroxene and hornblende phenocrysts. Surface coating of desert varnish creates a darker appearance. Interbedded with epiclastic breccia.
 - Tml LATITE OF MITCHELL SPRING-Medium gray to pale yellow brown Glassy with phenocrysts of plagioclase, hornblende, and biotite.
 - Thl LATITE OF HELLS GATE-Grayish red to gray. Porphyritic, with abundant phenocrysts of plagioclase and biotite. Less common hornblende and pyroxene. Glassy vitrophyre where it overlies rhyolite tuffs of Garfias Wash. Vents and thick lava flows. Interbedded with volcanic breccias.
 - Tvb VOLCANIC BRECCIA-Lahar, mud flows, and ash flows, with light gray gray tuffaceous matrix. Generally unsorted with local thick accumulations.
 - Trl RHYOLITE LAVAS-Grayish to blackish red, flow banded rhyolite. Generally in thick flows or domes.
 - Trt RHYOLITE TUFFS OF GARFIAS WASH- Buff to red non-welded ash flow tuffs. Poorly sorted, and may contain phenocrysts of quartz and sandstone, and accidental fragments of Precambrian and older Tertiary rocks. Locally hydrothermally altered.
 - Tbr BRECCIA-Isolated occurrence. Bedded breccia with angular fragments older basalt.
 - Tbo OLDER BASALT-Medium dark gray, alkali-olivine basalt. Vesicular with amygdules commonly filled with quartz or calcite. Altered with olivine commonly altered to iddingsite. Local accumulations of lapilli and scoria.
 - TKa ANDESITIC DIKES-Greenish gray, porphyritic with plagioclase phenocrysts. Age uncertain.
 - pCgr PRECAMBRIAN GRANITE-Pegmatites and granites. Granitic rock is medium grained biotite granite. Pegmatite occurs as large mass.
 - pCsh YAVAPAI SERIES-Greenschist facies, well foliated, metasedimentary and metavolcanic rocks. 1775 to 1820 m.y. (Anderson and others, 1971)

CORRELATION OF MAP UNITS



GEOLOGIC MAP OF THE CASTLE HOT SPRINGS AREA YAVAPAI COUNTY, ARIZONA



Base adapted from U.S. Geological Survey Garfias Mountain and Governor's Peak topographic quadrangle maps.

SCALE 1:48000
CONTOUR INTERVAL 40 FEET
DATUM - 5 MEAN SEA LEVEL