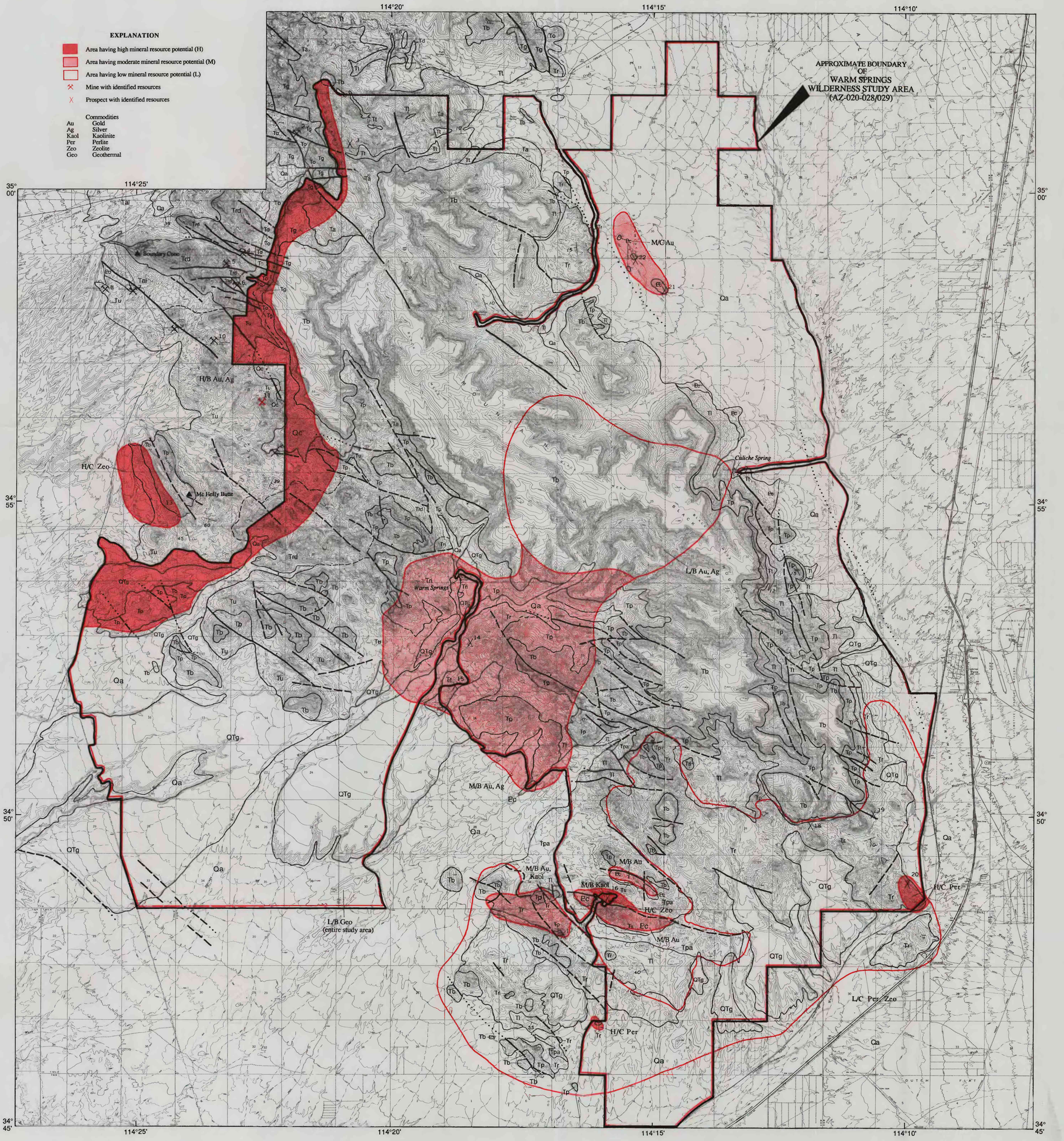


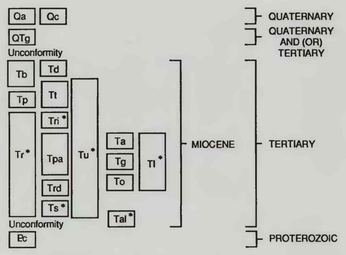
EXPLANATION

- Area having high mineral resource potential (H)
- Area having moderate mineral resource potential (M)
- Area having low mineral resource potential (L)
- Mine with identified resources
- Prospect with identified resources

Commodities

Au	Gold
Ag	Silver
Kaol	Kaolinite
Per	Perlite
Zeo	Zeolite
Geo	Geothermal

CORRELATION OF MAP UNITS



*See DESCRIPTION OF MAP UNITS for precise age assigment.

DESCRIPTION OF MAP UNITS

Qa **Alluvium (Quaternary)**—Unconsolidated sand and gravel in modern stream channels; includes talus

Qc **Colluvium (Quaternary)**—Landslide deposits and basalt talus

QTg **Gravel (Quaternary and (or) Tertiary)**—Weakly consolidated gravel and sand forming partly dissected alluvial fans

Tb **Basalt (Miocene)**—Basalt flows and agglomerate capping prominent masses throughout study area; locally contains thin tuffaceous sandstone interbeds

Td **Diabase (Miocene)**—Irregular dikes and small intrusions exposed north of study area boundary

Tt **Tuff (Miocene)**—Rhyolitic air-fall tuffs. Well-bedded, nonwelded to weakly welded tuffs; correlative, in part, with the Sitgreaves Tuff (Thorson, 1971a)

Tu **Volcanic rocks, undivided (Miocene and (or) Oligocene)**

Tp **Peach Springs Tuff of Young and Brennan (1974) (Miocene)**—Ash-flow and air-fall crystal-lithic tuffs containing abundant biotite and chatoyant sanidine; generally moderately to densely welded

Tr **Rhyolite (Miocene and (or) Oligocene)**—Rhyolite flows and pyroclastic deposits; includes unmapped plugs or domes

Tri **Rhyolitic intrusive rocks (Miocene and (or) Oligocene)**—Rhyolitic plugs associated with Tr

Tpa **Porphyritic andesite (Miocene)**—Variably porphyritic andesite flows and flow breccias

Ta **Antelope quartz latite unit of Thorson (1971a) (Miocene)**—Porphyritic latite flows in northern part of study area

Tl **Latite (Miocene and (or) Oligocene)**—Heterogeneous assemblage of porphyritic latite flows and minor andesites; may be correlative with parts of Gold Road Latite and Oatman latite unit, Antelope quartz latite unit, and Alcyone Formation of Thorson (1971a, b). Exposed in southern and eastern parts of study area

Tg **Gold Road Latite (Miocene)**—Porphyritic latite flows near northeast boundary of study area

To **Oatman latite unit of Thorson (1971a) (Miocene)**—Porphyritic latite flows near northeast boundary of study area

Trd **Rhyodacite (Miocene)**—Rhyodacite flows, domes, and tuffs. As mapped, unit includes minor amounts of basalt and rhyolite; may be correlative, in part, with Esperanza trachyte unit of Thorson (1971a)

Ts **Sedimentary rocks (Miocene and (or) Oligocene)**—Arkosic and volcanic-derived sediments and minor amounts of tuff

Tal **Alcyone Formation of Thorson (1971a, b) (Miocene and (or) Oligocene)**—Intermediate tuffs and flows; includes landslide breccias and some sediment

Ꞓc **Crystalline rocks (Proterozoic)**—Plutonic and metamorphic rocks in isolated hills in northeastern part of study area, fault blocks in the south and low-lying exposures northwest of study area boundary. Exposures in northeast part of study area consist of amphibolite and gneiss intruded by pegmatite dikes. The ridge of crystalline rocks in southern part of study area is predominantly granitic gneiss but includes schist

Contact—Dashed where approximately located

Fault—Dashed where approximately located; dotted where concealed; bar and ball on downthrown side

Strike and dip of bedding

DEFINITION OF LEVELS OF MINERAL RESOURCE POTENTIAL AND CERTAINTY OF ASSESSMENT

LEVELS OF RESOURCE POTENTIAL

H **HIGH** mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of data indicate a high degree of likelihood for resource accumulation, where data support mineral-deposit models indicating presence of resources, and where evidence indicates that mineral concentration has taken place. Assignment of high resource potential to an area requires some positive knowledge that mineral-forming processes have been active in at least part of the area.

M **MODERATE** mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics indicate a geologic environment favorable for resource occurrence, where interpretations of data indicate reasonable likelihood for resource accumulation, and (or) where an application of mineral-deposit models indicates favorable ground for the specified type(s) of deposits.

L **LOW** mineral resource potential is assigned to areas where geologic, geochemical, and geophysical characteristics define a geologic environment in which the existence of resources is permissive. This broad category embraces areas with dispersed but insignificantly mineralized rock, as well as areas with little or no indication of having been mineralized.

N **NO** mineral resource potential is a category reserved for a specific type of resource in a well-defined area.

U **UNKNOWN** mineral resource potential is assigned to areas where information is inadequate to assign a low, moderate, or high level of resource potential.

LEVELS OF CERTAINTY

A Available information is not adequate for determination of the level of mineral resource potential.
B Available information only suggests the level of mineral resource potential.
C Available information gives a good indication of the level of mineral resource potential.
D Available information clearly defines the level of mineral resource potential.

LEVEL OF RESOURCE POTENTIAL ↑	A	B	C	D
UNKNOWN POTENTIAL	U/A	H/B HIGH POTENTIAL	H/C HIGH POTENTIAL	H/D HIGH POTENTIAL
		M/B MODERATE POTENTIAL	M/C MODERATE POTENTIAL	M/D MODERATE POTENTIAL
		L/B LOW POTENTIAL	L/C LOW POTENTIAL	L/D LOW POTENTIAL
				N/D NO POTENTIAL

LEVEL OF CERTAINTY →

Abstracted with minor modifications from:

Taylor, R.B., and Steven, T.A., 1983, Definition of mineral resource potential: Economic Geology, v. 78, no. 6, p. 1268-1270.
Taylor, R.B., Stoneman, R.J., and Marsh, S.P., 1984, An assessment of the mineral resource potential of the San Isabel National Forest, south-central Colorado: U.S. Geological Survey Bulletin 1638, p. 40-42.
Goudarzi, G.H., compiler, 1984, Guide to preparation of mineral survey reports on public lands: U.S. Geological Survey Open-File Report 84-0787, p. 7, 8.

Base from U.S. Geological Survey, 1:24,000, Mount Nutt, 1967; Kingman SW, 1983; Warm Springs, 1970; Warm Springs SW, 1970; Boundary Cone, 1970; Yucca, 1970; and Yucca NW, 1970
Universal Transverse Mercator projection

SCALE 1:62 500

1 ½ 0 1 2 3 4 5 MILES

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 40 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

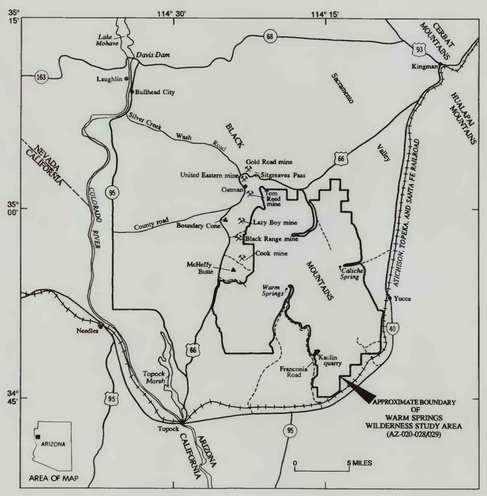
Geology mapped by R.J. Miller and Floyd Gray, 1987-1989, and W.J. Kieth, 1989. NW corner of map modified from Thorson, 1971a and Lausen, 1931.

APPROXIMATE MEAN DECLINATION, 1990

AREA OF MAP

Mines and prospects

1	Gold Road mine
2	Black Eagle mine
3	Unnamed prospect
4	Lazy Boy mine
5	Paragon mine
6	Wrigley mine
7	Oatman Syndicate mine
8	Oatman Southern mine
9	Green Quartz mine
10	Black Range mine
11	Cook mine
12	Tipparary mine
13	Unnamed zeolite prospect
14	Unnamed prospect
15	Unnamed prospect
16	Kaolin quarry
17	Unnamed prospect
18	Unnamed prospect
19	Unnamed prospect
20	Unnamed perlite prospect
21	Unnamed prospect
22	Unnamed prospect



INDEX MAP

MINERAL RESOURCE POTENTIAL AND GENERALIZED GEOLOGY OF WARM SPRINGS WILDERNESS STUDY AREA, MOHAVE COUNTY, ARIZONA