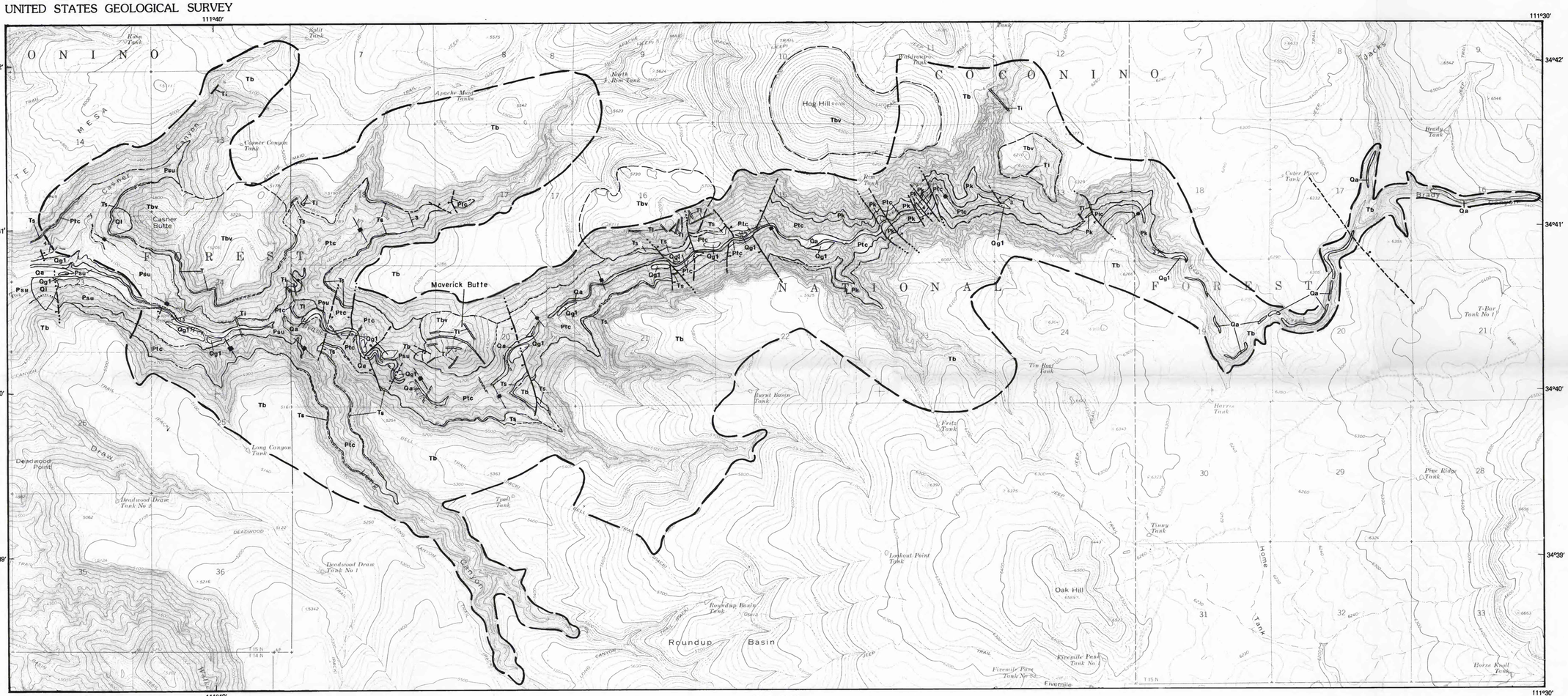
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

MISCELLANEOUS FIELD STUDES
MAP MF-1558-A
PAMPHLET ACCOMPANIES MAP



Base from U.S. Geological Survey
Casner Butte, 1965; Apache Maid Mountain, 1965

SCALE 1:24 000
1 ½ 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 20 FEET

Geology mapped in 1982 by G. E. Ulrich and J. S. Bywaters

CORRELATION OF MAP UNITS

Qa, Ql, Qg1	Holocene and Pleistocene; Pleistocene	QUATERNARY
UNCONFORMITY		
Tb, Tbv, Ti, Ts	Pliocene(?) and Miocene; Miocene or older	TERTIARY
UNCONFORMITY		
Pk, Ptc, Psu	Lower Permian	PERMIAN

DESCRIPTION OF MAP UNITS

Qa — ALLUVIUM (QUATERNARY)--Modern flood-plain deposits and lower terrace gravels; silt, sand, and gravel in main Wet Beaver Creek drainage

Ql — LANDSLIDE DEPOSITS (QUATERNARY)--Slump block or loose rubble; mostly basaltic debris

Qg 1 — GRAVEL (PLEISTOCENE)--Primarily basaltic pebbles, cobbles, and boulders as large as 2 ft in diameter; generally 10-30 ft above flood plain

Tb — BASALT FLOW(S) AND PYROCLASTIC DEPOSITS (TERTIARY)--Basalt flows, tuff, cinders, and spatter. Tuff commonly occurs at base of thick sequence of flows; as much as 1,000 ft thick

Tbv — BASALT VENT MATERIAL (TERTIARY)--Cinder cone, scoria, tuff, spatter, and small flows

Ti — INTRUSIVE BASALT (TERTIARY)--Dikes and plugs; probable feeders for eroded basaltic vents. Dikes shown on map as open-ended due to indefinite extensions in outcrop

Ts — SEDIMENTARY ROCKS (TERTIARY)--Conglomerate, sandstone, limestone, and gravel; locally contains abundant lower Paleozoic and Precambrian clasts. Maximum thickness is 140 ft

Pk — KAIBAB FORMATION (LOWER PERMIAN)--Very pale orange, grayish-orange, and pale yellowish-orange cherty dolomite, sandy dolomite, and limestone; 280 ft thick

Ptc — TOROWEAP FORMATION AND COCONINO SANDSTONE, UNDIVIDED (LOWER PERMIAN)--Crossbedded, light-gray to yellow-gray sandstone; 500 ft thick

Psu — SUPAI FORMATION, UPPER (LOWER PERMIAN)--Orange-red siltstone, sandstone, and shale; interbedded light-gray sandstone tongues in upper part. Exposed thickness is 550 ft

Gray limestone and shale marker bed, probably the Fort Apache Limestone Member of the Supai. Unit is 5-15 ft thick and occurs about 350 ft below top of formation

CONTACT--Dashed where approximately located; short-dashed where inferred; dotted where concealed

FAULT--Short-dashed where inferred; dotted where concealed. Ball and bar on downthrown side

STRIKE AND DIP OF BEDS

STRIKE OF VERTICAL JOINTS

VERTICAL SHEAR ZONE ALONG PROMINENT JOINT--No apparent displacement

APPROXIMATE BOUNDARY OF ROADLESS AREA

STUDIES RELATED TO WILDERNESS

The Wilderness Act (Public Law 88-577, September 3, 1964) and related acts require the U.S. Geological Survey and the U.S. Bureau of Mines to survey certain areas on Federal lands to determine their mineral resource potential. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Wet Beaver Roadless Area (U.S. Forest Service number 03045) in the Coconino National Forest, Coconino and Yavapai Counties, Ariz. The Wet Beaver Roadless Area was classified as a further planning area during the Second Roadless Area Review and Evaluation (RARE II) by the U.S. Forest Service, January 1979.

MINERAL RESOURCE POTENTIAL SUMMARY STATEMENT

The mineral resource potential of the Wet Beaver Roadless Area, Ariz., is low, based on field studies performed by the U.S. Bureau of Mines and the U.S. Geological Survey during 1980-82. No concentrations of minerals are indicated by geologic mapping, geochemical sampling, or geophysical investigations within the boundary of the roadless area. Basaltic cinders and sandstone have been quarried for construction materials near the area but are readily available and more accessible outside the precipitous canyon of Wet Beaver Creek.

INTRODUCTION

The Wet Beaver Roadless Area includes 9,890 acres (15.4 mi^2) of the Coconino National Forest in T. 15 N., R. 6, 7, and 8 E., Yavapai and Coconino Counties, central Arizona (fig. 1). Camp Verde, the nearest major town, is about 13 mi southwest of the roadless area.

GEOLOGY

The rocks of the Wet Beaver Roadless Area include about 1,450 ft of upper Paleozoic strata, which are unconformably overlain by Tertiary basalt flows and pyroclastic deposits that range from 300 to 1,500 ft thick. At the unconformity, a few feet of residual gravel and conglomerate that contain chert, limestone, and sandstone occur in several areas. Locally, the gravel and conglomerate form channel-fill deposits as much as 120 ft thick and contain clasts of Precambrian and lower Paleozoic rocks. In one area, about 1 mi southwest of Hog Hill, 120 ft of conglomeratic, white sandstone and limestone occurs at the unconformity. This deposit is interpreted as a local fluvio-lacustrine unit contemporaneous with the gravel.

The Paleozoic (Lower Permian) rocks comprise, in ascending order, the upper part of the Supai Formation (550 ft), the Toroweap Formation and Coconino Sandstone, undivided (600 ft), and the Kaibab Formation (280 ft). Prevolcanic erosion removed more than 1,200 ft of these strata and formed the westward-dipping unconformity on which gravels, conglomerates, and basaltic rocks were deposited. A potassium-argon age of 14.6±0.4 m.y. for a basalt flow that overlies the gravel near the canyon mouth, reported by Peirce and others (1979), places an upper limit for the age of this erosion at mid-Miocene time.

Faults, shear zones, and joints trend north and northwest, parallel to the margin of the Colorado Plateau in and near the roadless area. The number of faults increases in some areas of basaltic vent deposits; the area southeast of Hog Hill is an example.

The regional dip of sedimentary strata between fault zones is generally to the east; however, the direction of local dips is variable. Toward the upper, east end of the canyon, the elevation of the basalt-Kaibab unconformity rises 900 ft from the easternmost exposure on Wet Beaver Creek to the upper part of Brady Canyon, 1.3 mi beyond the east margin of the area shown on the map. The 4-mi-wide area between these outcrops is covered by volcanic flows that conceal the structure of the underlying sedimentary rocks. The hidden structure is interpreted as a combination of normal faulting, down to the west, and a 1°–2° dip of the sedimentary strata on the southwest flank of the Mormon Lake anticline of Twenter and Metzger (1963).

GEOCHEMISTRY

Preliminary appraisal of the geochemical data for 64 stream-sediment samples, 30 heavy-mineral concentrates, 7 rock samples, and 7 water samples from the Wet Beaver Roadless Area does not indicate anomalous concentration of metals (Gerstel, in press; Gerstel and others, 1983).

GEOPHYSICS

An aeromagnetic survey was conducted to determine any anomalies that might be associated with buried mineral deposits (Martin, in press). The low-altitude aeromagnetic data obtained show short-wavelength anomalies; long-wavelength anomalies may be masked by the short-wavelength data. Broad magnetic lows occur over sedimentary rocks where overlying volcanic rocks are thin or absent. Steep-gradient magnetic highs, some with associated lows, occur over large basaltic bodies. A regional, northwest-trending magnetic high, more than 150 mi long, crosses the roadless area approximately in its center as shown on the "Residual Aeromagnetic Map of Arizona" (Sauck and Sumner, 1970). Current interpretation of the geophysical data does not indicate the presence of significant mineral occurrences.

ASSESSMENT OF MINERAL RESOURCE POTENTIAL

The mineral resource potential of the Wet Beaver Roadless Area is low. The results of geologic, geochemical, and geophysical investigations and an assessment of mining activity do not indicate the presence of mineral resources in the area. Although rock materials that may be used for construction purposes occur here, an abundant supply of similar construction materials is more readily available at other places.

REFERENCES

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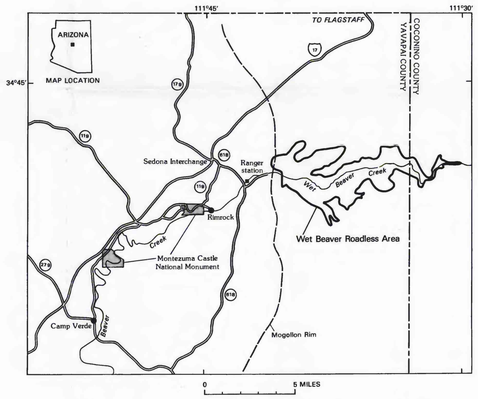

INDEX MAP SHOWING LOCATION OF THE WET BEAVER ROADLESS AREA (U.S. FOREST SERVICE NUMBER 03045), COCONINO AND YAVAPAI COUNTIES, ARIZ.

MINERAL RESOURCE POTENTIAL AND GEOLOGIC MAP OF THE WET BEAVER ROADLESS AREA, COCONINO AND YAVAPAI COUNTIES, ARIZONA

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