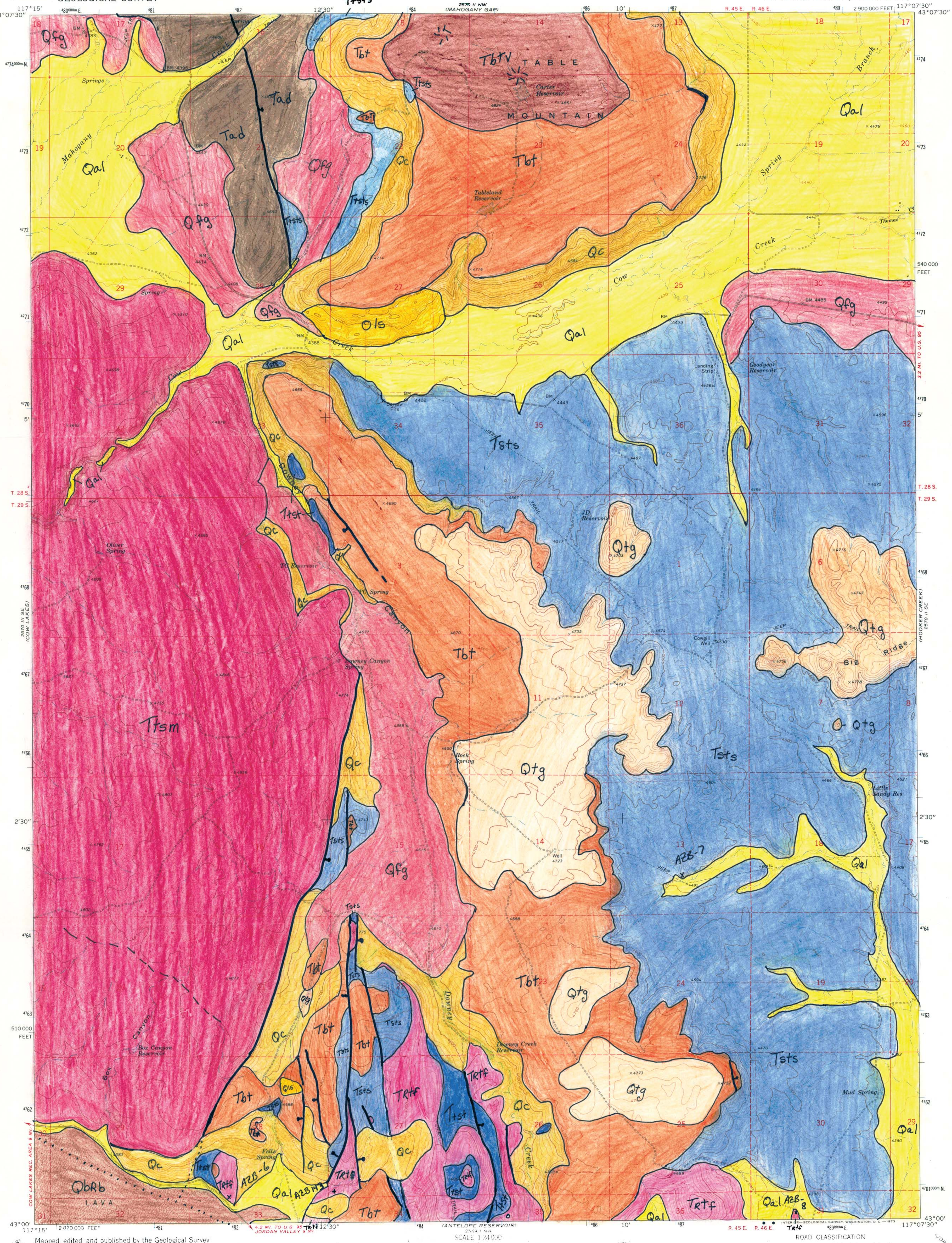
2570 III NE
(MC CAIN CREEK)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

OPEN-FILE REPORT O-92-07
PRELIMINARY GEOLOGIC MAP OF THE DOWNEY CANYON QUADRANGLE
MALHEUR COUNTY, OREGON
1992
BY MARK L. FERNS/NORMAN MACLEOD

DOWNEY CANYON QUADRANGLE
OREGON—MALHEUR CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

2570 II NE
(SHEAVILLE)



(DANNER)
2569 IV NE

Mapped, edited and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1968. Field checked 1969

Polyconic projection. 1927 North American datum
10,000-foot grid based on Oregon coordinate system, south zone
1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1969 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL

OREGON DEPARTMENT OF GEOLOGY
AND MINERAL INDUSTRIES

Field work conducted 1990/1991

Funded jointly by the Oregon Department of Geology and Mineral Industries, the Oregon State Lottery, and the U. S. Geological Survey COGEOMAP Program.

OREGON
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Primary highway, hard surface	Light-duty road, hard or improved surface
Secondary highway, hard surface	Unimproved road

Interstate Route · U. S. Route · State Route

(JORDAN VALLEY)
2569 I NE

DOWNEY CANYON, OREG.
N4300—W11707.5/7.5

1969

AMS 2570 II SW—SERIES V892

OPEN-FILE REPORT O-92-07
PRELIMINARY GEOLOGIC MAP OF THE DOWNEY CANYON QUADRANGLE MALHEUR COUNTY, OREGON

By M. L. Ferns, and N. S. MacLeod
Oregon Department of Geology and Mineral Industries

1992

Field work conducted in 1990/1991
Map Scale: 1:24,000

Funding Statement: Funded jointly by the Oregon Department of Geology and Mineral Industries, the Oregon State Lottery, and the U. S. Geological Survey COGEOMAP Program as part of a cooperative effort to map the west half of the 1^{O} by 2^{O} Boise sheet, eastern Oregon.

Downey Canyon

The tuff of Swisher Mountain (Ttsm) thickens southward into the Downey Canyon quadrangle. A fault contact separates Ttsm from a section of interbedded high-silica, lithophysal rhyolite (Ttlg) and airfall tuff (Tts). The rhyolites are planar sheets and may be rheomorphic ashflow tuffs emplaced as outflow sheets during formation of the Mahogany Mountain caldera.

Basalt flows (Tbt) cap a sedimentary section (Tsts) that unconformably overlies the rhyolites. The Tbt eruptive center is exposed at Table Mountain. Low ridges in the eastern part of the quadrangle are capped by unconsolidated gravel deposits.

Quaternary basalt flows (Qbrb) on the southern margin of the quadrangle flowed eastward from the Cow Lakes area, along the northern margin of the Antelope Valley Graben. Several areas of hydrothermal alteration in older rocks occur along the northern margin of the graben.

DOWNEY CANYON QUADRANGLE

Qal — Fluviatile deposits (Holocene and Pleistocene). Mainly unconsolidated deposits of stream gravels and floodplain silts deposited along Cow Creek.

Qls — Landslides (Holocene and Pleistocene?) Unstratified accumulations of basalt blocks along the north side of Cow Creek. Characterized by hummocky topography.

Qbrb — Basalt of Rocky Butte (Quaternary) Dark gray diktytaxitic olivine basalt flows, with well preserved primary volcanic structures such as tumuli, pahoehoe surfaces, and collapse structures. In thin section, consists of olivine phenocrysts 3 mm in diameter and elongate plagioclase phenocrysts set in a subophitic groundmass of clinopyroxene, opaques, and glass. According to Hart (1982) the unit consists of alkali olivine basalt flows with a maximum age of 0.03 - 0.09 Ma.

Qc — Colluvial deposits (Holocene and Pleistocene) Mainly skree and talus deposits consisting of basalt blocks along the rim of Table Mountain. Includes talus and fan deposits along Downey Canyon.

Qfg — Alluvial fan and pediment gravel deposits (Holocene and Pleistocene) Accumulation of poorly sorted and unconsolidated gravels, sands, and silts exposed on benches and ridges above the modern course of Cow Creek. Clasts are well rounded and consist mainly of rhyolite and rhyolite vitrophyre derived from the flanks of Mahogany Mountain to the north.

QTg — Fluviatile gravel deposits (Pleistocene? and Pliocene) Unconsolidated, poorly to moderately well-sorted deposits of rounded pebbles, cobbles, and boulders. Clasts are mostly of local rock types, mainly rhyolite and basalt, but include granitic and metamorphic clasts derived from older graves and conglomerates in the Hooker Creek quadrangle to the east. Gravels are relicts of old Plio-Pleistocene drainage systems.

Tbtv — Vent complex (Pliocene?) Agglutinate, scoria, and orange palagonitic tuff and lapilli tuff. Hyaloclastites at the base of the complex suggest that the vent was initially a maar.

Tbt — Olivine basalt (Pliocene?) Dark bluish black to black, grayish black aphyric basalt flows. Includes diktytaxitic olivine basalt flows capping Table Mountain. Locally very vesicular. Source for the flows is the vent complex (Tbtv) on Table Mountain. Includes alkali olivine basalts (Analyses, Table 1, in MacLeod (1991)).

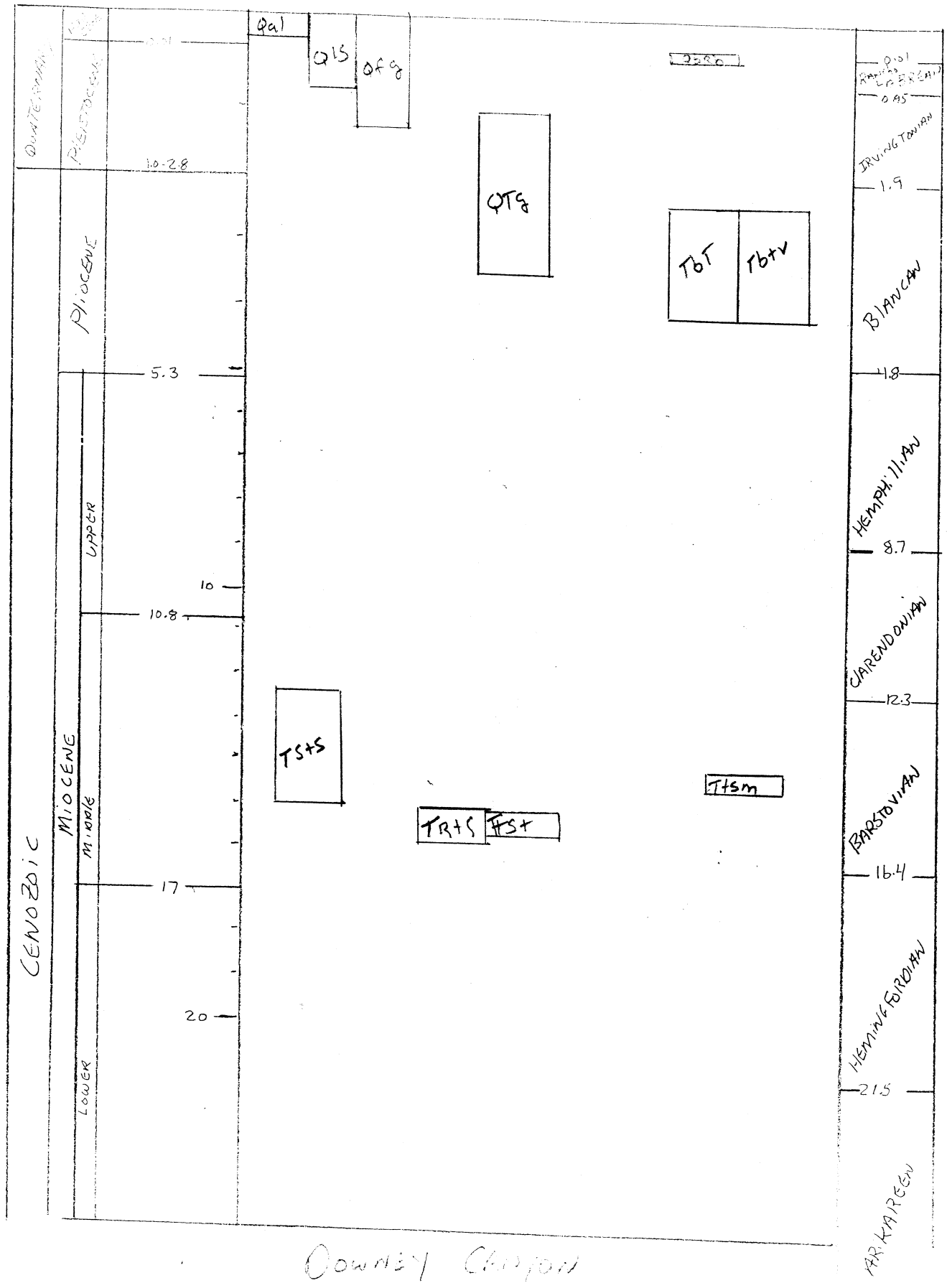
Tsls — Tuffaceous lacustrine and fluviatile sediments (Late Miocene?) Mainly white to pale yellow tuffaceous siltstones and fine-grained epiclastic sandstones. Locally includes thin lenses of diatomite and crossbedded micaceous epiclastic sandstones. Includes pebbly micaceous arkose sandstones. Equivalent in part to unit Tsu of MacLeod (1990).

Tad — Dacite or andesite (Middle Miocene) Platy aphyric andesite and/or dacite flows. Generally strongly weathered and deuterically altered, forming talus slopes of rusty angular fragments. Stratigraphic position is uncertain. Presumed to be correlative with unit Td of MacLeod (1990).

Ttsm — Tuff of Swisher Mountain (Middle Miocene) Densely welded, dark purple to reddish-purple, crystal-lithic ashflow tuff. Interior of ashflow is devitrified. Flow top is locally marked by pumiceous carapace breccias containing blocks of black and banded red and black vitrophyre and reddish, vesicular, devitrified tuff. Contains about 15 - 20% broken plagioclase crystals as much as 1 cm in length, light green pigeonite crystals, and as much as 5 % lithic fragments. Sanidine and orthopyroxene occur as accessory minerals in some thin sections. Chemically, a low-silica meta-aluminous rhyolite (Analyses , Table 1). Ashflow extends across the quadrangle northwestward through the McCain Creek, Jordan Craters North, and Diamond Butte quadrangles, where 200 foot exposures form the south wall of the Owyhee River Canyon. Petrographically and chemically similar to the tuff of Swisher Mountain as described by Ekren and others (1982) and herein considered to be a northern extension of the Swisher Mountain from the upper Owyhee Canyon where mapped and described by Evans (1990). The tuff of Swisher Mountain is considered to be about 13.9 Ma in age (Ekren, 1982).

Trtf — Sanidine-phyric rhyolite flows and ash flow tuffs (Middle Miocene) Pale orange and tan, sanidine and quartz phyric rhyolitic ashflow tuffs. At least two units exposed. Basal rhyolite is 200 feet thick and contains horizontal bands of 1/4" - 2" diameter spheralites, some of which are filled with chalcedony. Chemically, a high-silica metaluminous rhyolite similar in major and trace element composition to densely-welded ashflow tuffs exposed in the Graveyard Point quadrangle (Ferns, 1989). Stratigraphic position uncertain. Possibly an outflow sheet of the Leslie Gulch Tuff.

Ttst — Tuff and tuffaceous sediments (Middle Miocene) White to pale yellow airfall tuff and tuffaceous siltstones. Includes airfall deposits separating Trtf flows.


QUATERNARY
PLEISTOCENE
PLIOCENE
MIOCENE
UPPER
MIDDLE
LOWER
CENOZOIC
1.0-2.8
5.3
10
10.8
17
20
Qal
Qls
Qfg
QTg
TbT
Tbtv
TSTs
TRTs
TST
Ttsm
RANCHO LA BREAN
0.95
IRVINGTONIAN
1.9
BLANCAN
4.8
HEMPHILLIAN
8.7
CLARENDONIAN
12.3
BARSTOVIAN
16.4
HEMINGFORDIAN
21.5
ARIKAREEN
Downey Canyon

LAB #	1/4	1/4	Sec.	T.(S.)	R.(E.)	Lithology	Unit	SiO2	Al2O3	TiO2	Fe2O3	MnO	CaO	MgO	K2O	NA2O	P2O5	Cr	Co	Ni	Cu	Zn	Rb	Sr	Y	Zr	Nb	Ba	Li
								%	%	%	%	%	%	%	%	%	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
AZB-143	SW	SW	27	29	44	Sanidine rhyolite	Trfc	77.1	11.4	0.20	1.41	0.0	0.0	0.07	4.51	4.11	0.08	<10	<5	<5	6.4	108.	138	<10	84	503	43	170	31.5

Laboratoy Number	1/4	1/4	Sec.	T.	R.	Map Unit	Ag ppm	As ppm	Au ppb	Cu ppm	Hg ppm	Mo ppm	Pb ppm	Sb ppm	Tl ppm	Zn ppm	Bi ppm	Cd ppm	Ga ppm	Se ppm	Te ppm	Ba ppm	Co ppm	Cr ppm	Fe %	Li ppm	Mn ppm	Ni ppm
AZB-006	SW	SW	28	29S	45E	Trtf	.251	36.5	16	7.23	.406	9.67	3.93	8.98	<.5	9.57	<.25	<.1	.852	<1.0	<.5	247	1	271	0.68	53	147	<1
AZB-007	NW	SW	18	29S	45E	Tsts	.164	<1.0	4	2.80	<.1	2.01	2.22	<.25	<.5	12.0	<.25	<.1	.855	<1.0	<.5	710	4	136	0.41	8	141	2
AZB-008	NE	NW	31	29S	46E	Trtf	.198	70.0	2	5.49	.161	16.1	9.92	2.72	<.5	24.5	<.25	<.1	<.5	<1.0	<.5	101	1	154	0.91	53	111	6

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MAP SYMBOLS

———— **Contact** -- approximately located

———— — - - - - - **Fault contact** -- dashed where approximately located, dotted where concealed. Ball and bar on down throw side

/ **Strike and dip of beds**

x **Location of whole rock sample analyzed in Table 1**

Location of mineralized sample analyzed in Table 2