OPEN-FILE REPORT O-92-12
PRELIMINARY GEOLOGIC MAP OF THE ROCKVILLE QUADRANGLE
MALHEUR COUNTY, OREGON
OWYHEE COUNTY, IDAHO
1992
BY MARK L. FERNS/DEBORAH GILBERT

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROCKVILLE QUADRANGLE
OREGON—IDAHO
7.5 MINUTE SERIES (TOPOGRAPIC)

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography by photogrammetric methods from aerial photographs taken 1966-67. Field checked 1967

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

Fine red dashed lines indicate selected fence lines

UTM GRID AND 1967 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 1986/1987/1991

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

ROAD CLASSIFICATION
Medium-duty
Light-duty
Unimproved dirt
U.S. Route

OREGON
QUADRANGLE LOCATION

ROCKVILLE, OREG.—IDAHO
N4315—W11700/7.5

1967

AMS 2570 I SE—SERIES V892

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1971

OPEN-FILE REPORT O-92-12
PRELIMINARY GEOLOGIC MAP OF THE ROCKVILLE QUADRANGLE MALHEUR COUNTY, OREGON AND OWYHEE COUNTY, IDAHO

By M. L. Ferns
Oregon Department of Geology & Mineral Industries
and
Deborah Gilbert
University of Washington

1992

Field work conducted in 1986/1987/1991
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^{0} by 2^{0} Boise sheet, eastern Oregon.

Rockville

Palagonite tuffs and breccias (Topt) and interbedded basalt and basaltic andesite flows (Tpb) make up the oldest rock units exposed in the Rockville quadrangle. A thick section of massive palagonite breccias exposed along Succor Creek is part of a large hydrovolcanic center which provided detritus to the overlying sedimentary unit (Topts). Unit Tst includes a thick section of zeolitic airfall tuff and locally contains commercial deposits of clinoptilolite.

A mineralized zone is exposed crops on the southeast flank of the hydrovolcanic center. Known as the Mahogany Prospect, it is a classic hot-springs deposit that contains an explosion breccia with sinter blocks. According to Gilbert (1986), alteration zones associated with the hot springs also led to development of zeolitic alteration in the Tst tuffs.

Bentonitic silt- and claystones of unit Tsts unconformably overlie the zeolitic tuffs. Arkosic sandstone and conglomerate lenses (Tscs) locally occur interbedded with the siltstones. The sequence is overlain by the thick rhyolite flow forming Pole Creek Top (Trjc). The rhyolite is a low-silica, plagioclase-phyric flow which has been dated at about 10.6 Ma (Barlock and Vander Meulen, 1990).

The sanidine-phyric, high-silica rhyolite (Trp) exposed in the northwest corner of the quadrangle is one of a series of small volume high-silica rhyolite domes and plugs which were emplaced along a north trending belt to the west of the quadrangle boundary. The largest of these dome complexes was emplaced on Bannock Ridge at about 12.8 Ma.

ROCKVILLE QUADRANGLE

Qal Fluviatile deposits (Holocene and Pleistocene) Mainly unconsolidated deposits of stream gravels and floodplain silts deposited along Succor and McBride creeks.

Qfg Alluvial fan and pediment gravel deposits (Holocene and Pleistocene) Mainly fan and pediment gravel deposits, of unconsolidated accumulations of partially- to well-rounded boulders and cobbles of rhyolite. Size of blocks and boulders decreases and degree of rounding increases northeastward across the quadrangle. Alluvial fans grade northward into pediment and terrace gravels exposed on benches and ridges above the modern course of Cow Creek. Clasts are well rounded and consist mainly of rhyolite and rhyolite vitrophyre but include granitic and metamorphic clasts derived from underlying sedimentary units.

Qls Landslides (Holocene and Pleistocene?) Unstratified accumulations of rhyolite blocks along the north side of McBride Creek. Characterized by hummocky topography and occurrence of small springs.

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 gravels and conglomerates.

Trjf Jump Creek Rhyolite (Late Miocene) Mainly dark purple to purplish-gray, coarsely feldspar-phyric rhyolite vitrophyre flow. Contains 10 - 15% plagioclase phenocrysts as large as 1 cm in length and minor amounts of clinopyroxene. Chemically a quartz latite. Equivalent to the easternmost exposures of the Jump Creek Rhyolite of Kittleman and others (1965). Radiometric dates range from 10.6+0.3 to 11.1+0.2 Ma (Barlock and Vander Meulen, 1991, Ekren and others, 1984a).

Tsca Arksoic sandstone and conglomerate (Middle Miocene) Mainly unconsolidated to highly indurated, cross-bedded arkose sandstone with thin conglomerate lenses. Often micaceous, with both muscovite and biotite. Clasts are mainly granitic and silicic volcanic rock fragments, but include metamorphic clasts. Strongly indurated where silica-cemented, otherwise weathers to sandy soils. Locally includes abundant wood fragments. Equivalent to unit Tcg of MacLeod (1990) and Tc of Barlow and Vander Meulen (1991) and comprises part of the Sucker Creek Formation of Kittleman and others (1965).

Tsts — Tuffaceous lacustrine and fluviatile sediments (Middle Miocene) Mainly white to pale yellow tuffaceous siltstones and fine-grained epiclastic sandstones. Locally includes diatomite and bentonitic claystones. Equivalent in part to unit Tsu of MacLeod (1990). Part of the Sucker Creek Formation of Kittleman and others (1965).

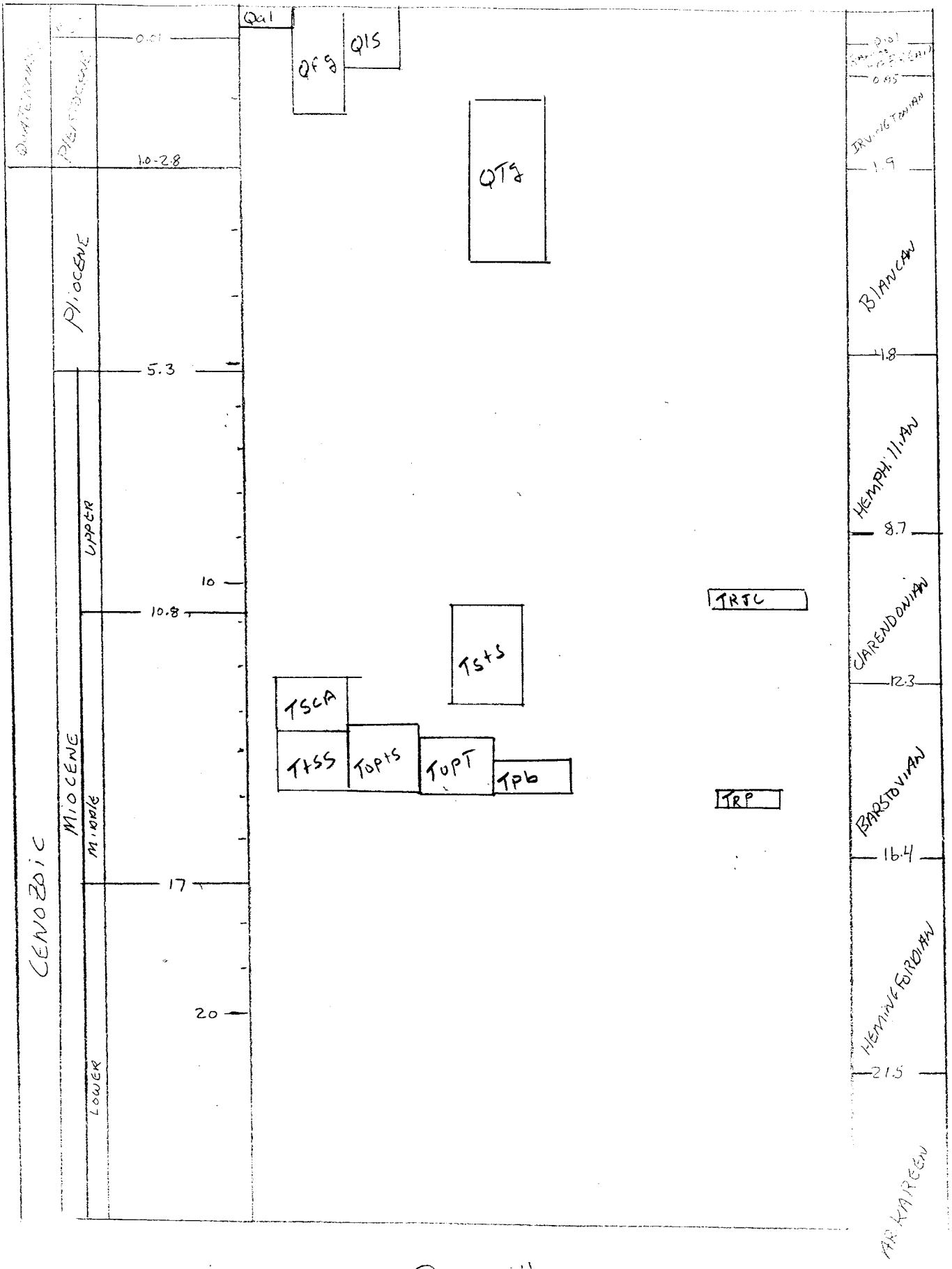
Ttss — Tuffs and tuffaceous siltstones (Middle Miocene) Mainly white, yellow, and yellow-brown, massive to thin bedded epiclastic siltstones and airfall tuff. Includes thinly laminated, shard-rich siltstones with contorted laminae, indicative of soft-sediment deformation. Also includes discontinuous beds of blue-green chert (picture rock). Tuffaceous zones are largely altered to zeolite (clinoptilolite and laumontite) (Gilbert, 1988).

Tpb — Pillow basalts and invasive flows (Middle Miocene) Columnar jointed, black, glassy aphyric basalt flows with lobate forms and palagonitized rinds.

Tapts — Epiclastic volcanic sandstones (Middle Miocene) Mainly reddish-brown to yellowish-brown, well-sorted, fine- to coarse-grained volcanic sandstones comprised of altered basaltic and rhyolitic glass shards, and quartz, plagioclase, potassium feldspar, and biotite crystals. Locally includes white tuffaceous siltstone interbeds. Commonly contains leaf fossils and petrified wood. Part of the Sucker Creek Formation of Kittleman and others (1965).

Topt — Palagonite tuffs and breccias (Middle Miocene) Yellowish- and greenish-brown palagonitic lithic tuffs. Mainly massive to thin-bedded, poorly sorted lapilli tuff, tuff, and tuff-breccia of fine-grained to glassy, olivine-phyric basalt. Locally grades upward into reddish-brown lithic tuffs at vent areas. Deposits were generated by a series of hydrovolcanic eruptions, probably from maars and tuff rings. Proximal facies tuffs include thin bedded, clast-supported lapilli tuffs while vent facies tuffs include massive, matrix-supported breccias. Vent areas commonly veined by zeolite-calcite veins and intruded by small mafic dikes and sills. Part of the Sucker Creek Formation of Kittleman and others (1965) and equivalent to unit Tbh of MacLeod (1990) and Tbt of Gilbert (1988).

Trp — Porphyritic rhyolite (Middle Miocene) Yellowish- to pinkish gray spherulitic rhyolite which contains 5 - 10% plagioclase, quartz, and sanidine phenocrysts as large as 6 mm in diameter. Chemically an evolved, high-silica rhyolite (Analyses, Table 1). Equivalent to unit Trp of Vander Meulen and others (1987).


Qal
Qfg
QIS
QTg
TRTC
TsTs
TSCA
TtSS
TopTs
TupT
Tpb
TRP
0.01
1.0-2.8
5.3
10
10.8
17
20
QUATERNARY
PLEISTOCENE
PLIOCENE
MIOCENE
UPPER
MIDDLE
LOWER
CENOZOIC
0.95
1.9
1.8
8.7
12.3
16.4
21.5
IRVINGTONIAN
BLANCAN
HEMPHILLIAN
CLARENDONIAN
BARSTOVIAN
HEMINGFORDIAN
ARIKAREEN

Rockville

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-147	SE	NW	22	25	46	Rhyolite	Trjc	68	13.9	0.55	3.72	0.0	1.6	0.56	4.35	4.16	0.14	<10	5	9	3.4	111.	92	362	66	578	60	2270	22.1
AZB-148	SW	NE	20	25	46	Rhyolite	Trp	76.9	11.7	0.22	1.30	0.0	0.2	0.09	4.67	3.00	0.04	<10	<5	<5	10.6	80.	124	24	95	292	48	480	41.8

Laboratory 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-016	NW	NE	29	26S	46E	Tpt	.156	<1.0	<1	4.70	<.1	3.76	2.51	<.25	<.5	1.88	<.25	<.1	<.5	<1.0	<.5	<5	3	116	0.39	39	213	<1
AZB-017	NW	NW	27	26S	46E	Topt	.168	32.5	11	7.12	.403	2.29	2.81	.446	<.5	47.0	<.25	<.1	10.5	<1.0	<.5	213	7	16	2.24	19	630	12
AZB-018	SW	SE	16	26S	46E	Ttss	.181	73.6	1	17.8	<.1	6.71	4.80	2.94	<.5	26.7	<.25	.104	.510	<1.0	<.5	211	4	187	1.29	57	195	<1
AZB-019	NE	NE	12	26S	46E	Topts	.179	4.91	<1	12.6	<.1	4.04	3.86	<.25	<.5	31.0	<.25	.101	<.5	<1.0	<.5	563	5	167	0.86	26	130	2
AZB-020	SE	SE	23	26S	46E	Ttss	.186	38.5	1	8.49	<.1	4.46	10.5	.612	<.5	42.5	.302	.138	2.28	<1.0	<.5	146	6	129	1.15	51	122	4

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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

Location of whole rock sample analyzed in Table 1

Location of mineralized sample analyzed in Table 2