

OPEN-FILE REPORT 0-92-16 PRELIMINARY GEOLOGIC MAP OF THE AVERY CREEK QUADRANGLE MALHEUR COUNTY, OREGON

By Howard C. Brooks

1992

This unpublished Open-File Report has not been reviewed and may not meet all Oregon Department of Geology and Mineral Industries' standards.

> Field work conducted in 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° by 2° Boise sheet, eastern, Oregon.

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GEOLOGY AND MINERAL RESOURCES MAP OF THE AVERY CREEK QUADRANGLE, MALHEUR COUNTY, OREGON

By Howard C. Brooks, Oregon Department of Geology and Mineral Industries. Field work conducted in 1991. 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 Boise 1 degree by 2 degree quadrangle.

EXPLANATION

Qal

Qls

Alluvium (Holocene and Pleistocene)--Unconsolidated and unsorted to well-sorted deposits of gravel, sand, and silt in existing flood plains.

Landslide deposits (Holocene and Pleistocene)--Unconsolidated mix of bedrock, soil and colluvium formed as a result of bedrock failure. The large landslides in the southern part of the quadrangle were caused by failure of incompetent soft sedimentary strata (Tdss) beneath basalt flows (Tsb).

QTfc

Qtg

Tsb

Colluvial and alluvial fan deposits (Holocene, Pleistocene, and Pliocene?) -- Mainly alluvial fan and slope deposits consisting of unconsolidated gravel, sand, and silt. Scree, talus, and small slump deposits are common along the margins of tablelands and other steep slopes but are mapped as Qtfc only where underlying strata are indeterminable. Includes wind-blown silt and sand deposits on tablelands benches and ridge tops and in broad valleys. Unmapped accumulations of wind-blown silt and sand locally cover extensive areas of basalt underlying the tablelands in the southern and eastern parts of the quadrangle. Most of the Qtfc deposits along the margins of Cottonwood Creek valley are the remnants of a floodplain that is somewhat older than Qal.

Terrace gravels (Pleistocene and Pliocene ?)--Unconsolidated, poorly sorted deposits of gravel, sand, and silt exposed on benches and ridge tops above the level of modern flood plains. Qtg deposits have a more tabular pattern of exposure than Qtfc and are an important source of detritus in Qtfc deposits.

Shumway Ranch Basalt (upper Miocene) -- Mostly Dark gray to black, commonly diktytaxitic, olivine basalt flows which form an extensive tableland in the southern part of the quadrangle and northern part of the adjacent Rufino Butte quadrangle. Thin tuffaceous sedmentary deposits occur locally between flows. Correlative with the Shumuray (sic) Ranch Basalt of Kittleman and others (1965, 1967) a sample of which gave a K/Ar date of 12.4 ma (Fiebelkorn and others, 1983) Varies from 1 to 4 flows from 10 to 40? ft thick.

TOA

Mafic intrusive rocks (Middle Miocene) -- Black to dark gray olivine basalt sills, dikes, and irregular shaped bodies intruded into the lower part of unit Tds. Hyaloophitic and subophitic textures. Exposure surfaces typically largely covered by disintegrated basalt. A few exposures are columnar jointed e.g. SW 1\4 Sec. 4, T. 22 S., R. 41 E.An exposure adjacent to Cottonwood Creek in SE 1\4 Sec. 6, T. 22 S., R. 41 E. includes two horizontal layers more than 10 ft thick which may represent different magma injections. A horizontally layered body adjacent to Cottonwood Creek in SE 1\4 Sec. 6, T. 22 S., R. 41 E. may represent two or more magma injections. Unit includes small pendants of silicified country rock. Country rock along margins of the larger Tbi bodies commonly is penetrated and altered by tongues of the basalt.



Bully Creek Formation (upper Miocene) -- Chiefly light gray to white interbedded tuff and tuffaceous diatomite. Includes a few discontinuous ash flow tuff (Tbt) layers up to 20 ft. thick. An ash flow containing rip-up clasts of the underlying tuff beds is exposed in SE 1\4, NE 1\4 sec. 31, T. 21 S., R. 41 E.

Tdmv

Mafic volcanic rocks (middle Miocene)--Gray aphyric and porphyritic basalt and basaltic andesite flows.

Drip Springs Formation (Miocene) -- here divided into the following units.

Tdsb

Small isolated exposures of basalt interlayered with Tdss deposits. Typically aphyric, locally highly vesicular.

Tdss

Light gray to white interbedded tuffaceous sedimentary rocks and tuff, arkosic sandstone, and rhyolite and obsidian clast conglomerate, pumice lapilli tuff breccia, and diatomaceous tuff. The section along the Crowley road in sec. 10, T. 21 S., R. 41 E. is more than 300 ft thick. Rhyolite and obsidian clast conglomerate deposits form the upper part of the unit and stratigraphically overlap basalt flows of Tdmv.



Pyroclastic breccia: 90-95 percent gray, weakly agglutinated tuff, fine cinders, and glass fragments and 5-10 percent accidental basalt fragments up to 4 ft. across.



Chiefly tuffaceous siltstone and fine sandstone and silicic tuff. Unit typically is mantled by yellowish soil containing abundant chips of dense, iron stained, white to light gray silicic tuff.

Ford Rhyodacite of the Dry Creek igneous complex (Miocene) Chiefly plagioclase and pyroxene phyric rhyodacite (Sample F, Table 1). Part of basalt and rhyolite igneous complex mapped to the south in the Rufino Butte quadrangle (Brooks, 19923).

The Littlefield Rhyolite (Miocene)--Chiefly lithoidal rhyolite flows and flow breccias. Includes vitrophyre locally.

*Chemical analyses of samples from several units are shown in the accompanying tables.

REFERENCES

Brooks, H.C., 1992, Preliminary geologic map of the Rufino Butte quadrangle, Malheur County, Oregon: Gregon Department of Geology and Mineral Industries Open-File Map 0-92-17.



Correlation chart. Avery Creek quadrangle

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 A_{0}

Location of whole rock sample analyzed in

Table 1

TABLE 1. WHOLE ROCK ANALYSES,	AVERY CREEK QUADRANGLE, MALHEUR COUNTY, OREGON

| no.
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0 B-91-9
1 B-91-21 | 77 SV
9 NI | n se
E sv | E 13
V 19 | 3 21
9 21 | | 448590E | 3,260 | Basattic
andesite | unit
Tdmv | SIO2
52.6 | | | Fe2O3
9.50
 | MnO
0.18

 | CaO
8.21 | MgO
5.01
 | K20
1.47 | Na2O
3.46 | P2O5
0.59 | | Total | Cr
93 | Rb
41 | Sr
572 | Y
10 | Zr
185 | Nb
46 | Ba
633
 | Co
26 | Cu
61.2 | <u> </u> | | | |
|---|-------------------------|---|--|---|--|---|--|--|--|---|---|--
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--|--|---|--|--|---|--|--|---|---|---|--
---|--|---|---|---|---|
| D B-91-9 | 9 NI | | | | | 448590E | i i | | Tdmv | 52.6 | 16.0 | 1.36 | 9.50
 | 0.18

 | 8.21 | 5.01
 | 1.47 | 3.46 | 0.59 | 1.39 | 00.0 | 93 | 41 | 572 | 10 | 185 | 46 | 633
 | 26 | 61.2 | 9.9 | 495 | 65 | a |
| | | e sv | / 19 | ¥ 21 | 41 | | | andesite | | | | |
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| | | E SV | V 11 | 9 21 | 4 | 1 49416066 | | | | | | |
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 | | | | | | |
| 1 B-91-21 | 01 NI | | | | | | | Rhyolite | Tir | 72.7 | 12.3 | 0.429 | 3.12
 | 0.04

 | 0.74 | 0.27
 | 4.00 | 4.58 | 0.07 | 1.08 | 99.7 | <10 | 124 | 185 | 137 | 600 | 56 | 2210
 | <5 | 1.2 | 11.0 | 171 | <5 | 1 |
| 1 B-91-21 | 01 NI | | | | | 44O120E | | | | | | |
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 | | | | | | | | | | | |
 | | | | | | |
| | | ENV | V 31 | 1 21 | 41 | 1 4839120N
440320E | | Pinyolite | Tir | 71.3 | 12.3 | 0.440 | 4.87
 | 0.04

 | 0.63 | 0.22
 | 4.09 | 4.29 | 0.08 | 1.23 | 99.9 | <10 | 129 | 168 | 92 | 608 | 55 | 2120
 | <5 | 0.8 | 15.5 | 172 | <5 | 1 |
| 8 8-91-36 | 36 SV | N SE | 34 | 4 21 | 41 | | | Basatic | Tohnv | 53.1 | 15.9 | 1.35 | 9.69
 | 0.18

 | 8.11 | 5.20
 | 1.73 | 3.32 | 0.59 | 1.23 | 00.6 | 87 | 39 | 595 | 21 | 190 | 11 | 718
 | 25 | 65.5 | 9.3 | 947 | 65 | 9 |
| 5 8-91-38 | 38 NN | N SE | : 2 | 22 | : 4 ' | 1 4836880N | 4,210 | Basaltic | Tohnv | 53.1 | 16.9 | 1.70 | 7.86
 | 0.13

 | 9.73 | 4.06
 | 1.24 | 3.61 | 0.65 | 1.23 | 00.4 | 124 | 27 | 662 | 35 | 181 | 31 | 739
 | 24 | 47.6 | 5.5 | 783 | 58 | 1 |
| 7 8-91-14 | 14 SI | e se | 5 | 22 | : 4 1 | 1 4836470N | 3,360 | Basalt | ты | 48.3 | 15.7 | 1.27 | 12.4
 | 0.20

 | 10.4 | 7 <i>.</i> 28
 | 0.36 | 2.69 | 0.35 | 1.47 | 100.5 | 78 | 13 | 376 - | <10 | 93 | 20 | 248
 | 35 | 137 | 10.3 | 519 | 93 | 93 |
| 6 B-91-39 | 39 SI | e se | 2 | 22 | : 4 ' | | | Basalt | Tsb | 48.6 | 15.9 | 1.92 | 12.4
 | 0.20

 | 9.39 | 6.33
 | 0.94 | 3.00 | 0.56 | 0.47 | 99.9 | 159 | 17 | 481 | 41 | 153 | 26 | 691
 | 34 | 46.9 | 9.9 | 603 | 94 | 1 |
| B-91-10 | 106 SV | N SE | 10 |) 22 | : 4 | | | Rhyolite | Tir | 64.3 | 16.7 | 1.24 | 3.23
 | 0.04

 | 3.25 | 0.60
 | 3.36 | 0.04 | 0.44 | 0.62 | 99.5 | 13 | 68 | 494 | 50 | 376 | 46 | 1380
 | 8 | 7.3 | 12.7 | 221 | 5 | 1 |
| 5 B-91-94 | 94 SI | E SV | / 13 | 3 22 | : 4 | 1 4833180N | 4,180 | Basat | Tokniv | 50. 9 | 15.8 | 1.60 | 11.1
 | 0.17

 | 9.17 | 4.94
 | 0.99 | 3.29 | 0.57 | 1.77 | 00.5 | 95 | 35 | 606 | 26 | 164 | 31 | 652
 | 30 | 63.7 | 11.6 | 1174 | 69 | 1 |
| 7
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8-91-
8-91- | 8-91-14 Si
8-91-39 Si
8-91-106 Si | 8-91-14 SE SE
8-91-39 SE SE
8-91-106 SW SE | B-91-14 SE SE 5
B-91-39 SE SE 2
B-91-106 SW SE 10 | B-91-14 SE SE 5 22
B-91-39 SE SE 2 22
B-91-106 SW SE 10 22 | B-91-14 SE SE 5 22 41
B-91-39 SE SE 2 22 41
B-91-106 SW SE 10 22 41 | 8-91-38 NW SE 2 22 41 435630E B-91-38 NW SE 2 22 41 4453630E B-91-39 SE SE 5 22 41 4836470N B-91-39 SE SE 2 22 41 4836420N B-91-39 SE SE 2 22 41 4836420N B-91-30 SE SE 2 22 41 4836420N B-91-106 SW SE 10 22 41 4834630N 4475640E 445540E 445540E 445540E 445540E | B-91-38 NW SE 2 22 41 445500E
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Basalic Tbi 48.3 15.7 1.27 12.4 0.20 10.4 728 0.36 2.69 0.35 1.47 100.5 78 13 376< | 445500E andesite andesite B-91-38 NW SE 2 22 41 4336800N 4.210 Basatic Tdmv 53.1 16.9 1.70 7.86 0.13 9.73 4.06 1.24 3.61 0.65 1.23 100.4 124 27 662 35 181 31 739 24 47.6 5.5 B-91-38 NW SE 5 22 41 4836470N 3.360 Basatic Tdmv 53.1 16.9 1.70 7.86 0.13 9.73 4.06 1.24 3.61 0.65 1.23 100.4 124 27 662 35 181 31 739 24 47.6 5.5 B-91-14 SE SE 5 22 41 4836470N 3.360 Basatic Tbi 48.3 15.7 1.27 12.4 0.20 10.4 7.28 0.35 1.47 100.5 78 13 376 <10 | 445500E andeisite andeisite andeisite andeisite andeisite B-91-38 NW SE 2 22 41 4336800N 4,210 Basalitic Tdmv 53.1 16.9 1.70 7.86 0.13 9.73 4.06 1.24 3.61 0.65 1.23 100.4 124 27 662 35 181 31 739 24 47.6 5.5 783 B-91-38 NW SE 5 22 41 4838470N 3.360 Basalit Tbi 48.3 15.7 1.27 12.4 0.20 10.4 7.28 0.36 2.69 0.35 1.47 100.5 78 13 376 <10 | 445500E andeisite |

Avery Creek Quadrangle

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

Y

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Location of whole rock sample analyzed in Table 1