STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
RUARRI J. DAY-STIRRAT, STATE GEOLOGIST
https://www.oregon.gov/dogami

Geologic Map of the Brown Creek 7.5' Quadrangle, Wasco County, Oregon

2024

GMS-128

Geologic Map of the Mill Creek Area, Hood River and Wasco Counties, Oregon

by Jason D. McClaughry[1,2], Clark A. Niewendorp[2], Carlie J.M. Azzopardi[3], Heather H. Herinckx[4], and Brian M. Webb[5]
Cartography by Jon J. Franczyk[1] and Geodatabase by Carlie J.M. Azzopardi[1]

[1]Oregon Department of Geology and Mineral Industries, Baker City Field Office, Baker County Courthouse, 1995 3rd Street, Ste. 130, Baker City, OR 97814
[2]Retired, formerly at Oregon Department of Geology and Mineral Industries, 800 NE Oregon Street, Ste. 965 Portland, OR 97232
[3]Oregon Department of Geology and Mineral Industries, 800 NE Oregon Street, Ste. 965 Portland, OR 97232
[4]Shannon & Wilson Inc., 3400 Sutton Park Drive S, Suite 1401, Jacksonville, FL 32224,
formerly at Oregon Department of Geology and Mineral Industries, 800 NE Oregon Street, Ste. 965 Portland, OR 97232
[5]AECOM, 888 SW 5th Ave Ste 600, Portland, OR 97204,
formerly at Oregon Department of Geology and Mineral Industries, 800 NE Oregon Street, Ste. 965 Portland, OR 97232

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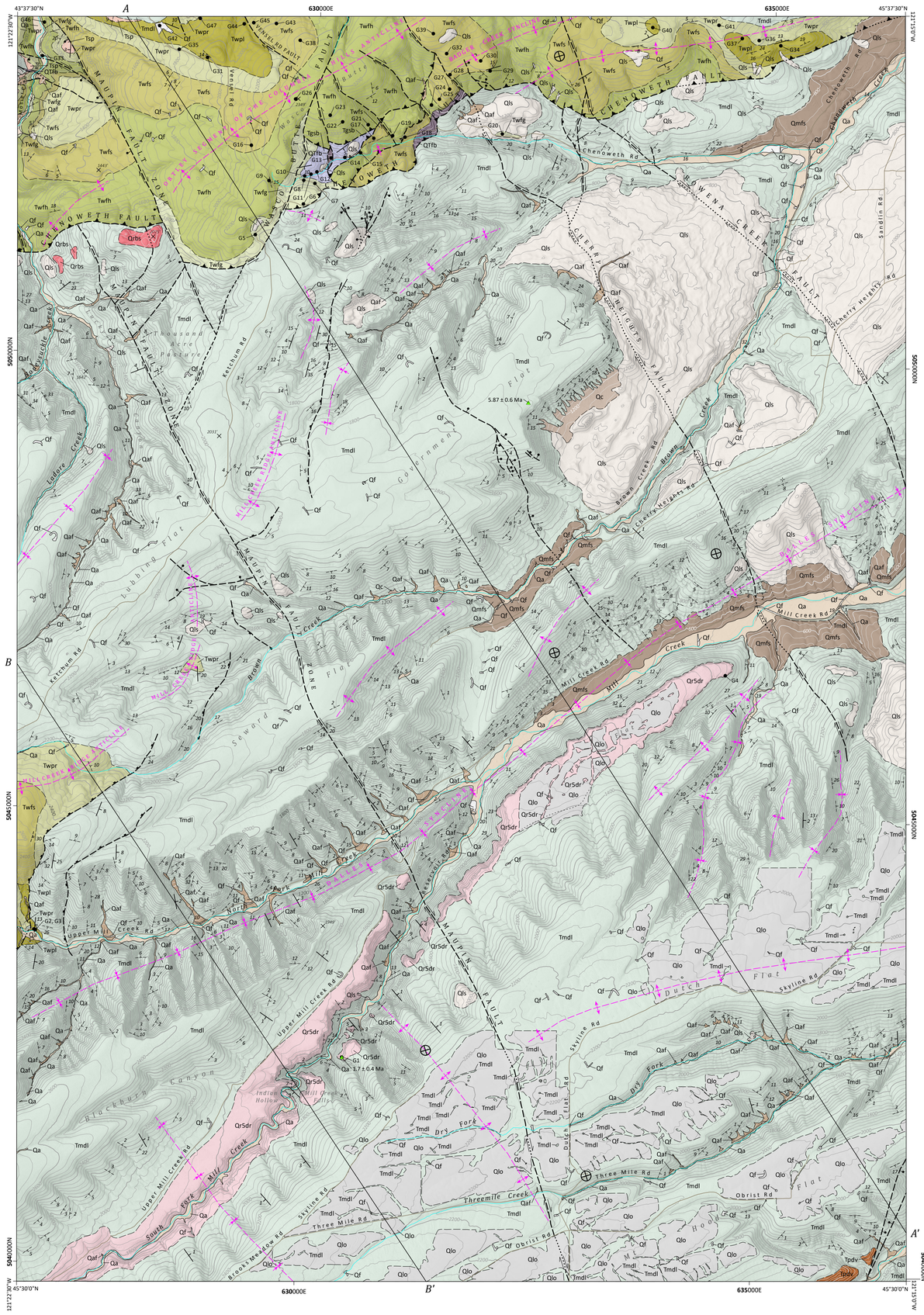
PLATE 1



SCALE 1:24 000 (1 inch equals 2 000 feet)
Contour interval is 40 feet.
1 0.5 0 1 MILE
1 0.5 0 1 KILOMETER
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2015

LIST OF MAP UNITS

See Explanation of Map Units *in the accompanying pamphlet for complete unit descriptions.*

UPPER CENEZOIC SURFICIAL DEPOSITS

- Qf — **modern fill and construction material (upper Holocene)**
- Qa — **alluvium (Holocene and Upper Pleistocene)**
- Qaf — **fan deposits (Holocene and Upper Pleistocene)**
- Qls — **landslide deposits (Holocene and Upper Pleistocene)**
- Qc — **colluvium (Holocene and Upper Pleistocene)**
- Qmfs — **Missoula flood deposits (Upper Pleistocene)**
- Qlo — **loess (Holocene and Pleistocene)**

Unconformity

UPPER CENOZOIC VOLCANIC AND SEDIMENTARY ROCKS

QUATERNARY AND UPPER PLIOCENE VOLCANIC AND SEDIMENTARY ROCKS OF THE LATE HIGH CASCADES

PRODUCTS OF REGIONAL QUATERNARY VOLCANOES

Volcanics of Fir Mountain

- Qrbs — **basaltic andesite of Beaver Spring (lower Pleistocene)**
- Qr5dr — **basaltic andesite of Dog River (lower Pleistocene)**
  1.87 ± 0.01 Ma ($^{40}Ar/^{39}Ar$; outside Mill Creek area); 1.7 ± 0.4 Ma (K-Ar)

Disconformity

PLIOCENE VOLCANIC AND SEDIMENTARY ROCKS OF THE LATE HIGH CASCADES

- Tpdv — **trachydacite of Fivemile Creek (lower Pliocene)**
  3.69 ± 0.01 ($^{40}Ar/^{39}Ar$); 3.7 ± 0.2 Ma (K-Ar; outside Mill Creek area)

Disconformity

LOWER PLIOCENE AND UPPER MIOCENE VOLCANIC AND SEDIMENTARY ROCKS OF THE EARLY HIGH CASCADES

Dalles Formation

- Tmdl — **Dalles Formation, undivided (lower Pliocene[?] and upper Miocene)**

Angular unconformity to disconformity

MIDDLE AND LOWER MIOCENE VOLCANIC AND SEDIMENTARY ROCKS

COLUMBIA RIVER BASALT GROUP

Saddle Mountains Basalt

- Tsp — **Pomona Member (late Miocene)**
  11.21 ± 0.42 Ma ($^{40}Ar/^{39}Ar$; outside Mill Creek area)

Disconformity to Angular Unconformity(?)

Wanapum Basalt

Priest Rapids Member

- Twpl — **Basalt of Lolo (middle Miocene)**
- Twpr — **Basalt of Rosalia (middle Miocene)**

Frenchman Springs Member

- Twfs — **Basalt of Sentinel Gap (lower Miocene)**
- Twfh — **Basalt of Sand Hollow (lower Miocene)**
- Twfg — **Basalt of Ginkgo (lower Miocene)**
  16.12 ± 0.05 Ma ($^{40}Ar/^{39}Ar$; outside Mill Creek area)

Disconformity

Grande Ronde Basalt

Normal-polarity (N2) magnetostratigraphic unit

- Tgsb — **Sentinel Bluffs Member (lower Miocene)**
  16.135 ± 0.04 Ma; 16.15 ± 0.07 Ma ($^{40}Ar/^{39}Ar$; outside Mill Creek area)
- Tgww — **Winter Water Member (lower Miocene)** *(cross-section only)*
- Tgo — **Ortley member (lower Miocene)** *(cross-section only)*

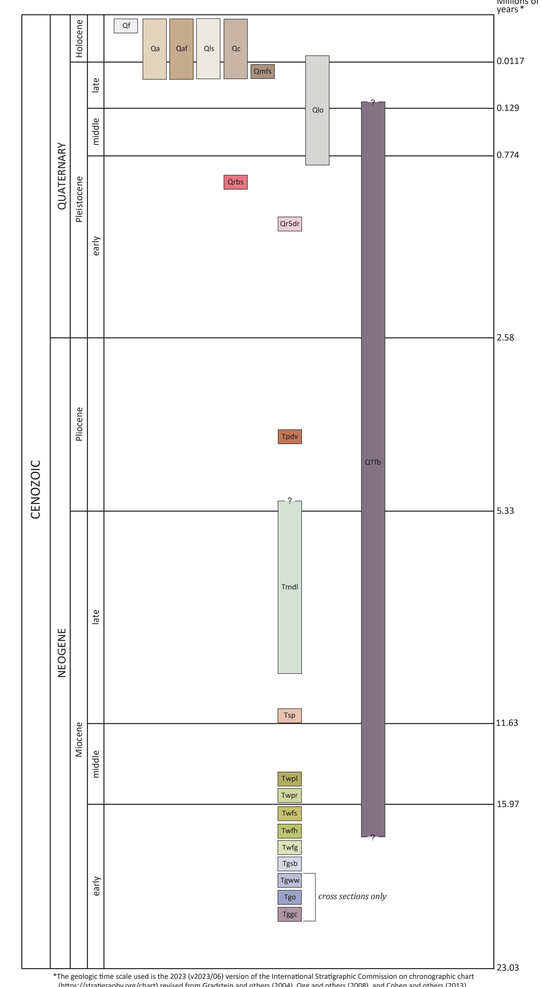
Reversed-polarity (R2) magnetostratigraphic unit

- Tggc — **Grouse Creek member (lower Miocene)** *(cross-section only)*

OTHER ROCKS

- QTfb — **fault breccia (Upper Pleistocene[?] lower Miocene)**

TIME ROCK CHART

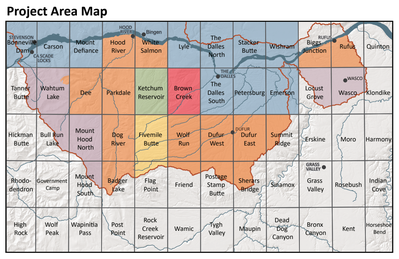


*The geologic time scale used is the 2023 (v2023/06) version of the International Stratigraphic Commission on chronographic chart (https://stratigraphy.org/chart) revised from Gradstein and others (2004), Ogg and others (2008), and Cohen and others (2013).

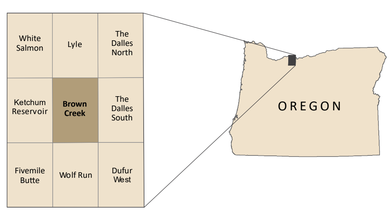
EXPLANATION OF SYMBOLS

- Stream
- Road
- A —— A′ — Cross Section
- G12 — Location of whole-rock XRF geochemical analysis sample
- 1.7 ± 0.4 Ma — Location of radiometric age in millions (Ma) of years
- × 2982′ — Lidar-derived elevation
- ⊕ — Horizontal Bedding
- ÷ — Horizontal bedding, as determined remotely or from aerial photographs
- 2 — Inclined bedding showing strike and dip
- 4 — Approximate orientation of inclined bedding — Showing approximate strike and dip
- 7 — Gently inclined (between 0 and 30) bedding, as determined remotely or from aerial photographs — Showing approximate strike and direction of dip
- 33 — Moderately inclined (between 30 and 60) bedding, as determined remotely or from aerial photographs — Showing approximate strike and direction of dip
- Contact — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Fault — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Normal fault — ball and bar on downthrown block. Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Strike-slip fault, right-lateral offset — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Strike-slip fault, left-lateral offset — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Oblique-slip fault, right-lateral offset — ball and bar on downthrown block. Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Reverse fault — Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain. Rectangles on upthrown block.
- Thrust fault (1st option) — Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain. Sawteeth on upper (tectonically higher) plate.
- Normal fault (in cross section) — Arrows show relative motion. Queried where relative motion is inferred or uncertain.
- Strike-slip fault, left-lateral offset (in cross section) — minus, away from observer; plus, towards observer. Arrows show relative motion.
- Anticline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.
- Syncline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.

Project Area Map



- 2011-2021 DOGAMI geologic mapping completed
- Plate 1 (this plate)
- Plate 2
- Plate 3
- USGS geologic mapping (FEDMAP in progress)
- Future DOGAMI/USGS mapping targets
- Rivers and streams
- Watershed boundary
- Town

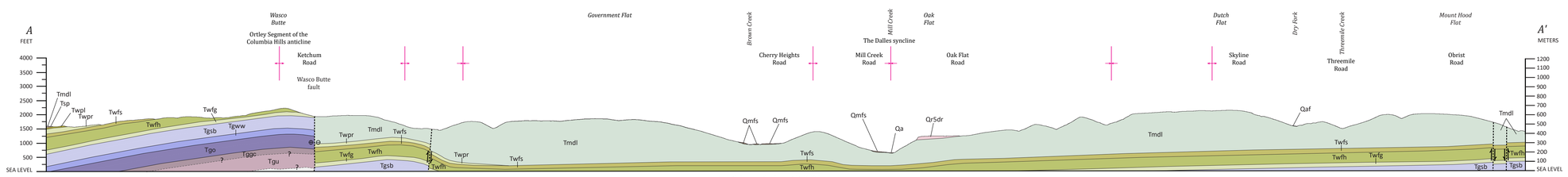


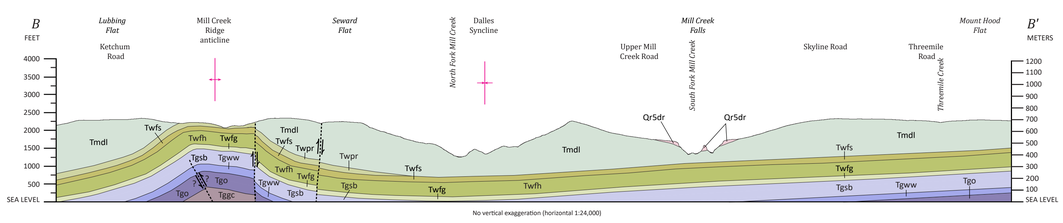
U.S. Geological Survey 7.5-minute quadrangles. Map plate extent shown with a filled semi-opaque brown polygon.

GEOLOGIC CROSS SECTIONS

Selected Quaternary units not shown in cross section.

Depth of exposure in the map area does not extend below the Sentinel Bluffs Member (Tgsb).





Source Data: Oregon Lidar Consortium, 2015, 3-foot bare earth lidar digital elevation model for the Brown Creek (45121-E3) quadrangle. Water features from USGS National Hydrography Dataset (2015). Roads map service from ESRI® Data & Maps: StreetMap™, U.S. and Canada Detailed Streets, 2008 Ed. (2008-04-01): Redlands, Calif.

Projection: Oregon Statewide Lambert Conformal Conic, Unit: International Feet, Horizontal Datum: NAD 1983 HARN. UTM Coordinates: Zone 10N, NAD83.

Software: Esri ArcGIS® 10.7.1 and Adobe® Illustrator® 2024

References:

Cohen, K. M., Finney, S. C., Gibbard, P.L. and Fan, J.-X, 2013, The ICS International Chronostratigraphic Chart: Episodes 36, p. 199-204.

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Ogg, J. G., Ogg, G., and Gradstein, F. M., 2008, The concise geologic time scale: New York, Cambridge University Press, 184 p.

Field Work: Field work conducted by Clark A. Niewendorp and Jason D. McClaughry, with assistance from Carlie J.M. Azzopardi and Brian Webb in 2016.

Geology Reviewers: Charlie Cannon (USGS), Jim O'Connor (USGS), Ken Lite (formerly OWRD), Josh Hackett (OWRD), and Lowell Anthony (DOGAMI).

Digital Cartography: Jon J. Franczyk.

Geodatabase: Carlie J.M. Azzopardi.