STATE OF OREGON
DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
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https://www.oregon.gov/dogami

Geologic Map of the Ketchum Reservoir 7.5' Quadrangle, Hood River and Wasco Counties, Oregon

2024

GMS-128

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

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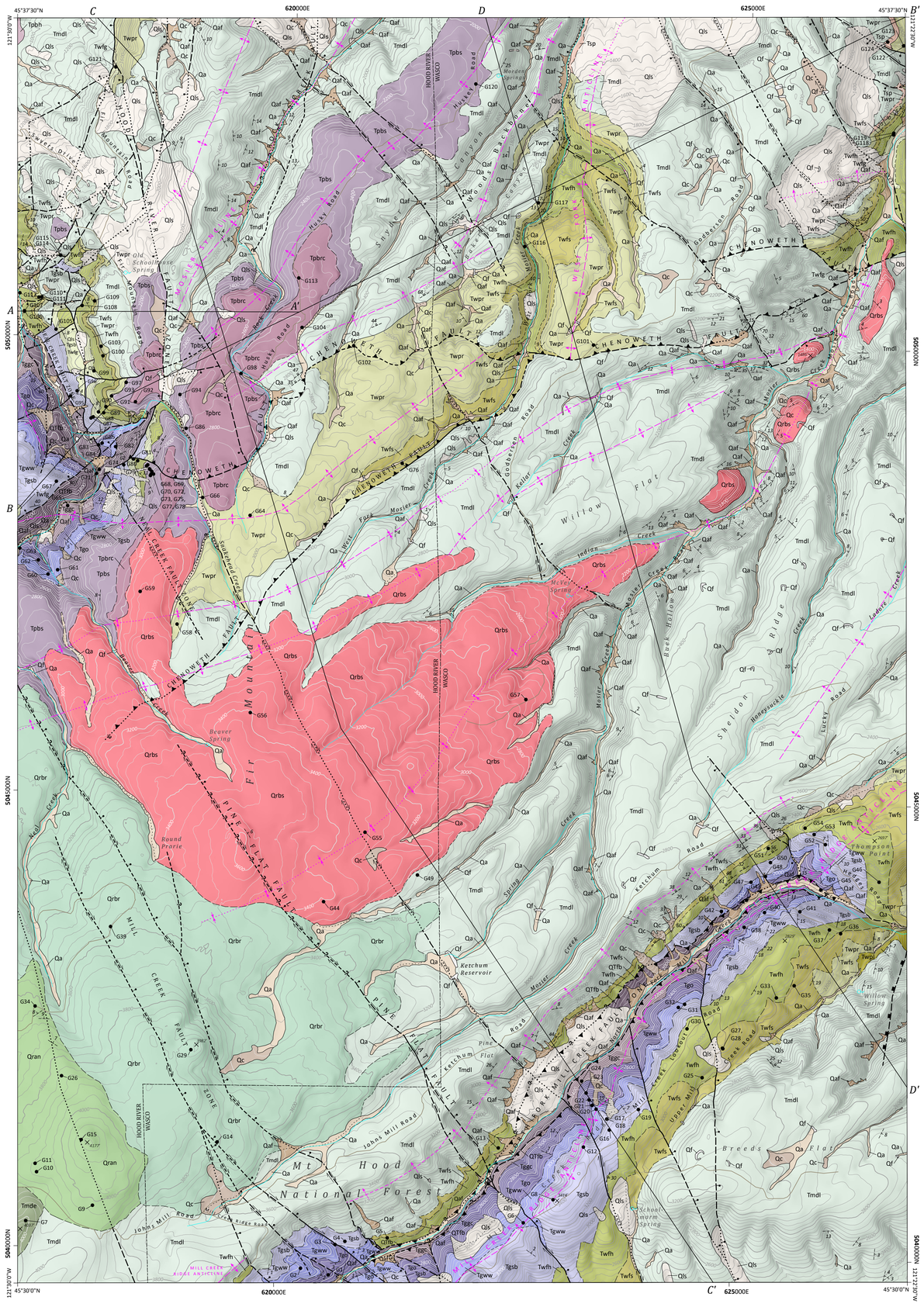
Geologic mapping was supported in part by grants from the STATEMAP component of the U.S. Geological Survey (USGS)
National Cooperative Geologic Mapping Program under cooperative agreement numbers G15AC00180, G16AC00179, and G21AC00647.
Additional funds were provided by the State of Oregon through the Oregon Department oaf Geology and Mineral Industries.

PLATE 2



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

APPROXIMATE MEAN DECLINATION, 2015

LIST OF MAP UNITS

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

UPPER CENOZOIC 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)**

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

- Qran — **andesite of Neal Creek (lower Pleistocene)**
- Qrbs — **basaltic andesite of Beaver Spring (lower Pleistocene)**
- Qrbr — **basaltic andesite of Round Prairie (lower Pleistocene)**

Disconformity

PLIOCENE VOLCANIC AND SEDIMENTARY ROCKS OF THE LATE HIGH CASCADES

- Tpbh — **basalt of Hood River (upper Pliocene)**
- Tpbrc — **basalt of Rock Creek (lower Pliocene)**
- Tpbs — **basalt of Snakehead Creek (lower Pliocene)**

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)**
- Tmde — **andesite and dacite of East Fork (upper Miocene)**
  7.15 ± 0.8 Ma, 8.18 ± 0.06 Ma (K-Ar; outside Mill Creek area)

Angular unconformity to disconformity

MIDDLE AND LOWER MIOCENE VOLCANIC AND SEDIMENTARY ROCKS

COLUMBIA RIVER BASALT GROUP

Saddle Mountains Basalt

- Tsp — **Pomona Member (uppper 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)**
- Tgo — **Ortley member (lower Miocene)**

Reversed-polarity (R2) magnetostratigraphic unit

- Tggc — **Grouse Creek member (lower Miocene)**

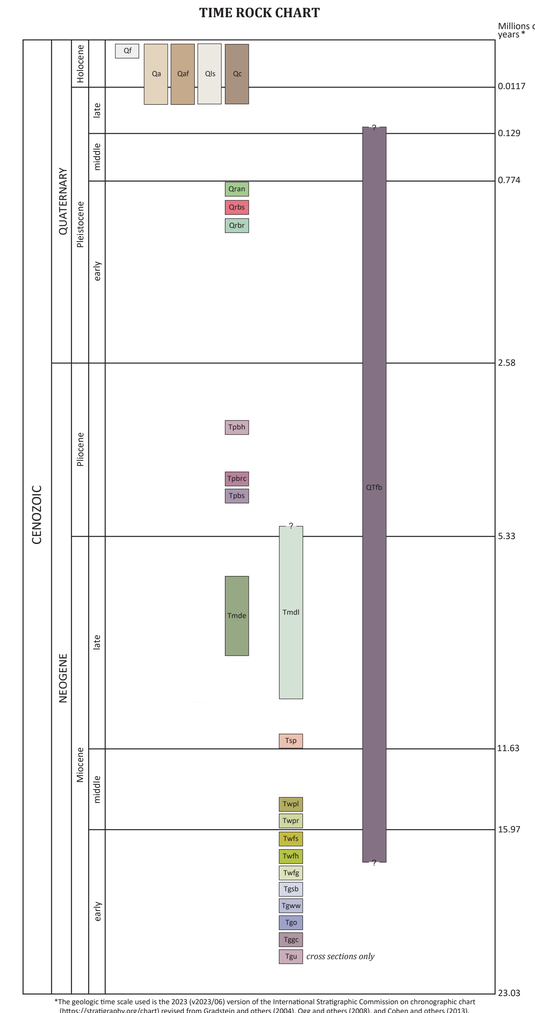
Undivided Grande Ronde Basalt

- Tgu — **Grande Ronde Basalt, undivided (lower Miocene)** *(cross section only)*

OTHER ROCKS

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

TIME ROCK CHART

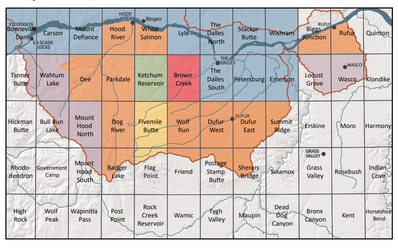


*The geologic time scale used is the 2023 (v2023/06) version of the International Stratigraphic Commission on chronographic chart (https://stratigraphy.org/chart) revised from Gradstein and others (2004), Ogg and others (2008), and Cohen and others (2013).

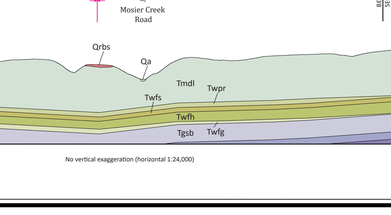
EXPLANATION OF SYMBOLS

- Stream
- Road
- County Boundary
- A — A' Cross Section
- ×1514′ Lidar-derived elevation
- G12 Location of whole-rock XRF geochemical analysis sample
- Spring, type of use unspecified
- Inclined bedding showing strike and dip
- Gently inclined (between 0 and 30) bedding, as determined remotely or from aerial photographs - Showing approximate strike and direction of dip
- Moderately inclined (between 30 and 60) bedding, as determined remotely or from aerial photographs - Showing approximate strike and direction of dip
- Steeply inclined (between 60 and 90) 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.
- 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 — long-dashed where approximate, dotted where concealed, queried where uncertain. Rectangles on upthrown block.
- Thrust fault — long-dashed where approximate, dotted where concealed, queried where uncertain. Sawteeth on upper (techtonically higher) plate.
- Normal fault (in cross section) — Arrows show relative motion. Queried where relative motion is inferred or uncertain.
- Oblique-slip fault, right-lateral offset (in cross section) — minus, away from observer; plus, towards observer. Absence of question mark indicates inferred. 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.
- Monocline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.

PROJECT AREA



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

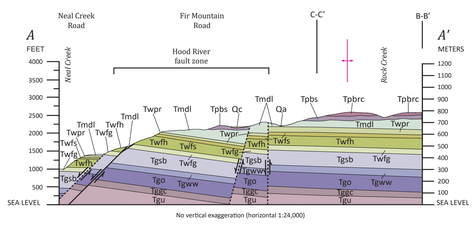


U.S. Geological Survey 7.5-minute quadrangles. Map plate extent shown with a filled semi-opaque brown polygon.

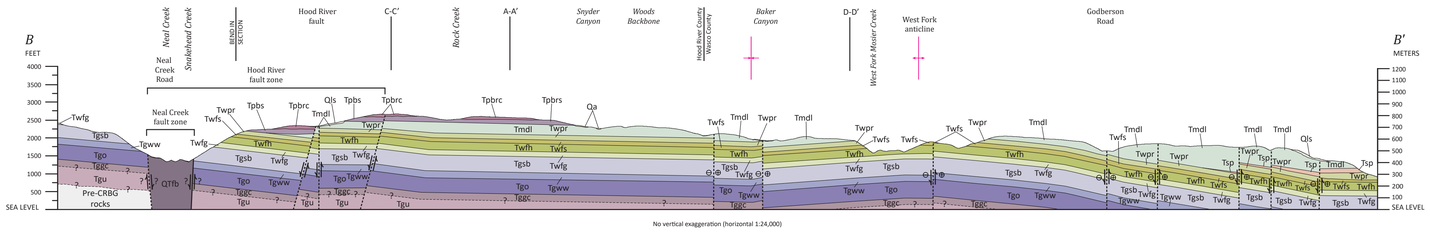
GEOLOGIC CROSS SECTIONS

Selected Quaternary units not shown in cross section.

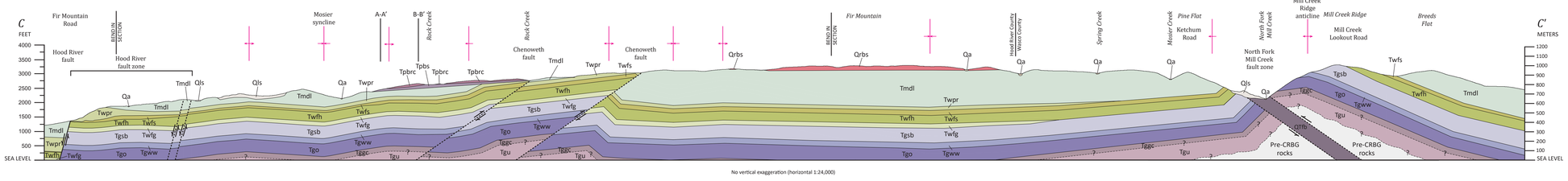
Depth of exposure in the map area does not extend beneath the Grouse Creek member (Tggc).



No vertical exaggeration (horizontal 1:24,000)



No vertical exaggeration (horizontal 1:24,000)



No vertical exaggeration (horizontal 1:24,000)

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Source Data: Oregon Lidar Consortium, 2015, 3-foot bare earth lidar digital elevation model for Ketchum Reservoir (45121-E4) 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, v. 36, no. 3, p. 199-204.

Gradstein, F. M., Ogg, J. G., and Smith, A. G., eds., 2004, A geologic time scale 2004: Cambridge, U.K., Cambridge University Press, 589 p.

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 Jason D. McClaughry in 2011, 2015, and 2016.

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

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Geodatabase: Carlie J.M. Azzopardi.