

Geologic Map of the Burns Butte 7.5' Quadrangle, Harney County, Oregon

2020

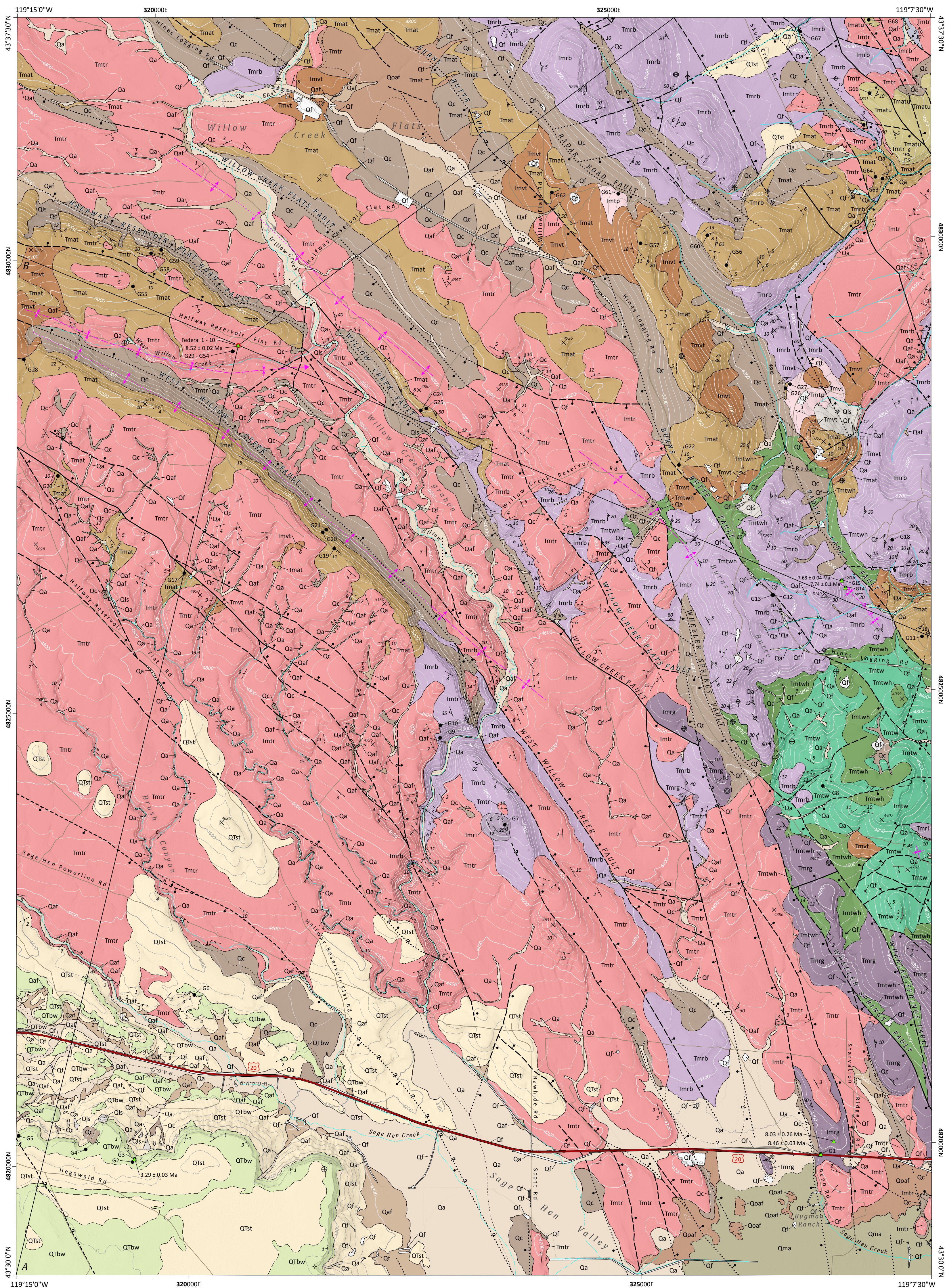
GMS-125

Geologic Map of the Burns Butte 7.5' Quadrangle,
Harney County, Oregon

By Jason D. McClaughry, Carlie J. M. Duda, and Mark L. Ferns

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PLATE 1



EXPLANATION OF MAP UNITS

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

UPPER CENOZOIC SURFICIAL DEPOSITS

- modern fill and construction material (upper Holocene)
- marsh and alluvial deposits (Holocene and Upper Pleistocene[?])
- alluvium (Holocene and Upper Pleistocene[?])
- fan deposits (Holocene and Upper Pleistocene[?])
- landslide deposits (Holocene and Upper Pleistocene[?])
- colluvium (Holocene and Upper Pleistocene[?])
- older fan deposits (Holocene and Pleistocene[?])

Angular unconformity to disconformity

UPPER CENOZOIC VOLCANIC AND SEDIMENTARY ROCKS

LOWER PLEISTOCENE TO UPPER MIOCENE SEDIMENTARY ROCKS

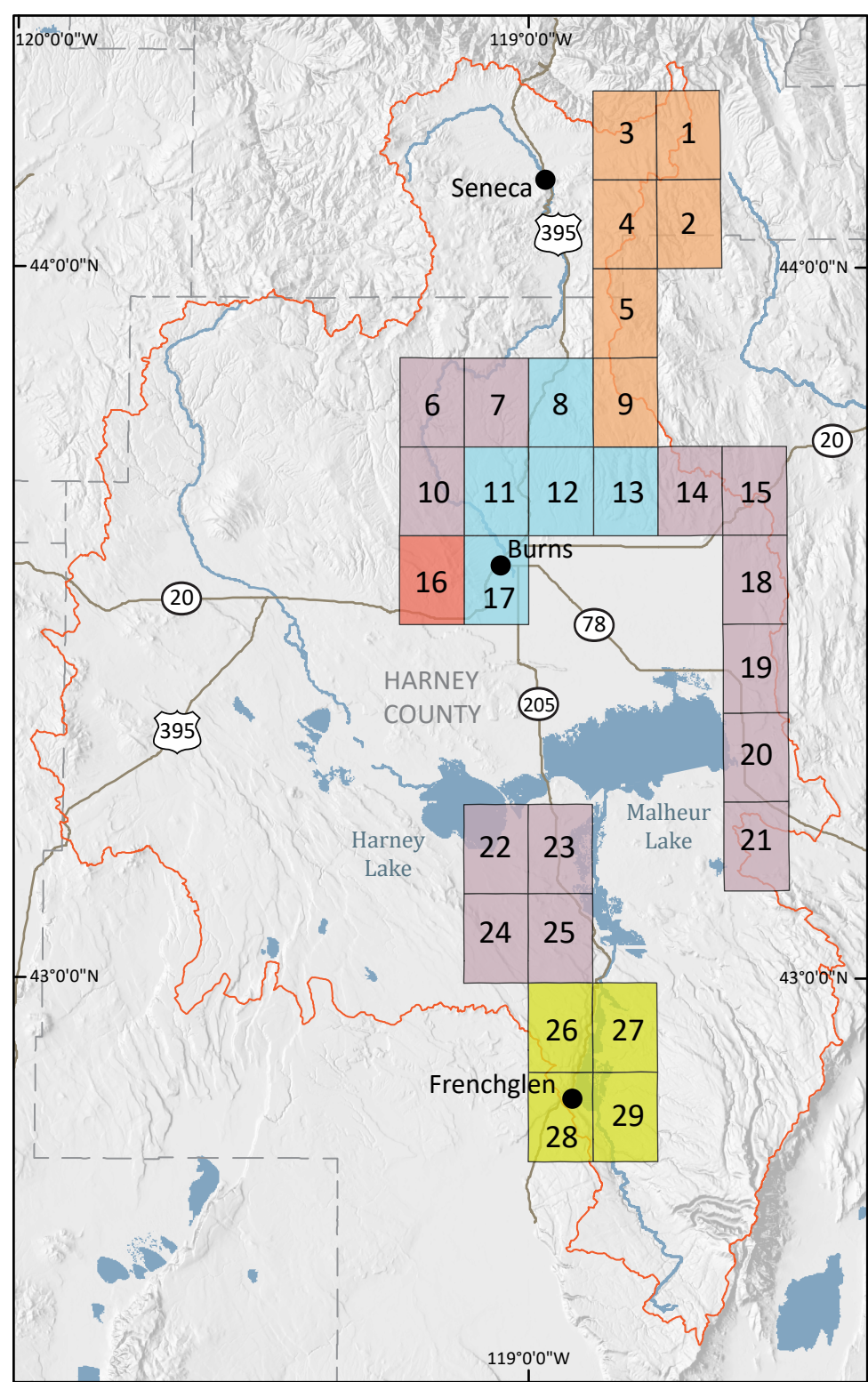
- sedimentary rocks (lower Pleistocene[?] to upper Miocene[?])
- Wrights Point Member (Pliocene) 3.29 ± 0.03 Ma (⁴⁰Ar/³⁹Ar; groundmass); 3.69 ± 0.57 Ma (⁴⁰Ar/³⁹Ar; plagioclase)

Angular unconformity to disconformity

UPPER MIOCENE VOLCANIC AND SEDIMENTARY ROCKS

- basaltic andesite flows and dikes (upper Miocene)
- Rattlesnake Tuff (upper Miocene) 7.05 ± 0.03 Ma (⁴⁰Ar/³⁹Ar); 7.093 ± 0.015 Ma (⁴⁰Ar/³⁹Ar)
- tuffaceous sedimentary rocks (upper Miocene)
- basaltic trachyandesite and trachyandesite flows and dikes (upper Miocene)
- basaltic trachyandesite and trachyandesite vent deposits (upper Miocene)
- ryholite of Burns Butte (upper Miocene) 7.68 ± 0.04 Ma (⁴⁰Ar/³⁹Ar); 7.74 ± 0.1 Ma (K-Ar)
- ryholite of Golden Ranch (upper Miocene) 8.46 ± 0.03 Ma (⁴⁰Ar/³⁹Ar); 8.03 ± 0.26 Ma (K-Ar)
- ryholite and trachyandesite (upper Miocene)
- tuff of Wheeler Springs, non-welded lapilli tuff (upper Miocene)
- tuff of Wheeler Springs, welded tuff (upper Miocene)
- basaltic trachyandesite, trachyandesite, and trachyandesite flows and dikes (upper Miocene) (cross section only)
- Prater Creek Ash-flow Tuff (upper Miocene) 8.41 ± 0.16 Ma (⁴⁰Ar/³⁹Ar); 8.48 ± 0.05 Ma (⁴⁰Ar/³⁹Ar)
- Prater Creek Ash-flow Tuff, intracaldera unit (upper Miocene) (cross section only) 8.52 ± 0.02 Ma (⁴⁰Ar/³⁹Ar)

HARNEY BASIN LOCATION MAP

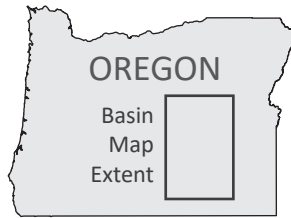


- Study area (16) for this report
- DOGAMI geologic mapping completed
- USGS geologic mapping completed
- FY 2016 - 2020 EdMap project areas (Portland State University, Oregon)
- Future DOGAMI geologic mapping targets

U.S. Geological Survey 7.5' Quadrangles by Number

- Logan Valley West
- Maggie Table
- Big Canyon
- Jump-Off Joe Mountain
- Calamity Butte
- Landing Creek
- Mosquito Flat
- Devine Ridge North
- Telephone Butte
- Burns Northwest
- Poison Creek
- Devine Ridge South
- Harney
- Buchanan
- Strikingwater Pass
- Burns Butte (this study)
- Burns
- Mahon Creek
- Crane
- New Princeton
- Adobe Flat
- Southeast Harney Lake
- Coyote Buttes
- Twin Buttes
- Jackass Butte
- Irish Lake
- Krumboltz Reservoir
- Frenchglen
- Page Springs

- Harney basin hydrologic boundary
- County boundary
- Stream
- Route 75 State 395 Federal
- Waterbody

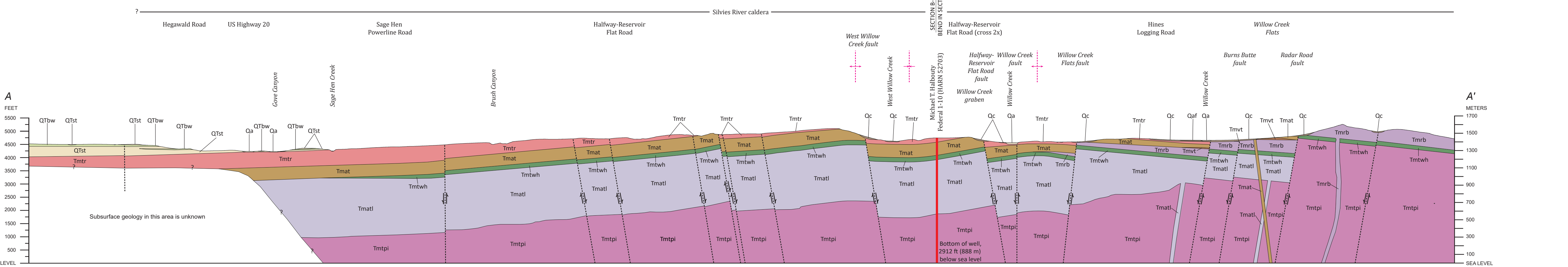


EXPLANATION OF SYMBOLS

- Stream
- Intermittent stream
- Road
- U.S. highway
- Cross section line
- City/town boundary
- Oil or gas well (cross section only)
- Oil or gas well, as shown on topographic maps or on general-purpose or smaller-scale maps
- Location of whole-rock XRF geochemical analysis sample; open circle where multiple data points overlap
- Horizontal bedding
- Horizontal bedding, as determined remotely or from aerial photographs
- 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
- Digital elevation model (1-meter) derived elevation
- Horizontal generic (origin not known or not specified) foliation
- Inclines generic (origin not known or not specified) foliation — Showing strike
- Vertical generic (origin not known or not specified) foliation
- Location of radiometric age sample; age in millions of years (Ma)
- Contact — Solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where identity or existence questionable
- Fault — Thick solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where identity or existence questionable. Ball and bar on downthrown block
- Normal fault (in cross section) — Short-dashed line where inferred, dotted where approximate. Arrows show relative motion
- Plunging Syncline — Identity and existence certain, location inferred. Large arrowhead shows direction of plunge
- Small, minor syncline, vertical or near-vertical axial surface (1st option) — Showing strike
- Anticline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain
- Asymmetric Anticline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain. Beds are upright; shorter arrow on steeper limb.

GEOLOGIC CROSS SECTION

Selected Quaternary units not shown in cross section.



Source Data: Three-foot high earth-lidar digital elevation model for Burns Butte (4319-82) quadrangle derived from multiple Oregon Lateral Consortium airborne lidar surveys: Harney 3-DEP 2018 and Silver Creek 2017. These data are distributed through the Oregon Department of Geology and Mineral Industries (DOGAMI) data program (<https://gis.dogami.oregon.gov/data/airborne/>).

Water Features: Data from USGS high-resolution National Hydrography Dataset (NHD). Aquatic Resources Information System (ARIS) (2017). Road features from Oregon Department of Transportation (ODOT) (2015).

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

Software: Esri ArcGIS v10.7.1 and Adobe® Illustrator® 2019 v23.1.

Field Work: Field work conducted by Jason D. McClaughry and Carlie J. M. Duda 2019 with assistance from Ian P. Madin, Jon J. Franczyk, and Derrick E. Boschmann.

References: Cohen, S. M., Finney, S. C., Gifford, P. L., and Fan, J. X., 2013, The USGS National Geologic Map Database: Episodes 36, p. 199-204.

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

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Geologic Reviews: Critical and insightful reviews by Derrick Boschmann (DWRD), Andrew Meigs (DWRD), and Matt (DOGAMI), and Christina Appleby (DOGAMI) greatly enriched the final manuscript, geologic map, and geodatabase.

Digital Cartography: Jon J. Franczyk, DOGAMI

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