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DEPARTMENT OF GEOLOGY AND MINERAL INDUSTRIES
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Geologic Map of the Devine Ridge North 7.5' Quadrangle, Harney County, Oregon

2018

GMS-121

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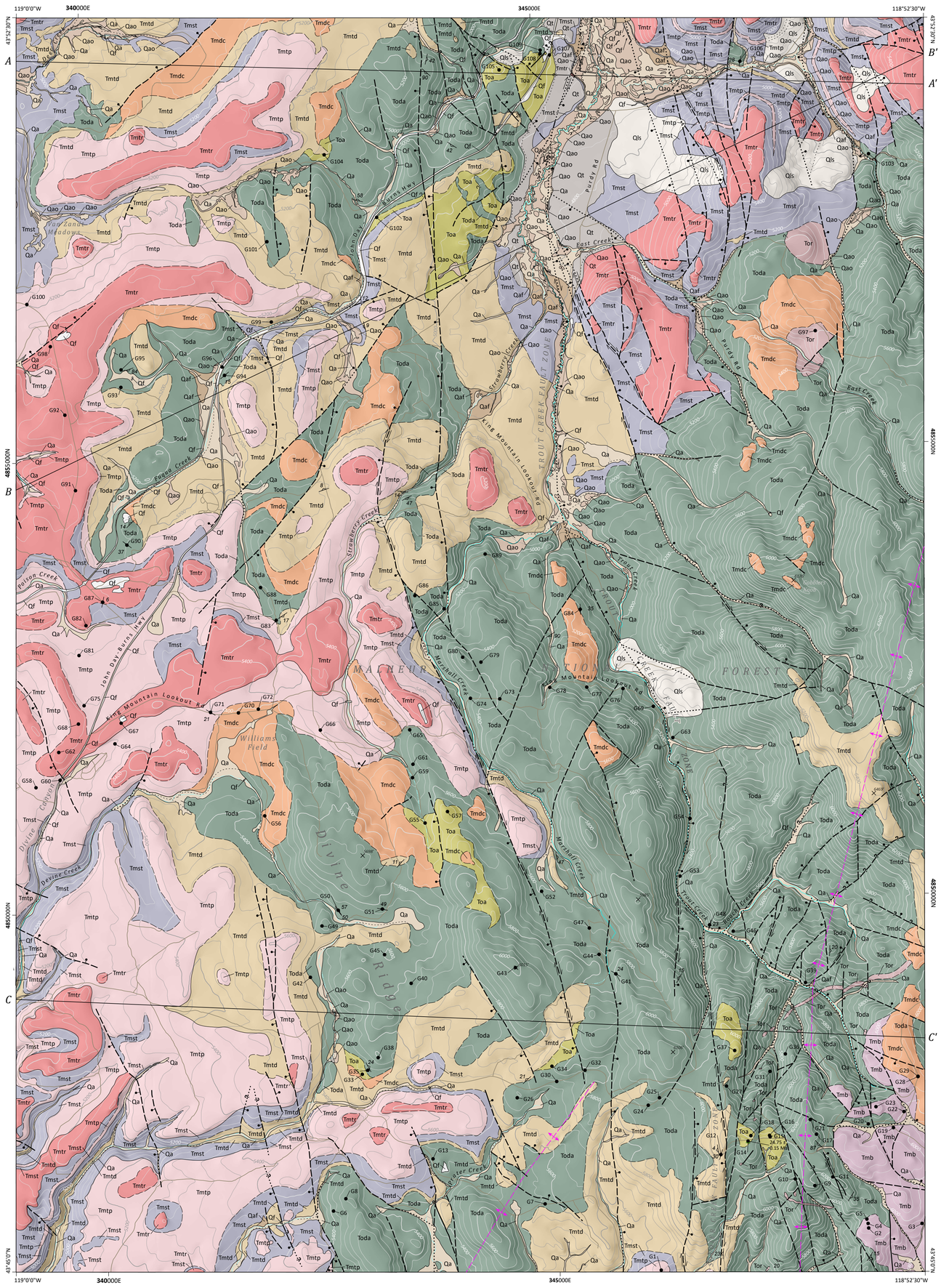
USGS STATEMAP component of the National Cooperative Geologic Mapping Program under assistance award G17AC00210. Matching funds were provided by the Oregon Department of Geology and Mineral Industries (DOGAMI).

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 15.3° MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 2015

EXPLANATION 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[?])
- Qao — older alluvium (Holocene and Upper Pleistocene[?])
- Qt — strath-terrace deposit (Holocene and lower Pleistocene[?])

Angular unconformity to disconformity

UPPER TO LOWER CENOZOIC VOLCANIC AND SEDIMENTARY ROCKS
UPPER TO MIDDLE MIOCENE VOLCANIC AND SEDIMENTARY ROCKS

- Tmtr — Rattlesnake Tuff (upper Miocene) 7.05 ± 0.01 Ma ($^{40}Ar/^{39}Ar$); 7.093 ± 0.015 Ma ($^{40}Ar/^{39}Ar$)
- Tmtp — Prater Creek Ash-flow Tuff (upper Miocene) 8.41 ± 0.16 ($^{40}Ar/^{39}Ar$)
- Tmtd — Devine Canyon Ash-flow Tuff (upper Miocene) 9.63 ± 0.05 Ma ($^{40}Ar/^{39}Ar$)
- Tmst — tuffaceous sedimentary rocks (upper Miocene[?] and middle Miocene[?])

Nonconformity

MIDDLE TO LOWER MIOCENE VOLCANIC ROCKS

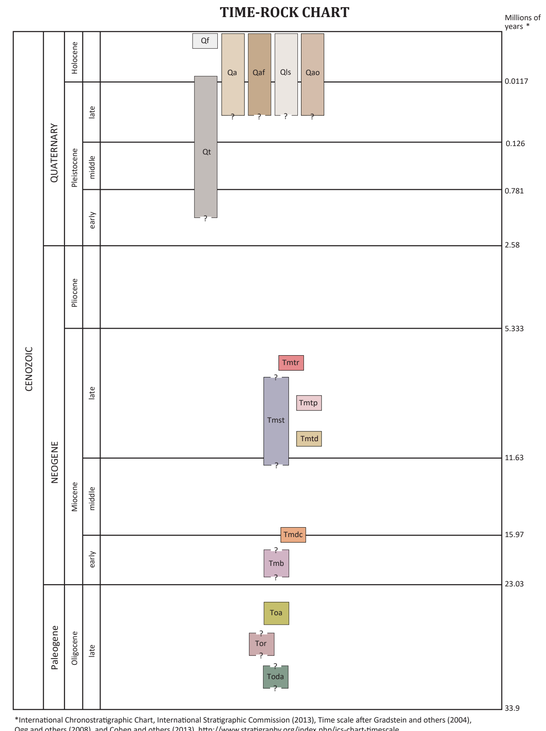
- Tmdc — Dinner Creek Tuff (middle or lower Miocene) 15.9 ± 0.09 Ma ($^{40}Ar/^{39}Ar$); 16.16 ± 0.02 Ma ($^{40}Ar/^{39}Ar$)
- Tmb — basalt-basaltic andesite (lower Miocene[?])

Angular unconformity to disconformity

UPPER OLIGOCENE VOLCANIC ROCKS

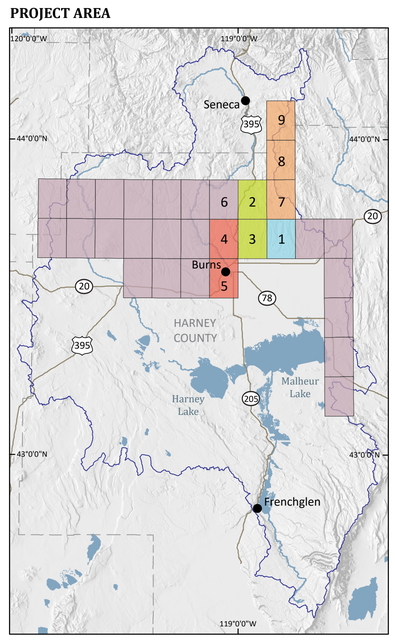
- Toa — andesite (upper Oligocene) 24.75 ± 0.15 Ma ($^{40}Ar/^{39}Ar$)
- Tor — rhyolite (upper Oligocene[?])
- Toda — dacite (upper Oligocene[?])

TIME-ROCK CHART



*International Chronostratigraphic Chart, International Stratigraphic Commission (2013), Time scale after Gradstein and others (2004), Ogg and others (2008), and Cohen and others (2013). http://www.stratigraphy.org/index.php/ics-chart-timescale

PROJECT AREA



- FY 2018 DOGAMI STATEMAP in progress
- FY 2017 DOGAMI STATEMAP
- FY 2016 STATEMAP Completed
- FY 2016/2017 EdMap Project Areas (Portland State University)
- Future DOGAMI geologic mapping targets

U.S. Geological Survey 7.5' Quadrangles by Number

1. Harney
2. Devine Ridge North (this study)
3. Devine Ridge South
4. Poison Creek
5. Burns
6. Mosquito Flat
7. Telephone Butte
8. Calamity Butte
9. Jump-Off Joe Mountain

- Harney hydrologic basin boundary
- County boundary
- Stream
- Highway (78) State (395) Federal
- Waterbody

EXPLANATION OF SYMBOLS

- Stream
- Intermittent stream
- Road
- A—A′ Cross-section line
- Inclined bedding showing strike and dip
- Inclined eutaxitic foliation — showing strike and dip
- DEM (10-meter) derived elevation
- Location of whole-rock XRF geochemical analysis sample
- Location of radiometric age sample in millions of years (Ma)

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.

Oblique-slip fault, right-lateral offset — ball and bar on downthrown block. Solid line where accurately located and existence certain, short-dashed where inferred, dotted where approximate, queried where uncertain.

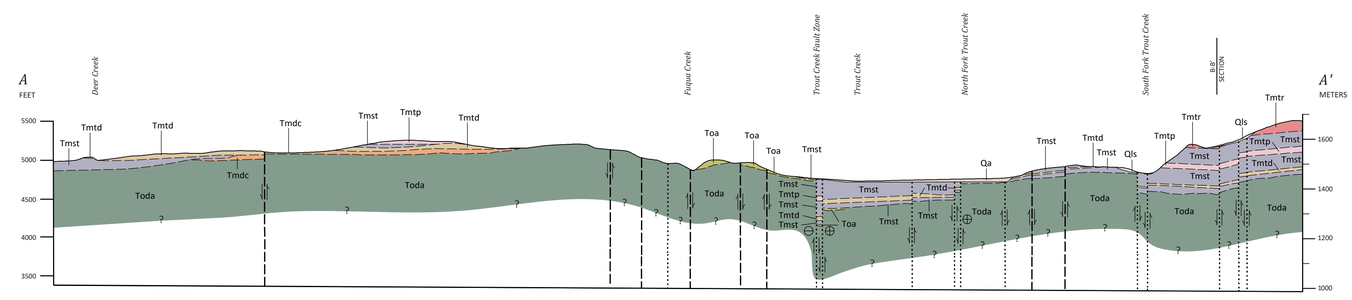
Oblique-slip fault, right-lateral offset (in cross section) — minus, away from observer; plus, towards observer. Short-dashed line where inferred, dotted where approximate. Arrows show relative motion.

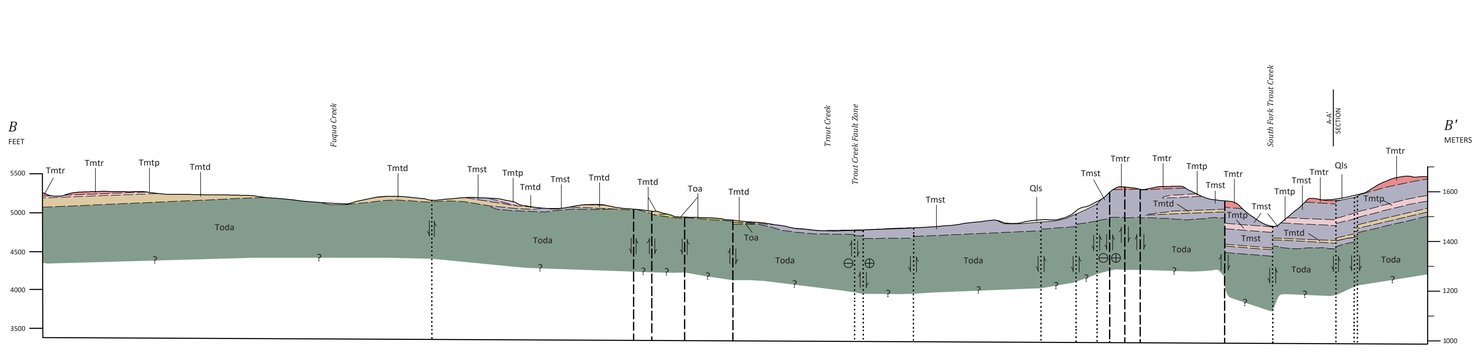
Normal fault (in cross section) — Short-dashed line where inferred, dotted where approximate. Arrows show relative motion.

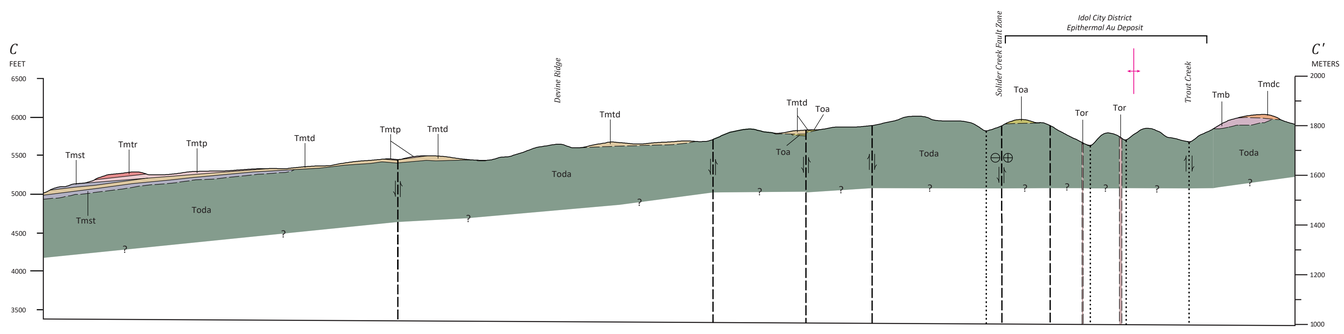
Anticline — solid line where accurately located, long-dashed where approximate, short-dashed where inferred, dotted where concealed, queried where uncertain.

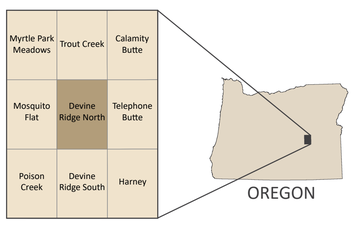
GEOLOGIC CROSS SECTIONS

2x vertical exaggeration (Horizontal 1:24,000)
Selected Quaternary units not shown in cross sections.
The extent of dacite (Toda) in the subsurface is not known and is therefore queried.
Subsurface projection of Toda is based on exposed thickness in the quadrangle.









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

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Source Data: U.S. Geological Survey (USGS) National Elevation Dataset (NED) 10-meter digital elevation model (DEM) for Devine Ridge North (43118-G8) quadrangle. Water features from USGS High Resolution National Hydrography Dataset (NHD): Aquatic Resources Information System (ARMIS) (2017). Road features from the Oregon Department of Transportation (ODOT) (2015).

Projection: Oregon Statewide Lambert Conformal Conic, Unit: International Feet, Horizontal Datum: NAD 1983 HARN. UTM Coordinates: Zone 11N, NAD83.

Software: Esri ArcGIS® 10.6 and Adobe® Illustrator® CC

Field Work: Robert A. Houston, DOGAMI

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.

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.

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