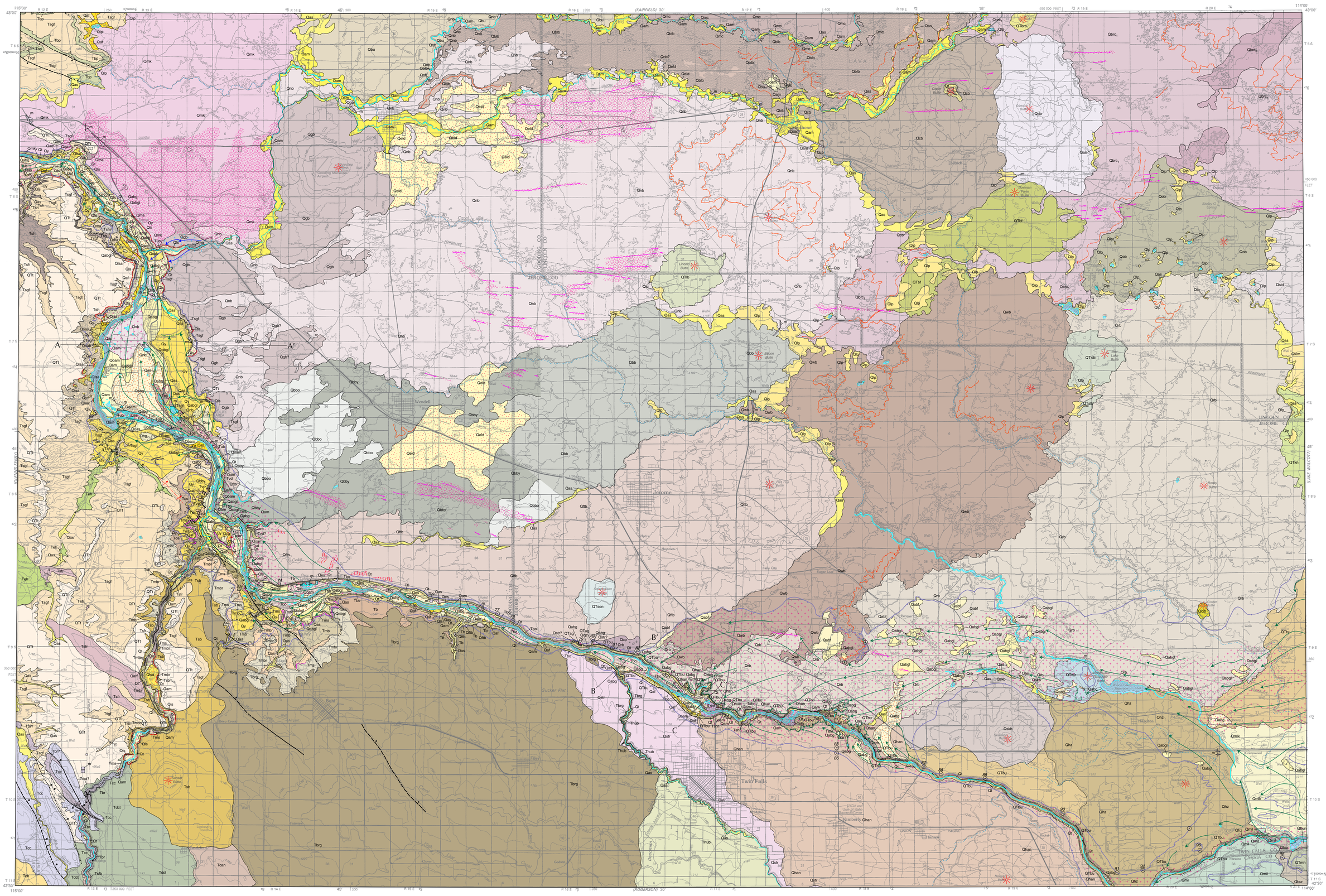


Base map credit
Base map from digitally scanned USGS 1:100,000 composite film base, 1979.
Projection: Idaho coordinate system, central zone (Transverse Mercator), 1927 North American Datum.
10,000-foot grid ticks based on Idaho coordinate system, central zone.
1000-meter Universal Transverse Mercator grid ticks, zone 12.

UTM Grid and 1979 Magnetic North Declination at Center of Map

SCALE 1:100,000
KILOMETERS — MILES
Contour interval 20 meters
National geodetic vertical datum of 1929

IDAHO
QUADRANGLE LOCATION

Field work conducted 2002-2004.
This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program, award number 04HQAG0029.
Digital cartography and GIS data capture by Jane S. Freed, Jesse S. Bird and Loudon R. Stanford at the Idaho Geological Survey's Digital Mapping Lab.
Reviewed by: Jim O'Connor, USGS; John Shervais, Utah State University; and Shawn Willsey, College of Southern Idaho.
Map version 7-10-2012.
PDF (Acrobat Reader) map may be viewed online at idahogeology.org.

Geologic Map of the Twin Falls 30 x 60 Minute Quadrangle, Idaho

Mapped and Compiled by
Kurt L. Othberg, John D. Kauffman, Virginia S. Gillerman, and Dean L. Garwood

2012

DESCRIPTION OF MAP UNITS

ARTIFICIAL DEPOSITS

- m — Made ground (Holocene)

ALLUVIAL DEPOSITS

- Qam — Alluvium of mainstreams (Holocene and Pleistocene)
- Qoam — Older alluvium of mainstreams (Pleistocene)
- Qas — Alluvium of side streams (Holocene and Pleistocene)
- Qoas — Older alluvium of side streams (Holocene and Pleistocene)
- Qoab — Older alluvium of Big Wood River (Holocene and Pleistocene)
- Qaf — Alluvial-fan deposits (Holocene)
- Qams — Scoured flood pathways of side streams (Holocene and Pleistocene)
- Qlp — Mixed alluvial and lacustrine deposits (Holocene and Pleistocene)
- Qcg — Crowsnest Gravel (Pleistocene)
- Qy — Yahoo Clay (Pleistocene)
- QTag — Alluvial gravels (Pleistocene or Pliocene)
- QTt — Tuana Gravel (Pleistocene or Pliocene)
- Tsgf — Glenns Ferry Formation (Pliocene)
- Tms — Sediment of Melon Valley (Pliocene or Miocene?)

Bonneville Flood Deposits

- Qabs — Scabland of flood pathways (Pleistocene)[pattern only]
- Qabf — Fine-grained deposits in slack-water basins (Pleistocene)
- Qabg — Sand and gravel in giant flood bars (Pleistocene)
- Qabgl — Sand and gravel in eddy deposits and lower-energy bars (Pleistocene)

EOLIAN DEPOSITS

- Qed — Dune sand (Holocene)[pattern only]
- Qes — Eolian sand of the Snake River canyon (Holocene and Pleistocene)
- Qeld — Loess and dune sand, undifferentiated (Holocene and Pleistocene)

MASS MOVEMENT DEPOSITS

- Qt — Talus deposits (Holocene)
- Qlsa — Deposits of active landslides (Holocene)
- Qls — Landslide deposits (Holocene and Pleistocene)

QUATERNARY BASALT UNITS

Relative age of some units uncertain

- Qbib — Basalt of Black Butte Crater (Holocene)
- $Qbrc_1$ — Basalt of Black Ridge Crater, unit 1 (Pleistocene)
- $Qbrc_2$ — Basalt of Black Ridge Crater, unit 2 (Pleistocene)
- Qmk — Basalt of McKinney Butte (Pleistocene)
- Qmkv — Volcaniclastic deposits of McKinney Butte (Pleistocene)
- Qnb — Basalt of Notch Butte (Pleistocene)
- Qwb — Basalt of Wilson Butte (Pleistocene)
- Qrb — Basalt of Rocky Butte (Pleistocene)
- Qcib — Basalt of Cinder Butte (Pleistocene)
- Qmc — Basalt of Mammoth Cave (Pleistocene)
- Qob — Basalt of Owinza Butte (Pleistocene)
- Qcb — Basalt of Crater Butte (Pleistocene)
- Qdb — Basalt of Dietrich Butte (Pleistocene)
- Qkim — Basalt of Kimama Butte (Pleistocene)
- Qmlk — Basalt of Milk Butte (Pleistocene)
- Qbb — Basalt of Bacon Butte, undivided (Pleistocene)
- Qbby — Basalt of Bacon Butte, younger unit (Pleistocene)
- Qbbo — Basalt of Bacon Butte, older unit (Pleistocene)
- Qftb — Basalt of Flat Top Butte (Pleistocene)
- Qcp — Basalt of Jerome Cinder Pits
- Qgb — Basalt of Gooding Butte (Pleistocene)
- Qma — Basalt of Madson Spring (Pleistocene)
- Qhz — Basalt of Hazelton Butte (Pleistocene)
- Qsid — Basalt of Sid Butte (Pleistocene)
- Qmil — Basalt of Milner Butte (Pleistocene or Pliocene?)
- Qbur — Basalt of Burley Butte (Pleistocene or Pliocene?)
- Qstr — Basalt of Stricker Butte (Pleistocene)
- Qskb — Basalt of Skeleton Butte (Pleistocene)
- Qhan — Basalt of Hansen Butte (Pleistocene)
- Qbu — Basalt flows, undivided (Pleistocene)

QUATERNARY OR TERTIARY BASALT UNITS

Relative ages uncertain

- QTslb — Basalt of Star Lake Butte (Pleistocene or Pliocene)
- QTwlr — Basalt of Wilson Lake Reservoir (Pleistocene or Pliocene)
- QTkn — Basalt of Knoll 4610 (Pleistocene or Pliocene)
- QTlb — Basalt of Lincoln Butte (Pleistocene or Pliocene)
- QTmh — Basalt of Milner Hill (Pleistocene or Pliocene)
- QTson — Basalt of Sonnickson Butte (Pleistocene or Pliocene)
- QTbrb — Basalt of Brown Butte (Pleistocene or Pliocene)
- QTbf — Basalt of Bowman Farm (Pleistocene or Pliocene)
- QTbu — Basalt flows, undivided (Pleistocene or Pliocene)

TERTIARY BASALT UNITS

Relative age of some units uncertain

- Tb — Younger Tertiary basalt flows, undivided (Pliocene?)
- Tbo — Older Tertiary basalt flows, undivided, upstream from Thousand Springs (Pliocene or Miocene)
- Tub — Older Tertiary basalt flows, undivided, downstream from Thousand Springs (Pliocene or Miocene)
- Thub — Basalt of Hub Butte (Pliocene)
- Tbrg — Basalt of Berger Butte (Pliocene)
- Tsh — Basalt of Shoestring Road (Pliocene)
- Tshv — Vent deposits, basalt of Shoestring Road? (Pliocene)
- Tbp — Basalt of Bliss Point (Pliocene)
- Tos — Basalt of Oster Lakes (Pliocene)
- Tsb — Basalt of Sunset Butte (Pliocene or Miocene)
- Tmb — Basalt of Melon Valley, undivided (Pliocene or Miocene)
- Tmbr — Basalt of Melon Valley, reverse polarity (Pliocene or Miocene)
- Tmbn — Basalt of Melon Valley, normal polarity (Pliocene or Miocene)
- Tsfb — Basalt of upper Salmon Falls Creek, undivided (Pliocene or Miocene)
- Teh — Basalt of Elmas Hill (Pliocene or Miocene)
- Tdct — Basalt of Devil Creek Butte or Tuanna Butte (Pliocene or Miocene)
- Tcan — Basalt of Canyon Hill (Pliocene or Miocene)
- Tcb — Basalt of Castleford Butte (Pliocene or Miocene)
- Tvp — Vent deposits, proximal (Pliocene or Miocene)
- Tvd — Vent deposits, distal (Pliocene or Miocene)

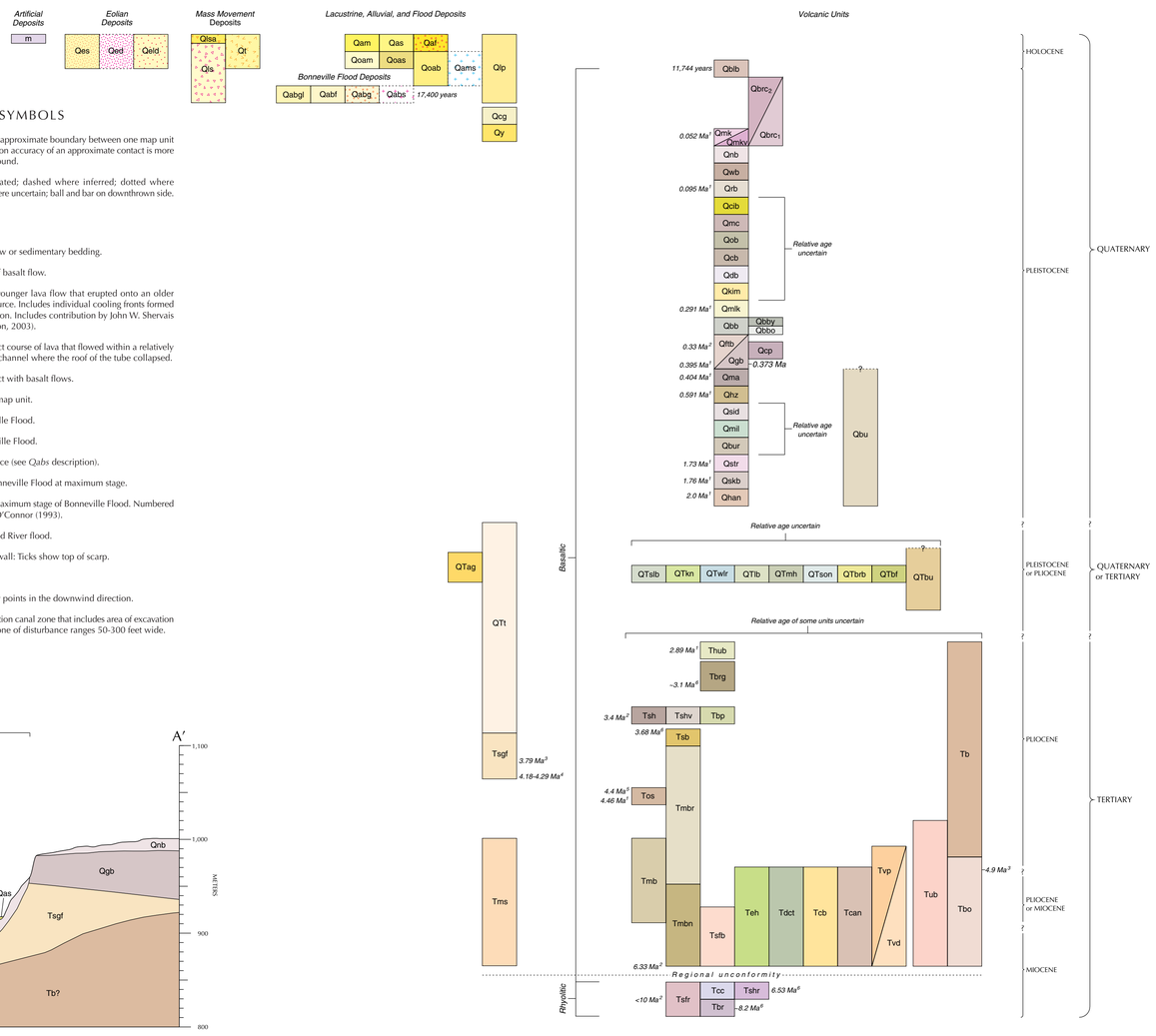
RHYOLITE UNITS

- Tshr — Rhyolite of Shoshone Falls (Miocene)
- Tsfr — Rhyolite of Salmon Falls Creek, undivided (Miocene)
- Tcc — Rhyolite of Castleford Crossing (Miocene)
- Tbr — Rhyolite of Balanced Rock (Miocene)

SYMBOLS

- Contact: Line showing the approximate boundary between one map unit and another. The location accuracy of an approximate contact is more than 80 feet on the ground.
- Fault: Approximately located; dashed where inferred; dotted where concealed; queried where uncertain; ball and bar on downthrown side.
- Fold axis.
- Monocline.
- Strike and dip of basalt flow or sedimentary bedding.
- Estimated strike and dip of basalt flow.
- Lava flow front: Edge of younger lava flow that erupted onto an older flow from the same source. Includes individual cooling fronts formed during the same eruption. Includes contribution by John W. Shervais (written communication, 2003).
- Lava tube or channel: Relict course of lava that flowed within a relatively narrow tube. Forms a channel where the roof of the tube collapsed.
- Baked sediments in contact with basalt flows.
- Gravel pit that exposes a map unit.
- Flow direction of Bonneville Flood.
- Relict cataracts of Bonneville Flood.
- Flood-scoured basalt surface (see *Qabs* description).
- Approximate extent of Bonneville Flood at maximum stage.
- Location of evidence for maximum stage of Bonneville Flood. Numbered location reported by O'Connor (1993).
- Flow direction of Big Wood River flood.
- Landslide scarp and headwall: Ticks show top of scarp.
- Stabilized dune field.
- Trend of dune field: Arrow points in the downwind direction.
- Canal: Trace of major irrigation canal zone that includes area of excavation and side-casted fill. Zone of disturbance ranges 50-300 feet wide.
- Source vent.

CORRELATION OF MAP UNITS



Sources of age determination:

1 $^{40}Ar/^{39}Ar$ weighted mean average plateau age (Tauxe, Lisa, Casey Luskin, Peter Selkin, Phillip Gans, and Andy Calvert, 2004, Paleomagnetic results from the Snake River Plain: contribution to the time-averaged field global database: Geochemistry Geophysics Geosystems (G^3), v. 5, no.8, Q08H13 DOI 10.1029/2003GC000681).

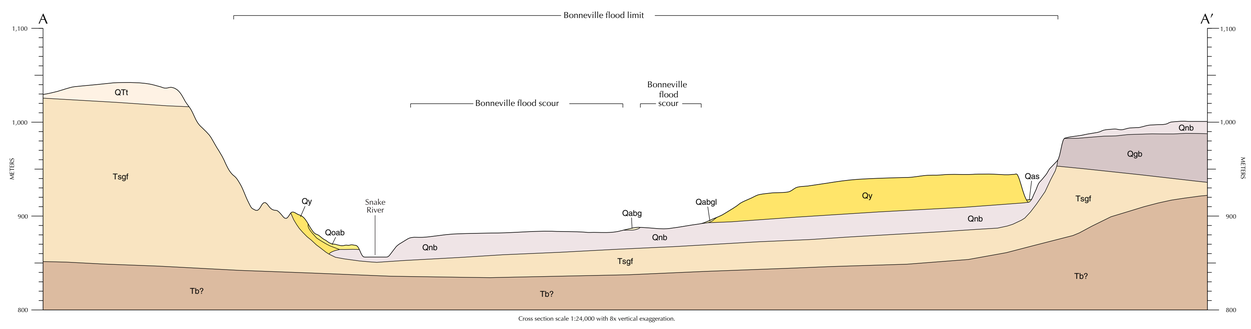
2 $^{40}Ar/^{39}Ar$ weighted mean age (Esser, Richard P., 2005, $^{40}Ar/^{39}Ar$ geochronology results from volcanic rocks from Idaho: New Mexico Geochronology Research Laboratory Internal Report NMGRL-IR-431, 10 p.).

3 $^{40}Ar/^{39}Ar$ weighted mean average plateau age (Hart, W.K., and M.E. Brueseke, 1999, Analysis and dating of volcanic horizons from Hagerman Fossil Beds National Monument and a revised interpretation of eastern Glenns Ferry Formation chronostratigraphy: unpublished manuscript prepared for Hagerman Fossil Beds National Monument, 37 p.).

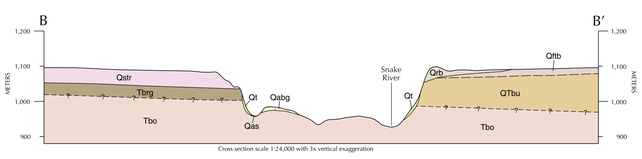
4 Magnetostratigraphic age (Hart, W.K., and M.E. Brueseke, 1999, Analysis and dating of volcanic horizons from Hagerman Fossil Beds National Monument and a revised interpretation of eastern Glenns Ferry Formation chronostratigraphy: unpublished manuscript prepared for Hagerman Fossil Beds National Monument, 37 p.).

5 K-Ar age determination (Armstrong, R.L., W.P. Leeman, and H.E. Malde, 1975, K-Ar dating, Quaternary and Neogene volcanic rocks of the Snake River Plain, Idaho: American Journal of Science, v. 275, p. 225-251).

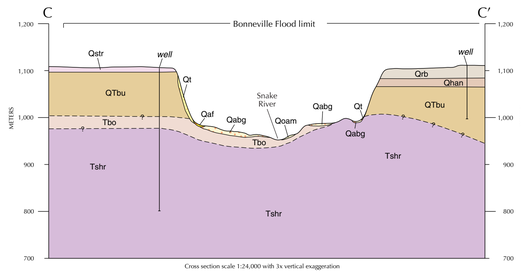
6 $^{40}Ar/^{39}Ar$ step heat analysis (Layer, P., and J. Drake, 2006, Geochronology laboratory, University of Alaska Fairbanks, report prepared for Idaho Geological Survey.



Cross section scale 1:24,000 with 8x vertical exaggeration.



Cross section scale 1:24,000 with 3x vertical exaggeration



Cross section scale 1:24,000 with 3x vertical exaggeration

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