

MANMADE DEPOSITS

- Qz** **Disturbed deposits** Includes highway fly, graded railroad bed, and canal
- Qx** **Disturbed areas** Includes agricultural lands, urban areas, and borrow pits.
- Qm** **Mine waste**

DEPOSITS OF THE TRUCKEE RIVER

- Qtr** **Active channel and floodplain deposits** (late Holocene) Historically active channel and floodplain deposits forming terraces about 2 m above modern river level.
- Qty** **Abandoned channel and floodplain deposits** (late Holocene) Recently abandoned channel and floodplain deposits forming terraces up to 3 m above modern river level.
- Qw** **Wadsworth terrace** (early Holocene) Deposits equivalent to the Wadsworth terrace, about 15-20 m above modern river level.

ALLUVIAL-FAN, EOLIAN, PLAYA, AND LANDSLIDE DEPOSITS

- Qa** **Recent alluvial deposits** (late Holocene) Alluvial deposits within ephemeral and recently active washes.
- Qpl** **Playa deposits** (Holocene) Ephemeral playa deposits; silt and mud in small closed depressions.
- Qc** **Colluvium** (late Holocene to middle Pleistocene) Colluvium developed mainly at the base of resistant volcanic units.
- Qcb** **Basaltic Colluvium** (late Holocene to middle Pleistocene) Colluvium deposits composed of basalt.
- Qs** **Spring deposits** (late Holocene to middle Pleistocene)
- Qf** **Undivided alluvial fan deposits** (late Holocene to Pleistocene)
- Qfo** **Undivided old alluvial fan deposits** (middle to early Pleistocene)
- QTI** **Older alluvial fan deposits** (early Pleistocene to Pliocene)

Young alluvial fan deposits of the Truckee River canyon and nearby areas

- Qy** **Undivided young alluvial fan deposits** (Holocene)
- Qy1** **Young alluvial fan deposits - Truckee River Canyon** (late Holocene) Young alluvial fan deposits generally originating within drainages eroded into the margins of the Truckee River canyon, predominantly silt and sand reworked from lacustrine sediment.
- Qy2** **Young alluvial fan deposits - Post-Sehoo alluvial piedmonts** (middle Holocene) Young alluvial fan deposits generally originating in the upper terraces of post-Sehoo alluvial piedmonts; silt to sandy, subangular pebbles to cobble gravel inset into older pre-Sehoo alluvial fans and deposited as an alluvial veneer on middle Sehoo lacustrine deposits following recession of the lake.

- Qfe** **Fallen and Turpanh Alluvialforms, undifferentiated** (Holocene) Brown, medium, well-sorted eolian sand derived from underlying lake sand; sand sheets and dunes ranging in thickness from a thin (4-1 m) veneer to >10 m; typically occurs as curvilinear dunes capping middle Sehoo-age lake deposits at the crests of river bluffs.

- Qwa** **Alluvial-fan deposit** (late to middle Pleistocene) Alluvial-fan deposit of the Wiyemaha intertropical interval.

- Qpa** **Paute Alluvialform**
- Qpf** **Alluvial-fan deposits** (middle Pleistocene) Alluvial-fan deposits of the Paute intertropical interval. Best exposed in an embayment on the south side of the Truckee River, opposite the Wadsworth East.

- Qla** **Undifferentiated landslide deposits** (Pleistocene) Unconsolidated landslide deposits composed of basalt, diatomaceous shale, and lesser porphyritic dacite; may locally include coarse alluvial fan deposits.
- Qlnb** **Landslide deposits of basalt** (Pleistocene) Unconsolidated landslide deposits composed primarily of basalt, with blocks up to 10 m long.
- Qlnd** **Landslide deposits of dacite** (Pleistocene) Unconsolidated landslide deposits composed primarily of porphyritic dacite, with blocks up to 10 m long.

- Qst** **Tuff** Isolated tuff deposits; only locally mapped.
- Qsm** **Middle member of the Sehoo Alluvialform** Brown to gray silt, sand, and mud.
- Qsb** **Beach deposits** Near- and onshore gravely beach deposits of the middle member of the Sehoo Alluvialform.
- Qe** **Silt, sand, and mud** Dark brown to whitish, generally well-stratified silt, sand, and mud.

- Qtg** **Gravels** (early Pleistocene to late Miocene) Unconsolidated, poorly exposed and rounded to subrounded pebbles to boulders of mafic to intermediate volcanic rock; boulders up to 3 m long. Age unknown.

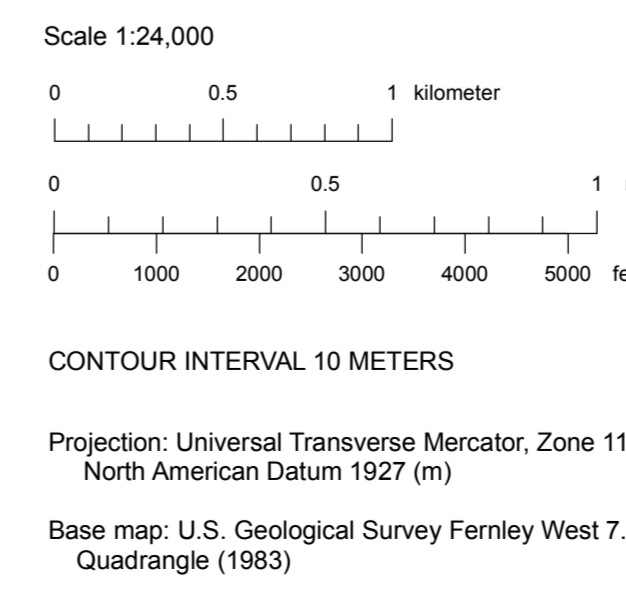
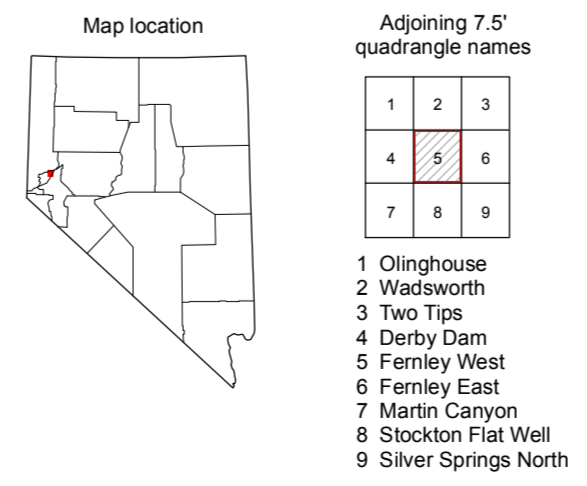
- Tpy** **Porphyritic basalt** (late Miocene) Porphyritic basaltic or basaltic andesite lavas containing ~10% plagioclase phenocrysts up to 1 cm long.
- Tby** **Aphanitic basalt** (late Miocene) Aphanitic vesicular basalt containing ~5% phenocrysts of olivine (altered to iddingsite) up to 2 mm long.
- Tbv** **Undivided basalt** (late Miocene) Undivided aphanitic and porphyritic basalt typically capping ridges in the eastern Virginia Range.

- Tdy** **Diatomite** (late Miocene) White, generally massive diatomite intercalated in Tpy.
- Tl** **Limestone** (late to middle Miocene) Massive limestone or tuff deposit mantling basalt. May be Quaternary rather than Miocene in age.
- Tva** **Volcanic conglomerate and litharenite** (late to middle Miocene) Pale grayish, white to light gray, massive to weakly bedded, matrix-supported, poorly sorted conglomerate and poorly sorted, coarse-grained, moderately indurated, noncalcareous litharenite. Clasts are angular to subangular and are primarily composed of mafic to intermediate volcanic rock. Cross out directly above and beneath Tpd.
- Tpa** **Altered porphyritic dacite flows** (late to middle Miocene) Reddish- to yellowish-brown and locally silicified porphyritic dacite (Tpd).
- Tpd** **Porphyritic dacite flow** (late to middle Miocene) Pale gray, weathering reddish-brown, poorly bedded, matrix-supported, moderately indurated, noncalcareous litharenite. Clasts are angular to subangular and are primarily composed of mafic to intermediate volcanic rock. Cross out directly above and beneath Tpd.
- Tth** **Porphyritic dacite lava domes** (late to middle Miocene) Plagioclase-hornblende +/- biotite dacite lava domes.
- Tpsa** **Porphyritic dacite-andesite flows** (late to middle Miocene) Light gray porphyritic dacite or andesite flows near base of Tpd.
- Tdb** **Dacite breccia** (late to middle Miocene) Massive breccia composed almost entirely of angular clasts and blocks of porphyritic dacite; locally includes thin lenses of coarse matrix-supported conglomerate, litharenite, and sparse diatomaceous shale.
- Tbd** **Coarse dacite breccia** (late to middle Miocene) Massive breccia composed of large angular blocks of porphyritic dacite (Tpd) to 12 m long; probable rock weathering origin.
- Tda** **Porphyritic andesite or dacite lavas** (late to middle Miocene) Porphyritic andesite or dacite lavas containing 5-20% phenocrysts of plagioclase, lesser hornblende (up to 1 cm long), and sparse biotite.
- Tbb** **Basalt breccia** (late to middle Miocene) Massive basaltic breccia consisting of crudely layered beds of poorly to moderately indurated, clast-supported angular to subangular fragments of basalt ranging from a few centimeters to ~2 m long; only mapped where well exposed; locally includes minor basalt flows.
- Tbsc** **Basalt breccia and scoria** (late to middle Miocene) Purplish red to reddish-brown basaltic scoria and breccia containing angular blocks of basalt to 1 m long.
- Tscg** **Silicified conglomerate** (late to middle Miocene) Reddish brown matrix-supported silicified pebble conglomerate.
- Tls** **Litharenite** (late to middle Miocene) Massive to locally well bedded, fine- to medium-grained, moderately sorted, generally poorly indurated, noncalcareous, pale brown to grayish-brown feldspathic litharenite interbedded with matrix-supported pebble conglomerate, which contains subangular clasts of basalt.
- Ts** **Sedimentary rocks undivided** (late to middle Miocene) Sandstone, siltstone, diatomite, and conglomerate extensively interbedded with Tl.
- Tbs** **Volcanic litharenite** (late to middle Miocene) Massive, generally poorly indurated, noncalcareous, moderately sorted, medium- to coarse-grained greenish-gray litharenite consisting primarily of basalt grains and lesser feldspar.
- Tbc** **Conglomerate-sedimentary breccia** (late to middle Miocene) Matrix-supported, poorly sorted, massive, pebble-cobble conglomerate or sedimentary breccia containing angular to subangular clasts of vesicular basalt in a matrix of coarse-grained litharenite.
- tab** **Altered basalt** (late to middle Miocene) Propylitically altered, greenish-gray basaltic lavas.
- Tb** **Aphanitic olivine basalt flows and breccia** (late to middle Miocene) Essentially aphanitic, generally vesicular, medium to dark gray basalt flows commonly with ~5-10% phenocrysts of olivine to ~2.5 mm long. Olivine is generally altered to iddingsite.
- Tpb** **Porphyritic basalt flows** (late to middle Miocene) Porphyritic basalt flows containing ~15% plagioclase phenocrysts to ~7 mm long.
- Tdt** **Dacitic tuff** (late to middle Miocene) Dacitic ash flow tuff containing ~10-20% phenocrysts of plagioclase, hornblende, and biotite.
- Tdbt** **Dacitic block-and-ash flow** (late to middle Miocene) Dacitic ash flow containing abundant lithic fragments and blocks of felsic to intermediate volcanic rock; locally includes tuff with few if any blocks.
- Tte** **Tephrite (tuff deposit)** (late to middle Miocene) Light gray, ash-fall deposit consisting of glass shards; mapped only where unusually thick (~2 m) and well exposed.
- Tds** **Silicified shale** (late to middle Miocene) Silicified shale and/or diatomite; only locally mapped.
- Tsh** **Shale, siltstone, and tuffaceous sandstone** (late to middle Miocene) White to pale yellowish brown or pale gray, commonly fossiliferous shale and lesser siltstone and tuffaceous sandstone. Fossils include leaf imprints, carbonaceous wood, and gastropods.
- Td** **Diatomite** (late to middle Miocene) White, generally massive diatomite and lesser siltstone and sandstone.
- Tds** **Diatomaceous shale** (late to middle Miocene) White, fossil diatomaceous shale and lesser siltstone.
- Tat** **Altered tuff** (late to middle Miocene) Greenish-white, altered and slightly silicified nonwelded tuff (Tt).
- Tt** **Nonwelded tuff** (late to middle Miocene) Massive, white, generally crystal-poor nonwelded tuffs containing ~2-10% phenocrysts of feldspar (sandine and/or plagioclase), quartz, and biotite; includes lesser amounts of tuffaceous sandstone and pebble conglomerate.
- Ttn** **Nonwelded quartz bearing tuff** (late to middle Miocene) Massive, white, crystal-poor nonwelded tuff containing ~5-10 phenocrysts of feldspar, quartz, and biotite; only locally mapped; locally includes minor intercalated tuffaceous sandstone and conglomerate.
- Tts** **Tuffaceous sedimentary rocks** (late to middle Miocene) White to light gray, generally medium to coarse-grained, weakly to moderately indurated, noncalcareous tuffaceous sandstone and matrix-supported pebble conglomerate; locally includes minor nonwelded tuffs and tuff-bell deposits.
- Ttr** **Porphyritic rhyolite tuff** (late to middle Miocene) Porphyritic rhyolite or rhyodacite containing ~50% phenocrysts of altered feldspar (to ~1 cm long), biotite, lesser quartz (some quartz is rocky), and sparse hornblende.
- Tr** **Rhyolite** (late to middle Miocene) Fine brown, crystal-poor rhyolite lava containing ~2% phenocrysts of sandine, quartz, and biotite.

Symbology (per FGDC-STD-013-2006)

- Contact** Solid where certain and location accurate; long-dashed where approximate; queried where location uncertain; dotted where concealed.
- Fault** Solid where certain and location accurate; long-dashed where approximate; queried where location uncertain; dotted where concealed; ball on downthrown side or showing strike and dip of fault plane and trend of fault sense; double arrows show strike-slip offset.
- Syncline axial trace** Solid where certain and location accurate; dashed where approximate; dotted where concealed.
- Anticline axial trace** Solid where certain and location accurate; dashed where approximate; dotted where concealed.
- Landslide headwall scarp** Hashes point into landslide.
- Shoreline scarp** Paleo-shoreline scarp of Pleistocene Lake Lahontan; Hashes point into scarp.

- Strike and dip of bedding**
Inclined Vertical Horizontal
- Strike and dip of flow bands in lava or intrusion**
Inclined Vertical
- Strike and dip of compaction foliation in ash-flow tuff**
Inclined
- Strike and dip of joints**
Inclined



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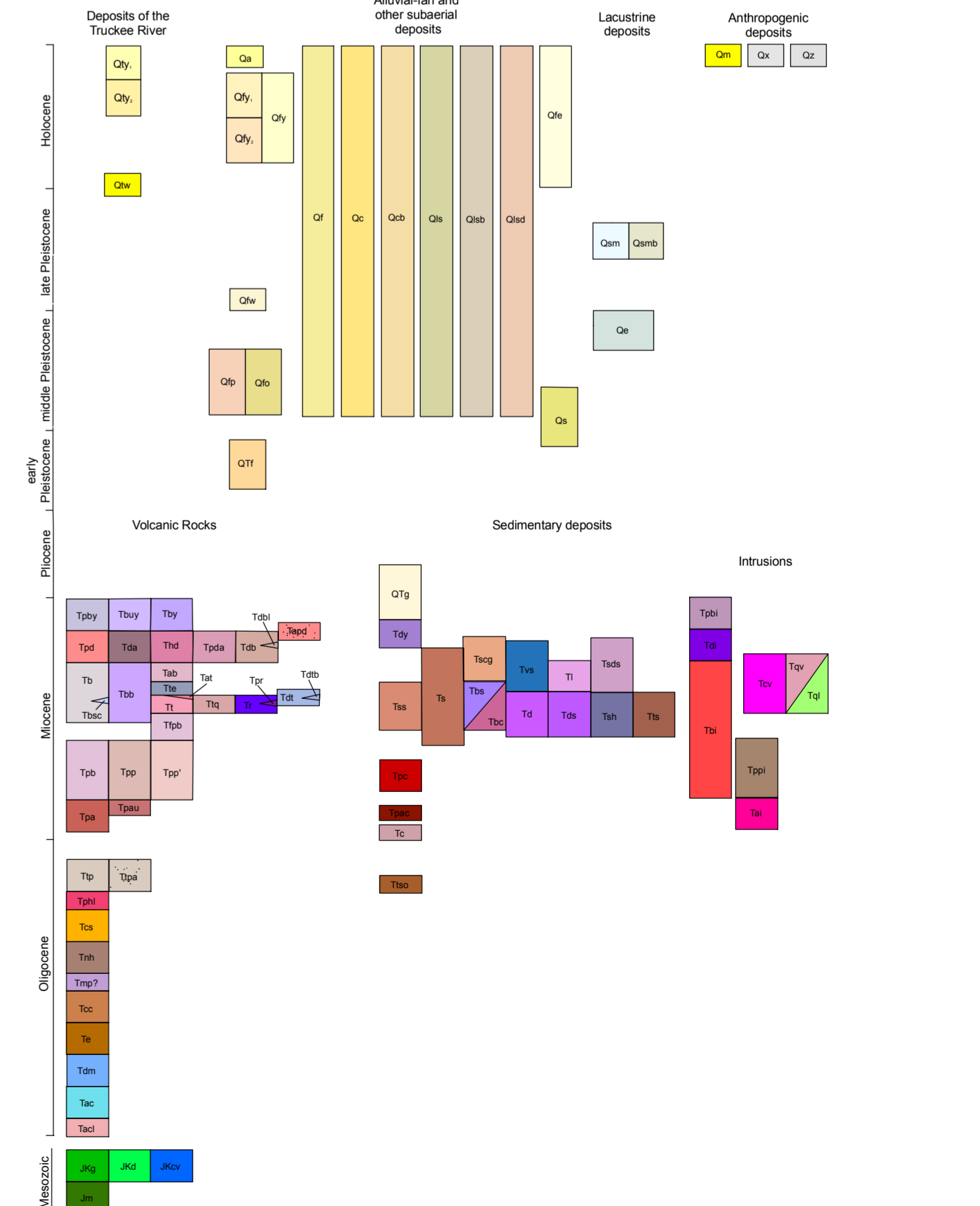
Field work done 2005-2008
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DRAFT
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- Tpc** **Pyramid sequence conglomerate and sedimentary breccia** (middle Miocene) Pale brown, matrix-supported, poorly to moderately sorted, pebble conglomerate and litharenite intercalated in sequences of basalt flows.
 - Tpb** **Pyramid sequence aphanitic basalt** (middle Miocene) Aphanitic, porphyritic basalt flows containing ~10% phenocrysts of olivine and plagioclase.
 - Tpp** **Pyramid sequence finely porphyritic basalt** (middle Miocene) Porphyritic basalt flows containing ~15-20% phenocrysts of plagioclase to ~5 mm long.
 - Tpd** **Pyramid sequence porphyritic basalt** (middle Miocene) Coarsely porphyritic basalt flows containing up to ~30% plagioclase phenocrysts as large as 2.3 cm long.
 - Tps** **Conglomerate** (middle to early Miocene) Pale reddish-brown to grayish-brown, poorly sorted, weakly to moderately indurated, calcareous, matrix-supported pebble conglomerate and litharenite intercalated in Tps. Clasts are subangular to subrounded and composed of mafic to intermediate volcanic rock and sparse ash-flow tuff.
 - Tpm** **Porphyritic andesite** (middle to early Miocene) Thick and massive light to medium-gray porphyritic andesite or dacite flow containing 25-30% phenocrysts of plagioclase (to ~5 mm long), hornblende, and lesser biotite; locally forms a distinctive, cliff-forming unit at top of Tps.
 - Tpa** **Porphyritic andesite** (middle to early Miocene) Light to medium-gray, porphyritic andesite and dacite flows containing 20-35% phenocrysts of plagioclase (to ~5 mm long), hornblende, a clinopyroxene, and lesser biotite.
 - Tc** **Conglomerate** (middle to early Miocene) Poorly sorted, matrix-supported, moderately indurated, noncalcareous light gray conglomerate containing subrounded to rounded clasts of porphyritic andesite and aphanitic basalt to 50 cm long.
- OLIGOCENE ASH-FLOW TUFFS AND RELATED UNITS**
- Tpsa** **Altered tuff of Perry Canyon** (late Oligocene) Propylitically altered tuff of Perry Canyon; feldspars and groundmass altered to clays.
 - Ttp** **Tuff of Perry Canyon** (late Oligocene) Densely welded, crystal-rich, pale brown to pale reddish-brown ash-flow tuff with ~40% phenocrysts of sandine, plagioclase, biotite, and quartz.
 - Ttsa** **Tuffaceous sandstone** (late Oligocene) Reddish-brown, poorly indurated, poorly sorted, medium-grained litharenite mainly composed of reworked Tcs.
 - Tph** **Lower Tuff of Painted Hills** (late Oligocene) White, poorly welded ash-flow tuff; contains ~20-25% phenocrysts of sandine, biotite, and lesser quartz; includes lithic of finely porphyritic andesite.
 - Tcs** **Tuff of Chimney Spring** (late Oligocene) Pinkish-gray, weathering reddish-brown, densely welded ash-flow tuff containing 25-35% phenocrysts of sandine (commonly subangular); smoky quartz; clinopyroxene, and biotite; 29.1 Ma.
 - Tth** **New Hill Tuff** (late Oligocene) Light gray to pale purplish-gray, densely welded ash-flow tuff containing ~5-20% phenocrysts of generally altered feldspars (sandine, plagioclase, and anorthoclase) and lesser biotite; generally becomes more crystal rich up section, characterized by abundant gray to brown laminae; 29.3 Ma.
 - Tmp** **Tuff of Mickey Pass** (late Oligocene) White, weakly welded ash-flow tuff containing 20-25% phenocrysts of plagioclase, biotite, and smoky quartz.
 - Tmc** **Tuff of Campbell Creek** (late Oligocene) White to pinkish-gray, poorly welded ash-flow tuff containing ~15% phenocrysts of sandine, plagioclase, biotite, and quartz; more crystal rich and less common vesicular quartz than Tcc.
 - Tm** **Tuff of Dogskin Mountain** (late Oligocene) White to purplish-gray, moderately to densely welded ash-flow tuff containing ~10-20% phenocrysts of plagioclase, biotite, and trace of quartz.
 - Tac** **Tuff of Axehand Canyon** (late Oligocene) Densely welded, highly altered ash-flow tuff containing ~15% phenocrysts of altered feldspar, biotite, and sparse fine quartz; tentatively correlated with tuff of Axehand Canyon but also similar to tuffs of Cove Spring and Robinsons Canyon.
 - Tad** **Lower tuff of Axehand Canyon?** (late Oligocene) Poorly to moderately welded, highly altered ash-flow tuff containing ~25% phenocrysts of altered feldspar and biotite; more crystal rich than Tac; tentatively interpreted as basalt, less welded part of Tac but may be a separate tuff.
- TERTIARY INTRUSIONS**
- Tpbi** **Porphyritic basalt plugs** (late Miocene) Plug-like intrusions of basalt containing plagioclase phenocrysts up to 1 cm long.
 - Tcv** **Calcite veins** (late to middle Miocene) Thin (1-2 m thick) veins consisting primarily of calcite.
 - Tql** **Silicified ledges** (late to middle Miocene) Purplish-red to light gray silicified ledges locally containing vuggy quartz.
 - Tqv** **Quartz veins** (late to middle Miocene) Thin (1-2 m thick) veins consisting primarily of quartz.
 - Td** **Porphyritic dacite** (late to middle Miocene) Porphyritic dacite-rhyodacite dikes or plugs containing ~15-20% phenocrysts of plagioclase, biotite, and hornblende.
 - Tba** **Aphanitic olivine basalt dikes** (late to middle Miocene) Aphanitic medium to dark gray basalt dikes commonly with ~5-10% phenocrysts of olivine to ~2.3 mm long.
 - Tpsd** **Porphyritic basalt dikes** (middle Miocene) Coarsely porphyritic basalt dikes containing up to ~30% plagioclase phenocrysts as large as ~2 cm long.
 - Ta** **Andesite dikes** (middle to early Miocene) Finely porphyritic hornblende or clinopyroxene bearing andesite or basaltic andesite dikes and plugs.
- MESOZOIC BASEMENT**
- Jkvc** **Calcite veins** (Late Cretaceous to Jurassic) Calcite veins and skarn-like features near or at contacts between Jm and Jkg.
 - Jkd** **Diorite** (Late Cretaceous to Jurassic) Fine- to coarse-grained hornblende-biotite diorite; hornblende locally to ~1 cm long.
 - Jkf** **Quartz monzonite** (Late Cretaceous to Jurassic) Coarse-grained, massive biotite quartz monzonite; generally slightly altered with mafic constituents altered to chlorite and iron oxides.
 - Jm** **Metamorphic rocks** (Jurassic?) Pale greenish-brown to brown, fine- to medium-grained, well-indurated quartzite, metagraywacke (?), and moderately calcareous metasedimentary rock, with beds up to ~2 m thick.



PRELIMINARY GEOLOGIC MAP OF THE FERNLEY WEST QUADRANGLE, LYON, STOREY, AND WASHOE COUNTIES, NEVADA

James E. Faulds, Alan R. Ramelli, and Christopher D. Henry

2008