

MANMADE DEPOSITS

- Qx** Manmade deposits: includes highway fill, graded railroad bed, and canal
- Qm** Mine waste

DEPOSITS OF THE TRUCKEE RIVER

- Qty** 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
- Qvw** Wadsworth terrace (early Holocene) Deposits equivalent to the Wadsworth terrace, about 15-20 m above modern river level
- 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

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

- Qty** Undifferentiated young alluvial fan deposits (Holocene)
- Qty** 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
- Qty** Young alluvial fan deposits - Post-Sehoo alluvial piedmonts (middle Holocene) Young alluvial fan deposits generally originating in the upper drainages of post-Sehoo alluvial piedmonts; silt to sandy, subangular pebbles to cobble gravel meet into older pre-Sehoo alluvial fans and deposited as an alluvial veneer on middle Sehoo lacustrine deposits following recession of the lake
- Qte** Fallon and Turupah Allformations, undifferentiated (Holocene) Brown, medium, well-sorted eolian sand derived from underlying lake sand; sand sheets and dunes ranging in thickness from a thin (<1 m) veneer to >10 m; typically occurs as conical dunes capping middle Sehoo-age lake deposits at the crests of river bluffs
- Wymeha Allomformation**
- Qw** Interlacustral, subaerial deposits (late to middle Pleistocene) Interlacustral, subaerial deposits separating the Etzta and Sehoo Allomformations
- Qw** Alluvial-fan deposit (late to middle Pleistocene) Alluvial-fan deposit of the Wymeha interlacustral interval
- Paute Allomformation**
- Qp** Interlacustral subaerial deposits (middle Pleistocene) Interlacustral subaerial deposits separating the Etzta Allomformation from the lacustrine interval
- Qtp** Alluvial-fan deposits (middle Pleistocene) Alluvial-fan deposits of the Paute interlacustral interval. Best exposed in an embayment on the south side of the Truckee River, opposite the Wadsworth Exit
- QTI** Older alluvial-fan deposits (Pliocene to early Pleistocene)

DEPOSITS OF LAKE LAHONTAN

- Sehoo Allomformation (late Pleistocene)**
- Qst** Tufa isolated tufa deposits; only locally mapped
- Qsm** Middle member of the Sehoo Allomformation Brown to gray silt, sand, and mud
- Qsmb** Beach deposits Near- and onshore gravely beach deposits of the middle member of the Sehoo Allomformation
- Qslm** Lower and middle member of the Sehoo Allomformation, undifferentiated
- Etzta Allomformation (middle Pleistocene)**
- Qe** Silt, sand, and mud Dark brown to whitish, generally well-stratified silt, sand, and mud
- Qess** Sand and gravel Fluvial and subaerial sand and gravel of the intralacustral S-Bar-S Allomember
- Ql** Lacustrine deposits (Pleistocene to Pliocene) Lacustrine deposits of pre-Etzta age, undifferentiated

TERTIARY-QUATERNARY DEPOSITS

- Qtg** Gravels (early Pleistocene to late Miocene) Unconsolidated, poorly exposed subrounded to rounded pebbles to boulders of mafic to intermediate volcanic rock; boulders up to 3 m long. Age unknown
- Porphyritic basalt (late Miocene)** Porphyritic basaltic or basaltic andesite lavas containing ~10% plagioclase phenocrysts up to 1 cm long
- Tdy** Diatomite (late Miocene) White, generally massive diatomite intercalated in Tpy
- Tl** Limestone (late to middle Miocene) Massive limestone or tufa deposit mantling basalt. May be Quaternary rather than Miocene in age
- Tvs** 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. Crops out directly above and beneath Tpd
- Tpd** Porphyritic dacite flows (late to middle Miocene) Pale gray, weathering reddish-brown, porphyritic dacite or rhyodacite lavas containing 20-50% phenocrysts of plagioclase (to ~1 cm long), hornblende, and biotite
- 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
- Tdb** 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

Lithologic contact Dashed where inferred or approximately located, dotted where concealed.

Fault Showing dip of fault and trend of striae on fault surface (arrow); ball on downthrown side, double arrows show sense of strike-slip offset; dashed where approximately located, queried where uncertain, dotted where concealed.

Syncline axial trace Showing plunge, dashed where approximately located, queried where uncertain, dotted where concealed.

Anticline axial trace Showing plunge, dashed where approximately located, queried where uncertain, dotted where concealed.

Landslide headwall scarp Hatchures point into landslide.

Shoreline scarp Paleo-shoreline scarp of Pleistocene Lake Lahontan. Hatchures point into scarp.

Strike and dip of beds

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

- Ts** 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 conglomerate, which contains subangular clasts of basalt
- 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 basalt 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 ~2-3 mm long. Olivine is generally altered to iddingsite
- Tpb** Finely porphyritic basalt (late to middle Miocene) Finely porphyritic basalt lavas containing 10-20% phenocrysts of plagioclase (to ~5 mm long) and lesser olivine
- Tte** Tephra (ash-fall deposit) (late to middle Miocene) Light gray, ash-fall deposit consisting of glass shards, mapped only where unusually thick (> 2 m) and well exposed
- Tssh** Siltified shale (late to middle Miocene) Siltified 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, fissile diatomaceous shale and lesser sandstone
- Tat** Altered tuff (late to middle Miocene) Greenish-white, altered and slightly siltified nonwelded tuff (Ti)
- Ti** Nonwelded tuffs (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
- Ttq** 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 ash-fall deposits
- Tpr** Porphyritic rhyolite (late to middle Miocene) Porphyritic rhyolite or rhyodacite containing ~50% phenocrysts of altered feldspar (to ~1 cm long), biotite, lesser quartz (some quartz is rosy), and sparse hornblende
- Tr** Rhyolite (late to middle Miocene) Pale brown, crystal-poor rhyolite lava containing ~2% phenocrysts of sandine, quartz, and biotite
- 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, generally vesicular basalt flows containing <10% phenocrysts of olivine and plagioclase
- Tpp** Pyramid sequence finely porphyritic basalt (middle Miocene) Porphyritic basalt flows containing ~10-20% phenocrysts of plagioclase to ~5 mm long
- Tpp** Pyramid sequence porphyritic basalt (middle Miocene) Coarsely porphyritic basalt flows containing up to ~30% plagioclase phenocrysts as large as 2.3 cm long
- Tpac** 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 Tpa; clasts are subangular to subrounded and composed of mafic to intermediate volcanic rock and sparse ash-flow tuff
- Tpa** Porphyritic andesite (middle to early Miocene) Thick and massive light to medium-gray porphyritic andesite or dacite flow containing 25-35% phenocrysts of plagioclase (to ~6 mm long), hornblende, and lesser biotite; locally forms a distinctive, cliff-forming unit at top of Tpa
- Tpa** Porphyritic andesite (middle to early Miocene) Light to medium-gray porphyritic andesite and dacite flows containing 20-35% phenocrysts of plagioclase (to ~6 mm long), hornblende, ± 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 hornblende andesite and aphanitic basalt to 50 cm long

OLIGOCENE ASH-FLOW TUFFS AND RELATED UNITS

- Tpha** Altered tuff of Painted Hills (late Oligocene) Propylitically altered tuff of Painted Hills, feldspars and groundmass altered to clay
- Tph** Tuff of Painted Hills (late Oligocene) Densely welded, crystal-rich, pale brown to pale reddish-brown ash-flow tuff with ~40% phenocrysts of sandine, plagioclase, biotite, and quartz
- Ttso** Tuffaceous sandstone (late Oligocene) Reddish-brown, poorly indurated, poorly sorted, medium-grained litharenite mainly composed of reworked Tso
- Tphl** Lower Tuff of Painted Hills (late Oligocene) White, poorly welded ash-flow tuff, contains ~20-25% phenocrysts of sandine, biotite, and lesser quartz; includes lithos 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 adularescent), smoky quartz, plagioclase, and biotite; 25.1 Ma
- Tnh** Nine 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 flame, 25.3 Ma
- Tmp** Tuff of Mickey Pass (late Oligocene) White, weakly welded ash-flow tuff containing 20-25% phenocrysts of plagioclase, biotite, and smoky quartz
- Tcc** Tuff of Campbell Creek (late Oligocene) White to pale reddish-brown, moderately to densely welded ash-flow tuff containing ~15% phenocrysts of sandine, quartz, and lesser biotite; quartz is commonly vermicular and locally smoky; 28.8 Ma
- Te** Tuff "e" of Haskell Peak (late Oligocene) White to pinkish-gray, poorly welded ash-flow tuff containing ~25% phenocrysts of sandine, plagioclase, biotite, and quartz; more crystal rich and less common vermicular quartz than Tcc

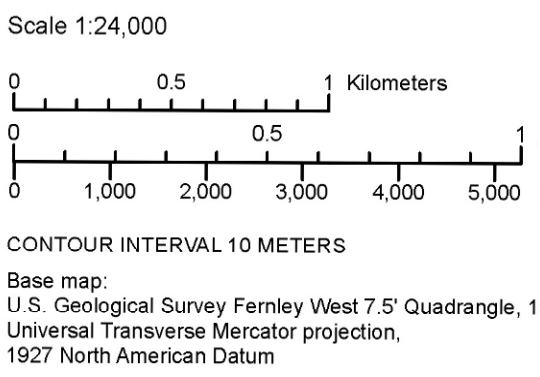
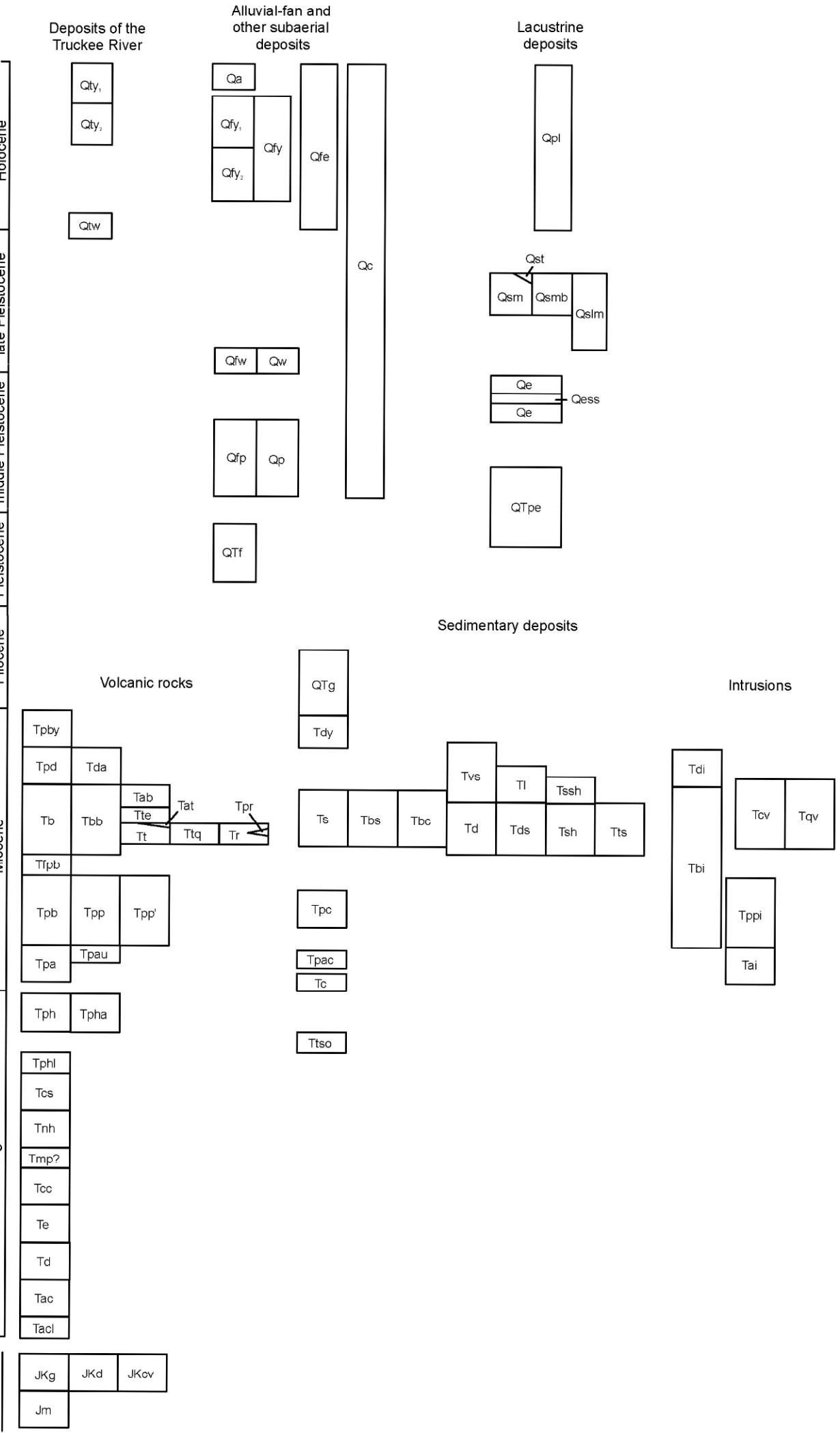
- Td** Tuff of Dogskin Mountain (late Oligocene) White to purplish-gray, moderately to densely welded ash-flow tuff containing ~10-20% phenocrysts of plagioclase, biotite, and trace of quartz
- Tae?** Tuff of Axehandle Canyon (late Oligocene) Densely welded, highly altered ash-flow tuff containing ~15% phenocrysts of altered feldspar, biotite, and sparse fine quartz; tentatively correlated with tuff of Axehandle Canyon but also similar to tuffs of Core Spring and Rattlesnake Canyon
- Tact** Lower tuff of Axehandle Canyon? (late Oligocene) Poorly to moderately welded, highly altered ash-flow tuff containing ~25% phenocrysts of altered feldspar and biotite; more crystal rich than Tact; tentatively interpreted as basal, less welded part of Tact but may be a separate tuff

TERTIARY INTRUSIONS

- Tcv** Calcite veins (late to middle Miocene) Thin (1-2 m thick) veins consisting primarily of calcite
- Tqv** Quartz veins (late to middle Miocene) Thin (1-2 m thick) veins consisting primarily of quartz
- Tdi** Porphyritic dacite (late to middle Miocene) Porphyritic dacite-rhyodacite dikes or plugs containing ~15-20% phenocrysts of plagioclase, biotite, and hornblende
- Tbi** 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
- Tpp** Porphyritic basalt dikes (middle Miocene) Coarsely porphyritic basalt dikes containing up to ~30% plagioclase phenocrysts as large as ~2 cm long
- Tai** Andesite dikes (middle to early Miocene) Finely porphyritic hornblende or clinopyroxene bearing andesite or basaltic andesite dikes and plugs

MESOZOIC BASEMENT

- JKcv** 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
- JKg** 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 cm thick



Field work 2005-2006
Geologic mapping was supported by the U.S. Geological Survey
STATEMAP Program (Agreement No. G5-HQ-AQ-0046)

DRAFT
Preliminary geologic map
Has not undergone office or field review
Will be revised before publication.

First Edition
Printed by Nevada Bureau of Mines and Geology
Cartography by Gary Johnson

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

James E. Faulds and Alan R. Ramelli
2006