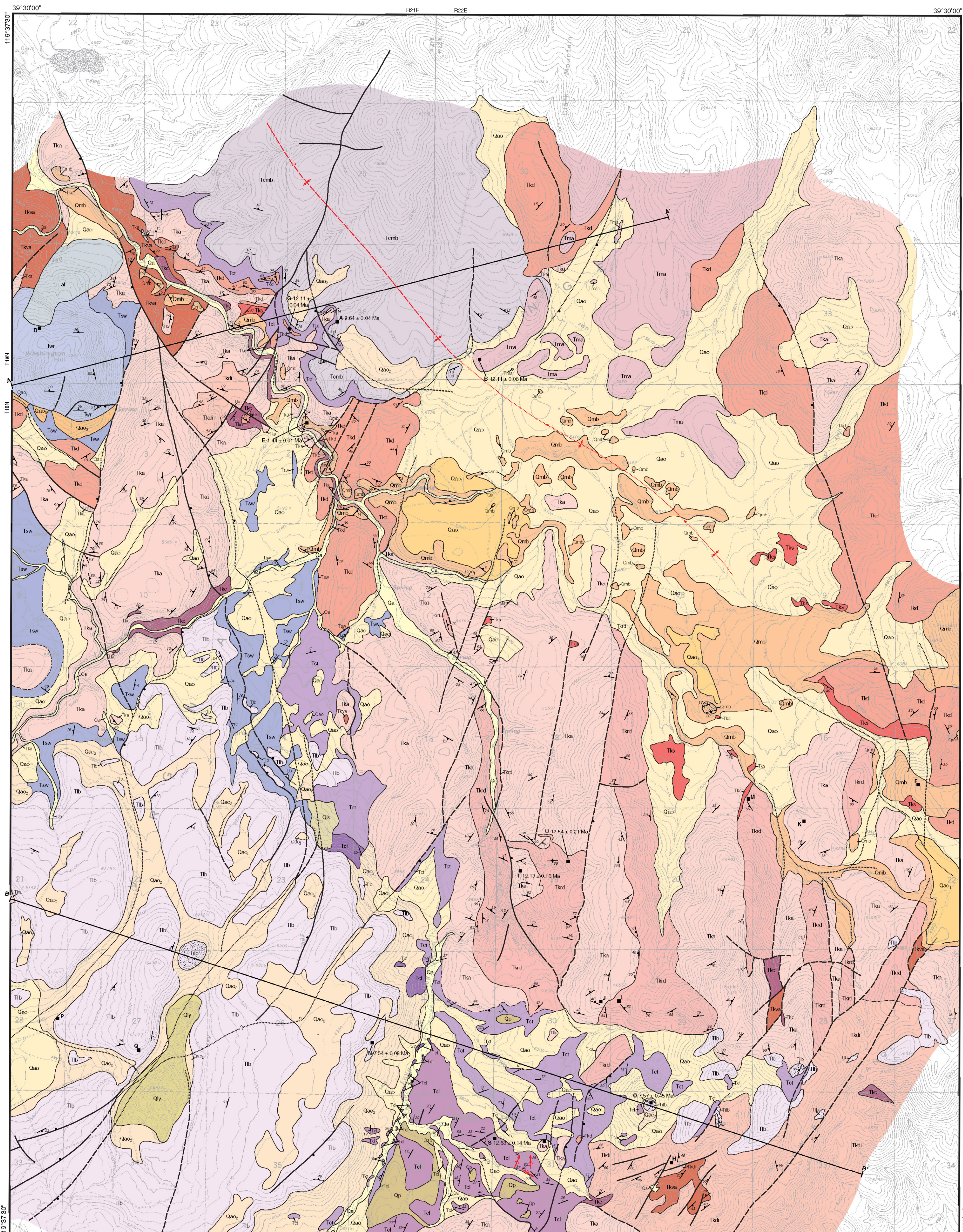


PRELIMINARY GEOLOGIC MAP OF MOST OF THE CHALK HILLS QUADRANGLE, STOREY COUNTY, NEVADA

Kenneth M. Schwartz and James E. Faulds 2004



- af** Recent excavations (Holocene) Man-made excavations at an aggregate mine within the Washington Hill Rhyolite. May also include outcrops of Taw and Tw.
- Qa** Recent alluvium (Holocene) Poorly sorted, subangular to subrounded unconsolidated silt, sand, and gravel (rarely boulders) along active, or recently active, washes. Flooded erosional channels and undifferentiated nearby over-bank flood deposits with some A-C soil development. Maximum thickness is ~6 m.
- Qls** Landslide deposit (Holocene) Poorly sorted, angular, silt to sand of seasonal lakes with some A-C soil development. Maximum thickness is ~10 m. Indicated by hatched scarp. Maximum thickness is ~15 m.
- Qly** Lacustrine deposit (Holocene) Unconsolidated clay, silt, and sand of seasonal lakes with some A-C soil development. Maximum thickness is ~10 m. Deposits found in sections 34 and 27, T18N, R21E.
- Qao** Alluvium undifferentiated Poorly sorted, unconsolidated, subangular silt, sand, pebble, cobble, and boulders of volcanic and sedimentary rocks; locally derived rocks of Tka, Tkd, Tw, Tomb, Tma, Tmb, Tmc, and Ttd. Taw and Taw form fans, small alluvial fans, and valley-fill deposits; locally has moderate development of A-C soil caliche crust in parts. Maximum thickness is ~10 m. Here consolidated, thin-bedded brown, coarse subangular, well-sorted, matrix-supported lithic arenite developed within Long Valley, incised by active washes (maximum thickness is ~1 m).
- Qmb** Alluvium of McClellan Peak Basalt Poorly sorted, unconsolidated, subangular cobble and boulders of basalt derived from McClellan Peak Basalt. Primarily forms a thin veneer above erosional surfaces on basalt or talus beneath Tmb outcrops. Maximum thickness is ~5 m.
- Qmc** Alluvium of Clark Mountain and Loupsdown basalt Poorly sorted, unconsolidated, subangular cobble and boulders of basalt derived from Loupsdown (Tmb) and Clark Mountain (Tmc) basalt. Primarily forms a thin veneer above erosional surfaces on basalt or talus beneath Tmc outcrops. Maximum thickness is ~5 m.
- Qm** Alluvium of Washington Hill Rhyolite Poorly sorted, unconsolidated, subangular cobble and boulders of rhyolite derived from Washington Hill Rhyolite (Twr). Forms as talus beneath rhyolite outcrops. Maximum thickness is ~5 m.
- Qp** Pediment deposits (Holocene to lower Pleistocene) Thin veneers of silt, sand, gravel, and rare boulders similar to recent and older alluvium. Maximum thickness is ~5 m. Erosional surfaces developed on sedimentary rocks in the south-central part of the map area.
- Omb** Omb, McClellan Peak Basalt (lower Pleistocene) Medium gray to black, brown- to red-weathering, augite olivine basalt lava containing 10-15% phenocrysts; composed of 10-20% olivine (2-5% of olivine has ididiagonal rims), 5-25% lath-shaped plagioclase, trace to 4% augite, porphyritic and vesicular in parts. Phenocrysts range up to 8 mm long. Abundant clots and blocks crop out around a possible mountain (Lowe 1969) along the eastern edge of the map area. Lava flowed westward, filling topographic lows along Long Valley, and into the Truckee River canyon, ~12 km from Clark Mountain. Tmb is locally columnar jointed within Long Valley. Maximum thickness of flows is ~5 m. A groundmass concentrate yielded an ⁴⁰Ar/³⁹Ar date of 1.44±0.01 Ma. Omb, McClellan Peak intrusion. Small plug in east-central part of map area showing concentric foliations and standing ~25 m above surrounding flows; petrographically similar to flows.
- Tb** Loupsdown Basalt (upper Miocene) Medium to dark gray locally vesicular olivine basalt and augite basaltic andesite lavas containing up to 35% phenocrysts. Phenocrysts include 10-20% laths of plagioclase, 2-8% olivine (10-15% of olivine altered to or without rims of ididiagonal), 3-8% augite, and trace hypersthene and hornblende. Phenocrysts range up to 4 mm long. Tb weathers brown to red. Plugs and flows crop out within the Tertiary sedimentary rocks (Tcd, Tct), ~1.5 km east of the main flows, and cap ridges of Kate Peak volcanics in the southwest part of the map area. Maximum thickness is ~150 m. A groundmass concentrate yielded an ⁴⁰Ar/³⁹Ar date of 7.54±0.08 Ma. Tb, Loupsdown Basalt intrusion. Olivine plugs of Loupsdown Basalt. Plugs yielded 2-5% phenocrysts of olivine, primarily altered to ididiagonal, commonly exhibit columnar jointing. A groundmass concentrate yielded an ⁴⁰Ar/³⁹Ar date of 7.57±0.05 Ma. A large plug, within the main body of the lavas, is petrographically similar to flows but is distinct from the smaller olivine plugs. The large plug contains 5-10% plagioclase, 2-8% olivine (10-15% altered to ididiagonal), and trace hornblende, hypersthene, and augite phenocrysts.
- Tmb** Basalt of Clark Mountain (upper Miocene) Medium to dark gray, locally vesicular, glomeroporphyritic olivine basalt lavas containing up to 18% phenocrysts, including 8-10% laths of plagioclase (2-5% of plagioclase altered to sericite), 2-6% olivine (3-6% of olivine altered to or without rims of ididiagonal), 1-3% augite, and trace hypersthene and hornblende. Maximum phenocryst size is 2 mm. Tmb weathers brown to red. Maximum thickness is 120 m. Flows may have originated from Clark Mountain. A groundmass concentrate yielded an ⁴⁰Ar/³⁹Ar date of 6.64±0.04 Ma.
- Twr** Washington Hill Rhyolite dome (middle to upper Miocene) White to gray, flow-banded biotite rhyolite, commonly aphanitic with up to 5% phenocrysts consisting of 1-2% biotite, 1-2% trace sanidine, hornblende, and orthopyroxene; also contains 1-2% spherulites. Actively mined for aggregate. Plagioclase and biotite have yielded K/Ar dates of 9.7 to 11.2 Ma (Silberman and others, 1976; and Vira and others, 1988). Taw, Washington Hill tuffaceous sediments. Rhyolite to lithic tuffs with thin to medium interbeds of cross-laminated lithic arenites, diatomite, and tuffaceous shales, concentrated around the Washington Hill rhyolite dome (Twr). Also includes poorly sorted matrix-supported pebbles to boulder conglomerate with subangular clasts up to 1.5 m long and moderately sorted coarse lithic arenite with subangular clasts and tuff interbeds. Conglomerate clast composition is 60% Tka, 32% Tkd or Tkc, and 8% Taw clasts. No basaltic or Tka clasts were observed. Taw is generally poorly exposed, best outcrops lie to the southwest of Twr outside the map area. Maximum thickness is 250 m.

- Tcd** Tcd, Chalk Hills fluvial sediments Thin- to medium-bedded gray to tan, commonly cross-laminated, tuffaceous lithic arenites, with interbeds of medium-bedded, poorly sorted, matrix-supported, pebble conglomerate with subrounded clasts. Maximum clast size is 20 cm. Maximum thickness is ~200 m. Tcd, Chalk Hills tuffaceous sediments Thin- to medium-bedded, rarely thick-bedded, light gray to white diatomite with interbeds of thin- to medium-bedded, poorly sorted, matrix-supported, pebble conglomerate with subrounded clasts. Clastic dikes locally cut strata. Locally dikes are deformed into outcrop-scale folds. Diatomites commonly contain abundant fossil flora and rare vertebrates suggesting an early Pliocene age (Axtell, 1956, 1958, 1962; La Favers, 1955). However, radiometric dates suggest a Miocene age. Maximum thickness is ~400 m. Biotite from an interbedded tuff yielded a K/Ar date of 12.34±0.6 Ma (Faulds, 2004). Tcd, Chalk Hills tuffaceous sediments White to gray, thin- to thick-bedded, (poorly) sorted, matrix-supported, brown, tuffaceous cobble breccias, 2- to 4-m-thick, locally diatomite, 3- to 4-m-thick, to medium-grained conglomerate with 4- to 6- to 8- to 10- to 15- to 20- to 30- to 40- to 50- to 60- to 70- to 80- to 90- to 100- to 110- to 120- to 130- to 140- to 150- to 160- to 170- to 180- to 190- to 200- to 210- to 220- to 230- to 240- to 250- to 260- to 270- to 280- to 290- to 300- to 310- to 320- to 330- to 340- to 350- to 360- to 370- to 380- to 390- to 400- to 410- to 420- to 430- to 440- to 450- to 460- to 470- to 480- to 490- to 500- to 510- to 520- to 530- to 540- to 550- to 560- to 570- to 580- to 590- to 600- to 610- to 620- to 630- to 640- to 650- to 660- to 670- to 680- to 690- to 700- to 710- to 720- to 730- to 740- to 750- to 760- to 770- to 780- to 790- to 800- to 810- to 820- to 830- to 840- to 850- to 860- to 870- to 880- to 890- to 900- to 910- to 920- to 930- to 940- 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