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and in cooperation with the Nye County Department of Natural Resources and Federal Facilities

Nevada Bureau of Mines and Geology

PRELIMINARY GEOLOGIC MAP OF THE NORTHEAST QUARTER OF THE STEWART VALLEY QUADRANGLE, NYE COUNTY, NEVADA, AND INYO COUNTY, CALIFORNIA

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2003

Basin Deposits

Fluvial, eolian, spring, and paludal deposits that make up the valley-bottom fill in northern Pahrump Valley. Settings range from active deposition to terraced and isolated deposits. Deposits are characteristically fine grained ranging from medium sands to clays, and ranging in consistency from loose to being indurated with gypsum or calcite. The basin floor is subject nearly daily to eolian processes, including deposition of clays and silts from local and distant sources. These are incorporated and moved by localized rains. Floods from the Spring Mountains also occasionally sweep across large portions of the valley bottom in broad sheets, modifying the landscape and depositing layers of fluvial sands and silts. The ages of basin deposits range from modern, active units to late Pleistocene deposits that are tilted and exposed in the south-central part of the quadrangle.

Qba **Active and intermittently active basin alluvium** Active fluvial and eolian deposits on the floor of Pahrump Valley. Light-brown fluvial silts and muds, much of this reworked from older basin deposits. Thin bedded to massive, unit ranges from surficial to 0.5 m thick. Active to late Holocene age. Subject to occasional flooding.

Qd **Active copice dunes and eolian deposits** Light brown, silts, sands, and clays.

Qp **Active playa deposits** Reddish brown sitly caly deposited in an active playa that is occassionally flooded. Deposits are lacustrine and eolian in nature, with some vertisolic properties.

Qpo **Older playa deposits** Reddish brown silty clay deposits along the eaastern margin of the Stewart Valley playa. Slightly elevated above active playa.

Qbae **Basin alluvial and eolian deposits** Reddish brown clayey silt and silty clay deposits along distal fan margins in eastern Stewart Valey. Minor copice dunes on surface.

Alluvial Fan Deposits

Sandy, coarse-pebble gravel alluvial fan deposits originating from the small set of hills projecting southward from the Montgomery Mountains and the northeastern flank of the Nopah Range. Includes poorly sorted, weakly to moderately imbricated, generally clasts supported with minor matrix supported angular to subrounded gravel deposits. Thinly bedded to massive, with gravel lenses ranging from a few centimeters to 70 cm thick, and commonly 10 to 30 cm thick. Clasts are dominated by either limestones or quartzites depending on the source deposits. Some deposits, especially in the proximal areas, are thin beds (<0.5 m thick) overlying significantly older alluvial deposits. Deposits are middle Quaternary to late Holocene in age.

Qa **Active alluvium** Cobbly, pebbly, sandy gravel within active washes within fans. Surface made up of anastomosing bar-and-swale microtopography, with no pavement or soil development. Subject to intermittent flooding.

Qc **Colluvial deposits** Talus, debris, and fan surfaces in aprons around steep bedrock escarpments, that are not part of the piedmont. Composed of boulders, cobbles, sands, and silts, and appears to span a large range in age, from latest Holocene to early Quaternary.

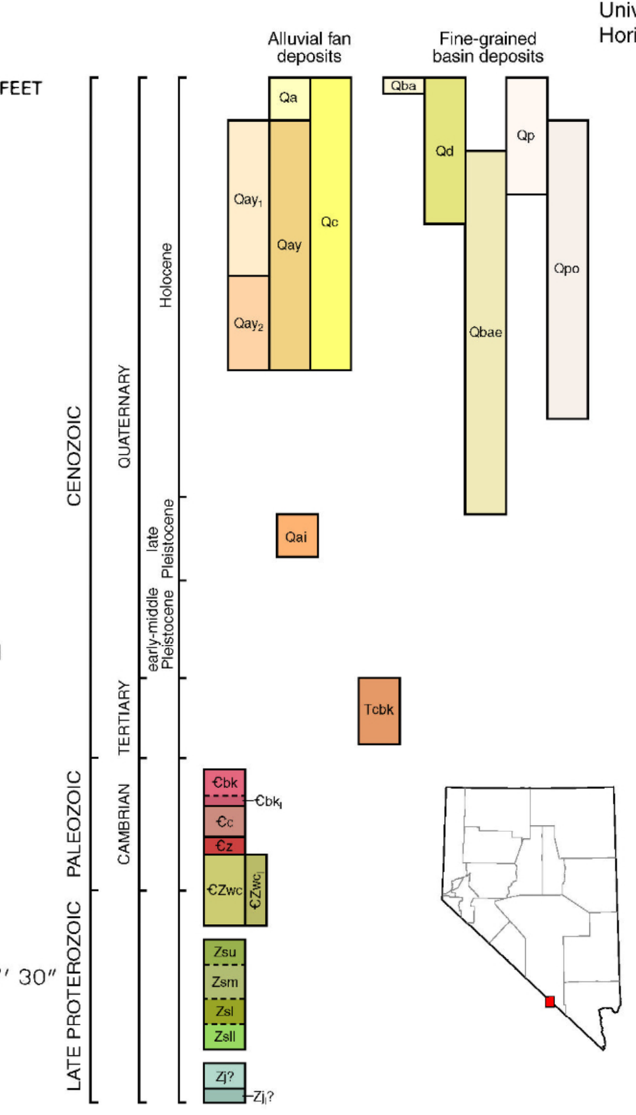
Qay **Younger alluvium (undifferentiated)** Fans and fan remnants characterized by surfaces ranging from subdued bar and channel to fully smoothed with moderately well developed desert pavements. Commonly includes earlier younger alluvium (Qay$_1$) with interspersed, later younger alluvium (Qay$_2$) making delineation difficult. Latest Pleistocene to Holocene in age. Subject to intermittent flooding in places.

Qay$_1$ **Later younger alluvium** Fan remnants characterized by subdued bar-and-swale microtopography, incipient desert pavement, weak rock varnish, and none to slight etching of limestone and dolomitic surface clasts. Soils typically A-C and A-Bk-C profiles with a 1- to 5-cm-thick, light-brown silt eolian epipedon (Av), a 5- to 20-cm-thick, weak to non-existent calcic horizon (Bk) with Stage I carbonate development. Mid to late Holocene in age.

Qay$_2$ **Earlier younger alluvium** Fan remnants characterized by well-developed, moderately to tightly packed desert pavement, weakly to moderately developed rock varnish, incipient to moderate etching of surficial limestone and dolomitic clasts. Soils are typically A-Bw-Bk-C profiles with a 2- to 15-cm-thick, light brown eolian epipedon (Av), a 10- to 20-cm-thick, slightly reddened, silt infiltrated, cambic horizon (Bw), and a 30+ cm thick, calcic horizon with Stage I and II carbonate development. Latest Pleistocene to early Holocene in age.

Qai **Intermediate age alluvium** Fan-terrace remnants characterized by tightly packed desert pavement, dark rock varnish on non-carbonate clasts, and very strongly etched carbonate clasts. Flat-topped surfaces are quite prominent in this unit that is commonly well dissected, and elevated above surrounding fan surfaces. Unit typically contains a soil exhibiting a 5- to 10-cm-thick, light brown, eolian silt epipedon (Av), 10- to 30-cm-thick, reddened and well-structured argillic horizon (Bt), and 100- to 150-cm-thick calcic horizon (Bk) with up to Stage IV carbonate. Upper soil horizons may be erosional stripped in some areas. Late Pleistocene in age.

Tcbk **Breccia of the southern Montgomery Mountains** Monolithic breccia deposit made up of clasts predominantly derived from Bonanza King Formation, with some rare clasts of the underlying Stirling Quartzite incorporated into the lower part of the deposit. The unit appears to be deposited on hillslopes eroded on bedrock, and may be a landslide deposit. The source area has been tectonically removed in the Neogene.



Cambrian and Precambrian Sedimentary Rocks

Cambrian and Precambrian sedimentary rocks were compiled and modified from Burchfiel and others (1982). They include a faulted and broadly folded sequence of siliciclastic and carbonate rocks, principally quartzites and limestones.

Єbk, Єbk$_l$ **Bonanza King Formation** The Bonanza King Formation is a limestone sequence that can be divided into a lower, massive limestone unit, the Papoose Flat Member **(Єbk$_l$)**, and an upper group **(Єbk)** of bedded, banded limestone, the Banded Mountain Member (Barnes and Palmer, 1961). Both members are beautifully exposed on the Sixmile Springs Quadrangle. The Papoose Flat Member **(Єbk$_l$)** consists of gray and dark gray mottled limestone minor dolomite. The member forms a steep, cliff-like bottom to the hills of Bonanza King Formation. A nonconformity occurs between the Papoose Flat and Banded Mountain Members. The Banded Mountain Member **(Єbk)** consists of interbedded dark-gray to black and white limestone and dolomite that gives the formation its conspicuous banded appearance. The basal 27 to 40 m of the upper member is composed of red-brown-weathering silty and sandy limestones, and the base of this unit is the contact between the two members. The Banded Mountain Member is about 860 m thick at the northwestern part of the quadrangle.

Єc **Carrara Formation** The Carrara Formation is a transitional unit from the terrigenous sequence below and the carbonate sequence below. It crops out at the base of a set of large hills that are largely made up of Bonanza King Formation, immediately above the alluvial apron. Thinly to very thinly bedded deposits of reddish-brown to gray siltstone, limey siltstone, and silty limestone. Erodes out into paper-like layers in places. Generally transitional and gradational contact with the overlying massive limestones of the Bonanza King Formation. Thickness of the Carrara Formation is up to 446 m immediately west of the quadrangle (Burchfiel and others, 1982); the lower part of the Carrara Formation is buried by alluvium on the Sixmile Spring Quadrangle.

Єz **Zabriskie Quartzite** White, pink, red, and maroon vitreous quartzite. The formation is 80 to 90 m thick immediately to the west of the quadrangle (Burchfiel and others, 1982).

ЄZwc, ЄZwc$_l$ **Wood Canyon Formation** Dark-weathering sandstone; green, gray, and red shale; and siltstone with beds of brown-weathering sandy dolomite. This is the upper member of the Wood Canyon Formation as mapped by Burchfiel and others (1982). The Wood Canyon locally is 640 m thick (Burchfiel and others, 1982). ЄZwc$_l$ brownish lower unit.

Zsu, Zsm, Zsl, Zsll **Stirling Quartzite** The Stirling Quartzite has been divided into three members locally following Burchfiel and others (1982), a lower, middle, and upper member. The upper member **(Zsu)** consists of medium- to very coarse-grained and con-glomeratic pink, gray, and white quartzite. Rare beds of light-brown sandy dolomite are present locally south of the Stewart fault. The middle member **(Zsm)** consists of purple, maroon, and green shale and siltstone, interbedded with pink and red fine-grained quartzite. The middle member tends to form recessive slopes between the bounding, more resistant upper and lower members. The lower member **(Zsl)** consists pre-dominantly of fine- to coarse-grained and con-glomeratic quartzite of white, gray, pink, maroon, and purple colors. **(Zsll)** A lower lighter colored base of the lower member that is less consolidated and forms eroded, ressesive slopes.

Zj?, Zj$_l$? **Johnny Formation(?)** Shattered and brecciated light-brown quartzite that has a dolomitic matrix or cement and rarer pinkish conglomeratic arkosic quartzite. The quartzite with dolomitic cement weathers to a distinctively black "varnish." These rocks crop out in the core of a highly faulted anticline, and may be shattered parts of the lower member of Stirling quartzite that has been cemented by dolomite. These rocks are not similar to other descriptions of the Johnny Formation elsewhere and correlation is uncertain. **Zj$_l$?** More easily eroded quartzites in the core of anticline that lack the dark varnish.

References

Barnes, H., and Palmer, A.R., 1961, Revisions of stratigraphic nomenclature of Cambrian rocks, Nevada Test Site and vicinity: U.S. Geological Survey Professional Paper 424-C, p. C100-C103.

Burchfiel, B.C., Hamill, G.S., and Wilhelms, D.E., 1982, Stratigraphy of the Montgomery Mountains and the northern half of the Nopah and Resting Spring Ranges, Nevada and California: Geological Society of America, Map and Chart Series, MC-44.

dePolo, C.M., Ramelli, A.R., and Bell, J.W.,1999, Geologic map of the Pahrump Quadrangle, Nevada: Nevada Bureau of Mines and Geology, Open-File Report 99-14, 1:24,000.

Lundstrom, S.C., Mahan, S. A., Blakely, R.J., Paces, J.B., Young, O.D., and Dixon, G.L., in prep., Geologic map of the Mound Spring Quadrangle, Nye and Clark Counties, Nevada and California: U.S. Geological Survey, MF map in prep.

Malmberg, G.T., 1967, Hydrology of the valley-fill and carbonate-rock reservoirs, Pahrump Valley, Nevada-California: U.S. Geological Survey Water-Supply Paper 1832.

Scale 1:24,000

0 0.5 1 kilometer

0 0.5 1 mile

0 1000 2000 3000 4000 5000 feet

CONTOUR INTERVAL 10 METERS
Supplementary Contour Interval 2.5 meters

Base map: U.S. Geological Survey Stewart Valley 7.5' Quadrangle, 1984 Digital Raster Graphic (DRG)
Universal Transverse Mercator projection, Zone 11
Horizontal Datum: NAD27

Lithologic contact Dashed where inferred or approximately located.

Normal-slip fault Ball on downthrown side; dashed where inferred or approximately located; dotted where concealed.

Lineament Determined from aerial photography.

Field work done in 2003.

DRAFT

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

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