

**PIEDMONT ALLUVIAL DEPOSITS AND BASIN FILL DEPOSITS**

- Qay Holocene alluvium**  
Deposits of silt, sand, and gravel on active alluvial fans, and in washes. Includes some abandoned fluvial terraces flanking active channels and coarse bouldery debris flow deposits along the East face of the Newberry Mountains.
- Qai, Qai1, Qai2, Qai3 Late Pleistocene alluvium**  
Deposits of sand, and gravel on inactive alluvial fans. Moderate soil development evident as stage II-IV calcic (Bk) horizon. Locally divided into subunits Qai1, Qai2, and Qai3 (in decreasing age) on basis of relative topographic relations. Planar surface morphology typical of related alluvial fan landforms.
- Qao Middle to early Pleistocene**  
Alluvial fan deposits of sand and gravel. Strongly erosional topographic form.
- Qta Early Pleistocene to Pliocene**  
Alluvial fan deposits of sand and gravel. Forms alluvial fan surfaces cut into the Pliocene Colorado River fill (Tcb). Surfaces commonly capped with QtaK.
- QtaK Early Pleistocene to Pliocene**  
Strongly developed, mesa-forming soil carbonate deposits.
- Tfn Pliocene to Miocene**  
Indurated deposits of coarse grained alluvium (fanglomerate) from the Newberry Mountains.
- Tfb Pliocene to Miocene**  
Indurated deposits of coarse grained alluvium (fanglomerate) from the Black Mountains.
- Tc Late Miocene(?) to early Pliocene**  
Bouse Formation of Metzger (1968). Flat-lying marl and poorly consolidated mudstone, sandstone, and minor gravel.
- Tic Late Miocene**  
Lost Cabin beds of House et al. (2005, 2008). Pre-river integration valley fill sequence of conglomerate, sandstone, and mudstone. Two facies (fine and coarse) support a depositional model of a fine-grained basin fill unit interfingering on its base and sides with a coarser-grained valley margin unit. Clast compositions of beds in the marginal unit vary from strongly Black Mountain source to strongly Newberry Mountain source to a mixture of both.
- Taf Late to middle(?) Miocene**  
Older valley fill deposits of flat-bedded sand and gravel. Locally to extensively tilted. Overall similar composition and character as the Lost Cabin beds.

**COLORADO RIVER ALLUVIAL DEPOSITS**

- Qcts Late Pleistocene**  
Colorado River terrace gravels
- Qch Late to middle(?) Pleistocene**  
The Chemehuevi beds as defined by House et al. (2005). Typically composed of a lower sequence of flat-bedded mud and sand overlain by an upper sequence of loose fluvial sand and gravel. Lower sequence is most common variant in this map.
- Tcb Pliocene, Alluvium of Bullhead City**  
Thick, complex deposit of cross-stratified fluvial sand and gravel. Contains sequences of thick beds of trough cross-stratified fluvial gravel and a varying array of beds of cross-stratified clean fluvial sand. Gravels typically polyhedral and well rounded. Some exposures characterized by distinct abundance of locally derived gravels. Petrified wood present but rare; subfossil wood fragments very rare, but present locally. Mapped as Tcb/Tfb where interfingering with Tfb.

**BEDROCK UNITS (undivided)**

- Bdrk Middle Miocene to Proterozoic**

**References**

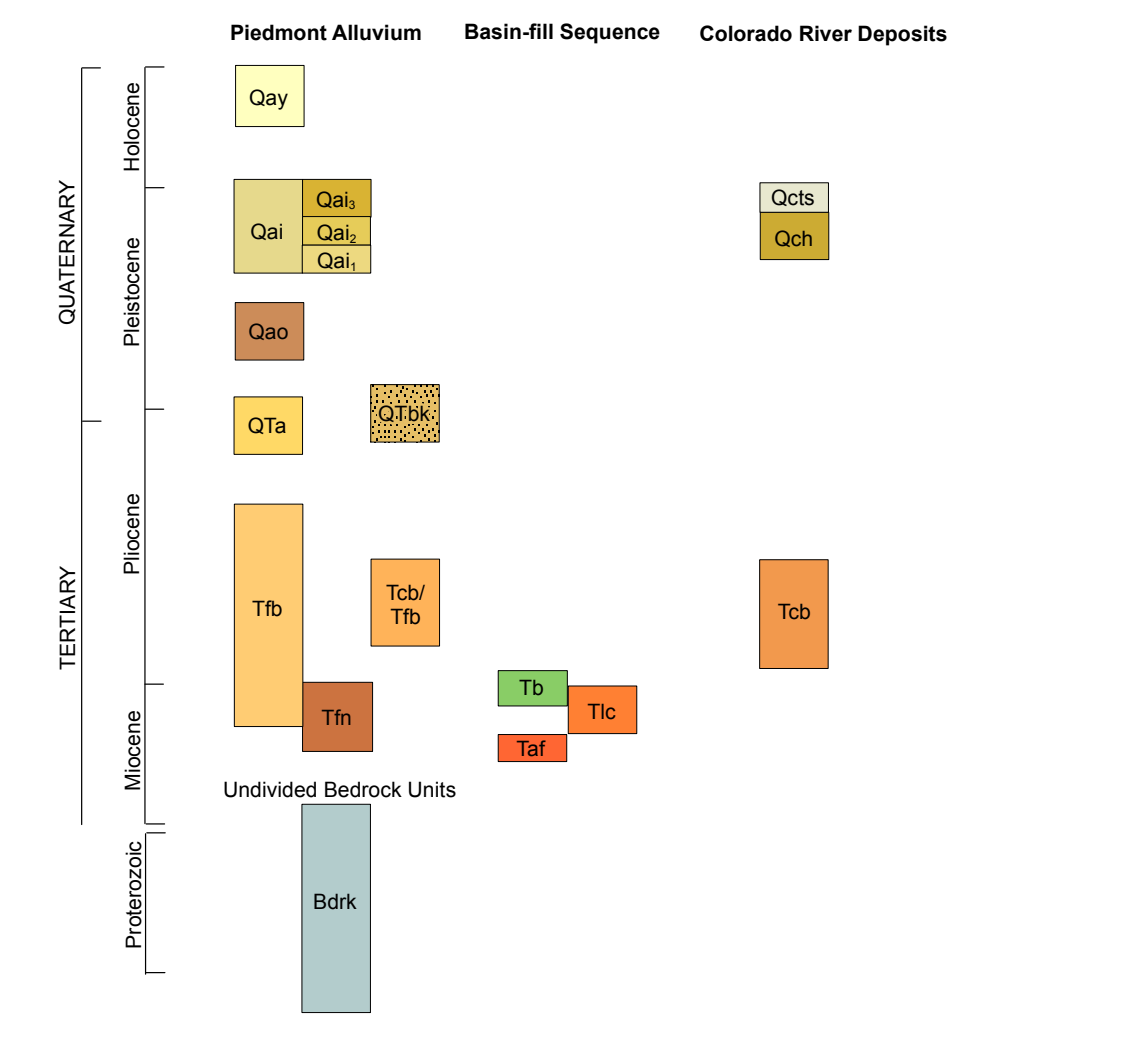
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**Symbology (per FGDC-STD-013-2006)**

Contact: Solid where certain and location accurate, long-dashed where approximate, short-dashed where inferred.

Tephra Sample Locality: 31405-9

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**DRAFT**  
Preliminary geologic map  
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Will be revised before publication

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**PRELIMINARY GEOLOGIC MAP OF LATE CENOZOIC DEPOSITS IN THE SPIRIT MTN. SE QUADRANGLE, CLARK COUNTY, NEVADA AND MOHAVE COUNTY, ARIZONA**  
**P. Kyle House, Amy L. Brock, and Philip A. Pearthree**  
**2008**

Scale 1:24,000  
0 0.5 1 kilometer  
0 0.5 1 mile  
0 1000 2000 3000 4000 5000 feet

CONTOUR INTERVAL 40 FEET  
Projection: Universal Transverse Mercator, Zone 11, North American Datum 1927 (m)

Base map: U.S. Geological Survey Spirit Mtn. SE 7.5' quadrangle (1959), Polyconic projection  
Geologic mapping in UTM is no longer coincident with this base.

