



Qa Alluvium of active washes Pink to pale-brown fine sand to pebble to cobble gravel occurring in incised, active stream channels and on between-channel alluvial flats; uncon-
solidated to locally cemented by petrocalcic cement (case hardened). Clasts are mostly limestone and dolomite in the northern and central parts of the quadrangle and volcanic rock fragments in the southern part. Sand-size sediment is mainly fragmental limestone and dolomite; quartz and feldspar are subordinate and detrital gypsum locally is an important component.

Qs Sheetwash alluvium Pink to brown sand, pebble to cobble gravel, and petrocalcic fragments occurring as thin veneers downslope from fault scarps; unconsolidated to slightly consolidated. Recycled from rock units exposed on upthrown sides of fault scarps. Active; subject to reworking by wind.

Qd Sand dunes Pink to pale-brown fine to medium sand occurring in small to large barchan dunes and dune fields; unconsolidated to moderately consolidated. Intermittently active to inactive and stabilized deposits derived from eolian reworking of Qa, Qai, Qoa, and Qr. Composition is predominantly detrital limestone, dolomite, and gypsum with subordinate quartz and feldspar.

Qai Intermittently active alluvium Pink to pale-brown sand and pebble to cobble gravel occurring mainly on between-channel alluvial flats and less commonly in incised washes; slightly to moderately consolidated. Deposits are lithologically similar to Qa; carbonate clasts are predominant in the northern and central parts of the quadrangle and volcanic clasts are predominant in the southern part. Unit grades laterally into Qa; contact between Qai and Qa in some places is arbitrary and may shift. Contains sediment transported and deposited during high-water stages or heavy flood discharges.

Qoa Older alluvium of Blue Diamond and Red Rock fans Pink to brown pebble to small cobble gravel with subordinate pebble-

bearing sand; moderately to well consolidated to locally cemented; petrocalcic carbonate horizon (calcrete) 1½–2 m thick occurs at or near the surface. Clasts are predominantly limestone and dolomite with subordinate quartzite. Surface of unit is slightly to well dissected, lacks channel-and-bar morphology, has well-developed desert pavement, and is dark colored and mottled on aerial photographs. Surface clasts have slight to moderate desert varnish; carbonate clasts are typically etched. Unit thickens westward to exposed thicknesses in excess of 5 m; unit feathers out to the east on upthrown fault blocks. Stippled where degraded and calcrete absent or weakly developed.

Qr Deposits of Duck Creek Terrace Pink to pale-brown pebble to cobble gravel, pebbly sand, and subordinate fine to coarse sand; moderately to well consolidated. Clasts include limestone, dolomite, quartzite, and volcanic rock fragments in varying proportions. Deposits occur in terraces along Paradise Valley and are related to backfilling and wash incision along Duck Creek.

Qog1 Older gravel deposits Dissected, consolidated to strongly cemented gravel deposits that represent early-generation alluvial-fan development derived from outside the quadrangle; within the quadrangle, the deposits feather out on top of Qts.

Qog2 Light-gray to pink-brown, imbricated, clast-supported pebble to cobble gravel capped by a matrix-supported petrocalcic (calcrete) horizon more than 3 m thick. Clasts mostly consist of limestone and dolomite with subordinate quartzite. At the surface, carbonate clasts are strongly etched and broken and possess slight to moderate petrocalcic coatings; the petrocalcic horizon is eroded and petrocalcic fragments form varying proportions of the surface clasts. Unit feathers out to the east and thickens westward to exposed thicknesses greater than 10 m.

Qog3 Light- to medium-brown sandy pebble to cobble gravel capped by a petrocalcic

(calcrete) horizon more than 2 m thick. Clasts are predominantly basalt and andesite with subordinate limestone, dolomite, and quartzite. The petrocalcic horizon occurs at the surface except in the extreme southeast part of the quadrangle where it is covered by a thin (1–2 m) veneer of bouldery alluvium (indicated by stippled pattern). Surface of unit has moderately to well-developed desert varnish; carbonate clasts are etched; bouldery veneer exhibits subdued to moderately preserved channel-and-bar morphology.

Qog4 Light- to medium-brown pebble to boulder gravel interstratified with pebbly fine calcareous sand; capped by a petrocalcic (calcrete) horizon more than 2 m thick. Gravel clasts are predominantly limestone and dolomite pebbles and cobbles. Surface of deposit is rounded and mantled with etched and broken carbonate fragments.

Qts Consolidated sediments White and light-gray to light- and pale-red fine sand interstratified with silt, pebbly sand, and pebble to small cobble gravel; moderately to well consolidated to strongly cemented. Layers of petrocalcic carbonate are common and have variable textures and fabrics; surface exposures are locally capped by a resistant petrocalcic crust. Fibrous and encrusting gypsum are common. Massive to flat laminated to shallowly trough laminated; scour and fill channel structures occur locally. Unit was deposited by streams; lacustrine sediments have not been documented.

— — — — — Contact Dashed where approximately located. Hash marks indicate that a geologic unit occurs in an incised channel or in a cut-and-fill terrace or that a younger geologic unit truncates an older geologic unit with butters-unconformity.

— — — — — Fault scarp Ball on downdropped side of escarpment

Urbanized area or artificial cut and/or fill for which geologic data are not available

Jonathan C. Matti and Fred W. Bachhuber, 1985

Supplementary mapping was provided by John W. Bell

Scale 1:24,000
CONTOUR INTERVAL 10 FEET

