SURFICIAL GEOLOGIC MAP OF THE WESTERN CRATER RANGE, GOLDWATER AIR FORCE RANGE, SOUTHERN ARIZONA

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Field mapping done in 1998

digital cartography by
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MAP EXPLANATION

GEOLOGIC CONTACTS

- Accurately located contact (±30 m)
- Map neat line

GEOLOGIC MAP UNITS

Piedmont Alluvial Deposits

- **Qy2** — **Late Holocene alluvium (< 2 ka)**
  Channels, undissected floodplains, low terraces, and active or recently active alluvial fans
- **Qy1** — **Middle to early Holocene alluvium (2 to 10 ka)**
  Undissected terraces and alluvial fans somewhat isolated from active fluvial systems
- **Qly** — **Late Pleistocene to early Holocene alluvium (7 to 15 ka)**
  Slightly, light-colored dissected terraces and alluvial fans
- **Ql** — **Late Pleistocene alluvium (10 to 150 ka)**
  Weakly to moderately dissected, gray-colored alluvial fans and terraces
- **Qlf** — **Fine-grained late Pleistocene alluvium (10 to 150 ka)**
  Fine-grained, weakly to moderately dissected alluvial fans and terraces
- **Qlc** — **Coarse-grained late Pleistocene alluvium (10 to 150 ka)**
  Coarse-grained, weakly to moderately dissected alluvial fans and terraces
- **Qm** — **Middle Pleistocene alluvium (150 to 750 ka)**
  Older relict fans with moderate to strong soil development and well-developed, entrenched tributary drainage networks
- **QTs** — **Late Tertiary alluvium (1.6 to 5.5 Ma)**
  Highly dissected, poorly preserved fan remnants composed of subrounded stones and subangular to angular cobbles

Eolian and Eolian / Alluvial Piedmont Deposits

- **Qe** — **Late Holocene eolian deposits (0 to 4 ka)**
  Eolian accumulations of sand and silt located adjacent to bedrock outcrops
- **Qle** — **Late Pleistocene alluvium and Holocene eolian deposits (< 150 ka)**
  Mixed young eolian deposits and intermediate alluvium

Deposits of Tenmile Wash

- **Qy2r** — **Late Holocene stream deposits (<1 ka)**
  Very young deposits in stream channels and on primary floodplains of the major washes
- **Qy1r** — **Holocene stream terrace deposits (< 10 ka)**
  Deposits associated with relict channels and upper or secondary floodplains of major washes
- **Qyre** — **Holocene stream terrace and eolian deposits (<10 ka)**
  Mixed young river terrace deposits and eolian deposits
- **Qlr** — **Late Pleistocene stream terrace deposits (10 to 150 ka)**
  Mixed Intermediate pebble, gravel and finer textured river terraces and young eolian sand and silt deposits
- **Qlre** — **Late Pleistocene stream terrace deposits and Holocene eolian deposits (<150 ka)**
  Mixed intermediate pebble, gravel and finer textured river terraces and young eolian sand and silt deposits

Colluvial Deposits

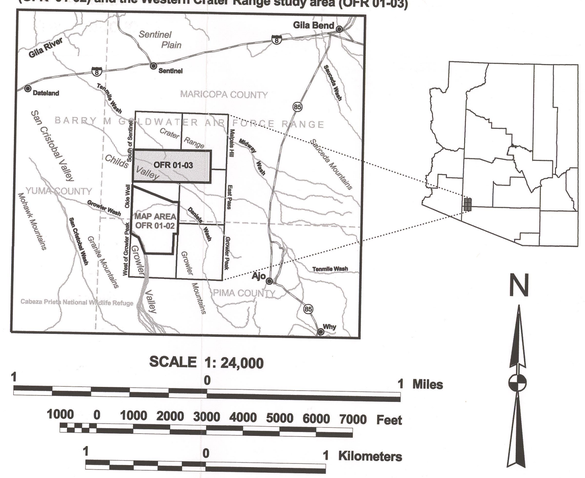
- **Qc2** — **Holocene colluvium (<10 ka)**
  Poorly sorted deposits that extend as elongate lobes from the mountain front
- **Qc1** — **Pleistocene colluvium (10 ka to 1 Ma)**
  Relict, darkly varnished colluvial slopes located adjacent to modern hillslopes

Bedrock Units

- **Tba** — **Basaltic andesite flows (middle to late Miocene)**
  Thin, mesa-capping flows 2 to 6 meters thick dated at 14.4 ± 0.7 Ma (Gray and Miller, 1984), 15.0 ± 2.0 Ma (Eberly and Stanley, 1978) and 15.52 ± 0.54 Ma (Shafiqullah and others, 1984)
- **Tc** — **Childs latite flows (middle Miocene)**
  More felsic volcanic flows that have been dated at 18.4 ± 0.9 Ma (Gray and Miller, 1984)
- **Thc** — **Holocrystalline Childs latite flows and intrusives (middle Miocene)**
  Light gray locally columnar jointed flows and subvolcanic intrusive bodies
- **Tsa** — **Sneed andesite, and associated andesitic flow tuffs and intrusive rocks (early Miocene)**
  Light-pinkish-tan to gray medium-grained flows, associated tuffs, and intrusive rocks dated at 22.0 ± 0.7 Ma (Gray and Miller, 1984)
- **Tsc** — **Arkosic sandstone and boulder conglomerate (Miocene)**

INDEX MAP OF SOUTHWESTERN ARIZONA

Showing the location of the Northern Growler Valley study area (OFR 01-02) and the Western Crater Range study area (OFR 01-03)



SCALE 1: 24,000

1 0 1 Miles

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

1 0 1 Kilometers

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