

GEOLOGIC MAP OF THE SOUTHERN PART OF THE VAIL 7.5' QUADRANGLE, PIMA COUNTY, ARIZONA

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MAP EXPLANATION

GEOLOGIC MAP SYMBOLS

Bedding

- Distinct planar bedding measured with standard accuracy indicated by solid, straight strike line
 - Facing inferred
 - Facing indicator or unknown
- Inclined
 - Vertical
 - Overtumed
- Contorted or variable bedding indicated by wavy strike line
- Indistinct or crudely measured bedding indicated by broken strike line
- Inclined bedding measured in crossbedded rocks indicated by solid, straight strike line with hatchures
- Horizontal bedding
- Apparent dip of bedding

Foliation

- Inclined transposed bedding
- Inclined gneissic foliation
- Weak shape fabric
- Planar tectonic foliation
- Planar tectonic foliation, with stretching lineation
- Mylonitic foliation

Cleavage

- Inclined close disjunct cleavage
- Inclined cleavage parallel to bedding
- Slaty cleavage
- Slaty cleavage, with lineation

Line Symbols

- Contact, showing attitude of contact surface (dashed where approximately located, queried where location guessed, dotted where concealed)
- Gradational contact
- Scratch contact (indicates contact necessary for polygon closure; not mapped based on geologic observation)
- Normal fault, showing attitude of fault surface (dashed where approximate, queried where guessed, dotted where concealed; ball and bar symbol on down-dropped side)
- Low-angle fault (dashed where approximate, dotted where concealed)
- Syncline fold hinge surface trace (dashed where approximate)
- Anticline fold hinge surface trace (dashed where approximate)
- Vein, showing attitude (dashed where approximate)
- Mafic dike
- Felsic dike

GEOLOGIC MAP UNITS

Quaternary Deposits

- Piedmont Alluvium**
 - Qs Quaternary alluvium, undivided
 - Qy Holocene alluvium, undivided (< 10 ka)
 - Qy2 Late Holocene alluvium (< 2 ka)
 - Qy1 Holocene alluvium (~2 to 10 ka)
 - Qly Holocene to late Pleistocene alluvium (0 to 130 ka)
 - Ql Late Pleistocene alluvium (~10 to 130 ka)
 - Qml Middle to late Pleistocene alluvium (~10 to 500 ka)
 - Qm Middle Pleistocene alluvium (~130 to 500 ka)
 - Qmp Middle Pleistocene alluvium over dissected pediment (~130 to 500 ka)
 - Qmo Middle to early Pleistocene alluvium (~500 ka to 2 Ma)
- Axial Stream Deposits**
 - Qr Quaternary river terraces, undivided
 - Qyrc Late Holocene channel deposits (< 100 years)
 - Qyrd Late Holocene river alluvium (< 150 years)
 - Qyra Recently abandoned late Holocene floodplain and terrace deposits (< 2 ka)
 - Qytr Holocene river terrace deposits (~2 to 10 ka)
 - Qlrr Late Pleistocene river terrace deposits (~10 to 130 ka)
 - Qmlr Middle Pleistocene river terrace deposits (~130 to 500 ka)
 - Qorr Early Pleistocene river terrace deposits (~1 to 2 Ma)

Hillslope Deposits

- Qc Holocene and Pleistocene hillslope colluvium

Quaternary or Tertiary Deposits

- QTs Early Pleistocene to late Miocene alluvium (~1 to 10 Ma)
- QTso Mapped exposures of QTs deposits beneath colluvium (~1 to 10 Ma)
- QTg Early Pleistocene to late Miocene gravel or conglomerate (~1 to 10 Ma)
- QTsc Pantano Formation and hillslope deposits mantling Pantano Formation, undivided

Tertiary Rocks

Miocene(?) Hydrothermal Rocks

- Tq Quartz veins and massive hydrothermal quartz
- c Hydrothermal carbonate
- Tex Silicified rock with unknown protolith
- sTc Silicified conglomerate, probably derived from Davidson Canyon facies of Pantano Formation
- sPzc Silicified Paleozoic carbonate rock, recognized by preserved textures in chert nodules
- sPq Silicified quartzite(?), recognized by preserved grain outlines
- sXgd Silicified granodiorite, derived from unit Xgd
- sXgs Hematite altered granodiorite, derived from unit Xgd

Pantano Formation

- Agua Verde facies**
 - Tavc Buff colored conglomerate with clasts of leucogranite from the Rincon Mountains
- Sedimentary breccias**
 - Txg Granite rock avalanche deposits
 - Txq Quartzite rock avalanche deposits
- Davidson Canyon facies**
 - Tdcs Silicified conglomerate
 - Tdf Mudstone with minor sandstone and locally abundant gypsum
 - Tds Sandstone, mudstone and conglomerate
 - Tdc Conglomerate, upper and lower undivided
- Upper Davidson Canyon Facies; includes rocks lithologically identical to units Tdf and Tdc, but interpreted to overlie porphyritic andesite unit (Ta)**
 - Tdu undivided conglomerate, sandstone, mudstone
 - Tduf mudstone
 - Tduc conglomerate
- Lower Davidson Canyon Facies; includes rocks lithologically identical to units Tdf and Tdc, but interpreted to underlie porphyritic andesite unit (Ta)**
 - Tdl undivided conglomerate, sandstone, and mudstone
 - Tdlf mudstone and limestone

Pantano Formation (cont.)

- Volcanic rocks**
 - Tap Crystal poor andesitic lava flows
 - Tdt Tuff and tuffaceous rocks
 - Tas Andesitic sandstone and conglomerate
 - Tac Andesitic conglomerate
 - Ta Porphyritic andesite
 - Tr Rhyolite ash-flow tuff

Mesozoic Rocks

Laramide(?) Igneous rocks

- Intermediate to mafic hypabyssal intrusive rocks

Biisbee Group

- Willow Canyon-Apache Canyon facies (Early Cretaceous) -- Drab lithofeldspathic sandstone, mudstone, and conglomerate
- KJg Glance Conglomerate (Early Cretaceous or Jurassic) -- Massive cobble to boulder conglomerate

Early Mesozoic rocks

- JTu Undivided mudstone, sandstone and sparse conglomerate
- JTm Mudstone, quartzose sandstone
- JTgs Sandstone, sparse conglomerate and mudstone

Paleozoic Sedimentary Rocks

- PI Carbonate rocks (Paleozoic)
- Pc Concha Limestone (Permian) -- Massive cherty limestone
- Ps Scherrer Formation (Permian) -- Fine-grained quartz arenite
- Psm Middle Member -- Medium-bedded dolomite and sandy dolomite
- Ep Epitaph Formation (Permian)
- Pem Middle member -- Fine-grained sandstone, mudstone, marl, and dolomite
- PeL Lower Member -- Medium-bedded dark gray dolomite
- PPe Earp Formation (Permian or Pennsylvanian) -- Limestone interbedded with sandstone grading up into mostly fine-grained quartz arenite with interbedded dolomite markers. Prominent chert pebble conglomerate marker bed in lower part.
- Chert-pebble conglomerate marker
- Other marker beds, traced locally
- PML Undivided Horquilla and Escabrosa formations (massive limestone)
- Ph Horquilla Formation (Pennsylvanian) -- Thick bedded to massive fossiliferous limestone, marly limestone, marl
- Marker beds, traced locally
- Mek Karst breccia (Mississippian?) -- Maroon mudstone, chert-pebble conglomerate, and sandstone
- Me Escabrosa Limestone (Mississippian) -- Massive cherty limestone
- Dm Martin Formation (Devonian) -- Medium-bedded dolomite, sandstone, and sandy dolomite
- Ca Abrigo Formation
- Cb Bolsa Quartzite (Cambrian) -- Fine- to coarse-grained feldspathic quartz arenite.

Proterozoic Rocks

Apache Group and diabase

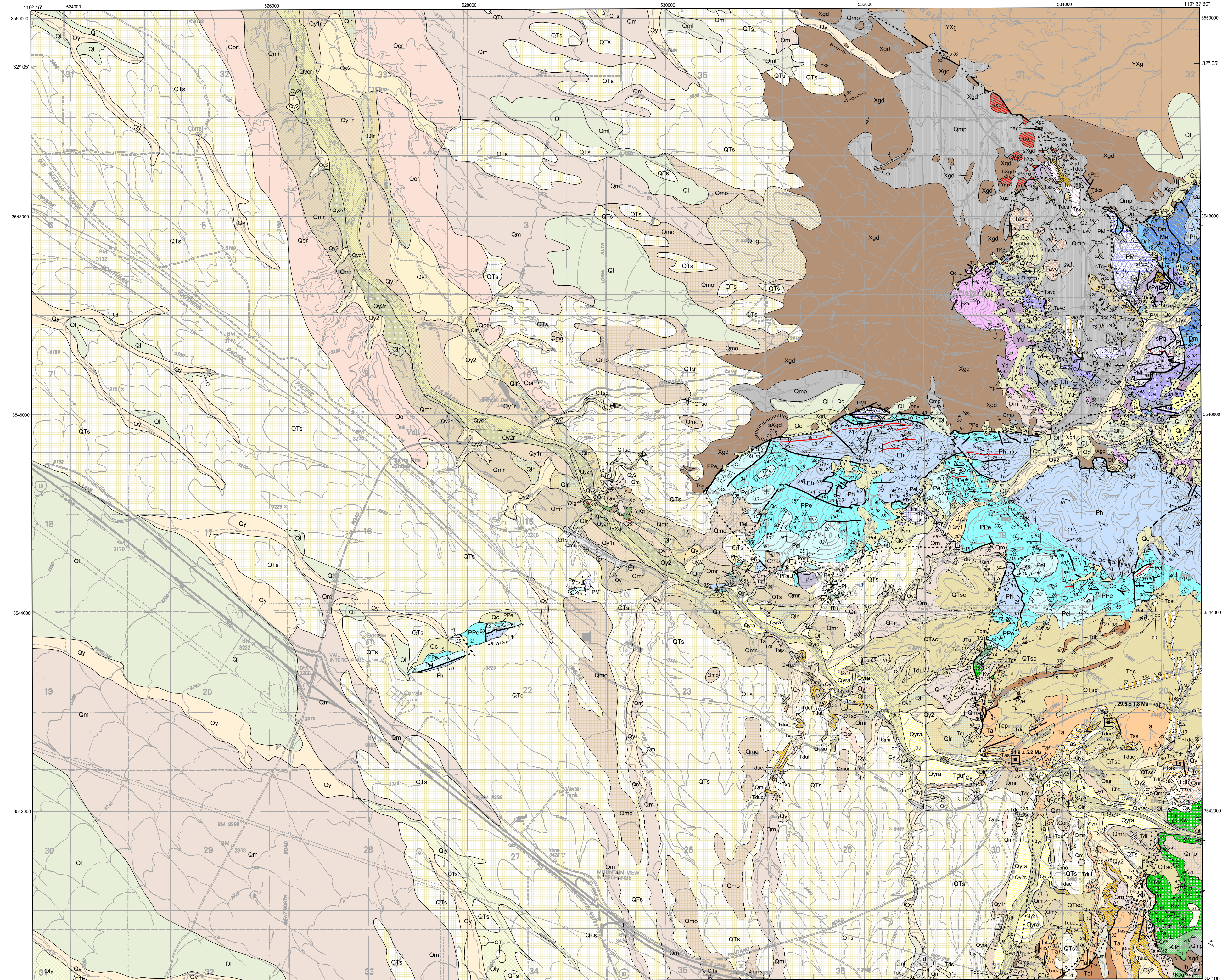
- Yp Pioneer Formation -- Maroon to gray sandstone, argillite and mudstone, with basal conglomerate
- Yd Sierra Ancha Diabase
- Ydp Pyroxenite

Igneous and metamorphic rocks

- Xg Granite (Middle or Early Proterozoic) -- Medium- to coarse-grained biotite granite; boundary with granodiorite (Xgd) not mapped
- Xgd Granodiorite (Early Proterozoic) -- Medium-grained, equigranular biotite and hornblende-biotite granodiorite
- Xp Pinal Schist(?) (Early Proterozoic) -- Pelitic granulites and gneiss

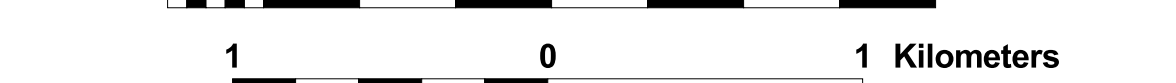
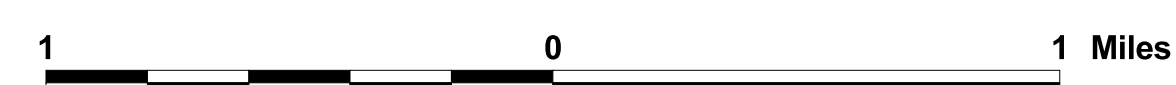
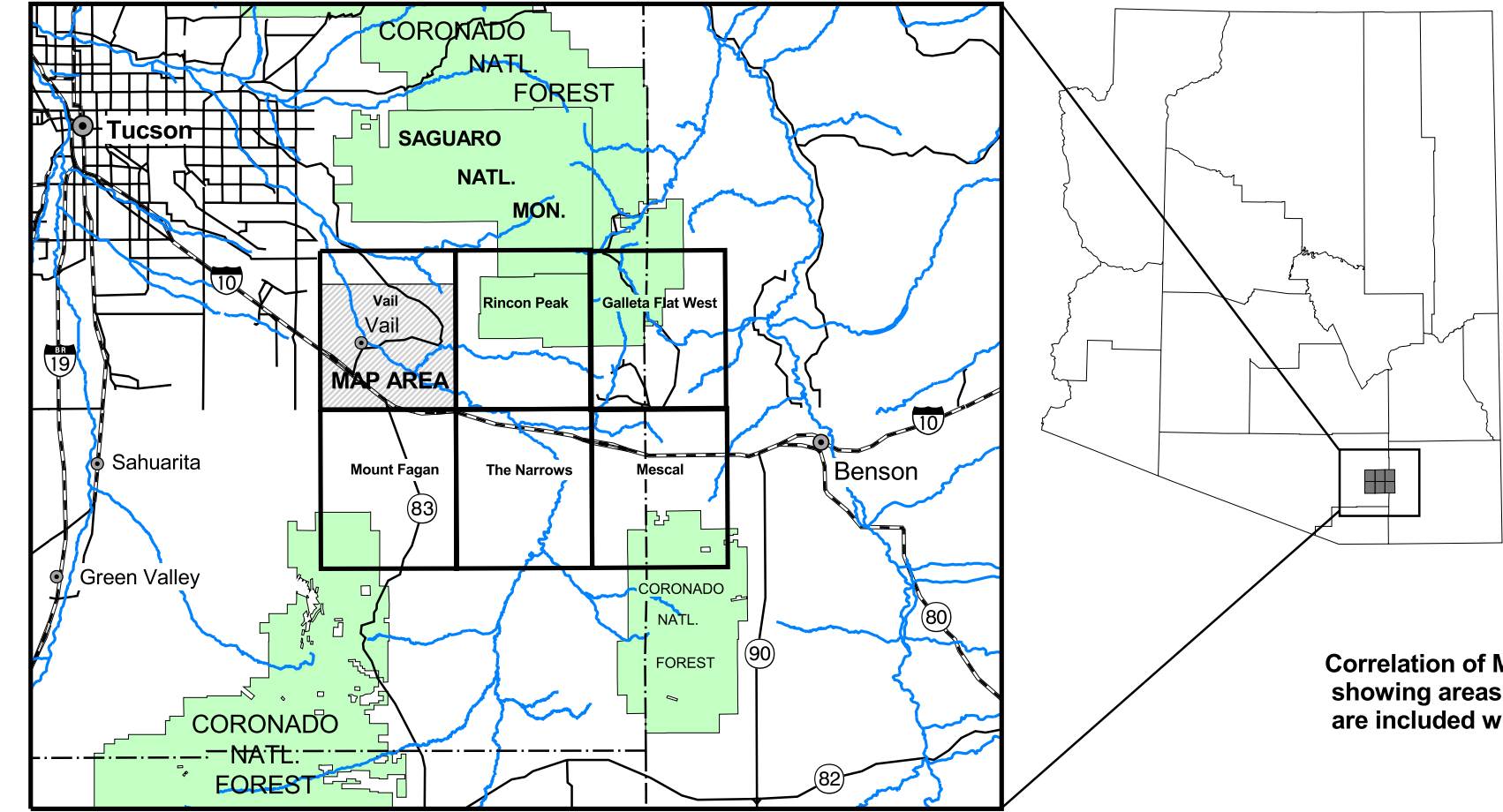
Miscellaneous Units

- d Disturbed



INDEX MAP OF THE CIENEGA GAP AREA

Showing the location of the map area in relation to Pima and Cochise Counties, Arizona, and the greater Tucson area



Base map is from USGS Vail, Arizona 1:24000 quadrangle, 1981.
Map Projection UTM, Zone 12, NAD 27.

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Correlation of Map Units and index map showing areas of mapping responsibility are included with the text.