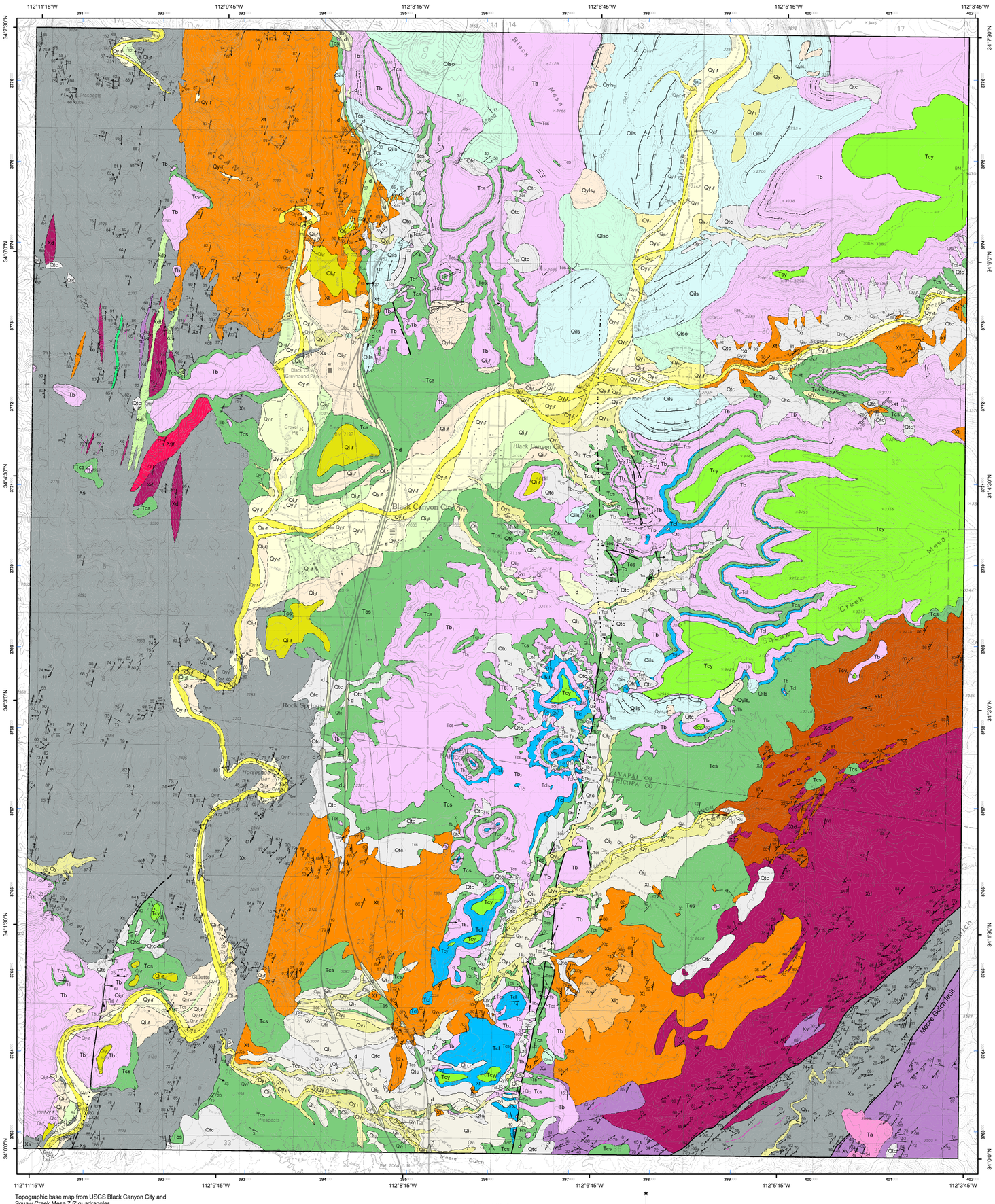


Topographic base map from USGS Black Canyon City and Squaw Creek Mesa 7.5' quadrangles.

North American Datum of 1927 (NAD27). Projection and 1,000-meter grid: Universal Transverse Mercator, zone 12.

SCALE 1:24,000

1 0.5 0 1 Miles

0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 Feet

1 0.5 0 1 Kilometers

UTM GRID AND 2007 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

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# Geologic map of the east half of the Black Canyon City 7 ½' Quadrangle and the west half of the Squaw Creek Mesa 7 ½' Quadrangle, Maricopa and Yavapai Counties, Arizona

by
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**Arizona Geological Survey Digital Geologic Map 64**

July 2008

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*(Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under assistance award number 06HQAG0051. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.)*

## Map Unit Descriptions

*For more detailed unit descriptions, see accompanying text.*

### Surficial Units

d — **Disturbed areas (<~100 yrs) -** Disturbed areas due to excavation, land and road fill, quarries and landfills.

### River Deposits

$Qy_5f$ — **Late Holocene active river channel deposits (<~100 yrs) -** Active open channel deposits of Agua Fria, Black Canyon Creek, and Squaw Creek.

$Qy_5f$ — **Late Holocene river terrace and point-bar deposits (<~100 yrs) -** Low-lying terraces, and bar-and-swale topography in point bars.

$Qy_2f$ — **Late Holocene river terrace deposits (<~1.5 ka) -** Terraces, between 1 and 2m above main channels ($Qy_5f$).

$Qy_1f$ — **Middle Holocene river terrace deposits (~1.5 to ~5.5 ka) -** Terraces, between 1.5 and 3m above main channels ($Qy_5f$).

$Qi_3f$ — **Late Pleistocene river terrace deposits (~10 to ~200 ka) -** Terraces, between 3 and 10m above main channels ($Qy_5f$).

$Qi_2f$ — **Middle Pleistocene river terrace deposits, younger member (~200 to ~600 ka) -** Terraces, between 15 and 30m above main channels ($Qy_5f$).

$Qi_1f$ — **Middle Pleistocene river terrace deposits (~600 ka to ~1 Ma) -** Terraces, between 50 and 60m above main channels ($Qy_5f$).

### Piedmont Deposits

$Qy_5$ — **Late Holocene active stream channel deposits (<~100 yrs) -** Active open channel deposits of Little Squaw Creek and Moore Gulch.

$Qy_3$ — **Late Holocene alluvium (<~1.5 ka) -** Channel and low terrace deposits associated with piedmont tributaries.

$Qy_2$ — **Middle Holocene alluvium (~1.5 to ~5.5 ka) -** Abandoned channel and terrace deposits that flank piedmont tributaries.

$Qy_1$ — **Early Holocene alluvium (~5.5 to ~10 ka) -** Channel and terrace deposits that flank $Qy_2$ deposits.

$Qi_2$ — **Middle to Late Pleistocene alluvium, younger member (~10 to ~600 ka) -** Relatively flat surfaces, typically incised between 6 and 15m, perched on bluffs of Chalk Canyon Formation.

$Qi_1$ — **Early Pleistocene alluvium (~600 ka to ~1.5 Ma) -** Isolated planar surfaces of older alluvium fans, typically intrusive contact 30-60m above main drainages.

Qtc — **Quaternary talus and colluvium, undivided -** Unconsolidated, poorly-sorted, angular to sub-rounded colluvial deposits.

### Landslide Deposits

$Qyls_d$ — **Holocene landslide deposits (<~10 ka) -** Landslide-derived debris composed of Chalk Canyon Formation and basalt lava.

Qils — **Pleistocene landslides (~10 ka to ~ 800 ka) -** Landslide-derived debris composed of Chalk Canyon Formation and basalt lava.

Qlso — **Older Pleistocene landslides (>~800 ka) -** Highly degraded landslide-derived debris composed of Chalk Canyon Formation and basalt lava.

### Bedrock Units

Tcy — **Younger conglomerate (Miocene) -** Conglomerate with clasts of felsic and mafic granitoid, felsic metavolcanics, and schist.

Ta — **Hornblende andesite (Miocene) -** Andesitic lava containing 5-25%, 2-3mm euhedral hornblende phenocrysts.

Tb — **Basalt (Miocene) -** Basalt lava containing 2-10%, 0.5-3mm olivine, pyroxene, and subordinate plagioclase phenocrysts.

$Tb_{1-4}$ — **Basalt (Miocene) -** A sub-set of basalt flows within the basalt unit (Tb) that are numbered 1-4 (older to younger).

Tcl — **Fine-grained Chalk Canyon Formation (Miocene) -** Variably calcareous mudstone and shale with lesser amounts of carbonate and fine-grained sandstone.

Tcs — **Sandstone-conglomerate facies of the Chalk Canyon Formation, (Miocene) -** Dominantly medium- to thick-bedded conglomerate, sandstone, and pebbly sandstone.

Xdb — **Diorite (Paleoproterozoic) -** Fine- to medium-grained weakly foliated to non-foliated diorite.

Xgr — **Granitoid (Paleoproterozoic) -** Medium-grained granitoid, strongly altered and sheared.

Xlg — **Leucogranite (Paleoproterozoic) -** Fine- to medium-grained leucogranite containing less than 5% biotite.

Xtp — **Porphyritic leucogranite (Paleoproterozoic) -** Quartz and potassium feldspar porphyritic, fine-grained leucogranite matrix porphyry.

Xt — **Tonalite (Paleoproterozoic) -** Medium- to coarse-grained tonalite that grades into granodiorite towards the southwest.

Xtd — **Tonalite-diorite complex (Paleoproterozoic) -** A plutonic complex consisting of mixed medium- to coarse-grained tonalite and fine- to medium-grained diorite.

Xd — **Diorite-metabasite complex (Paleoproterozoic) -** Mafic igneous complex consisting mostly of fine- to medium-grained diorite with lesser metabasite and tonalite.

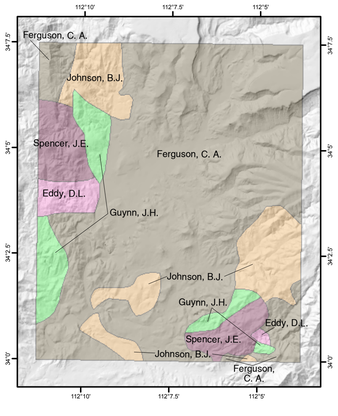
Xv — **Felsic metavolcanics (Paleoproterozoic) -** Porphyritic rhyolite and rhyodacite.

Xs — **Schist (Paleoproterozoic) -** Quartz-sericite schist, chloritic schist, and amphibolite schist, locally including zones of ferruginous chert, rusty calcareous schist and marble.

Xst — **Talc Schist (Paleoproterozoic) -** Talc schist.

## Bedrock Mapping Responsibility

Quaternary geology mapped by Haddad, D.E.




## Map Symbol Descriptions

### Primary Sedimentary Structure

50 Bedding

### Primary Igneous Structure

24 Primary igneous foliation; aligned phenocrysts in plutonic rocks, flow-foliation in lavas or hypabyssal porphyritic rocks.

42 Eutaxitic foliation in ash-flow tuff

### Intrusive Structure

15 Compositional layering parallel to foliation in metamorphic and igneous rocks

### Brittle Structure

22 Fault that does not correspond to a mapped trace

64 Slickenline lineation

### Mylonitic Structure

51 Mylonitic foliation and associated stretching lineation

### Other

57 Foliation or layering of unknown origin

32 Dip of contact, fault, or dike

### Line Symbols

Contact - solid where accurately located, dashed where approximate

Landslide headwall scarp - solid where accurately located, dashed where approximate

Fault - solid where accurately located, dashed where approximate, dotted where concealed beneath surficial units

Intra-formational contact

Ferruginous chert/quartzite/carbonate beds

Mafic dike

### Ductile Structure

1st, 2nd and 3rd generation ductile fabric elements, described as various types of cleavage, foliation and schistosity, are depicted in terms of relative age at each individual station, and it should not be assumed that they are regionally correlative based on the hierarchy displayed on this map. Fabric elements at each station are described in the data (shapefiles) accompanying this map. The location of field stations with more than one fabric element corresponds to the oldest fabric element as plotted on the map. Others are shown as close as reasonably possible. The oldest fabric element is typically bedding, mylonitic foliation, or primary igneous foliation such as eutaxitic foliation or flow-foliation. Two fabrics are commonly recognized at many field stations, three sparsely, and four rarely. hierarchy displayed on this map.

65 First generation ductile foliation. This is typically the prominent foliation at most field stations, and it corresponds mostly to schistosity, slatey cleavage, or generic axial planar cleavage.

Vertical first generation ductile foliation.

26 First generation ductile lineation. In most cases this is an intersection lineation, but it is also described as a mineral lineation, or the hinge line of folds.

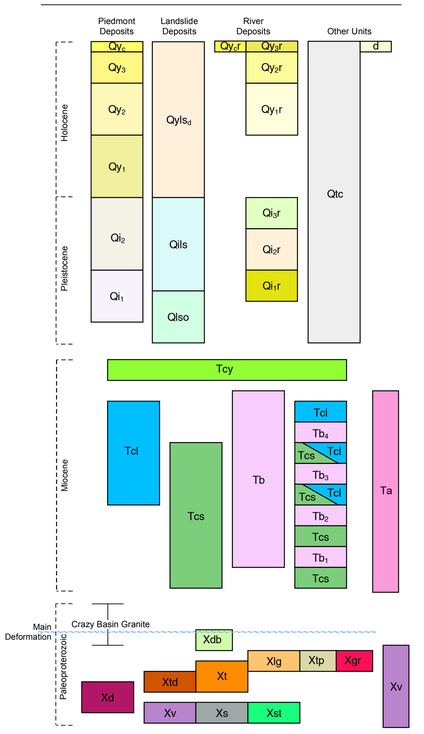
79 Second generation ductile foliation. This is typically a lesser foliation corresponding to crenulation cleavage (in pelitic metasedimentary rocks) or shear bands (especially where the older fabric element is mylonitic foliation).

Vertical second generation ductile foliation.

41 Second generation ductile lineation. In most cases this is a crenulation lineation, but in some areas it is described as a mineral lineation, or the hinge line of second generation folds.

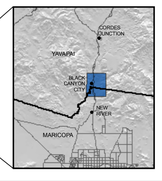
28 Third generation ductile lineation. In most cases this fabric is an intersection lineation, crenulation lineation, mineral lineation, or the hinge line of minor folds.

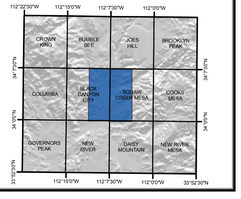
## Unit Correlation Diagram




ARIZONA COUNTIES
Mapped Area Shown in Blue

LOCATION OF MAPPED AREA
Mapped Area Shown in Blue




ADJOINING 7.5' QUADRANGLES
Mapped Area Shown in Blue