



**CORRELATION OF MAP UNITS**

Surficial and Volcanic Deposits	Quaternary	Quaternary
Q1	Q1	Q1
Q2	Q2	Q2
Q3	Q3	Q3
Q4	Q4	Q4
Q5	Q5	Q5
Q6	Q6	Q6
Q7	Q7	Q7
Q8	Q8	Q8
Q9	Q9	Q9
Q10	Q10	Q10
Q11	Q11	Q11
Q12	Q12	Q12
Q13	Q13	Q13
Q14	Q14	Q14
Q15	Q15	Q15
Q16	Q16	Q16
Q17	Q17	Q17
Q18	Q18	Q18
Q19	Q19	Q19
Q20	Q20	Q20
Q21	Q21	Q21
Q22	Q22	Q22
Q23	Q23	Q23
Q24	Q24	Q24
Q25	Q25	Q25
Q26	Q26	Q26
Q27	Q27	Q27
Q28	Q28	Q28
Q29	Q29	Q29
Q30	Q30	Q30
Q31	Q31	Q31
Q32	Q32	Q32
Q33	Q33	Q33
Q34	Q34	Q34
Q35	Q35	Q35
Q36	Q36	Q36
Q37	Q37	Q37
Q38	Q38	Q38
Q39	Q39	Q39
Q40	Q40	Q40
Q41	Q41	Q41
Q42	Q42	Q42
Q43	Q43	Q43
Q44	Q44	Q44
Q45	Q45	Q45
Q46	Q46	Q46
Q47	Q47	Q47
Q48	Q48	Q48
Q49	Q49	Q49
Q50	Q50	Q50
Q51	Q51	Q51
Q52	Q52	Q52
Q53	Q53	Q53
Q54	Q54	Q54
Q55	Q55	Q55
Q56	Q56	Q56
Q57	Q57	Q57
Q58	Q58	Q58
Q59	Q59	Q59
Q60	Q60	Q60
Q61	Q61	Q61
Q62	Q62	Q62
Q63	Q63	Q63
Q64	Q64	Q64
Q65	Q65	Q65
Q66	Q66	Q66
Q67	Q67	Q67
Q68	Q68	Q68
Q69	Q69	Q69
Q70	Q70	Q70
Q71	Q71	Q71
Q72	Q72	Q72
Q73	Q73	Q73
Q74	Q74	Q74
Q75	Q75	Q75
Q76	Q76	Q76
Q77	Q77	Q77
Q78	Q78	Q78
Q79	Q79	Q79
Q80	Q80	Q80
Q81	Q81	Q81
Q82	Q82	Q82
Q83	Q83	Q83
Q84	Q84	Q84
Q85	Q85	Q85
Q86	Q86	Q86
Q87	Q87	Q87
Q88	Q88	Q88
Q89	Q89	Q89
Q90	Q90	Q90
Q91	Q91	Q91
Q92	Q92	Q92
Q93	Q93	Q93
Q94	Q94	Q94
Q95	Q95	Q95
Q96	Q96	Q96
Q97	Q97	Q97
Q98	Q98	Q98
Q99	Q99	Q99
Q100	Q100	Q100

**DESCRIPTION OF MAP UNITS**

Unit	Description
Q1	Alluvium (Holocene)—Silt, sand, gravel, and boulders. Mapped unit includes alluvial fans and floodplain deposits.
Q2	Terrace deposits (Holocene and Pleistocene)—Fluvial deposits of boulders, gravel, sand, and silt; poorly sorted and partly consolidated.
Q3	Landslide deposits (Holocene and Pleistocene)—Unsorted and unconsolidated rock debris, consisting mainly of large blocks of volcanic and sedimentary rocks.
Q4	Gravel, undivided (Holocene, Pleistocene, and Pliocene)—Consolidated and partly consolidated boulders, gravel, sand, and silt derived from older gravel deposits of various rock types commonly sand or interbedded with colluvium. Includes alluvial fan, talus, and pediment deposits.
Q5	Intermediate basaltic rocks (Pliocene and Pliocene?)—General basaltic lava flows not associated with gravel deposits (Lerner, 1958).
Q6	Verde Formation (Pliocene and Miocene)—Individuals of interbedded conglomerate, gravel, sandstone, siltstone, and limestone. Includes rock types similar to those of Verde Formation (Lerner, 1958).
Q7	Hickey Formation (Pliocene and Miocene)—Basaltic flows interbedded with the Verde and Verde Formation. Includes interbedded basaltic flows of probably similar age (Kriger, 1965).
Q8	Dacitic to trachytic volcanic flows (Pliocene and Miocene)—Includes tertiary andesite units (Kriger, 1965; A, B, C, D, and E) and is correlative with basaltic flows of Hickey Formation. Rocks mapped on Martin, Cottonwood, and Blue Mountains are dacitic or mildly trachytic and therefore included.
Q9	Dacitic to trachytic plugs and dikes (Pliocene and Miocene)—Correlative with unit above.
Q10	Basaltic flows (Pliocene and Miocene)—Mostly olivine basalt flows, cones, and tuffaceous deposits. Includes some conglomerate and andesite (Kriger, 1965).
Q11	Andesite (Pliocene and Miocene)—Map unit includes andesitic plugs, domes, flow breccias, and mud flows, andesitic and rhyolitic tuff, and gravel composed largely of andesitic fragments (Kriger, 1965).
Q12	Older sedimentary deposits (Pliocene, Miocene, and Oligocene)—Includes conglomerate, sandstone, shale, siltstone, and limestone. Includes some interbedded tuffaceous rocks, largely rhyolitic. Generally conglomeratic with abundant clasts of Precambrian rocks. This irregularly mapped unit includes the basal Hickey Formation. Includes sedimentary rocks correlative with the basal Hickey Formation.
Q13	Rhyolite dikes, plugs, and tuff (Miocene)—At Copper Basin (Landon and Lowell, 1961).
Q14	Andesite dikes and plugs (Miocene and Oligocene)—In south-central map area.
Q15	Quartz monzonite and related rocks (Lower Tertiary and Upper Cretaceous)—Forms Upper Basin stock, consisting of quartz monzonite, quartz monzonite porphyry, and aplite. Also forms one plug about 1/2 mile north of Granite Mountain.
Q16	Quartz latite porphyry dikes (Lower Tertiary and Upper Cretaceous).
Q17	Kalbar Formation (Lower Permian)—Heterogeneous mixture of calcareous, thin-bedded, sandy limestone; gray calcareous sandstone; and white quartz. Forms cliffs or steep, near-vertical slopes. Crops out in northeast corner of map area.
Q18	Torowap Formation (Lower Permian)—Upper unit is sequence of alternating grayish-orange and pale-brown calcareous sandstone and siltstone and some shaly mudstone; forms steep slopes. Middle unit is prominent, light-colored, yellowish-orange calcareous sandstone and very sandy limestone. Basal unit is grayish-orange, medium-grained sandstone and gray, calcareous, cliff-forming sandstone.
Q19	Cocconino Sandstone (Lower Permian)—Falls to grayish-orange, fine-grained, cross-bedded quartz sandstone. Forms steep, near-vertical slopes and north-facing cliffs. Contact with underlying Supai Formation conformable or intertonguing, with locally placed in zone of color change from red to pale shades of Cocconino.
Q20	Supai Formation as defined by Huddle and Hetrovsky (1945). Upper Member (Lower Permian)—Sequence of sandstone and interbedded siltstone. Sandstone is medium to coarse grained, calcareous, and contains thin-bedded, calcareous, with large-scale cross-bedding; siltstone is medium to fine grained, calcareous, and contains thin-bedded, calcareous, with large-scale cross-bedding. Middle Member (Lower Permian)—Medium to coarse grained, calcareous sandstone, gray limestone, and pale-brown conglomerate; forms moderate slope. Lower Member (Upper, Middle, and Lower Permian)—Falls to dark-red to brown, thin to thick-bedded siltstone interbedded with calcareous sandstone and limestone. Basal portion is conglomerate and shaly fill erosion pockets in underlying Redwall Limestone.
Q21	Redwall Limestone (Upper and Lower Permian)—Light gray to white, subbed to coarsely crystalline, thin to thick-bedded limestone. Contains lenses and nodules of white to gray, fine-grained chert; forms cliffs or ledges. In four members (Huddle, 1945, p. 21-22) are present.
Q22	Martin Limestone (Upper and Middle Devonian)—Light to dark-gray limestone, dolomite, limestone, dolomite, and some clay calcarenite and sandstone; forms series of ledges (Huddle and Hetrovsky, 1945). Includes subdivisions A, B, C, and D of others (Huddle, 1945, p. 21-22) are present.
Q23	Bright Angel Shale (Middle and Lower Cambrian)—Light-green siltstone and shale interbedded with brown to reddish-brown, coarse-grained, thin-bedded sandstone of underlying Tonto Limestone. Thin beds of light-gray dolomite in upper part. Forms slope or weak cliffs. Exposed only in northeastern corner of map area.
Q24	Tapeats Sandstone (Middle and Lower Cambrian)—Brown and reddish-purple, medium to coarse-grained, cross-bedded sandstone. Includes lenses of granite and pebbles formed with siliceous volcanic material.

**PROTEROZOIC INTRUSIVE ROCKS**

Unit	Description
X1	Della Granite (Middle Proterozoic)—Medium to coarse-grained, massive granite, locally porphyritic (Kriger, 1965).
X2	Granite (Early Proterozoic)—Coarse-grained, porphyritic granite (Early Proterozoic)—Generally fine grained.
X3	Granite (Early Proterozoic)—Subsided to microfoliated, slightly varied, locally coarse-grained porphyritic granite at Granite Mountain.
X4	Mostly granitic rocks (Early Proterozoic)—Granite with irregularly and randomly spaced xenoliths and pendants of stratified rock.
X5	Cabon (Early Proterozoic)—Fine to medium-grained, with hornblende and muscovite-bearing plagioclase (Anderson and Crassey, 1959; Kriger, 1965).
X6	Alaskite and related rocks (Early Proterozoic)—Includes quartz monzonite, porphyritic alaskite, and aplite, as well as unsorted alaskite, aplite, and quartz monzonite mapped by Kriger (1965) and alaskite and aplite mapped by Anderson and Crassey (1959).
X7	Prescott granodiorite (Early Proterozoic)—Fine to medium-grained with plagioclase, quartz, potassium feldspar, biotite, sphene, and accessory minerals (Kriger, 1965); also includes unsorted coarse- and fine-grained granite (Kriger, 1965).
X8	Government Canyon granodiorite (Early Proterozoic)—Medium-grained, equigranular to slightly porphyritic; fault and shear zone associated massive to strongly foliated (Kriger, 1965). Life apparent age of 1770 ± 15 m.y. (Anderson and Crassey, 1959).
X9	Granodiorite porphyry dikes (Early Proterozoic)—Zoned to hornblende-bearing, composed of quartz and plagioclase. Dikes cross intrusive contact of San Creek Group and quartz diorite described below.
X10	Quartz diorite (Early Proterozoic)—Medium-grained; contains stubby hornblende crystals, biotite, plagioclase, minor orthoclase and may contain small quartz grains. Grades eastward into Redwall at Cherry, Ariz., where facies is similar to fine-grained with slender hornblende crystals, biotite, plagioclase, quartz, and coarse orthoclase content. Life iron apparent age of 1760 ± 15 m.y. (Anderson and Crassey, 1959).

**EARLY PROTEROZOIC STRATIFIED ROCKS**

All units of Early Proterozoic age Maxial Group and Texas Gulch Formation probably younger than all Early Proterozoic intrusive units.

**MAXIAL GROUP**—Reddish-orange to purple, fine to medium-grained quartzite. Correlated by Kriger (1965) with Maxial Group of Landon (1952, 1959) in Maxial Mountains of central Arizona.

**TEXAS GULCH FORMATION**—Purple to gray siltstone alternating with light to medium gray siltstone, sandstone, and conglomerate. Includes rhyolite, quartz, and basaltic dikes and tuffaceous rocks. Rhyolite tuff is mainly quartz, sericite, and varied amounts of volcanic rocks from fine to coarse-grained, to coarse or coarse conglomerates; most clasts flattened and stretched, variously foliated. Contains linear fragments in tuffaceous matrix, rhyolite, and sericite which may represent boudin fragments.

**METIC VOLCANIC ROCKS**—Mostly stratified volcanic rocks in western part of quadrangle but includes other rock types.

**SEDIMENTARY AND VOLCANIC ROCKS**—In western part of quadrangle.

**NIGHTMARE**—Mostly schistose rocks of pelitic protolith intruded by igneous granitic and pegmatite dikes. Some granitic material may have formed from partial melting of host rocks.

**RHYOLITE**—Flow and related material between Shylock fault zone and Prescott-Flores fault zone. Includes rhyolite flows, rhyolite breccias, and rhyolite tuffs. Includes rhyolite flows originally mapped as Texas Gulch Formation of Landon (1952, 1959) in Maxial Mountains (Anderson and Crassey, 1959; Kriger, 1965; Anderson and Crassey, 1959).

**GRAPESVINE GULCH FORMATION**—Tuffaceous metasediments, volcanic breccias, minor interbedded andesitic and dacitic flows, crystalline tuffs, and minor dikes (Anderson and Crassey, 1959; Lindberg, 1966).

**RHYOLITE EAST OF SHYLOCK FAULT ZONE**—Flows, breccias, and tuffs. Includes rhyolite flows, breccias, and tuffs of Hesperian Rhyolite, fine-grained rhyolite, rhyolite tuff, and rhyolite breccias of Hesperian Rhyolite, and locally interbedded rhyolite flows of Odessa and One Basalts (Anderson and Crassey, 1959).

**RHYOLITE WEST OF SHYLOCK FAULT ZONE**—Rhyolite with large phenocrysts of quartz and feldspar and a felsic matrix (Quartz porphyry of Anderson and Crassey, 1959; Cleopatra Crystal Tuff of Lindberg, 1966).

**ANDESITE AND BASALT EAST OF SHYLOCK FAULT ZONE**—Flows, agglomerates, and tuffaceous sedimentary rocks. Includes interbedded andesitic flows and agglomerates of Hesperian Rhyolite, basaltic flows and interbedded tuffaceous sedimentary rocks of One Basalt, interbedded basaltic agglomerates and flows of Hesperian Rhyolite, porphyritic andesite flows of Hesperian Rhyolite, and porphyritic andesite flows of One Basalt (Anderson and Crassey, 1959).

**DIORITE EAST OF SHYLOCK FAULT ZONE**—Porphyritic, with conspicuous feldspar phenocrysts as well as small quartz phenocrysts. (Dacite of Burt Canyon of Anderson and Crassey, 1959).

Base by the U.S. Geological Survey, 1981

GEOLOGIC MAP OF THE PRESCOTT 30-X 60-MINUTE QUADRANGLE, ARIZONA

By

G.H. Billingsley, C.M. Conway, and L.Sue Beard

1988

THIS MAP IS PRELIMINARY AND HAS NOT BEEN REVIEWED FOR CONFORMITY WITH U.S. GEOLOGICAL SURVEY EDITORIAL STANDARDS AND STRATIGRAPHIC NOMENCLATURE. (ANY USE OF TRADE NAMES IS FOR DESCRIPTIVE PURPOSES ONLY AND DOES NOT IMPLY ENDORSEMENT BY THE USGS.)

