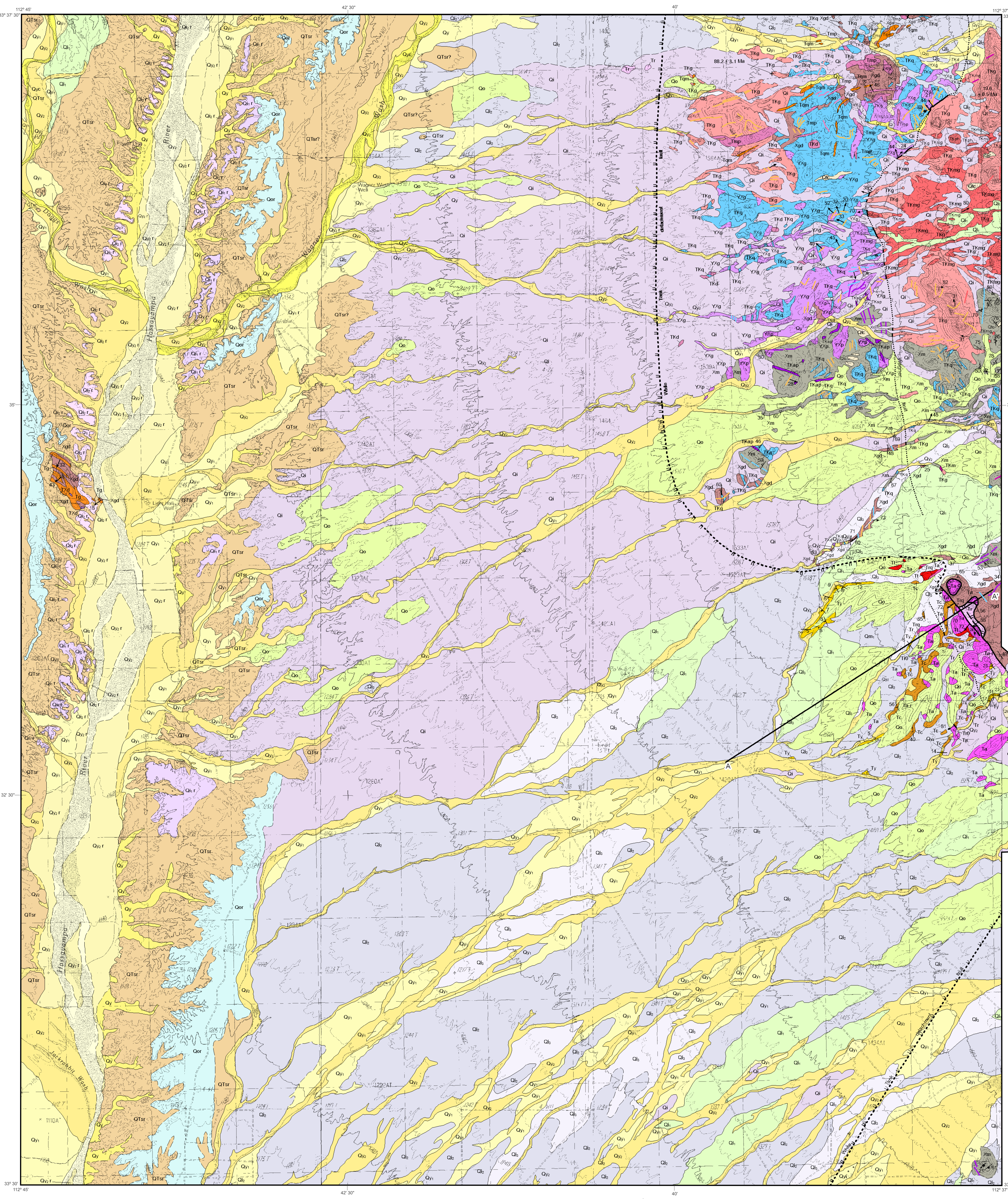
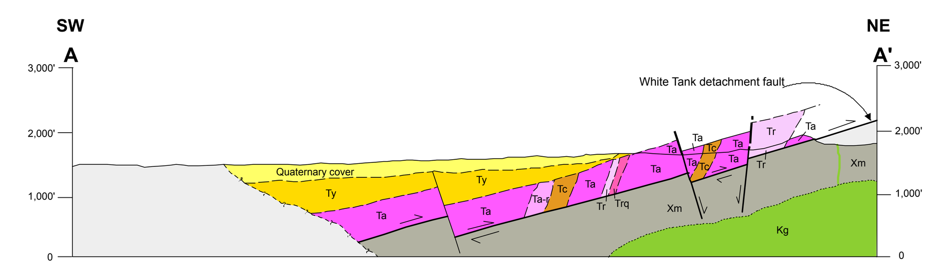
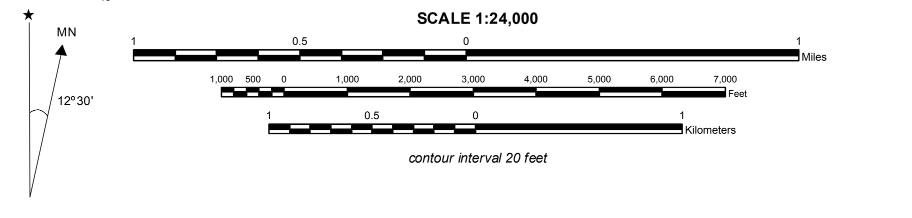


Topographic base from USGS Wagner Wash Well 7.5' quadrangle, compiled from aerial photographs taken 1951 and 1960, field checked in 1962. Transverse Mercator projection, NAD 27 datum, UTM zone 12 meters. Reprojected to NAD 83, stateplane feet. Magnetic declination 12.5° east of true north. Contour interval 20 feet.





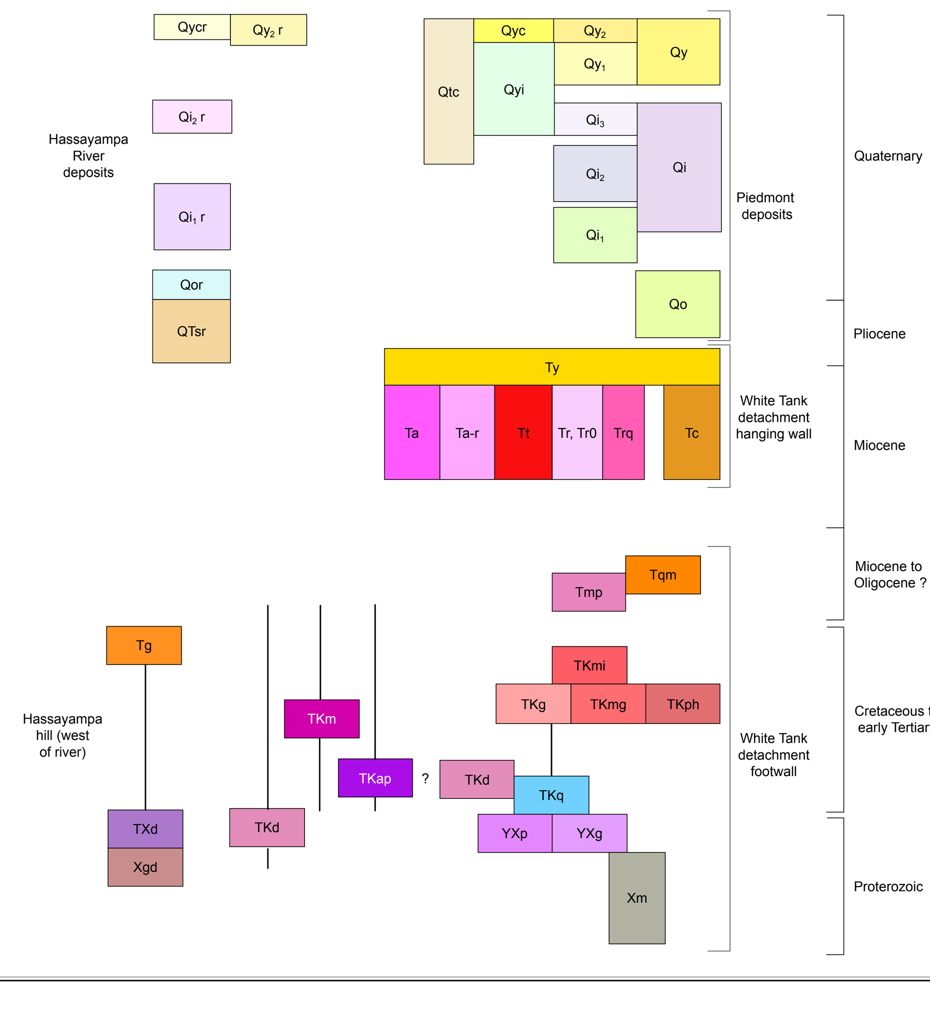
Map Legend

- Bedding, accurate
- Generic foliation
- Schistosity
- Inclined flow foliation
- Gneissic layering
- Vertical gneissic foliation
- Slickenside striae lineation
- Lineation in cumulate rocks
- Fault attitude
- Contact, accurate
- Contact, approximate
- Fault, accurate
- Fault, approximate
- Fault, concealed
- White Tank detachment fault, accurate (barbs on hanging wall)
- White Tank detachment fault, concealed (barbs on hanging wall)

Dikes

- Quartz monzonite porphyry dike (unit Tqm)
- Monzonite porphyry dike (unit Tmp)
- Basaltic dike (unit Tb)
- Mafic dike (unit TKm)
- Andesite porphyry dike (unit TKap)
- Fine-grained diorite stocks and dikes (unit TXd)
- Dacite porphyry dike (unit TKd)
- Rhyolite porphyry dike (unit TKq)

Stratigraphic Correlation diagram



Unit Descriptions

Surficial map units

Piedmont surficial deposits cover most of the Wagner Wash Well 7.5' quadrangle, with fairly extensive exposures of Quaternary to late Tertiary Hassayampa River deposits in the western part of the quadrangle. The lower margins of the piedmonts are defined by their intersection with relict river deposits. Approximate age estimates for the various units are given in parentheses after the unit name. Abbreviations are ka, thousands of years before present, and Ma, millions of years before present.

Piedmont Alluvium

Qyc — **Late Holocene active channel deposits of larger washes** – Poorly sorted to very poorly sorted sand, pebbles, and cobbles in channels of larger washes. Also includes minor bars and low terraces, where deposits are generally sand and silt with minor gravel.

Qy_2 — **Late Holocene deposits in active stream channels, low terraces, and alluvial fans** – Very young deposits associated with active or recently active fluvial systems. Channel deposits typically consist of sand and pebbles with some cobbles and small boulders in middle and upper piedmont areas, and sand and some pebbles lower on the piedmont. Terrace and fan deposits typically consist of sand and silt with some gravel lenses. Fan and terrace surfaces typically are planar where deposits are fine and gently undulating where deposits are coarser, with gravel bars and finer-grained swales. Desert pavement development is minimal and rock varnish is very light or nonexistent. Soil development is weak. Surface dissection is minimal and is associated with channels that are incised up to 1.5 m below adjacent fans or terraces. Channel patterns are variable, including anastamosing or distributary linked channels and separate small tributary channels feeding into larger channels.

Qy_1 — **Late to early Holocene deposits on alluvial fans and terraces** – Young deposits associated with recently active alluvial fans and terraces. In middle and upper piedmont areas, deposits are poorly sorted, consisting sand, silt, pebbles, and cobbles; in lower piedmont areas, deposits are typically sand and silt with minor gravel. Surface relief varies with particle size, with relict bar and swale topography where deposits are gravelly and relatively smooth surfaces where sand and silt predominate. Soil development is weak, with some soil structure and minor carbonate accumulation. Surfaces typically are brown to gray, with common gravel litter but minimal desert pavement or rock varnish.

Qy — **Holocene alluvial deposits, undifferentiated**

Qyi — **Holocene and late Pleistocene alluvial deposits** – Broadly rounded alluvial fans, and terraces and scoured benches along smaller tributary washes. Qyi surfaces are less than 1 m above active channels. They are primarily covered by a thin (< 1 m) veneer of Holocene fine-grained alluvium (Qy_2 and Qy_1) over reddened Pleistocene alluvium (Qi_2, Qi_1 or Qio) or eroded basin-fill deposits (QTs). The older units are exposed in scoured, eroded benches adjacent to active channels and in cut banks of washes. Holocene soils vary in development with color ranging from yellow brown (10YR) to slightly reddened (7.5YR) with no to weak subangular blocky structure and no to minor carbonate accumulation, although soils strongly effervesce due to source material. Coarse clasts within these deposits are typically reworked from older deposits and often exhibit carbonate coats or rinds.

Qi_3 — **Late Pleistocene alluvial fan and terrace deposits** – Younger intermediate deposits associated with inactive alluvial fans and terraces along washes. Deposits typically are poorly sorted mixtures of silt, sand, pebbles and cobbles with few small boulders. Surfaces are moderately dissected by tributary drainages that head on the surfaces and through-going distributary channels. Local surface topographic varies from about 1 to 2 m. Soil development is moderate, with minimal to some clay accumulation and soil reddening and weak to moderate calcic horizon development. Desert pavement development typically is moderate, and rock varnish varies from light to dark brown.

Qi_2 — **Middle Pleistocene alluvial fan deposits** – Older intermediate deposits associated with extensive relict alluvial fans. Deposits are poorly sorted, including sand, pebbles and cobbles, with minor silt and clay. Surfaces are moderately to deeply dissected, with local topographic relief varying from about 1 to 6 m. Original depositional topography typically is not preserved, and surfaces are quite smooth where not eroded. Qi_1 surfaces are drained by extensive tributary drainage networks. Interfluve areas between drainage vary from quite flat to broadly rounded. Soils have weak to moderate clay accumulation and slight reddening in the upper 30 cm beneath the surface, and calcic horizons show obvious visible carbonate accumulation.

Qi — **Middle and late Pleistocene alluvial fan and terrace deposits, undifferentiated**

Qi_1 — **Middle to early Pleistocene alluvial fan deposits** – Old relict alluvial fans with moderately strong soil development. Deposits are poorly sorted, including sand, pebbles, cobbles, and small boulders with minor silt and clay. Surfaces typically are moderately dissected with up to 6 m of local relief, but interfluve surfaces are quite smooth and have dark, strongly developed pebble-cobble desert pavements. Soils have moderate clay accumulation and obvious reddening and abundant carbonate accumulation resulting in weak cementation.

Qo — **Early Pleistocene to late Pliocene alluvial fan deposits** – High, very old relict alluvial fan deposits. Deposits typically are very poorly sorted, including angular to subangular cobbles and pebbles with sand and minor silt and clay. Surfaces are moderately to deeply dissected, with 2 to 10 m of relief between channels and ridgecrests. Original fan surfaces have been removed by erosion, so the characteristic topographic expression of these deposits are alternating ridges and valleys. Soil development is moderate to strong, depending on local preservation, but all soils are dominated by carbonate accumulation and clay-rich horizons were not observed. Surfaces typically are littered by carbonate fragments derived from eroded or perturbed petrocalcic horizons; this gives Qo surfaces a light appearance on aerial photographs.

Hassayampa River Alluvium

Qycr — **Active river channel deposits** – Moderately to poorly sorted sand, gravel and minor silt in active channels of the Hassayampa River. Gravel includes subangular to well-rounded clasts.

Qy_2r — **Late Holocene to modern floodplain deposits** – Sand, silt, and gravel deposits associated with slightly higher terraces along the Hassayampa River. Terrace surfaces are smooth and are less than 3 m above the active channel. Terrace surfaces are covered with fine-grained floodplain deposits, but relict gravel bars and lenses are common.

Qi_3r — **Middle to late Pleistocene river deposits** – Older terrace deposits of very limited extent found in a few places along the Hassayampa River. Deposits are gravelly with some sand, silt and clay. Soil development is moderate with some clay accumulation where terrace surfaces are well preserved. Terrace surfaces typically are less than 10 m above the active river channel.

Qi_2r — **Middle Pleistocene river deposits** – Deposits associated with a set of high terraces along the Hassayampa River. Terrace surfaces are of limited extent in the quadrangle. Terraces are fairly flat or slope gently toward the river, but terrace surfaces are dissected by tributary drainages. Deposits are quite gravelly at the surface but limited exposures indicate that they also contain sand and silt. Qi_2r terrace surfaces range from about 10 to 20 m above the active river channel.

Qor — **Early Pleistocene river deposits** – Deposits associated with the high terraces along the Hassayampa River that record the maximum aggradation of the river. Terrace surfaces are fairly flat or broadly rounded, but all terrace surfaces are moderately to deeply dissected by tributary drainages and the river and have been substantially modified by erosion. Exposures are poor, but well-rounded gravel is evident at the surface. Terrace surfaces are also covered with litter from underlying petrocalcic soil horizons. Qor terrace surfaces are more extensive than any of the younger Pleistocene terraces (Qi_2r). Terrace surfaces range from about 20 to 30 m above the active river channel, and rise to the north across the quadrangle.

QTsr — **Pliocene to early Pleistocene river deposits** – A moderately thick sequence of old Hassayampa River deposits that underlies the Qor terrace/fan deposits. These deposits consist of river sand, gravel and silt with a substantial component of tributary sand and gravel. Local zones of substantial carbonate accumulation may represent moderately to strongly developed buried soils. Queried unit labels (QTsr?) indicate areas where exposures are poor.

Other units

Qtc — Holocene and Pleistocene colluvium and talus – Very poorly sorted hillslope deposits mantling bedrock slopes.

Bedrock map units

Bedrock units are divided into three groups: 1) volcanic and sedimentary rocks in the hanging wall of the detachment fault, 2) plutonic and metamorphic rocks in the footwall of the White Tank detachment fault, and 3) plutonic rocks of the Belmont Mountains west of the Hassayampa River.

Hanging wall rock units, White Tank Mountains

Ty — **Sandstone and conglomerate (middle to late Tertiary)** – Thin- to medium-bedded, dominantly plane-bedded, gently dipping, pebbly sandstone, and rounded to sub-rounded, cobble-pebble, rare boulder, sandy conglomerate. In most areas, the unit is light-colored and clasts consist of >70% granodiorite, schist, and orthogneiss, and < 30% mafic volcanic rocks. Locally, mostly to the east, where volcanic clasts make up greater than 50%, the unit is reddish. Imbricated cobbles indicate southwest-directed paleocurrents.

Ta — **Andesite (middle Tertiary)** – Andesitic lava flows containing 1-25%, subhedral to euhedral, 0.5-4 mm plagioclase phenocrysts and minor <2 mm altered mafic phenocrysts. Matrix is typically dark gray to dark purple. Samples: CAF-2-7339, 7402, 7436, 7481, 7488.

Ta-r — **Mixed andesite and rhyolite (middle Tertiary)** – Rare flows of phenocryst-poor andesitic lava contain 5-50% irregular inclusions ranging in size from less than 1 m to greater than 50 m of fine-grained, phenocryst-poor rhyolite lava. The unit appears to be a distinctive flow characterized by mixed lava, but poor exposure makes it possible in some areas that the mixed nature of the unit is tectonic. The unit may correlate with a distinctive bimodal andesite-rhyolite mixed lava unit (Tax) on Flatiron Mountain in the southeastern Belmont Mountains.

Tt — **Pyroclastic rocks (middle Tertiary)** – Massive to thick-bedded, mostly matrix-supported, nonwelded felsic tuff with abundant lithic lapilli. Lithic clasts are dominantly andesite and rhyolite, but locally, granitic and metamorphic clasts are also abundant. Samples: CAF-27271, 7569.

Tr — **Phenocryst-poor rhyolite lava (middle Tertiary)** – Rhyolite lava containing 1-10% 1-3 mm feldspar phenocrysts. The lava is typically pink to lavender in color and preserves massive, flow-foliated and autobrecciated textures. Samples: CAF-2-7413, 7575

Trq — **Phenocryst-poor, quartz-phyric rhyolite lava (middle Tertiary)** – Rhyolite lava containing 1-10% 1-3 mm feldspar and quartz phenocrysts. The flows are typically pink to lavender in color and preserve massive flow-foliated and autobreccia textures. Samples: CAF-2-7476, 7564, 7565,

Tr0 — **Aphyric rhyolite lava (middle Tertiary)** – Rhyolite lava flows that are typically pink to lavender in color and preserve massive flow-foliated and autobreccia textures.

Tc — **Conglomerate and breccia (middle Tertiary)** – A massive, rarely thick-bedded, dark reddish colored, clast-supported, sandy matrix, coarse-grained conglomerate and breccia unit dominated by granitic and metamorphic clasts, but also containing 0-30% andesite and rhyolite clasts. The clasts are typically cobble to boulder sized and sub-rounded to angular. The dominant clast types are (1) coarse-grained, potassium-feldspar porphyritic granite (similar to the YXg map unit of this map area), and (2) fine- to medium-grained biotite schist and amphibolite schist (similar to the Xp and Xa map units of the southerly adjacent Buckeye NW 7.5' quadrangle). The conglomerate and breccia unit is intimately interbedded (generally steeply-dipping) with the andesite (Ta, Ta-r), and rhyolitic (Tr, Trq, Tr0) lava flows in the area. Sample CAF-2-7350.

Footwall rock units, White Tank Mountains

Age assignments for plutonic rocks in the northwestern White Tank Mountains are based primarily on their age relative to an early Tertiary to Late Cretaceous (56.2 ± 14 Ma) complex of medium-grained granite (TKg) and comagmatic heterogeneous mafic plutonic rocks (TKmg, TKmi, TKph). Hypabyssal rocks that are intruded by this complex are also assigned an early Tertiary to Late Cretaceous age (TKq, TKd), whereas those that intrude the complex are assigned a Tertiary age (Tqm, Tmp, Tb). Hypabyssal rocks with no known age relationship to the complex are assigned a Tertiary-Cretaceous age (TKap, TKm), and a mafic dike unit with a fine- to medium-grained phaneritic texture (TXd) is assigned a Tertiary-Early Proterozoic age. An undeformed coarse-grained granite (YXg), and associated pegmatite complex (YXp) is assigned a Middle to Early Proterozoic age, and tectonically foliated plutonic and metamorphic rocks are assigned to the Early Proterozoic (Xgd, Xm).

Tqm — **Quartz monzonite porphyry (Tertiary)** – Fine-grained, typically dark greenish matrix porphyry containing 5-20% 0.5-30 mm subhedral to euhedral plagioclase, 1-10% 2-50 mm subhedral to euhedral potassium feldspar, and 1-10% 1-5 mm anhedral to subhedral, deeply embayed quartz phenocrysts, 1-5% 1-3 mm chlorite-altered biotite. The porphyry also contains sparse 0.2-1 mm clinopyroxene, and sparse opaque minerals. In some areas, the quartz monzonite porphyry has a light gray matrix and is very similar to the rhyolite porphyry (TKq). The quartz monzonite porphyry is distinguished from the rhyolite porphyry (TKq) and other quartz-phyric porphyry units based primarily on cross-cutting relationships. Along with the monzonite porphyry (Tmp), the quartz monzonite porphyry is one of the youngest intrusive units in the area. It consistently intrudes two important units, the medium-grained granite (TKg) and a swarm of basaltic dikes (Tb) that consistently intrude the rhyolite porphyry (TKq). The quartz monzonite porphyry correlates with Barrett's (1976) quartz monzonite porphyry. Samples: CAF-2-8222, 8228.

GEOLOGIC MAP OF THE WAGNER WASH WELL 7.5' QUADRANGLE, MARICOPA COUNTY, ARIZONA

by Charles A. Ferguson, Jon E. Spencer, Philip A. Pearthree, Ann Youberg and John J. Field

Arizona Geological Survey Digital Geologic Map 38 (DGM-38), version 1.0

November, 2004

Citation for this map: Ferguson, C.A., Spencer, J.E., Pearthree, P.A., Youberg, Ann, and Field, John J., 2004, Geologic Map of the Wagner Wash Well 7.5' Quadrangle, Maricopa County, Arizona: Arizona Geological Survey Digital Geologic Map 38 (DGM-38), 7 p., 1 sheet, scale 1:24,000.

Research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under USGS award #03HQAG0114. 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.

Unit Descriptions continued…

Tmp — **Monzonite porphyry (Tertiary)** – Porphyritic dikes characterized by the absence of quartz phenocrysts visible in hand specimen. Phenocryst content varies from 10-50%. Subhedral to euhedral plagioclase (0.5-5 mm) is by far the most abundant phase. Potassium feldspar is virtually absent, but sparse, microscopic (<0.2 mm) subhedral to anhedral quartz is ubiquitous. Mafic phenocrysts are strongly chloritic-altered biotite (1-2% 0.4-1.5 mm), and 0.5-3% 0.5-1.5 mm glomeroporphyritic clinopyroxene. Traces of sphene (<0.3 mm) and opaques are associated with the biotite and clinopyroxene. Glomeroporphyritic clumps of clinopyroxene are commonly rimmed by euhedral plagioclase phenocrysts. The monzonite porphyry is generally coarser grained and has a more crystalline matrix than the andesite porphyry (TKap), but the two units which occur in different areas, the monzonite porphyry to the north and the andesite porphyry (TKap) to the south, may be correlative. The monzonite porphyry correlates with Barrett's (1976) monzonite porphyry and quartz latite porphyry units. Samples: CAF-2-8201, 8224, JES-12-9-03-2, 12-10-03-6.

Tb — **Basaltic dikes (Tertiary)** – Fine-grained, generally dark gray to purple, aphanitic-matrix basaltic dikes with sparse plagioclase (1-4 mm) and altered mafic (≤2 mm) phenocrysts. The basaltic dikes are similar to the generic mafic dikes (TKm) which tend to have fine-grained phaneritic matrix. The basaltic dikes represent a wide-ranging swarm of dikes that consistently intrude the medium-grained granite (TKg) and are mostly intruded by the quartz monzonite (Tqm) and monzonite porphyry (Tmp). In the north basaltic dikes are commonly intruded by parallel dikes of the quartz monzonite (Tqm) and monzonite porphyry (Tmp), and in some areas, overlapping relationships are present. The basaltic dikes correlate with Barrett's (1976) dacite porphyry dikes. Samples: JES-11-19-03-5, 12-10-03-2, 12-10-03-5.

TKm — **Mafic dikes (Tertiary – Cretaceous)** – Dark-colored, fine-grained to very fine-grained dioritic dikes with sparse 1-4 mm plagioclase and mafic phenocrysts. Samples: CAF-2-6959, 7077, JES-12-12-03-2, 12-12-03-3.

TKap — **Andesite porphyry (Tertiary – Cretaceous)** – Dark gray to purple matrix, andesite porphyry dikes with 10% 2-4 mm, euhedral plagioclase phenocrysts. The andesite porphyry appears to be restricted to the hanging wall of the Wagner fault. Samples: CAF-2-7124, 7137, 7323, 7324.

TXd — **Fine-grained diorite stocks and dikes (Tertiary – Early Proterozoic)** – Fine- to medium-grained, dark-green amphibolite to diorite, locally with felted mafic phenocrysts up to 10 mm. Samples: CAF-2-7978, 8135.

TKmg — **Heterogeneous mafic granitoid (early Tertiary – Late Cretaceous)** – A complex suite of granitoids ranging in composition from granodiorite to monzodiorite, quartz monzodiorite and diorite, and from very fine- to medium-grained (mixed together on scale of 10-100 cm), with highly variable mafic content (6-50% clinopyroxene, and hornblende, locally with some biotite), and up to 1% sphene. The granitioids form irregular stocks and dikes that both intrude and are intruded by the closely related TKg map unit. Some biotite granite in contact with dioritic granitoids is pegmatitic, with coarse interiors and vein-like form; in other places dioritic granitoids have chilled margins. The heterogeneous mafic granitoid unit correlates with Barrett's (1976) quartz diorite to the east of the Wagner fault, and possibly in part with the (TKgd) unit of Reynolds et al. (2002). Samples: CAF-2-6959, 7077, JES-11-17-03-2, 11-18-03-8, 12-11-03-3, 12-11-03-6.

TKmi — **Granitoids associated with heterogeneous mafic granitoids (early Tertiary – Late Cretaceous)** – Felsic to intermediate, sparsely quartz-phyric granitoids associated with mafic granitoids and probably comagmatic with them. This unit generally contains 3-8% mafic minerals (mostly pale green, alteration product or primary?, some vaguely micaceous) and 1-2% < 1mm sphene. Samples JES-11-18-03-1, 11-18-03-4, -11-18-03-7, 12-11-03-2, 12-11-03-5, 12-12-03-1.

TKph — **Pyroxene- and hornblende-rich mafic granitoids (early Tertiary – Late Cretaceous)** – An irregular shaped stock of very dark mafic granitoids. Sample JES-11-18-03-5 contains 25-35%, brownish green, 2-20 mm subhedral to euhedral hornblende phenocrysts within a fine- to medium-grained quartz monzonite matrix that contains 10-20% 0.5-1.0 mm, subhedral to euhedral clinopyroxene, and 5% 0.5-3.5 mm, subhedral to euhedral hornblende. Sample JES-11-18-03-6 is a hornblendite containing ~35% 1-4 mm, subhedral to euhedral hornblende in a quartz monzodiorite matrix with up to 2% sphene. The rocks display faint layering defined by variations in the abundance and grain size of pyroxene and hornblende.

TKg — **Medium-grained granite (early Tertiary – Late Cretaceous)** – Medium-grained to locally coarse-grained, equigranular to potassium-feldspar porphyritic granite with 3-15%, ≤ 3 mm subhedral to euhedral biotite, up to 1% hornblende, and sparse opaques associated with the biotite and hornblende. The granite typically weathers into tors and rounded grus-covered hills, and is present on both sides of the Wagner fault. To the west, the granite is leucocratic (< 7% biotite), homogeneous, and porphyritic with up to 20% very fine-grained crystalline matrix. On the east side of Wagner fault, the granite ranges from medium-grained, equigranular granite, monzogranite, and granodiorite to sparsely and abundantly potassium-feldspar-porphyritic granite with potassium-feldspar phenocrysts up to 30 mm, and biotite content that ranges from 5-15%. The middle portion of the eastern pluton includes several irregular stocks of heterogeneous mafic granitoids (TKmg) that show abundant evidence of comagmatic emplacement with the granite. Contacts between the two units range from sharp to gradational with conflicting cross-cutting relationships. The mafic granitoids (TKmg) range from granodiorite and monzodiorite to diorite and pyroxenite (TKph), and in areas where contact relationships with the medium-grained granitoids are vague, a change from biotite-dominated to hornblende-dominated mafics is used as the criteria for unit assignment. To the west of the Wagner fault, where a K-Ar hornblende date of 88.2 ± 3.1 Ma (Armstrong, 1975 as reported in Reynolds et al., 1986) was obtained from this unit, the medium-grained granite correlates with Barrett's (1976) granite porphyry. To the east of the Wagner fault, where a K-Ar biotite cooling age of 19.6 ± 0.5 Ma (Shafiqullah et al., 1980) was obtained, this granite correlates with the granodiorite (TKgd) unit of Reynolds et al. (2002). Another sample of this unit, from the White Tank Mountains NE 7.5' quadrangle, yielded a U-Pb zircon date of 56.2 ± 14 Ma (Spencer et al., 2003). Our Late Cretaceous to early Tertiary age assignment for this unit is based on the interpretation that both the U-Pb and hornblende K-Ar dates reflect a Late Cretaceous to early Tertiary crystallization age, and the biotite K-Ar age is related to cooling during later extensional exhumation. Samples: CAF-2-6948, 7941, 8208, JES-11-18-03-2, 11-19-03-2, 12-10-03-11, 12-11-03-1, 12-11-03-4a, b. 11-18-03-2, 11-19-03-2, 12-10-03-11, 12-11-03-1, 12-11-03-4a, b.

TKd — **Dacite porphyry (early Tertiary – Late Cretaceous)** – Aphanitic-matrix feldspar porphyry containing 20-35% 2-15 mm plagioclase and lesser potassium feldspar, plus 1-5% biotite. The dacite porphyry is intimately related to the rhyolite porphyry (TKq) with conflicting intrusive relationships observed in several areas. The dacite porphyry probably represents the mafic end-member of a continuum of felsic porphyries dominated by the rhyolite porphyry (TKq). Samples: CAF-2-7087, 7089.

TKq — **Rhyolite porphyry (early Tertiary – Late Cretaceous)** – A composite unit of quartz-phyric rhyolite porphyry dikes and stocks with highly variable phenocryst content. The main outcrop area of this unit includes up to 30% country rock, which consists mostly of the coarse-grained granite (YXg) unit, but also includes significant areas of the granodiorite (Xgd) unit to the north. The rhyolite porphyry is characterized by light gray, commonly flow-foliated aphanitic matrix and contains between 0.5% and 40% 1-10 mm quartz, potassium feldspar, and plagioclase phenocrysts with sparse biotite, hornblende, and other mafics. More than 60% of the unit is represented by porphyry containing 10-15% 1-4 mm phenocrysts, and most of the rest consists of an aphyric to phenocryst-poor (≤5%) variety. Lesser amounts of coarse-grained (2-10 mm), phenocryst-rich (25-40%) porphyry is also present. In general, grain size and the abundance of accessory mafic minerals increases with phenocryst content. Contacts between the different varieties are sharp, and many of the dikes are occupied by more than one variety. The rhyolite porphyry, and its constituent phenocryst-poor to phenocryst-rich varieties, along with the dacite porphyry (TKd), represent a continuum of essentially contemporaneous felsic to intermediate hypabyssal rocks. The rhyolite porphyry is distinguished from the quartz monzonite porphyry (Tqm) by its lighter colored matrix and because it is older than the medium-grained granite (TKg). The bulk of the rhyolite porphyry correlates with the older rhyolite and aplite porphyries of Barrett (1976) and the intrusive rocks (Ti) unit of Reynolds et al. (2002). Samples: CAF-2-6950, 6954, 7005, 7133, 7246, 7247, 7261, 8203, JES-11-19-03-6, 11-19-03-8, 12-10-03-4, 12-10-03-7, 11-19-03-1, 11-19-03-4, 11-19-03-7, 12-9-03-1, 12-10-03-1, 12-10-03-3, 12-10-03-8, 12-12-03-4, 12-12-03-5, 12-12-03-6.

YXg — **Coarse-grained granite (Middle or Early Proterozoic)** – Coarse-grained, potassium-feldspar porphyritic granite with 7-10% biotite. The coarse-grained granite correlates with Barrett's (1976) granite unit. Sample 11-19-03.

YXp — **Pegmatite and leucogranite complex (Middle and Early Proterozoic)** – Medium- to coarse-grained pegmatite and heterogenous texture, banded, muscovite leucogranite. The pegmatite and leucogranite complex occurs in small stocks that intrude the granodiorite (Xgd) and metamorphic complex (Xm) along the southern margin of the coarse-grained granite (YXg) pluton.

Xm — **Metamorphic complex (Early Proterozoic)** – A metamorphic and plutonic complex consisting of four main rock types intimately mixed on a scale that precludes mapping separately, although each is recognized and locally mapped separately in this map area or in the southerly adjacent Buckeye NW 7.5' quadrangle. The oldest, making up between 0-70% of the unit, is a fine- to medium-grained, mafic-rich, variably quartz veined, banded orthogneiss and amphibolite schist (Xa). The metamorphic rocks are intruded by foliated, medium-grained granodiorite (Xgd), which makes up between 0-70% of the unit, and lesser amounts (0-10%) of weakly foliated, fine- to medium-grained, 10-20% biotite granite or quartz monzonite (Xg) that appears to be younger than the granodiorite (Xgd). The entire complex is intruded by pegmatite dikes (YXp) that make up between 0-5% of the unit. The metamorphic complex is distinguished from the heterogeneous mafic granitoid (TKm) unit by its pervasive tectonic foliation and by its ubiquitous pegmatite dikes and quartz veins. The metamorphic complex correlates with the undifferentiated metamorphic rocks (Xm) and granitic rocks and pegmatite (Xgr) units of Reynolds et al. (2002).

Xgd — **Granodiorite (Early Proterozoic)** – Medium-grained, weakly to strongly foliated granitoid ranging from monzogranite to granodiorite and quartz monzodiorite, and containing 15-40% mafics. Mafic minerals in sample CAF-2-8237 are hornblende (5-8% 1-3 mm) and clinopyroxene (2% <0.5 mm). The granodiorite is closely associated with the metamorphic complex (Xm), and may include up to 30% of its constituents in its outcrop area. The granodiorite correlates with the hornblende diorite, quartz diorite and diorite units of Barrett (1976) to the west of the Wagner fault in the northeast corner of the map area. In the south, the granodiorite correlates with the undifferentiated metamorphic rocks (Xm), granitic rocks and pegmatite (Xgr), and tonalite (Xt) units of Reynolds et al. (2002).

Belmont Mountains (west of the Hassayampa River)

Tb — **Basaltic dikes (Tertiary)** – Fine-grained, generally dark gray to purple, aphanitic-matrix basaltic dikes with sparse plagioclase (1-4 mm) and altered mafic phenocrysts (≤2 mm). These dikes may correlate with the basaltic dikes of the White Tank Mountains.

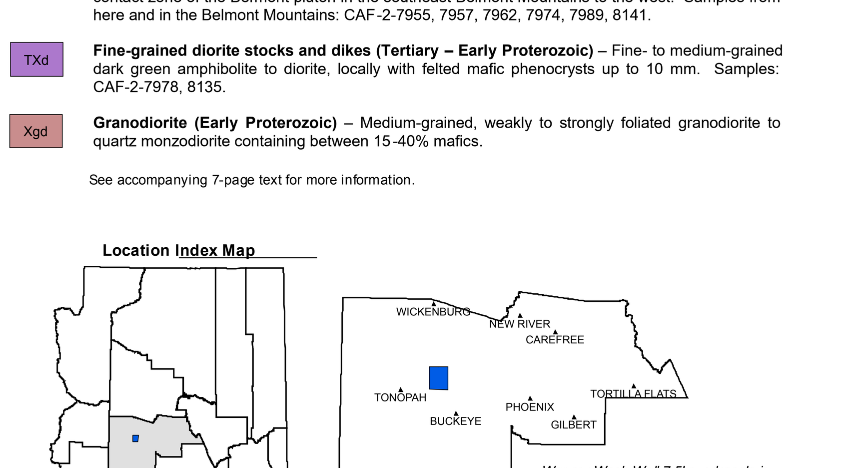
Tg — **Belmont Granite (Tertiary)** – Medium- to coarse-grained, 10% biotite, weakly potassium-feldspar porphyritic granite with ubiquitous 0.5-5.0 cm miarolitic cavities. The granite forms a series of southeast-striking, southwest-dipping dikes that intrude foliated granodiorite (Xgd) in a single hill along the west bank of the Hassayampa River. The margins of the dikes display contact zones up to 20 m wide that grade from flow-foliated, 5-10% 1-4 mm quartz-feldspar porphyry through 20-50% 2-4 mm, quartz-feldspar porphyry into the granitic interior of the dikes. These textural relationships, the host rock, and the orientation of the dikes are identical to what is observed in the southeast contact zone of the Belmont pluton in the southeast Belmont Mountains to the west. Samples from here and in the Belmont Mountains: CAF-2-7955, 7957, 7962, 7974, 7989, 8141.

TXd — **Fine-grained diorite stocks and dikes (Tertiary – Early Proterozoic)** – Fine- to medium-grained dark green amphibolite to diorite, locally with felted mafic phenocrysts up to 10 mm. Samples: CAF-2-7978, 8135.

Xgd — **Granodiorite (Early Proterozoic)** – Medium-grained, weakly to strongly foliated granodiorite to quartz monzodiorite containing between 15-40% mafics.

See accompanying 7-page text for more information.

Location Index Map



Wagner Wash Well 7.5' quadrangle is located in northwest Maricopa County.

Arizona Geological Survey
416 W. Congress Street, Suite 100
Tucson, AZ 85701
(520) 770-3500
www.azgs.az.gov