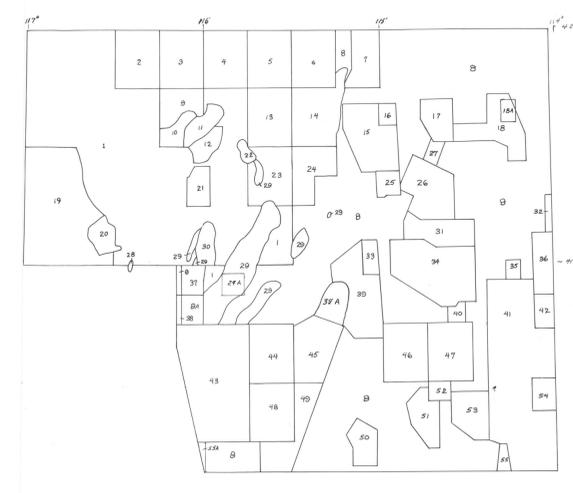


DESCRIPTIONS OF MAP UNITS\*

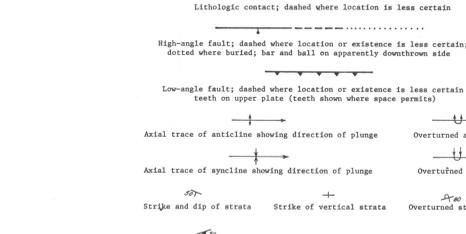
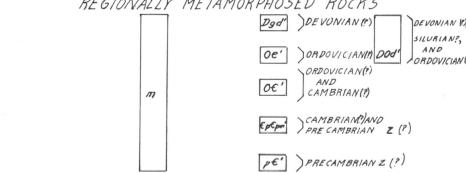
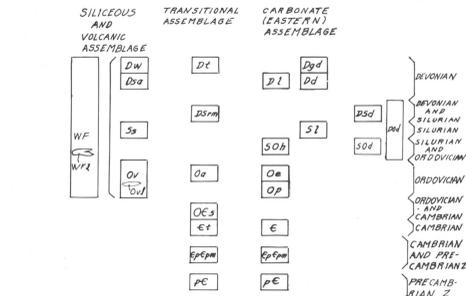
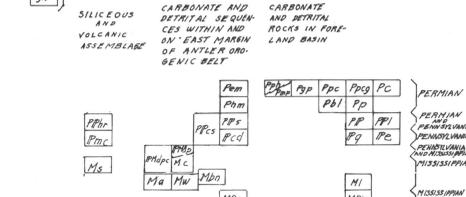
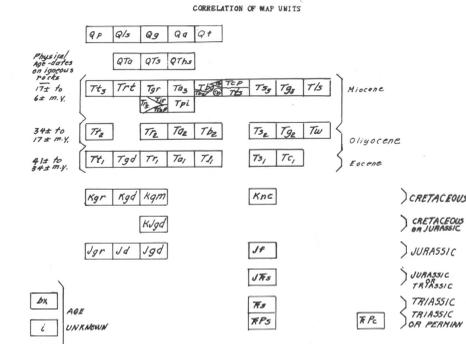
- Qf ARTIFICIAL FILL
Qp FLUVIAL LAKE DEPOSITS Includes beach and bar gravels and playa silts
Qla LANDSLIDE DEPOSITS AND COLLUVIUM
Qg GLACIAL MORAINES AND ROCK GLACIERS Locally, includes outwash gravels
Qa ALLUVIUM Silt, sand, and gravel along present streams. Includes alluvial fans
Qfa BOULDER GRAVEL AND SAND Deposits on high-level stream terraces
Qra TUFFACEOUS LIMESTONE, SILT, AND SAND, LOCALLY INDURATED Includes Hay Ranch Formation of Beglar (1960)
Qraa HOT SPRING TUFF AND SINTER, MOSTLY CALCAREOUS
Qraa PYROXENE LACITE (ONIBERITE) Phenocryst-poor, with oligoclase, sanidine, pignoneite, and augite
Qraa UNCONSOLIDATED PYROXENE RHODOCITIC TUFF
Qraa ALASKITIC GRANITE (upper Miocene) Extremely variable in texture
Qraa PYROXENE ANDESITE AND HORNBLENDE ANDESITE Dark gray, weathering dark brown [3, 4]
Qraa BANBURY FORMATION (10-10.5 m.y.) Tholeiitic olivine basalt, everlying and underlying gravel, minor amounts of rhyolitic tuff directly beneath basalt
Qraa BASALT FLOWS Part of Banbury Formation
Qraa BASALTIC CINDER, TUFF, AND LAVA CONES Part of Banbury Formation
Qraa BASALT FLOWS In Sheep Creek Range [19], also Dairy Valley quadrangle [8]
Qraa COAGUL POINT WELDED TUFFS Gray to brown pyroxene rhodocitic ignimbrites
Qraa IONIMBRITE, TUFF, AND SEDIMENTARY ROCKS Includes Idavada Formation, and locally, Cougar Point Welded Tuff
Qraa TUFF, VITRIC ASH, TUFFACEOUS SILTSTONE AND SANDSTONE, CONGLOMERATE, AND LIMESTONE Includes Humboldt Formation
Qraa GRAVEL Includes Slide Creek Gravel [6], Young America Gravel of Bushnell [15]
Qraa LANDSLIDE DEPOSITS
Qraa RHYOLITIC TO DACITIC FLOWS AND DOMES [20] Somatic quartz and sanidine rich, locally vitrophytic. Hornblende and fayalite sparse [19] [2]
Qraa JAMBIDGE RHYOLITE Light brown to gray phenocryst-rich ferrospathe rhyolite, mostly as flows, but also with some domes and minor tuff
Qraa PORPHYRITIC RHYOLITE AND RHYODACITE Commonly as domes. Phenocrysts abundant, commonly sanidine, quartz, and oligoclase [19]
Qraa PIONONITE ANDESITES Medium gray, holocrystalline hybrid rocks, characterized by phenocrystic quartz, orthoclase, and sodic plagioclase, and by pseudo-uniaxial pignoneite
Qraa RHYOLITE TO DACITE IONIMBRITE Locally vitrophytic. Commonly with phenocrysts of biotite, often also hornblende, quartz, plagioclase, and sanidine
Qraa RHYOLITIC FLOWS AND DOMES Relatively fine grained, generally holocrystalline. Characterized by small sparse crystals of biotite. Locally topaziferous
Qraa ANDESITIC AND LATTIC FLOWS AND PYROCLASTIC ROCKS Commonly with phenocrysts of hornblende and pyroxene. Includes andesites of Jones Creek [3, 4] and those near Cornucopia [1]
Qraa ALKALI-OLIVINE BASALT AND BASALTIC TUFFS AND TUFF-BRECCIAS Includes some minor intrusions. Commonly porphyritic, with common to sparse, large to very large phenocrysts of labradorite. Groundmass includes purple augite, olivine, and locally biotite and alkali-feldspar. Includes Seventy Six Basalt [4, 6, 14]
Qraa TUFFACEOUS AND CLASTIC SEDIMENTARY ROCKS Includes minor amounts of tuff and welded tuff. Near Mountain City, contains Arikareean fossils (C. A. Repenning, written comm.)
Qraa GRAVEL Locally tuffaceous
Qraa TUFFACEOUS SEDIMENTARY ROCKS, VITRIC ASH AND TUFF, WELDED TUFF, AND LAVA (Oligocene) Includes limestone, tuffaceous limestone, sandstone. Exposed near Indian Well [43]. Includes Meadow Fork Formation [6] and unnamed gravel [3]
Qraa RHYOLITIC TO DACITIC IONIMBRITE Commonly micaceous; also may contain hornblende, augite, and hypersthene. In many places with high concentrations of phenocrysts, and of xenoliths of Valmy chert.
Qraa RHYOLITIC TO DACITIC FLOWS AND DOMES May include some ignimbrites. Includes Otawash Rhyolite [3, 4]
Qraa ANDESITIC TO LATTIC FLOWS AND PYROCLASTIC ROCKS Phenocrysts generally include plagioclase, hornblende, pyroxene, locally biotite, or any combination of these mafics. Includes andesite of Summit Creek [3, 4]
Qraa GRANODIORITE, QUARTZ MONZONITE, AND GRANODIORITE AND QUARTZ MONZONITE PORPHYRY Commonly biotite, locally with augite or hornblende
Qraa LATTIC ROCK OF BASALTIC HADIT Dark gray to black, holocrystalline to microcrystalline, very fine grained rocks, locally vesicular, containing olivine, hypersthene, labradorite and potash feldspar. Flows and dike feeders
Qraa LIMESTONE, LACRATIC CHERT, CONGLOMERATE, SANDSTONE, CLASTIC, SILTSTONE, SHALE (INCLUDING CARBONACEOUS SHALE AND OIL SHALE), AND TUFF
Qraa CONGLOMERATE Fragments generally chert and quartzite, commonly well-rounded locally angular. Locally up to two feet in fragment size, but commonly a few inches. May be stained by iron oxide. May have siliceous cement; also a tuffaceous matrix in some places
Qraa GRANITE Commonly biotitic
Qraa GRANODIORITE May be characterized by biotite, hornblende, or both
Qraa QUARTZ MONZONITE May be characterized by biotite, hornblende, or both
Qraa NEMAKE CANYON FORMATION Non-marine conglomerate, sandstone, siltstone, shale and limestone [43]. Clastic rocks commonly gray, tan, brown, and red. Clasts include volcanic rocks, sandstone, quartzite, chert, limestone, and silicified limestone; sizes may range up to one foot. Limestone, dense, silty, gray, tan, to creamy tan in color
Qraa GRANODIORITE
Qraa DIORITE, includes locally Jgr, granite and Jgd, granodiorite, not everywhere mapped separately
Qraa FRENCH CREEK RHYOLITE Rhyolite flows and other volcanic rocks; some sedimentary rocks
Qraa SANDSTONE AND SHALE Correlative with Nugget and Atee Sandstones and Chiale Formation of southern Nevada
Qraa MARINE SEDIMENTARY ROCKS Includes Menopki and Thayne Formations, and unnamed Lower Triassic rocks [13, 14]
Qraa SILTY LIMESTONE, SHALE, AND MINOR GREENSTONE At north end Adobe Range [29]
Qraa MARINE CONGLOMERATE [14]
Qraa EDNA MOUNTAIN FORMATION Coarse sandstone, locally conglomeratic to siltstone, buff-weathering. Typical sandstone is chert-quartz arenite
Qraa PROSPERIA FORMATION Chert, phosphatic mudstone, siltstone and limestone
Qraa MADE PEAK PROSPERITY SHALE, REX CHERT, AND DOLOMITE MEMBERS OF PROSPERITY FORMATION
Qraa CHERT AND PROSPERITY FORMATIONS, UNDIVIDED Carbonate rock, chert, and phosphorite
Qraa PARK CITY GROUP Carbonate rock and sandstone. Mapped in southern part of Elko County
Qraa GRANDER MEMBER OF PARK CITY GROUP Carbonate rock and chert
Qraa UNNAMED BIOCLASTIC LIMESTONE
Qraa SANDSTONE AND SILTSTONE OF HORSE MOUNTAIN Medium-grained, brown weathering sandstone, largely chert fragments, and dark gray to black siltstone
\*Numbers in brackets refer to areas on index map.

- PP FROOP FORMATION OF STEELE (1969) Fusulinid limestone. In southern part of the county, includes Acturus Formation
PPh HAYALLAS AND RESERVATION HILL FORMATIONS Metagraywacke, fine-grained dolomitic sandstone and siltstone, gray siliceous dolomitic limestone. Some meta-andesite
PFC CARLIN SEQUENCE OF ROBERTS AND THOMAS (1964) Includes Buckskin Mountain Beacon Flat and Carlin Canyon Formations of Falls (1966), also Strathearn Formation
PFB STRATHearn FORMATION Limestone, conglomeratic toward base. Includes Sunflower Formation, Bushnell (1967) [5], [43], [4]
PFB LIMESTONE AND DOLomite Includes Windcup Formation of Riva (1970) in HD Range [17] (Upper Pennsylvanian), Rid Hill Sandstone (Permian), Rise Spring Limestone (Lower Permian) of Steele (1960) in Spruce Mountain [46] and Ferguson Mountain Formation (Lower Permian) of Borge (1960) in southeastern part of county
PFB UNDIVIDED LIMY ROCKS (Lower Pennsylvanian to Lower Permian) In Leppy and Pilot Ranges [36, 42]
PFB MITCHELL CREEK FORMATION Limestone and andesitic tuffs [3]
PFC QUILLIC FORMATION OF RIVA (1970) [17] Limestone, siltstone and sandstone, and chert conglomerate (Devonian)
PFC ELY LIMESTONE (Brown to middle Devonian) Limestone, largely of bioclastic origin. Includes Hogan Formation of Robinson (1961) [40]
PFC MOLEN AND TOMBA FORMATIONS (Lower and Middle Pennsylvanian) Cherty limestone, sandy and silty limestone, and conglomerate
PFC DIAMOND PEAK AND CHAINMAN FORMATIONS (Upper Mississippian and Lower Pennsylvanian) Conglomerate, sandstone, and shale, with some limestone
PFC DIAMOND PEAK FORMATION (Lower Pennsylvanian and Upper Mississippian) Conglomerate, sandstone, shale, some limestone
PFC SCHROEDER FORMATION OF FAGAN (1962) (Chertian) [11] Sandstone, chert, with minor limestone and andesitic lava flows
PFC CHAINMAN SHALE (Upper Mississippian) Shale and sandstone. Includes Mountain City Formation [3, 4] of shale and calcareous shale, metamorphosed to schist and argillite
PFC ARGILLITE UNIT OF LEE CANYON (Lower Mississippian) [43] Black siliceous argillite
PFC WEBB FORMATION (Lower Mississippian) [43] Mudstone and claystone, some sandstone and limestone
PFC MANNER AND NELSON FORMATIONS (base to Meramecan) Limestone with quartzite cobble conglomerate at base, grading upward through pebbly to meta-andesite [3, 4]
PFC TRIPON PASS LIMESTONE OF OVERBY (1973) (Late Kinderhookian) [26] Clastic limestone, argillite, quartz siltite and quartz arenite, and quartz-chert arenite
PFC LIMESTONE, SHALE, CHERT, ORTHOQUARTZITE, AND QUARTZ SILTITE (Lower Permian to Upper Mississippian) Includes parts of Poorman Peak and Hammond Canyon Formations of Coah (1967) [13] [8, 14]
PFC VAN DUZER LIMESTONE OF DECKER (1962) [9, 3, 4, 5] Limestone and shaly limestone
PFC GROSSMAN FORMATION (Mississippian?) or Devonian(?) [3, 4] Coarse conglomerate, siltstone, sandstone, and shale
PFC JOANA LIMESTONE AND PILOT SHALE (Lower Mississippian and Upper Devonian) Limestone and argillaceous limestone; carbonaceous shale
PFC WOODRUFF FORMATION (Devonian) Dark siliceous sandstone, shale, and chert, siltstone dolomitic siltstone, and dolomite, with some limestone, sandy limestone and calcareous sandstone [43]
PFC PLATY SILTSTONE, LIMESTONE, AND SHALE (Devonian) [15]
PFC GUILLETTE AND DEVILS GATE FORMATIONS (Upper Devonian) Dolomite and limestone
PFC SHALE, CHERT, AND LIMESTONE [29, 30]
PFC LIMESTONE (Devonian) [1, 15, 21, 30]
PFC SIMONSON AND SEVY DOLOMITES AND NEVADA FORMATION (Lower and Middle Devonian) Light to dark gray dolomite; limestone
PFC ROBERTS MOUNTAIN FORMATION (Silurian and Lower Devonian) Platy silty limestone and dolomite [1, 21, 30]
PFC DOLOMITIC LIMESTONE AND DOLomite (Silurian and Lower Devonian?) Includes Lone Mountain and Laketon Dolomites
PFC FREEDOMANTLY DOLOMITIC ROCKS (Devonian, Silurian, and Ordovician)
PFC LONE MOUNTAIN DOLomite (includes some Devonian rocks locally in Sulphur Spring Range)
PFC SHALE AND CHERT (Silurian) Includes Voh Formation (Middle Silurian) of Riva [17] and unnamed rocks near Lone Mountain and in Adobe Range [29, 30]
PFC HANSON CREEK FORMATION (Lower Silurian and Upper and Middle Ordovician) Limestone and dolomite
PFC DOLomite (Lower Silurian and Upper Ordovician) Includes Laketon and Ely Springs Dolomites
PFC VALMY AND VININI FORMATIONS (Ordovician) Chert, shale, siltstone, gray quartzite, greenstone
PFC LIMESTONE IN VALMY OR VININI FORMATIONS (Ordovician) Clastic and bioclastic locally biohermal
PFC AUBA FORMATION OF DECKER (1962) [9] Brown to black phyllite, partly calcareous, with chert and quartzite
PFC EUREKA QUARTZITE (Upper Ordovician) White, brown-weathering orthoquartzite
PFC POONIP GROUP (Middle and Lower Ordovician) Limestone
PFC WESTERN FACIES (Devonian, Silurian, and Ordovician) Mudstone, shale, chert, siltstone, gray quartzite, greenstone, minor limestone
PFC LIMESTONE IN WESTERN FACIES (Devonian, Silurian, and Ordovician) Bioclastic and biohermal limestone, sandy limestone, dolomitic siltstone and dolomite
PFC SHALE, PHYLLITE, AND LIMESTONE (Ordovician and Cambrian) Includes Tennessee Mountain Formation of Bushnell (1967) [5] and unnamed shale in Snake Mountains [15, 25]
PFC CARBONATE ROCK, MINOR QUARTZITE AND PHYLLITE (Cambrian) Includes Edgemont Formation and Porter Peak Limestone of Decker (1962) [9], and schist and limestone of Bushnell (1967) [5]
PFC CARBONATE ROCKS AND MINOR QUARTZITE (Cambrian) Dolomite, limestone, minor shale
PFC PROSPECT MOUNTAIN QUARTZITE (Lower Cambrian and Precambrian 2) Quartzite, with phyllite interbeds
PFC MCOY CREEK GROUP OF MISCH AND HAZARD (1962) [36] Includes unnamed Precambrian rocks [6, 13], quartzite and phyllite
PFC CALCITE MARBLE Probably part of Guillette(?) and Devils Gate(?) Formations
PFC EUREKA QUARTZITE
PFC CALCITE MARBLE (pogop(?) and indifferenciated Cambrian?)
PFC DOLomite MARBLE (Devonian?), Silurian?), and Ordovician?)
PFC PROSPECT MOUNTAIN(?) QUARTZITE
PFC SCHIST (Precambrian 2?) Sillimanitic biotitic schist, quartzitic schist
PFC METAMORPHIC ROCKS (Lower Paleozoic and Precambrian 2) Granitic to dioritic gneiss, biotite and muscovite schists, locally with sillimanite, quartzitic schist, quartzite, calc-silicate rocks, marble. Includes some granitic intrusives of later age
PFC BRECCIA, MOSTLY FAULT BRECCIA (Age unknown)
PFC UNNAMED BIOCLASTIC LIMESTONE
PFC INTRUSIVE ROCKS (Age unknown) Mostly plutons of silicic rock
PFC GREISS (Age unknown, locally Mesozoic)



SOURCES OF DATA—GEOLOGIC MAP OF ELKO COUNTY, NEVADA\*

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2. Coats, R. R., and Cross, L. D., unpub. mapping.
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This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey standards and nomenclature.

PRELIMINARY GEOLOGIC MAP OF ELKO COUNTY, NEVADA

BY  
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