

Quadrangle, Bernalillo and Sandoval Counties, New Mexico

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drafted originals or from digitally drafted original maps and figures using a wide variety of software, and is currently in cartographic production. It is being distributed in this draft form as part of the bureau's Open-file map series (OFGM), due to high demand for current geologic map data in these areas where STATEMAP quadrangles are located, and it is the bureau's policy to disseminate geologic data to the public as soon as possible. After this map has undergone review, editing, and final cartographic production adhering to bureau map

This draft geologic map is preliminary and will undergo revision. It was produced from either scans of hand-

1.1.7 Contact—Identity and existence certain, location concealed standards, it will be released in our Geologic Map (GM) series. This final version will receive a new GM

Comments to Map Users

number and will supercede this preliminary open-file geologic map.

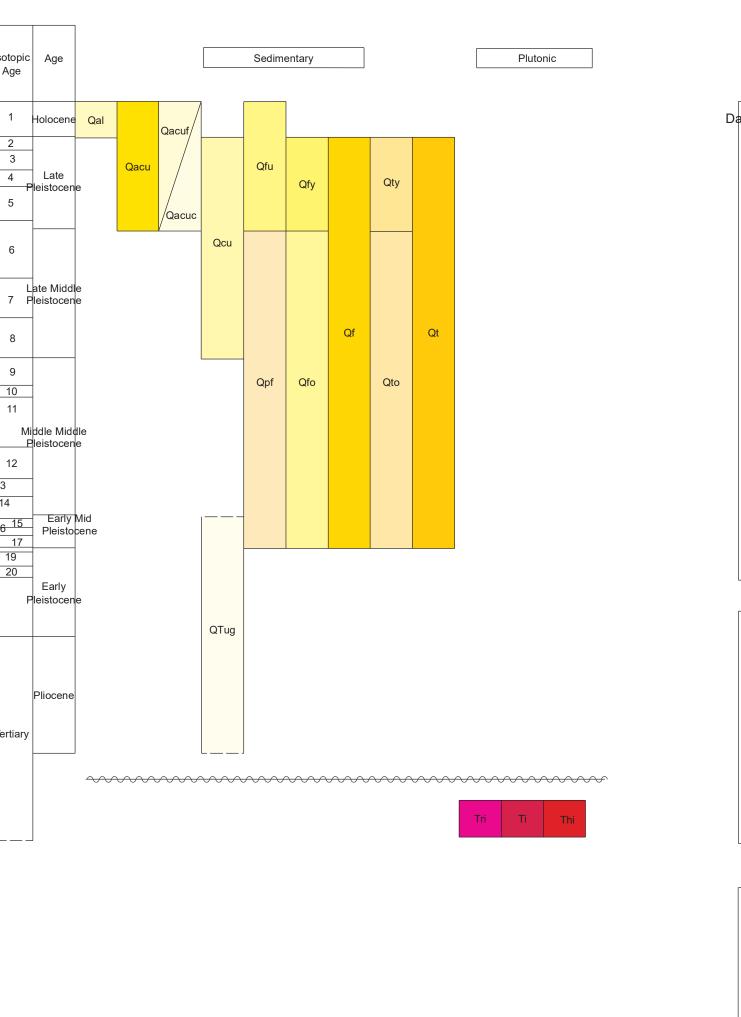
A geologic map displays information on the distribution, nature, orientation, and age relationships of rock and deposits and the occurrence of structural features. Geologic and fault contacts are irregular surfaces that form boundaries between different types or ages of units. Data depicted on this geologic quadrangle map may be based on any of the following: reconnaissance field geologic mapping, compilation of published and unpublished work, and photogeologic interpretation. Locations of contacts are not surveyed, but are plotted by interpretation of the position of a given contact onto a topographic base map; therefore, the accuracy of contact locations depends on the scale of mapping and the interpretation of the geologist(s). Any enlargement of this map could cause misunderstanding in the detail of mapping and may result in erroneous interpretations. Sitespecific conditions should be verified by detailed surface mapping or subsurface exploration. Topographic and cultural changes may not be shown due to recent development.

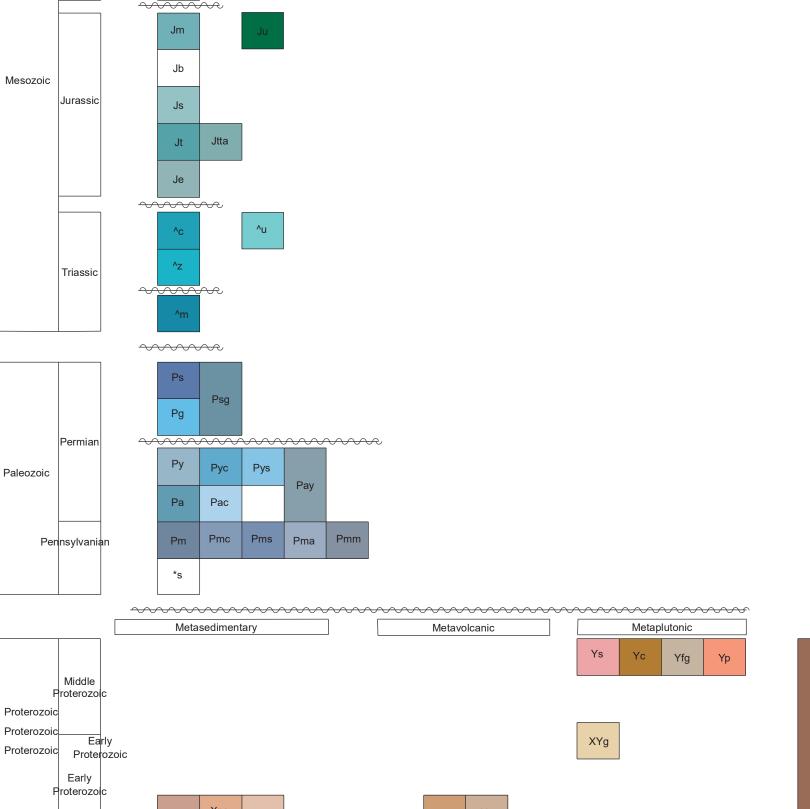
Cross sections are constructed based upon the interpretations of the author made from geologic mapping and available geophysical and subsurface (drillhole) data. Cross sections should be used as an aid to understanding the general geologic framework of the map area, and not be the sole source of information for use in locating or designing wells, buildings, roads, or other man-made structures.

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Explanation of Map Symbols

______ 1.1.1 Contact—Identity and existence certain, location accurate ———— 1.1.3 Contact—Identity and existence certain, location approximate

1.2.1 Key bed—Identity and existence certain, location accurate ———— 1.2.27 Coal bed—Identity and existence certain, location approximate

2.2.7 Normal fault—Identity and existence certain, location concealed

2.2.1 Normal fault—Identity and existence certain, location accurate —

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—

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2.2.3 Normal fault—Identity and existence certain, location approximate

5.1.1 Anticline (1st option)—Identity and existence certain, location accurate - 5.1.3 Anticline (1st option)—Identity and existence certain, location approximate

5.1.7 Anticline (1st option)—Identity and existence certain, location concealed 5.5.1 Syncline (1st option)—Identity and existence certain, location accurate

— ★ — 5.5.3 Syncline (1st option)—Identity and existence certain, location approximate 5.5.7 Syncline (1st option)—Identity and existence certain, location concealed

OrientationPoints

5.10.5 Plunging anticline

-- 6.2 Inclined bedding

FGDC_REFDE 31.10 Cross section line

Data Frame Name: Geologic Cross Section B-B'

Explanation of Cross Section Symbols ① 2.11.21 Plus/minus [notation on fault in cross section: minus, away from observer; plus, toward observer]

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CSBContactsAndFaults

1.1.1 Contact—Identity and existence certain, location accurate

——— 1.1.3 Contact—Identity and existence certain, location approximate

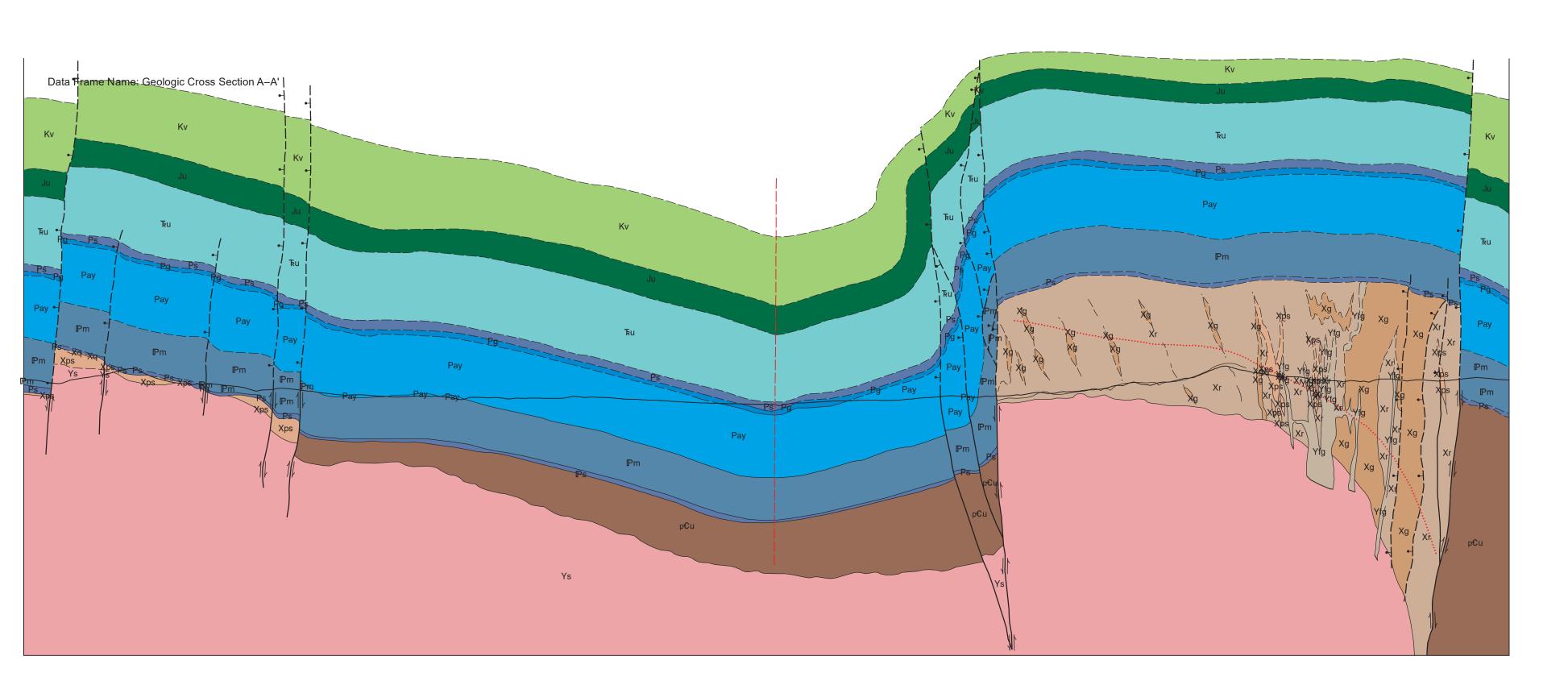
——— 1.2.27 Coal bed—Identity and existence certain, location approximate

——— 2.1.3 Fault (generic; vertical, subvertical, or high-angle; or unknown or unspecified orientation or sense of slip)—Identity and existence certain, location approximate

2.11.16 Normal fault (in cross section)

———— 31.08 Map Boundary

Data Frame Name: Geologic Cross Section B-B'



Data Frame Name: Geologic Cross Section C-C'

Last Modified February 2021 6-01-02-07-00 — unit — Ju — Ju — Jurassic — Jurassic Undivided 06-01-03-00-00 — heading02 — Triassic — Triassic — Triassic — Period

NMBGMR Open-File Geologic Map-1

01-01-00-00-00 — unit — Qal — Valley Alluvium (Holocene) — Holocene — Predominantly sand and silt and 06-01-03-01-00 — unit — ^c — Chinle Group (Upper Triassic) — Upper Triassic — Dark-red, mostly medium bedded, trough and wedge-planar cross-stratified feldspathic sandstone and silty micaceous shale, about 1,300 local gravely or clay-rich beds. Deposits underlie active floodplains and headwaters of low-order streams. As many as four upward-fining packages, separated by buried soils, are exposed locally in large incised drainages. ft (400 m) thick. Green reduction spots are common, as are limestone-pebble conglomeratic intervals, particularly Deposits derived from Permian bedrock are red; those derived from Pennsylvanian and Cretaceous bedrock near the base of the unit. are brown. Deposit locally incorporates debris-flow facies, derived from adjacent hillslopes, and spring and 06-01-03-02-00 — unit — ^z — Agua Zarca Formation (Upper Triassic) — Upper Triassic — The only

area along the boundary between Sandia Park and Sandia Crest quadrangles.

fabrics are commonly preserved, and they contain abundant quartz sand

considered a reliable criterion for picking the Abo-Yeso contact.

06-02-02-00-00 — heading02 — Permian — Permian — Permian — Period

plant debris are common.

Middle Pennsylvanian — Madera Formation limestone

Middle Pennsylvanian — Madera Formation arkose

Middle Pennsylvanian — Madera Formation mudstone

otite grains, define the foliation.

and greenish, and they contain abundant siliciclastic sand.

subdivision of Chinle Group recognized during this study. It is a tan to light grayish-pink, resistant, thin- to

06-02-01-03-00 — unit — Psg — San Andres-Glorieta Formations, undifferentiated (Upper Permian) — Upper

names, are gray limestone (San Andres) and white quartz arenite (Glorieta). These were differentiated where

06-02-01-04-00 — unit — Py — Yeso Formation, undifferentiated (Lower Permian) — Lower Permian — Reddish

to pink or tan, medium- to thin-bedded feldspathic sandstone, shale, and silty shale interbedded with massive or

laminated and virtually identical to those within the underlying Abo lithotype except that salt-hopper casts and

aminated, micritic, gray or tan limestone near the top. The sandstones are typically cross-stratified and/or cross-

06-02-01-05-00 — unit — Pyc — Yeso limestone (Lower Permian) — Lower Permian — Intervals, generally less an 5 m thick, of massive or algal/cryptalgal-laminated limestone. The limestones are typically micritic, fenestral

06-02-01-06-00 — unit — Pys — Yeso sandstone (Lower Permian) — Lower Permian — Red to light-red and

medium bedded and wedge planar to trough cross-stratified; ripple cross-laminations are common in the finer-

tan, medium- to fine-grained feldspathic sandstone and red siltstone or shale. Sandstones are typically thin to

grained intervals. Yeso lithotype siliciclastics are virtually indistinguishable from those of the Abo lithotype, and

these sequences were usually mapped together. Yeso siliciclastics were differentiated only in areas directly

adjacent to Yeso limestones or where salt-hopper casts/molds are abundant. Salt-hopper casts and molds are usually present in the upper part of the Abo-Yeso formation siliciclastic sequence, but because of the generally poor exposure and the small size of float material, the presence or absence of these structures was not

06-02-01-07-00 — unit — Pay — Abo-Yeso Formations, undifferentiated (Lower Permian) — Lower Permian

06-02-01-08-00 — unit — Pa — Abo Formation (Lower Permian) — Lower Permian — Red and locally tan

pioturbated (Macaronichnus). The sandstones are cross-stratified (typically trough and wedge-planar

(particularly near the base), medium- and thin-bedded arkose and feldspathic sandstone interbedded with red micaceous siltstone and shale, commonly with green reduction spots. The lower most arkoses are typically

lighter colored and coarser grained than the younger feldspathic sandstones, and at least one of them is strongly

geometries), and the finer-grained rocks are commonly ripple cross-laminated. In addition, mud-chip clasts and

06-02-01-09-00 — unit — Pac — Abo limestone (Lower Permian) — Lower Permian — Rare Jess than 1-m-

06-02-02-01-00 — unit — *m — Madera Formation, undifferentiated (Upper and Middle Pennsylvanian) — Upper

and Middle Pennsylvanian — A mixed sequence of medium- to thick-bedded, light-gray limestone and greenish

to tan and rarely reddish arkose and feldspathic siltstones at least 1,200 ft (365 m) thick. Dark-colored mudstone

intervals with variable amounts of thin-bedded black micrites are also present. Contacts between the limestones and coarse-grained siliciclastics are generally sharp, and those between the limestones and mudstones are

more gradational. Limestones, which vary in thickness from 20 cm to 20 m (amalgamated beds), dominate the rmation, and these are typically matrix-supported (micrites and skeletal wackestones). Clast-supported

limestones (skeletal grainstones and packstones) are less common, although locally abundant, and these tend to

be toward the top of sequences. Skeletal debris in the Madera Formation limestones consist mostly of crinoid

stems and columnals, brachiopods, corals, and bryzoans. Molluscan shell fragments are rare. The arkosic

06-02-02-00 — unit — *mc — Madera Formation limestone (Upper and Middle Pennsylvanian) — Upper and

Pennsylvanian) — Upper and Middle Pennsylvanian — Madera Formation siliciclastics, undifferentiated

06-02-02-04-00 — unit — *ma — Madera Formation arkose (Upper and Middle Pennsylvanian) — Upper and

06-02-02-05-00 — unit — *mm — Madera Formation mudstone (Upper and Middle Pennsylvanian) — Upper and

06-02-02-06-00 — unit — *s — Sandia Formation (Upper and Middle Pennsylvanian) — Upper and Middle Pennsylvanian — Sandstone-rich sequence of interbedded arkoses and feldspathic sandstones, siltstones, silty

and Proterozoic basement. Its contact with the overlying Madera Formation is chosen at the base of the oldest,

ight-gray either massive-appearing limestone or amalgamated sequence of medium- to thick-bedded

limestones. The Madera Formation limestones are typically micrites or skeletal wackestones, whereas

07-01-01-00-00 — heading02 — Early Proterozoic — Early Proterozoic — Early Proterozoic — Eon

shales, and limestones, about 150 ft (45 m) thick. This unit is commonly present between the Madera Formation

limestones in the Sandia Formation are typically thinner bedded, clast supported (packstones and grainstones),

07-01-01-00 — unit — Xq — Quartzite (Early Proterozoic) — Early Proterozoic — Orthoquartzite is typically gray to dark red in outcrop and locally contains oxide layering that defines bedding. Schistosity is best developed

07-01-01-02-00 — unit — Xps — Pelitic and semi-pelitic gneiss (Early Proterozoic) — Early Proterozoic —

08-01-01-00-00 — heading02 — Early Proterozoic — Early Proterozoic — Early Proterozoic — Eon

rock types and textures suggests that these rocks represent a heterogeneous volcanic package.

09-01-01-00-00 — heading02 — Early Proterozoic — Early Proterozoic — Early Proterozoic — Eon

the Sandia granite and possibly slightly younger than the ca 1.65 Ga metavolcanic rocks.

09-01-01-02-00 — unit — XYg — Sheared, coarse-grained biotite granite (Middle Proterozoic) — Middle Proterozoic — Composed of quartz, plagioclase, K-feldspar, biotite, and opaque minerals. Crosscuts the main

subvertical fabric of the supracrustal rocks. Dynamic recrystallization of feldspar porphyroclasts suggests

09-01-02-00-00 — heading02 — Middle Proterozoic — Middle Proterozoic — Middle Proterozoic — Eon

biotite monzogranite that contains megacrysts of K-feldspar (1–2 cm long) that are typically aligned in a

state deformational fabric. Stretching lineations defined by microcline ribbons in sheared granite are

magmatic foliation that is also defined by biotite layers. Locally contains a subvertical, northeast-striking, solid-

subhorizontal, and kinematic indicators such as sigmoid porphyroclasts suggest dextral shearing. Abundant

mafic enclaves are commonly elongate in the foliation and parallel to the shallowly plunging stretching lineation.

deformation was taking place at temperatures greater than 500° C. Temporal relationships with the Sandia

granite are as yet undetermined; however, the extent of shearing suggests that this intrusion is at least as old as

09-01-02-01-01 — unit — Ys — Sandia granite (Middle Proterozoic) — Middle Proterozoic — Mainly megacrystic

08-01-01-02-00 — unit — Xg — Greenstone (Early Proterozoic) — Early Proterozoic — Dark-gray to black

sequence of foliated, mafic to intermediate rocks that range from amphibolite to mafic schist. The large variety of

08-01-01-03-00 — unit — Xr — Metarhyolite (Early Proterozoic) — Early Proterozoic — Commonly orange-pink

and fine grained and contains quartz (as much as 5 mm in diameter) and K-feldspar phenocrysts. Average modal composition is quartz, 43%; plagioclase, 34% (An6 to An13); microcline, 13%; muscovite, 6%; biotite, 2%; and

opaque minerals, 2%. Quartz grains are commonly lineated and flattened and, along with aligned muscovite or

ompositionally banded, quartz-rich pelitic and semi-pelitic gneiss containing micas, sillimanite, and/or

07-01-01-03-00 — unit — Xpg — Pelitic gneiss (Early Proterozoic) — Early Proterozoic — Quartz-rich pelitic gneiss and schist and immature aluminous quartzites along the margins of the Sandia pluton in La Madera area.

micaceous units. Quartz grains are recrystallized and strongly elongate, having length to width ratios as high

sandstones are typically coarse- to medium-grained, but granules and rarely pebbles also are present.

06-02-02-03-00 — unit — *ms — Madera Formation siliciclastics, undifferentiated (Upper and Middle

07-01-00-00 — heading02 — Proterozoic — Proterozoic — Proterozoic — Eon

08-01-00-00 — heading02 — Proterozoic — Proterozoic — Proterozoic — Eon

09-01-00-00 — heading02 — Proterozoic — Proterozoic — Proterozoic — Eon

m), and are complexly interleaved. The lithotypes, which may not correlate strictly with formations of the same

01-02-00-00 — unit — Qacu — Alluvium and Colluvium, undivided (Holocene to Late Pleistocene) medium-bedded quartz arenite and feldspathic arenite, about 350 ft (105 m) thick. Holocene to Late Pliestocene — Poorly stratified, predominantly matrix supported colluvium that interfingers 06-01-03-03-00 — unit — ^m — Moenkopi Formation (Middle to Lower Triassic) — Middle and Lower Triassic downslope with a valley-bottom alluvium. Deposits underlie toeslopes and valley bottoms of low-order streams ve- weathering, dark-red micaceous shale, silty shale, and thin-bedded feldspathic sandstone, about 200 01-03-00-00-00 — unit — Qacuf — Predominantly fine grained colluvial deposits derived from shales, siltstones and friable sandstones (Holocene to Late Pleistocene). — Holocene to Late Pliestocene — Predominantly fine

06-01-03-04-00 — unit — ^u — TRu — Triassic — Triassic Undivided 01-04-00-00 — unit — Qacuc — Predominantly coarse grained, locally clast supported colluvium (Holocene 06-02-00-00 — heading02 — Paleozoic — Paleozoic — Paleozoic — Era

to Late Pleistocene). — Holocene to Late Pliestocene — Predominantly coarse grained, locally clast supported 06-02-01-00-00 — heading02 — Pennsylvanian — Pennsylvanian — Pennsylvanian — Period 01-05-00-00-00 — unit — Qfu — Small alluvial fans, undivided (Holocene and late Pleistocene) — Small alluvial fans, undivided (Holocene and late Pleistocene) — hese small fans are typically found at tributary mouths in 06-02-01-02-00 — unit — Pg — Glorieta Formation (Upper Permian) — Upper Permian — White and pink (along alluvial valley bottoms and at the base of steep hillslope drainages. contact with underlying Yeso Formation), massive or plane-bedded to low-angle planar cross-stratified quartz arenite. Locally, the sandstones are extensively bioturbated (Macaronichnus), and near the contact with Yeso 02-00-00-00 — heading02 — Late Pleistocene — Late Pleistocene — Late Pleistocene — Epoch Formation they are feldspathic. The sandstones are typically well sorted, but a thin, feldspathic quartz-pebble conglomerate occurs just below the base of the lowermost San Andres Formation limestone in the Arroyo Armijo

matrix-supported deposits are locally present as talus on the dip slope of the Sandia Mountains. Locally includes Permian — The upper two lithostratigraphic units of the Permian have a combined thickness of about 400 ft (120

isolated exposures 02-02-00-00 — unit — Qfy — Alluvial-fan deposits inset into the Qfo deposits (Late Pleistocene) — Late Pleistocene — Younger fan deposits inset into Qfo. These deposits are composed of a heterolithic mix of carbonate and various Proterozoic rocks including quartzite. Fan surfaces exhibit modified bar and swale topography. Soils developed in these deposits exhibit from stage I to II+ calcic horizons.

02-01-00-00-00 — unit — Qcu — Colluvium (Holocene and Pleistocene) — Holocene and Pleistocene —

Coarse-grained, poorly sorted, poorly stratified colluvial deposits. Deposit includes colluvium derived from a

variety of mass-movement hillslope processes including debris flows, slumps, and landslides. Angular-clast,

<all other values>

01-00-00-00 — heading02 — Holocene — Holocene — Holocene — Holocene

cienega carbonateand organic-rich, fine-grained facies. From 3 to 20 ft (<1 to 6 m) thick.

grained colluvial deposits derived from shales, siltstones, and friable sandstones.

alluvial-fan sand, gravel, and boulders and lesser amounts of silt and clay. Fan facies reflect predominantly fluvial processes and to a lesser extent debris-flow and/or hyperconcentrated-flow processes. From 6 to 30 ft (2 to 10 02-04-00-00 — unit — Qty — Fluvial terraces (Late Pleistocene — Late Pleistocene — Straths typically 6 to 65 ft (2 to 20 m) above grade. Treads exhibit both intact and reworked characteristics. Soils developed in these terraces exhibit from stage I to II calcic horizon development.

02-03-00-00 — unit — Qf — Alluvial fans (Pleistocene) — Pleistocene — Moderately well sorted and stratified

characteristics. Soils developed in these terraces exhibit from stage I to II calcic horizon development. 02-05-00-00 — unit — Qt — Fluvial terraces (Pleistocene) — Pleistocene — Well-sorted, well-stratified, rounded fluvial gravels and sand and lesser amounts of silt and clay. Terrace deposits lie adjacent to major highorder drainages as predominantly thin inset alluvial fills that bury low-relief straths cut on bedrock. From 3 to 20 ft 03-00-00-00 — heading02 — Late Middle Pleistocene — Late Middle Pleistocene — Late Middle Pleistocene

03-01-00-00 — unit — Qpf — Piedmont–alluvial-fan complexes (middle Pleistocene) — Middle Pleistocene — The lower two lithostratigraphic units of the Permian represent a reddish, feldspathic to quartzose siliciclastic Complexly interstratified alluvial fans and piedment deposits mantling low-relief pediments that extend north and sequence that reaches 1,300 ft (400 m) in thickness, and was mapped as a single unit throughout most of the east of La Madera. Deposit exhibits several unconformities and buried soils. Treads are of low relief and exhibit a complex polygenetic soil with from stage II to III+ calcic horizons. From 10 to 65 ft (3 to 20 m) thick. of low relief and exhibit a complex polygenetic soil with from stage II to III+ calcic horizons. From 10 to 65 ft (3 to 20 m) thick. 03-02-00-00 — unit — Qfo — Alluvial-fan deposits inset below the Tuerto gravels (Stearns, 1953) overlying the Ortiz pediment (Bryan, 1938) (middle Pleistocene) — Middle Pleistocene — Older fan deposits derived in

part from Tuerto gravels. These deposits are composed primarily of carbonate clasts. Fan surfaces exhibit highly

Pliocene — Well-rounded, poorly stratified gravel lags that mantle low-relief upland surfaces approximately 100

m above local grade. These gravels may be equivalent to the Tuerto gravels of Stearns (1953). About 3 ft (<1 m)

03-03-00-00 — unit — Qto — Fluvial terraces (middle Pleistocene) — Middle Pleistocene — Straths typically thick, thin- to medium-bedded, gray to tan limestones, typically containing abundant bivalve fragments and/or 100 ft (30 m) above grade. Treads are significantly reworked, and soils developed in these terraces exhibit from stage II+ to III+ calcic horizons. 04-00-00-00 — heading02 — Early Middle Pleistocene — Early Middle Pleistocene — Early Middle Pleistocene — Epoch 04-01-00-00 — unit — QTug — Upland gravels (middle Pleistocene to Pliocene?) — Middle Pleistocene to

modified bar and swale topography. Soils developed in these deposits exhibit from stage II+ to III+ calcic

05-00-00-00 — heading02 — Tertiary — Tertiary — Tertiary — Period 05-01-00-00 — unit — Tri — Rhyolite dike — Tertiary — Moderately crystal poor, sanidine-bearing rhyolitic dike that intrudes the Dakota Formation, Morrison Formation contact near the head of Gutierrez Canyon. 05-02-00-00 — unit — Ti — Monzonite — Tertiary — Medium-grained monzonitic intrusion, probably related to the Ortiz igneous complex.

■ 05-03-00-00-00 — unit — Thi — Hornblende porphyritic intrusive latite — Tertiary — Dikes and a plug in the lower San Pedro Creek area. The dike and the plug intrude the upper Madera Formation and Abo Formation. The main dike has given 39Ar/40Ar hornblende ages of 34.5±0.2 Ma and 35.02±0.13 Ma. 06-00-00-00 — heading01 — Sedimentary — Sedimentary — Sedimentary units

06-01-00-00-00 — heading02 — Mesozoic — Mesozoic — Mesozoic — Era 06-01-01-00-00 — heading02 — Cretaceous — Cretaceous — Cretaceous — Period 06-01-01-00 — unit — Kv — Mesaverde Group, undifferentiated (Cretaceous) — Cretaceous — A complex

unit of marine, marginal-marine, and fluvial sandstones, shales, and siltstones with at least two intervals of coalbearing strata, up to 1,400 ft (430 m) thick. The sequence is divided into three mappable lithofacies, which have peen given interpretive informal names: 1) marine sandstone and shale (Kvm); 2) fluvial and distributary-channel sandstones, which include the coal beds (Kvt); and 3) shoreface sandstones (Kvs). The sandstones of the Mesaverde Group range from feldspathic arenites to quartz arenites, and, locally, dark-colored chert grains are 06-01-01-02-00 — unit — Kvm — Mesaverde Group marine sandstone and shale (Cretaceous) — Cretaceous — A map unit recognized only in areas where molluscan shell fragments (chiefly bivalves) are present. The unit

is typically recessive weathering, and the sandstones are thin to medium bedded, dark brown to greenish, argillaceous, and variably calcareous. The unit along the west limb of the Tijeras syncline includes at least one medium-bedded calcareous sandstone containing septarian nodules and bivalve shell fragments. 06-01-01-03-00 — unit — Kvt — Mesaverde Group terrestrial sandstones (Cretaceous) — Cretaceous — A map unit characterized by abundant woody debris and mud-chip intraclasts. It consists of two type of sandstones: 1) resistant, medium- to thick-bedded, tr ugh and wedge-planar cross-stratified, lightcolored sandstones and 2) recessive, massive or flaggy-weathering, argillaceous, greenish-brown sandstones and siltstones with abundant woody debris and mud-chip clasts. Three intervals of this map unit are recognized, each overlying marine sequences, and the upper two contain coal beds. The middle unit thins dramatically to the east, where it is represented by a 3 to 10 ft (1 to 3 m) thick, clean, cross-stratified sandstone along the east limb of the Tijeras

06-01-01-04-00 — unit — Kvs — Mesaverde Group near shoreface sandstones (Cretaceous) — Cretaceous — A map unit recognized by a combination of at least two of the following features: 1) clean (nonargillaceous), wellsorted nature of the sandstone; 2) planar bedding or low-angle cross-stratification; 3) recognition of the uppernoreface-environment restrictive trace fossil Macaronichnus (c.f., Mieras et al., 1993). Molluscan shell fragments are also recognized, and at the top of the easternmost mapped outcrop, vertical, lined burrows are present. The combination of textural maturity, sedimentology, and ichnofauna are indicators of a high-energy near-shoreface environment. The map unit is discontinuous, appearing to grade laterally into marine or nonmarine sandstone units. 06-01-01-05-00 — unit — Km — Mancos Shale (Cretaceous) — Cretaceous — Dark-gray shale, slightly

calcareous shale, and septarian nodule-bearing shale with rare, thin, black micrite beds and at least two 3-4-mhick, medium-bedded calcareous sandstone intervals. Unit is about 1,300 ft (400 m) thick. The micrites and sandstones are typically fossiliferous, yielding abundant molluscan shell fragments. A prominent noncalcareous present in the middle of this unit that directly overlies a calcareous shale and siltstone interval containing the late Turonian ammonites Prionocyclus novimexicanus and Scaphites whitfieldi, indicating that these strata are 06-01-01-06-00 — unit — Kms — Mancos sandstone (Cretaceous) — Cretaceous — Medium- to thin-bedded, noncalcareous, extensively vertical burrowed, fine- to medium-grained sandstone. The sandstone is recognized

08-01-01-04-00 — unit — pCu — pCu — Precambrian — Precambrian undivided only east of Tijeras fault where it is less than 2 m thick. It directly overlies a calcareous siltstone-shale interval interpreted as equivalent to the Juana Lopez Member because it contains the late Turonian ammonites

Prionocyclus novimexicanus and Scaphites whitfieldi. 06-01-01-07-00 — unit — Kdu — Dakota Formation, upper man unit (Cretaceous) — Cretaceous — A thin unit of thin- to medium-bedded slightly calcareous sandstone, siltstone, and silty shale separated from the main body of the Dakota Formation by a covered interval. The map unit is probably correlative with the Twowells Tongue of the Dakota Formation and is <100 ft (30 m) thick. 06-01-01-08-00 — unit — Kd — Dakota Formation (Cretaceous) — Cretaceous — Medium-bedded, pervasively

silica cemented, plane-bedded to tabular cross-stratified quartz arenite, typically with abundant vertical, lined burrows, many of which are clearly Diplocraterion traces. About 300 ft (90 m) thick. 06-01-02-00-00 — heading02 — Jurassic — Jurassic — Jurassic — Period 06-01-02-01-00 — unit — Jm — Morrison Formation (Jurassic) — Jurassic — Medium- to thick-bedded, lightcolored, generally poorly sorted feldspathic sandstones, with green and red shaley interbeds, around 500 ft (150 m) thick. Sandstones contain abundant quartz granules and greenish mud-chip clasts, and the feldspar grains

typically are strongly altered to white clay minerals. The upper part of this unit in some areas is a moderately to well-sorted, moderately bioturbated feldspathic sandstone, which may be equivalent to the Jackpile Member. Abundant dark grayish-green shaly intervals with thin, dark-colored micritic limestones are present in some areas near the base of the map unit. 06-01-02-03-00 — unit — Js — Summerville Formation (Jurassic) — Jurassic — Red and green variegated shale and thin-bedded siltstone or fine-grained sandstone, rarely exposed.

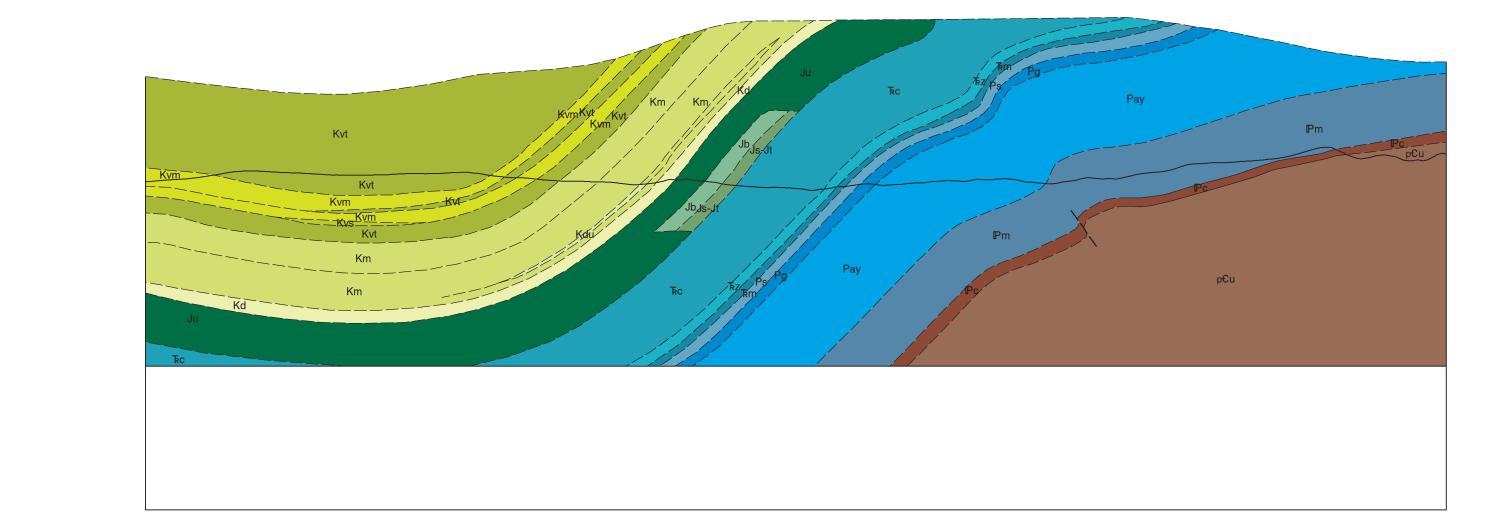
06-01-02-04-00 — unit — Jt — Todilto Formation, chiefly Luciano Mesa Member (Jurassic) — Jurassic — In most areas the only part of the Todilto Formation exposed is the Luciano Mesa Member, which is a laminated, fetid, dark-gray micritic limestone. Laminations in the limestone appear to be algal in origin, and macrofossils are

06-01-02-05-00 — unit — Jtta — Todilto Formation, Tonque Arroyo Member (Jurassic) — Jurassic — Thinbedded to laminated gypsum facies, rarely exposed. 06-01-02-06-00 — unit — Je — Entrada Formation (Jurassic) — Jurassic — Light-green, massive (bioturbated?) sandstone. Rarely, this unit displays high-angle cross-stratification.

09-01-02-01-03 — unit — Yfg — Fine-grained granite (Middle Proterozoic) — Middle Proterozoic — Chiefly composed of quartz, K-feldspar, and plagioclase. These leucocratic granites represent late melts of the Sandia granite and are possibly correlative with the Cibola granite. 09-01-02-01-04 — unit — Yp — Pegmatite and aplite dikes (Middle Proterozoic) — Middle Proterozoic — Dikes are mainly subvertical sheets parallel to the country-rock foliation; however, local crosscutting relationships with the country rock indicate that the dikes postdate the development of the vertical foliation. Dikes are generally undeformed but are locally sheared parallel to their margins. These dikes are interpreted to be a late phase of

09-01-02-01-02 — unit — Yc — Yc (Middle Proterozoic) — Middle Proterozoic — Yc

Data Frame Name: Geologic Cross Section D–D'



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