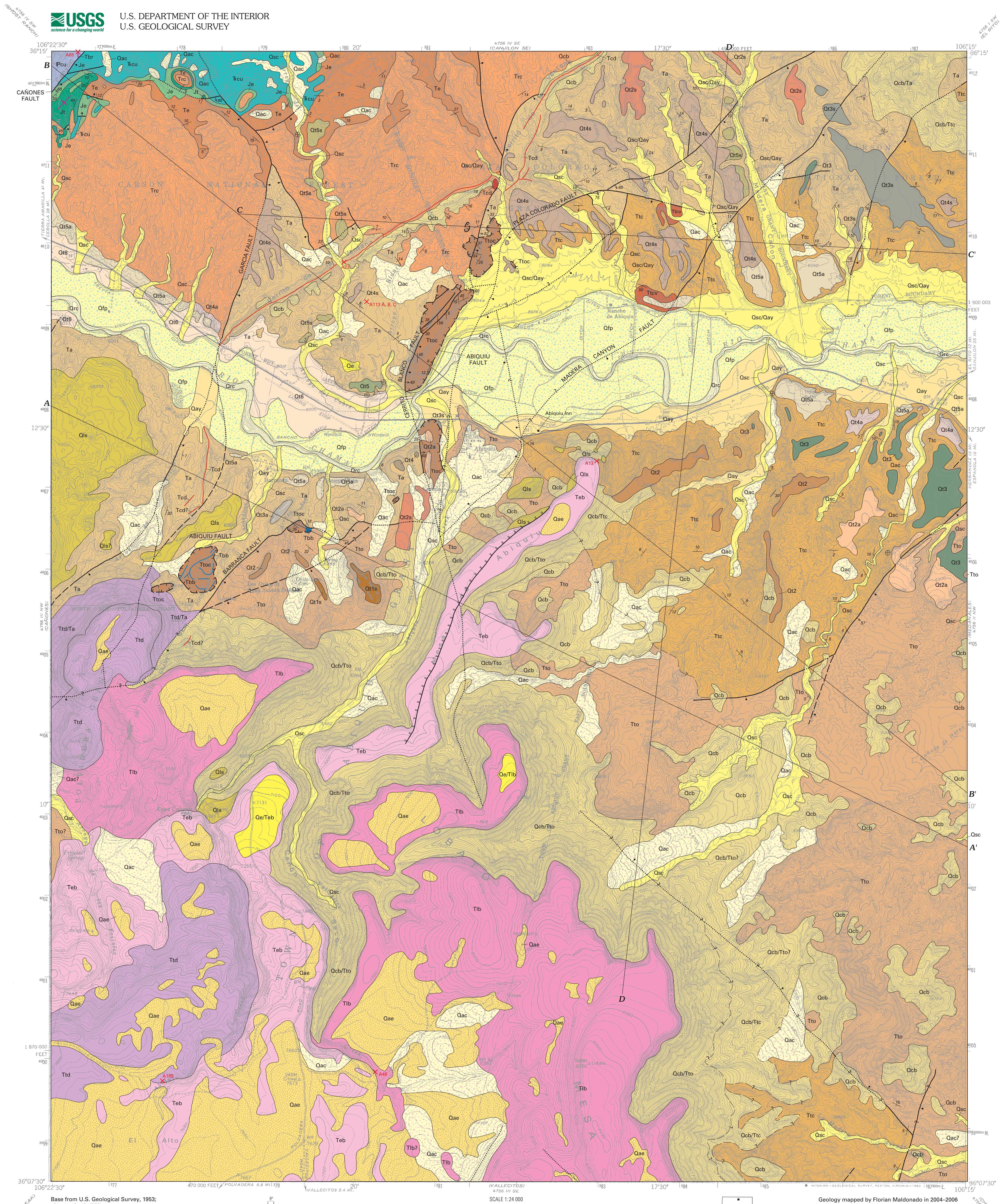
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

SCIENTIFIC INVESTIGATIONS MAP 2998
Version 1.0
Pamphlet accompanies map



Base from U.S. Geological Survey, 1953; photorevised, 1979
Polyconic projection
10,000-foot grid based on New Mexico coordinate system, central zone
1,000-meter Universal Transverse Mercator grid ticks, zone 13
1927 North American Datum

APPROXIMATE MEAN DECLINATION, 2008

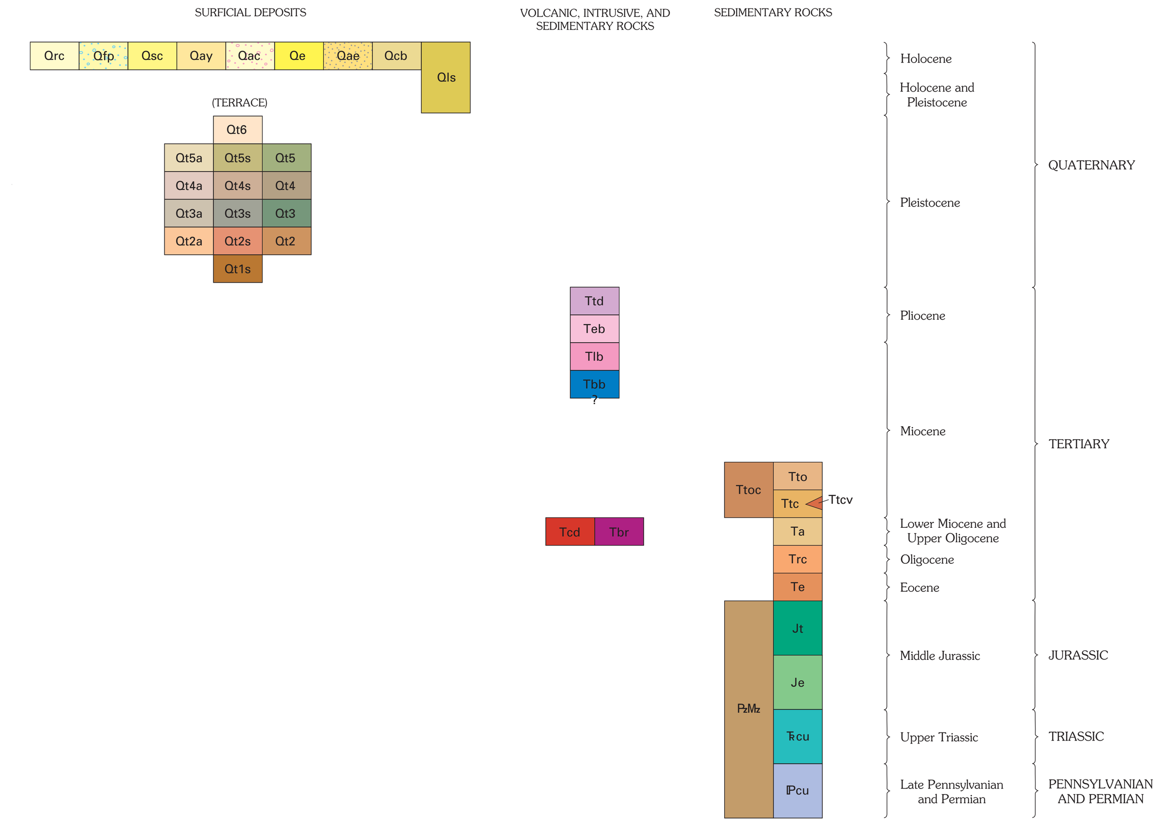
SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

Geology mapped by Florian Maldonado in 2004–2006
Digital database prepared by Darren R. (Paco) Van Sistine
Editing and digital cartography by Gayle M. Dumonceaux, Denver Publishing Service Center
Manuscript approved for publication December 20, 2007

CORRELATION OF MAP UNITS



LIST OF MAP UNITS

ALLUVIUM, COLLUVIUM, EOLIAN, TALUS, AND LANDSLIDE DEPOSITS

- **Qrc** Main stream channel of modern Rio Chama (historic)
- **Qfp** Floodplain of modern Rio Chama (historic)
- **Qsc** Side-stream channel deposits (Holocene)
- **Qay** Young alluvium in Rio Chama valley bottom and north of Rio Chama (Holocene)
- **Qac** Alluvium and colluvium (Holocene)
- **Qe** Eolian sand (Holocene)
- **Qae** Alluvium and eolian sand (Holocene)
- **Qcb** Colluvium deposits predominately of basaltic clasts (Holocene)
- **Qls** Landslide deposits (Holocene and Pleistocene)

AXIAL CHANNEL AND SIDE-STREAM CHANNEL DEPOSITS OF ANCESTRAL RIO CHAMA

- **Qt6** Axial channel and side-stream channel deposits of ancestral Rio Chama, undivided (Pleistocene?)
- **Qt5a** Axial channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt5s** Side-stream channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt5** Axial channel and side-stream channel deposits of ancestral Rio Chama, undivided (Pleistocene)
- **Qt4a** Axial channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt4s** Side-stream channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt4** Axial channel and side-stream channel deposits of ancestral Rio Chama, undivided (Pleistocene)
- **Qt3a** Axial channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt3s** Side-stream channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt3** Axial channel and side-stream channel deposits of ancestral Rio Chama, undivided (Pleistocene)
- **Qt2a** Axial channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt2s** Side-stream channel deposits of ancestral Rio Chama (Pleistocene)
- **Qt2** Axial channel and side-stream channel deposits of ancestral Rio Chama, undivided (Pleistocene)
- **Qt1s** Side-stream channel deposits of ancestral Rio Chama (Pleistocene)

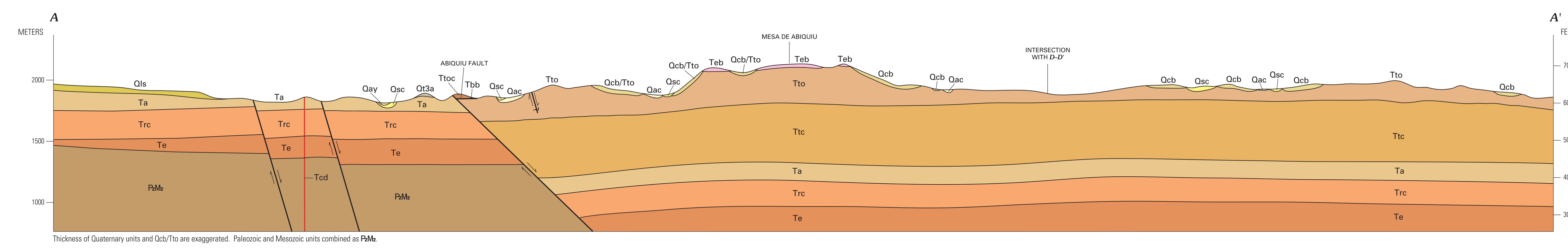
INTRUSIVE, EXTRUSIVE, AND SEDIMENTARY ROCKS

- **Ttd** Dacite of Tschicoma Formation (Pliocene)
- **Teb** El Alto Basalt (Pliocene)
- **Tlb** Lobato Basalt (Miocene)
- **Tbb** Basaltic dike of Barranca (Miocene?)
- **Tcd** Cerrito de la Ventana dike (lower Miocene)
- **Tbr** Basaltic dike of Red Wash Canyon (lower Miocene)

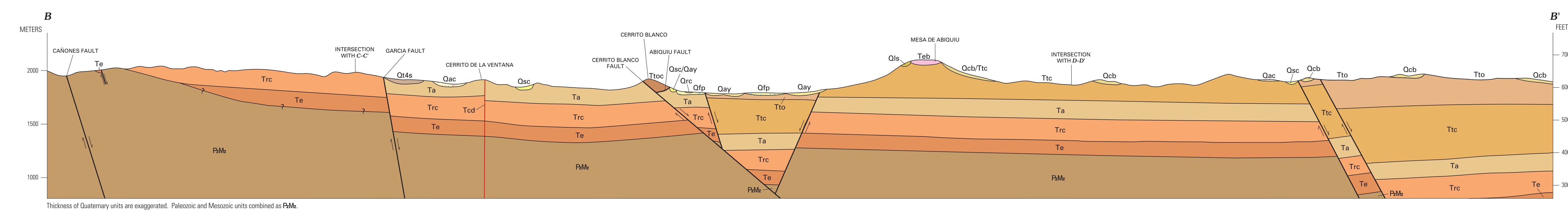
SEDIMENTARY ROCKS

Tesque Formation of the Santa Fe Group

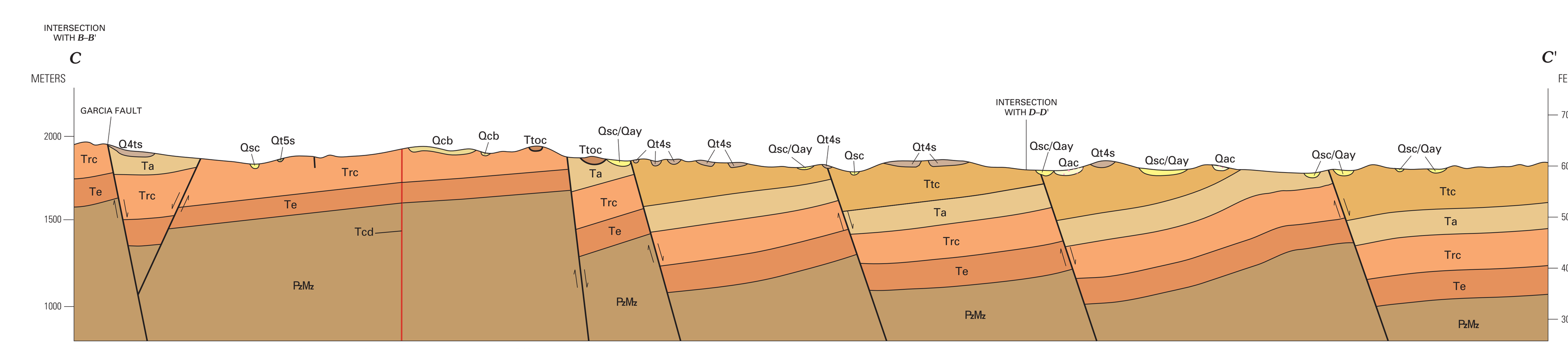
- **Tto** Ojo Caliente Sandstone Member (upper to middle Miocene)
- **Ttc** Chama-El Rito Member (middle to lower Miocene)
- **Ttcv** Volcaniclastic unit of Chama-El Rito Member (middle to lower Miocene)
- **Ttoc** Transitional zone of Ojo Caliente Sandstone and Chama-El Rito Members (upper to middle Miocene)
- **Ta** Abiquiu Formation (lower Miocene to upper Oligocene)
- **Trc** Ritito Conglomerate (Oligocene)
- **Te** El Rito Formation (Eocene)
- **Jt** Todilto Limestone Member of Wanakah Formation (Middle Jurassic)
- **Je** Entrada Sandstone (Middle Jurassic)
- **Tr̄cu** Chinle Group, undivided (Upper Triassic)
- **P̶cu** Cutler Group, undivided (Late Pennsylvanian to Early Permian)
- **PzMz** Paleozoic and Mesozoic rocks, undivided (Paleozoic to Upper Triassic)



Thickness of Quaternary units and Qcb/Tto are exaggerated. Paleozoic and Mesozoic units combined as PzMz.



Thickness of Quaternary units are exaggerated. Paleozoic and Mesozoic units combined as PzMz.



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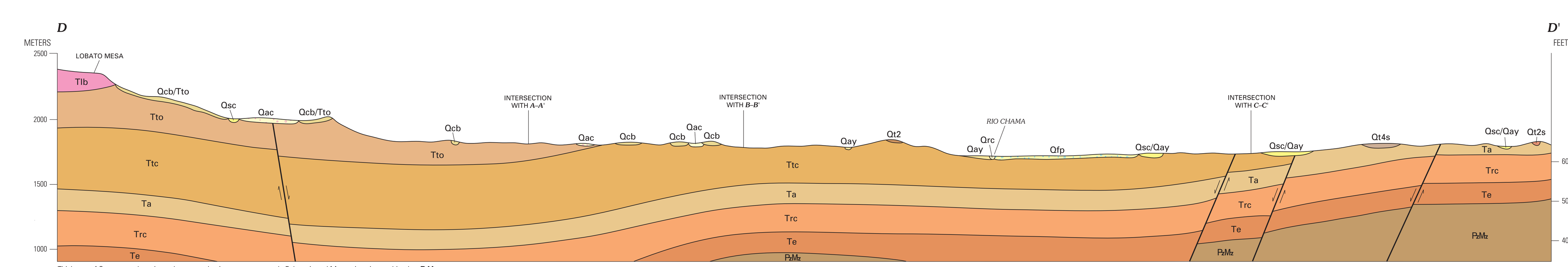

Thickness of Quaternary deposits and compound units are exaggerated. Paleozoic and Mesozoic units combined as PzMz.

EXPLANATION

- **Contact**—Queried where uncertain; dotted where concealed; dashed where approximately located. Contacts between bedrock and surficial deposits approximately located
- **Normal fault**—Bar and ball on downthrown side; dashed where approximately located; dotted where concealed; queried where uncertain; arrows indicate amount and direction of movement
- **Low-angle fault (Abiquiu fault)**—Dashed where mostly concealed and approximately located
- **Syncline**
- **Strike and dip of sedimentary beds**
  - Inclined
  - Horizontal
- **Incipient fissure (scarp) of gravity-slide block at Mesa de Abiquiu**
- **Sample location** (A48)
- **Qe/Teb** Veneer of younger unit (Qe, Qcb, or Qsc) covering older unit (second symbol varies)
- **Qcb/Tto** Undivided units due to poor exposures

Photograph 1. Photograph showing Santo Tomás Church, Abiquiu Plaza (view looking north).

Photograph 2. Photograph showing Rio Chama with Cerrito Blanco (Shiprock) in background (view looking north).

Photograph 3. Photograph showing Tertiary unit (Te) overlying Mesozoic rocks (Mz), upper reaches of Arroyo del Cobre (view looking southwest).

Photograph 4. Photograph showing Abiquiu Formation, north of Abiquiu (view looking southwest).

Photograph 5. Photograph showing Mesozoic rocks with Cerro Pedernal in background, upper reaches of Arroyo del Cobre (view looking southwest).

Photograph 6. Photograph showing Rio Chama, northeast of Abiquiu (view looking east).

Photograph 7. Photograph showing pedestal rock, northwest of Abiquiu (view looking south). Unit Ttoc on unit Ta.

GEOLOGIC MAP OF THE ABIQUIU QUADRANGLE, RIO ARRIBA COUNTY, NEW MEXICO

By
Florian Maldonado
2008

CONVERSION FACTORS

Multiply	By	To obtain
centimeters (cm)	0.394	inches (in.)
meters (m)	3.281	feet (ft)
kilometers (km)	0.621	miles (mi)

To convert Celsius (°C) to Fahrenheit (°F), use formula (°C x 1.8) + 32

Any use of trade names is for descriptive purposes only and does not imply endorsement by the U.S. Government

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Box 25286, Federal Center, Denver, CO 80225
1-888-ASK-USGS
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