EarthCaches of the Sandias

presented by Stan Davis
prepared for FOSM, October 7th, 2025

What is an EarthCache?

EarthCache is a special type of Geocache where the "treasure" is the geology

Entirely virtual (no physical cache in field)
1st EC placed in 2004
>28,000 EC's worldwide

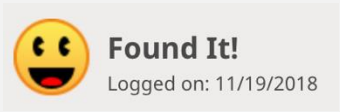
Basic requirements
- Teach an Earth Science lesson
- Include tasks that reinforce the lesson
- Based on the world around us, not an informational sign

Requirements for EC Owner
- Prepare EC details (location, description, requirements, etc.)
- Specify "terrain" and "difficulty" ratings
- Submit EC to geocaching.com
- Gain approval from a volunteer subject matter expert.
- The EC gets "published"!

Special requirement for Sandia Ranger District and ABQ OS
- EC's must be place on *official* trails (per C. Powell and ABQ OS)

"Geology setting" (unofficial)
- Ubiquitous
- Unique

Procedure for EC'er
- Use your phone app
- Navigate to the EC location
- Read the description
- Perform required tasks
- Answer questions
- Provide a picture(s)
- Gain approval from the Cache Owner (CO) to log the find



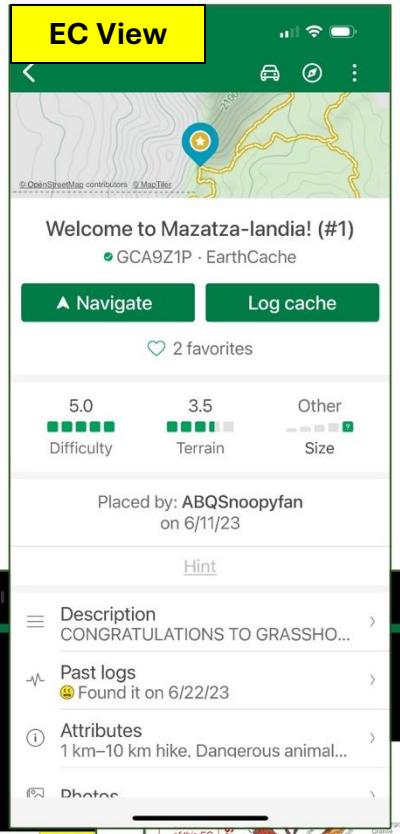
- Award a "Favorite" if it is one!

Notes
- I've been to the field for all EC's, multiple times.
- All photographs are mine, unless otherwise noted.

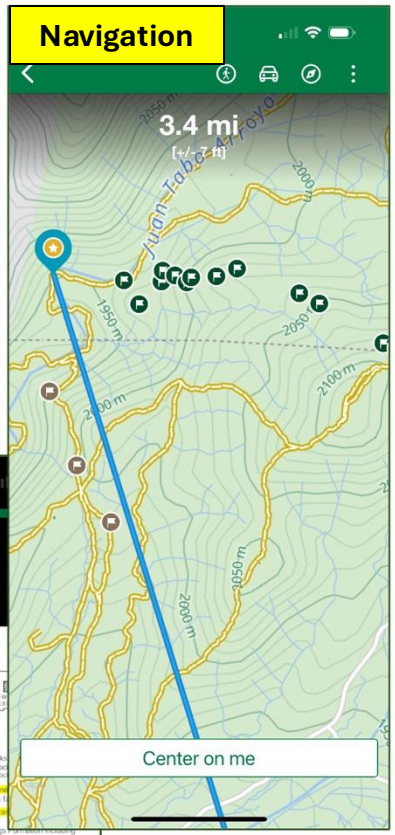
Example EarthCache interface (smart-phone view)

Map view

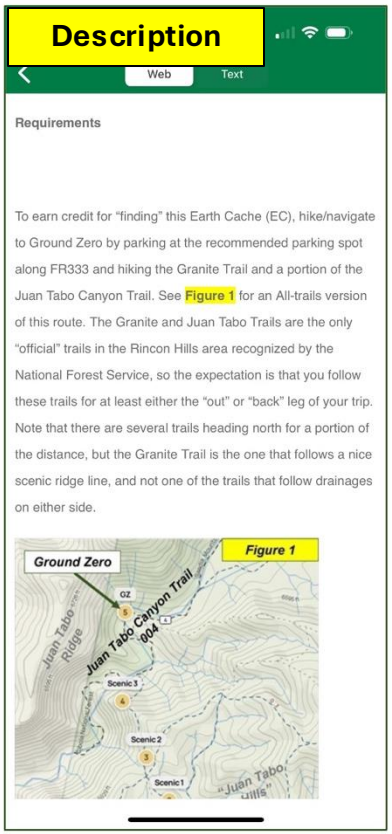
EC View



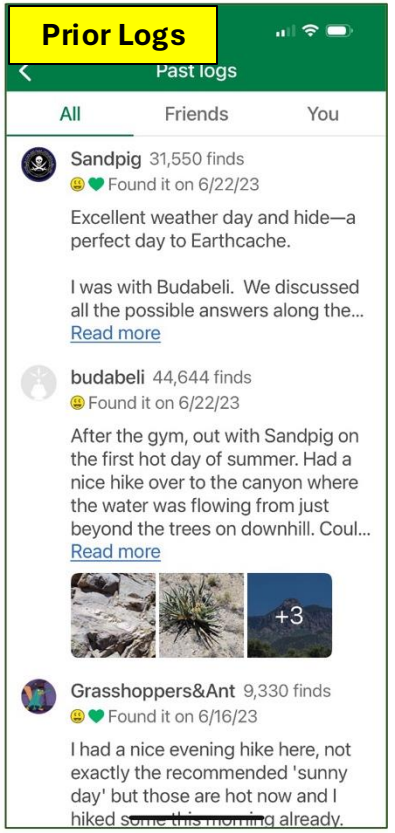
Navigation



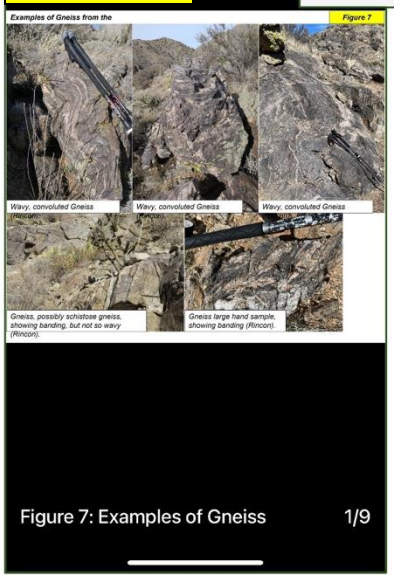
Description

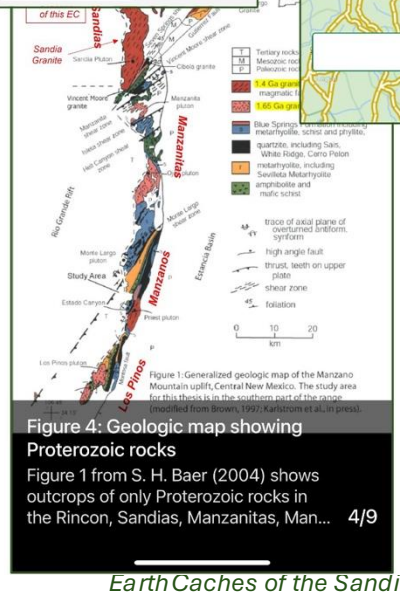


Prior Logs

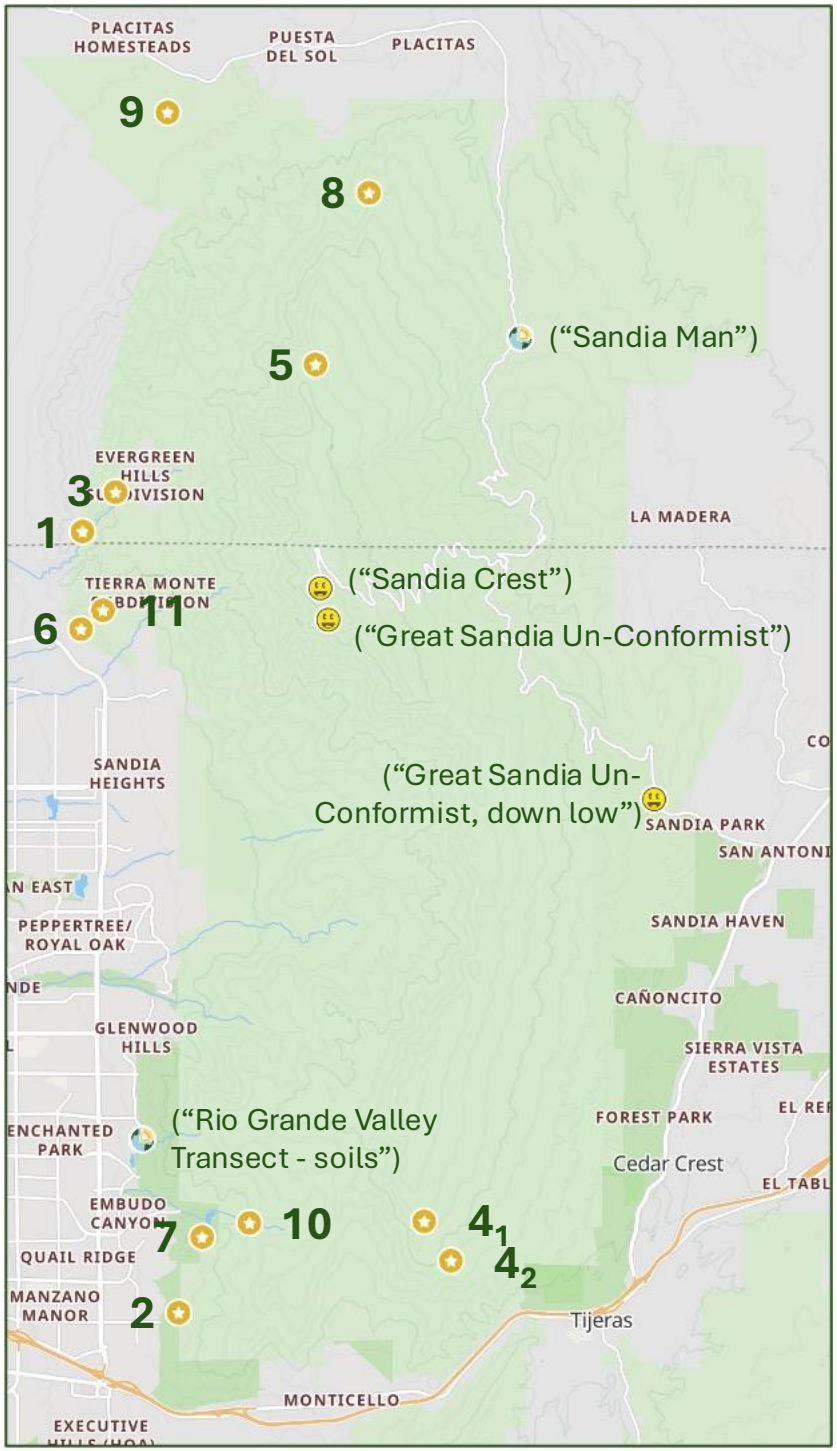


Pictures





EarthCaches of the Sandias



5 Pre-existing EC's in the Sandias:

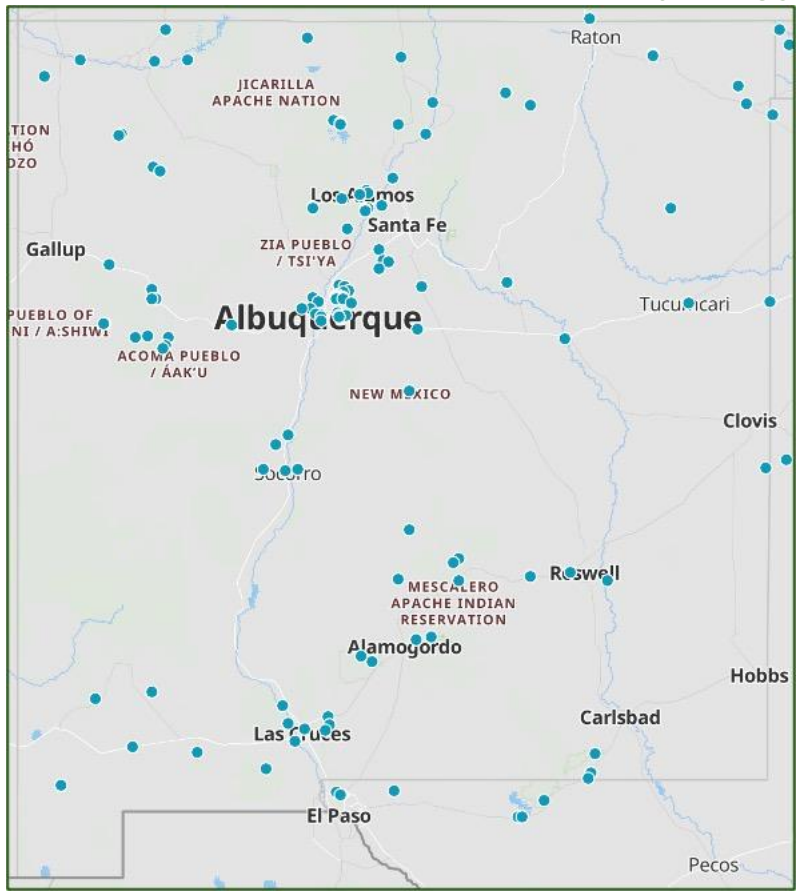
- 4 of these focused on "big picture" geology –
  - Albuquerque Basin and Sandia Mountains in general (1)
  - Great Unconformity (2)
  - Soil/alluvium structure across the Rio Grande Valley (1 multi-site)

- EC's were lacking for many worthy geologic features of the mountains and foothills.

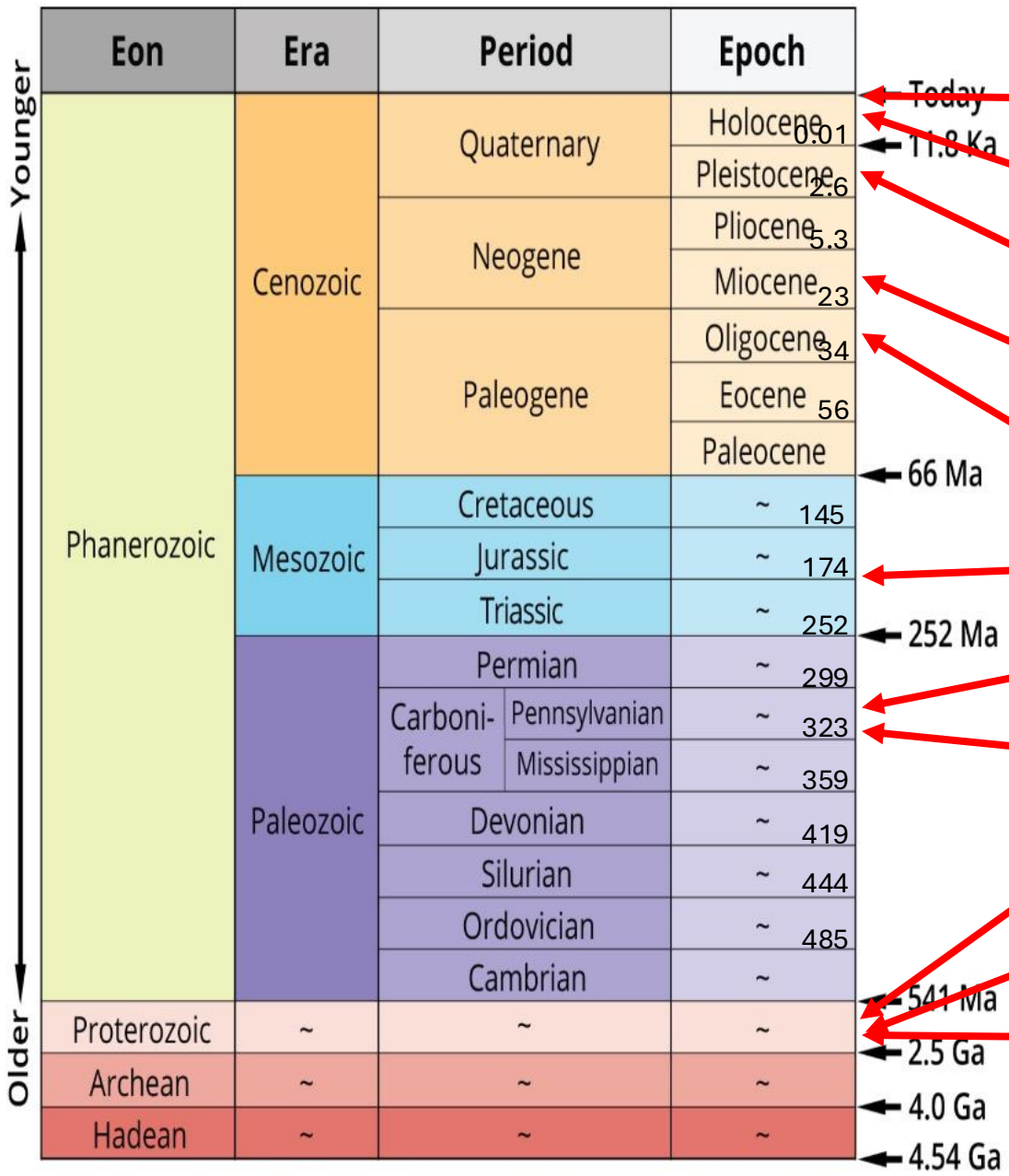
- We now have 12 new EC's, making the Sandias better represented across the state!

- There are more opportunities.

~120 NM ECs



Where new EC's fit in geologic time



11. Romancing the Stone

10. Fun with Fe_3O_4

9. Streams of Consciousness

8. Orange Crush

7. Follow That Dike!

6. Jurassic-Triassic Park

5. Sea Sea Sea Trail

4. Strata Gem (#1, #2)

3. Yikes! White Dikes!

2. Renowned Ground at U-Mound

1. Welcome to Mazatza-landia!

from digitalatlasofancientlife.org

1. “Welcome to Mazatza-landia!” (Juan Tabo Canyon Trail)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Welcome to Mazatza-landia! (#1)

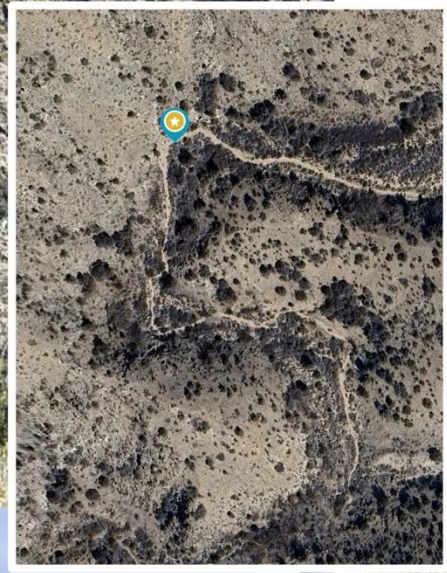
GCA9Z1P ▼

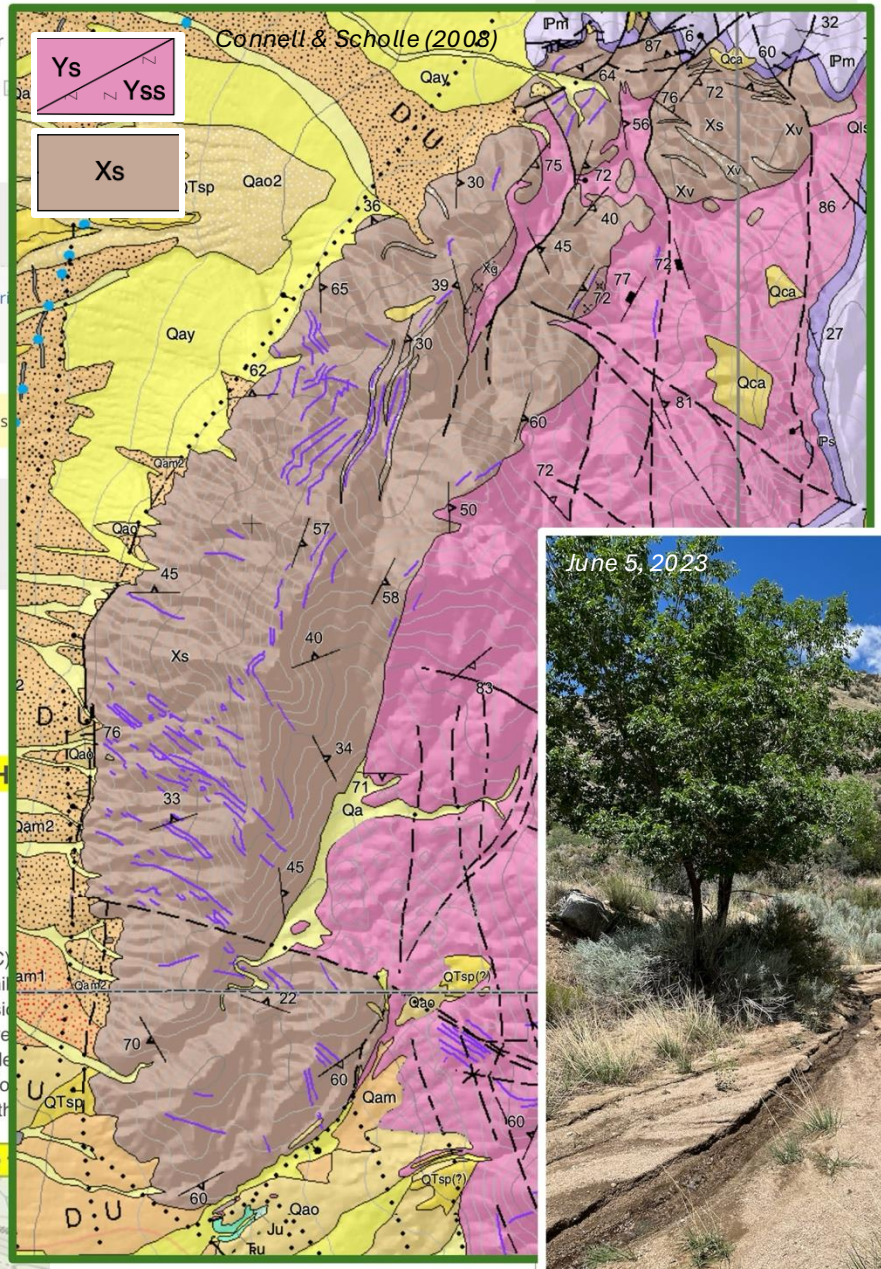
A cache by ABQSnoopyfan Message this owner

Difficulty: ★★★★★ Size:
Terrain: ★★★½☆

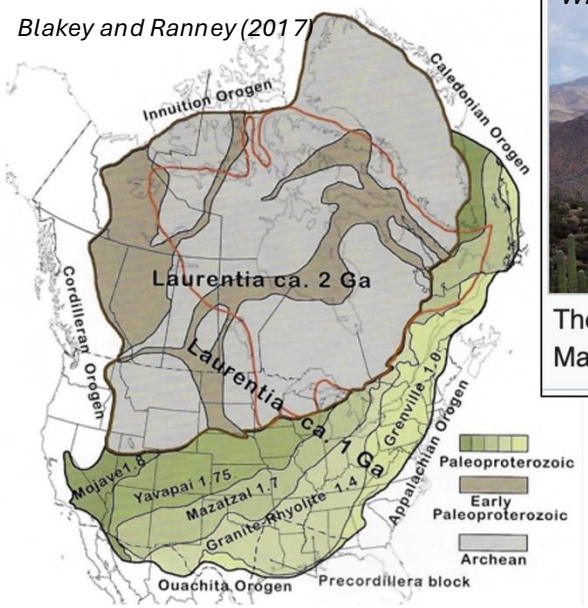
Grasshoppers&Ant
Found on 6/16/2023

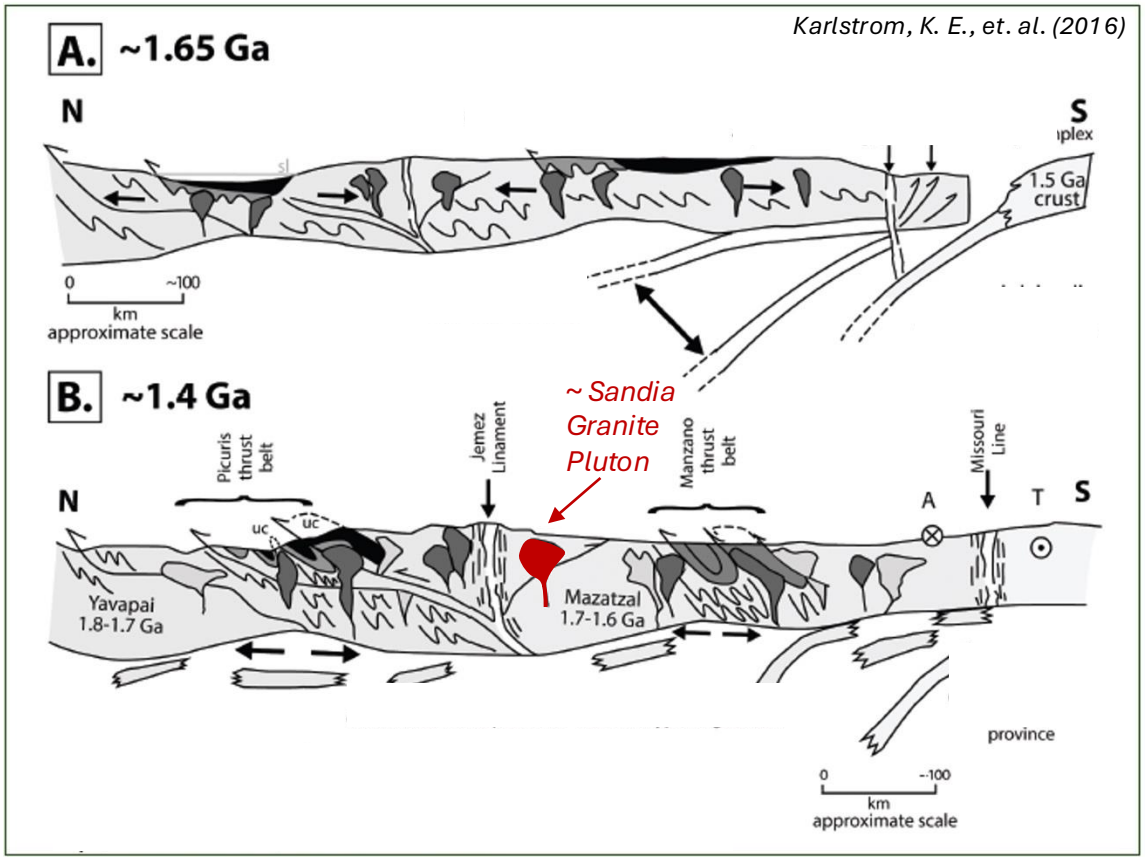
I had a nice evening hike here, not exactly the recommended 'sunny day' but those are hot now and I hiked some this morning already. About 1.33 miles each way, this took me about 1hr 45 minutes total to stop, observe, and make notes along the way. I'm really grateful the owner directed using the Granite trail. It's probably the most efficient way in and out of there and I don't think I've ever taken it for the entire length. The last part is steep, but like I said efficient so it's worth it. Cool that there's water running in the bottom this year, despite it eating a trench into the trail that was a drainage first. I was certainly educated by the writeup and observing geology in the field with that new knowledge. Answers to follow. Thanks for going to the great effort to do the writeup and the trouble to get it approved!

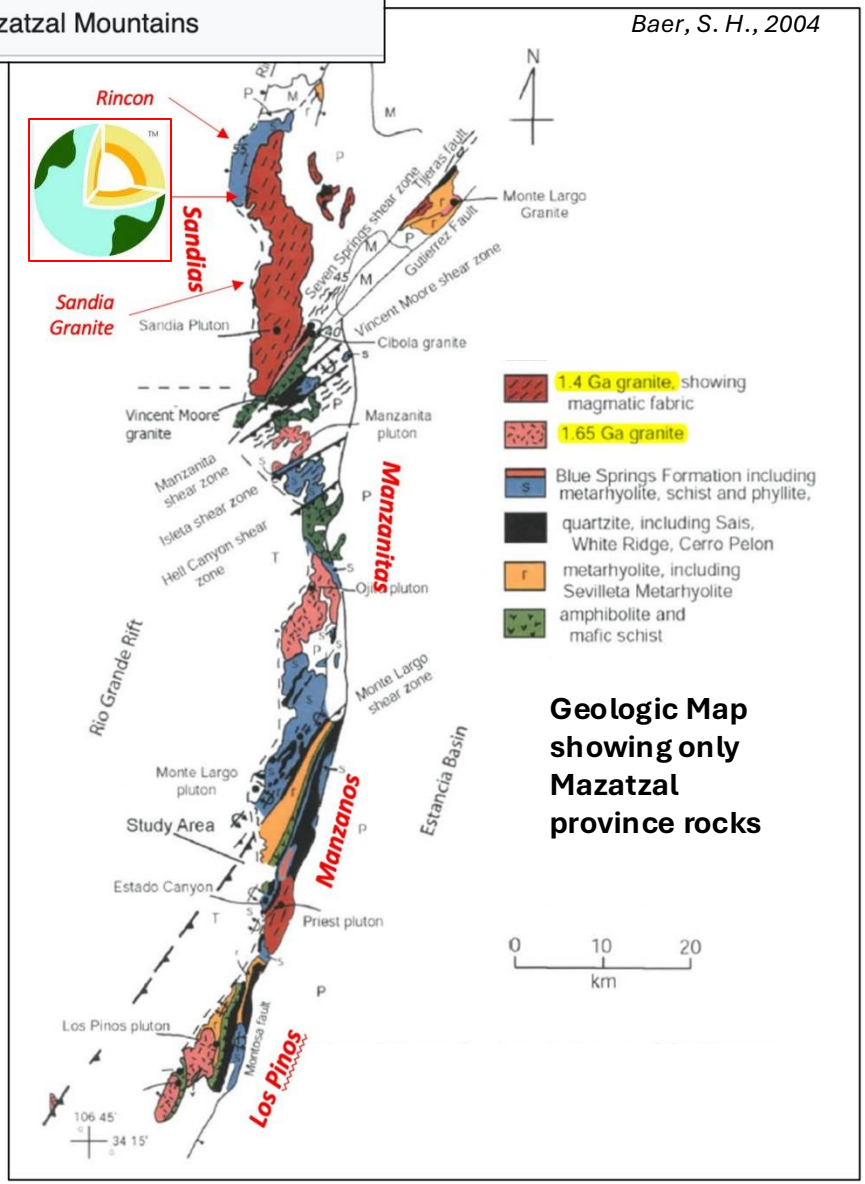




1. "Welcome to Mazatza-landia!" (Juan Tabo Canyon Trail)







1. “Welcome to Mazatza-landia!” (Juan Tabo Canyon Trail)

*Examples of wavy **gneiss***

Typical cliff pattern

*Examples of sparkly **schist***

Rockfall of schist slabs

*Examples of Sandia **Granite** for comparison*

***Quartzite** (southern Manzanos)*

2. “Renowned Ground at U-Mound” (365 Trail)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Renowned Ground at U-Mound

GCAH9FF

A cache by ABQSnoopyfan Message this owner

Difficulty: ★★½☆☆ Terrain: ★★★☆☆ Size:

MI Barrel Makers
Found on 4/7/2025

It was a cold snowey morning - this is the sign just after the open spaces sign.

Not much for views of the distance but fun hike and great to get the nearby oldie and this earth cache.

Determined EarthCacher!

Log geocache

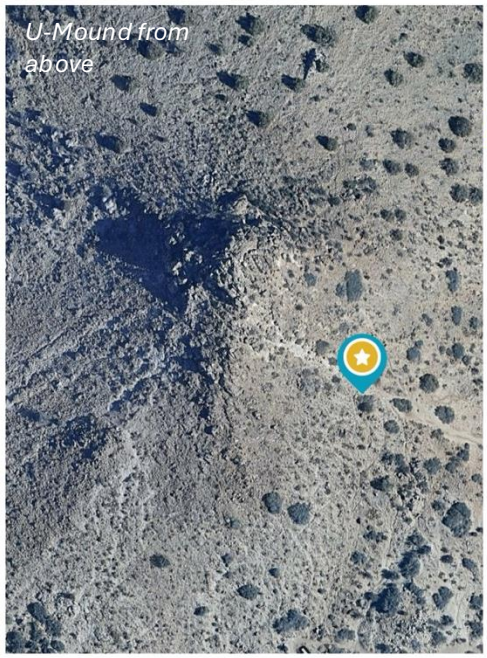
View all logs (5)
View gallery (12)
Watchers (0)
Add to List
Ignore

Admin Tools
Update Coordinates
Edit
Upload Images
Archive
Disable

Personal cache note

Click to enter a note

U-Mound from above

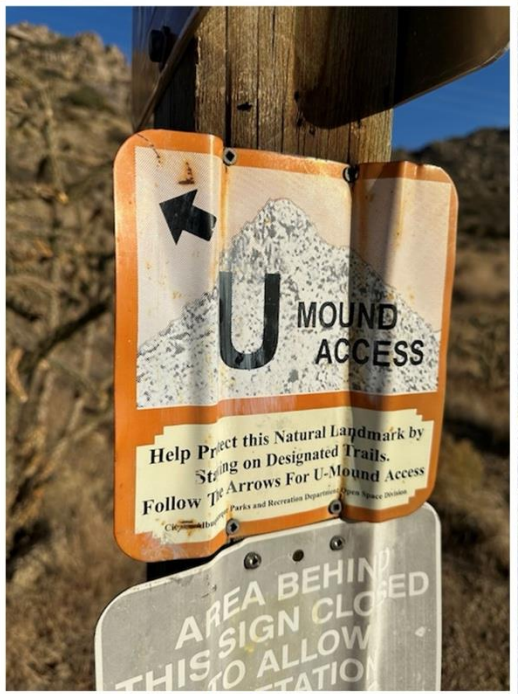


scription:

LATIONS TO GRASSHOPPERS&ANT FOR FTF!

ominent conical knob of rock in the Sandia Foothills that even has a bunch of “Nat
eading you up to the top for the nice vistas. It is located just off the 365 Trail near t
arking for the Foothills OpenSpace. U-Mound was named for a giant letter “U”
ks painted white by UNM students in the 1920’s on the City-facing side of the knol
students flipped them all over in the 1960’s, so the “U” is now gone.

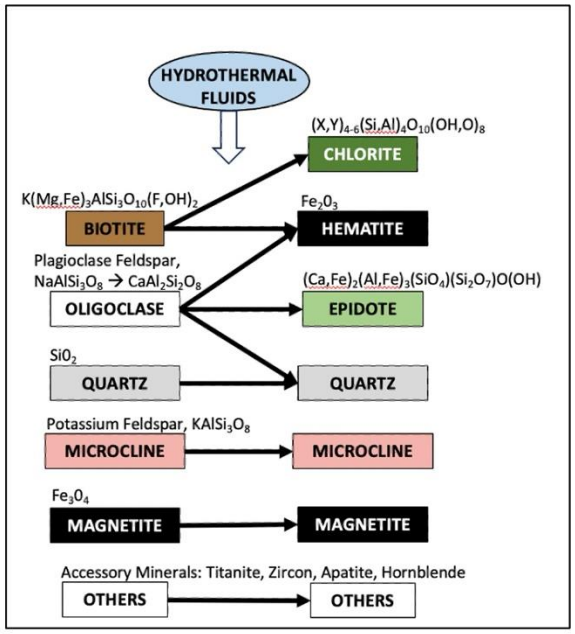
torical interest, U-Mound is a prime example of an interesting geologic phenomen
l in some places in the Sandias to turn the Sandia Granite into a stunning *red-and*
ype of rock. Sometime after the injection of “white” dikes into the Sandia Granite,
emics a more recent episode of hydrothermal activity injected hot iron-rich fluids ir
aults and small fractures and cracks. While white/milky quartz and pink feldspar
naltered, white feldspar and brown biotite were chemically altered to lots of black
le, Fe_2O_3) and some green non-gem-quality epidote (a silicate). Hematite is often
red, but in this case it is black! The resulting rock is generally harder than the original granite, helping to allow U-Mound to remain as a local erosion-resistant knob within the slightly more erosion-prone unaltered granite surrounding it.

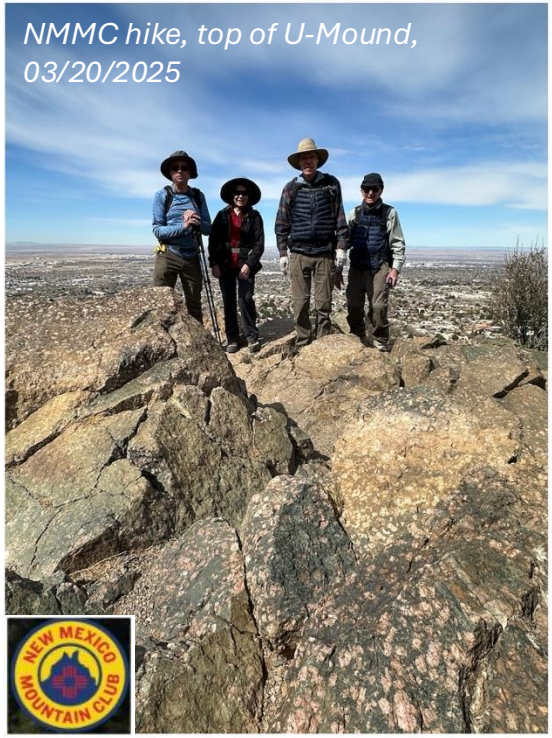


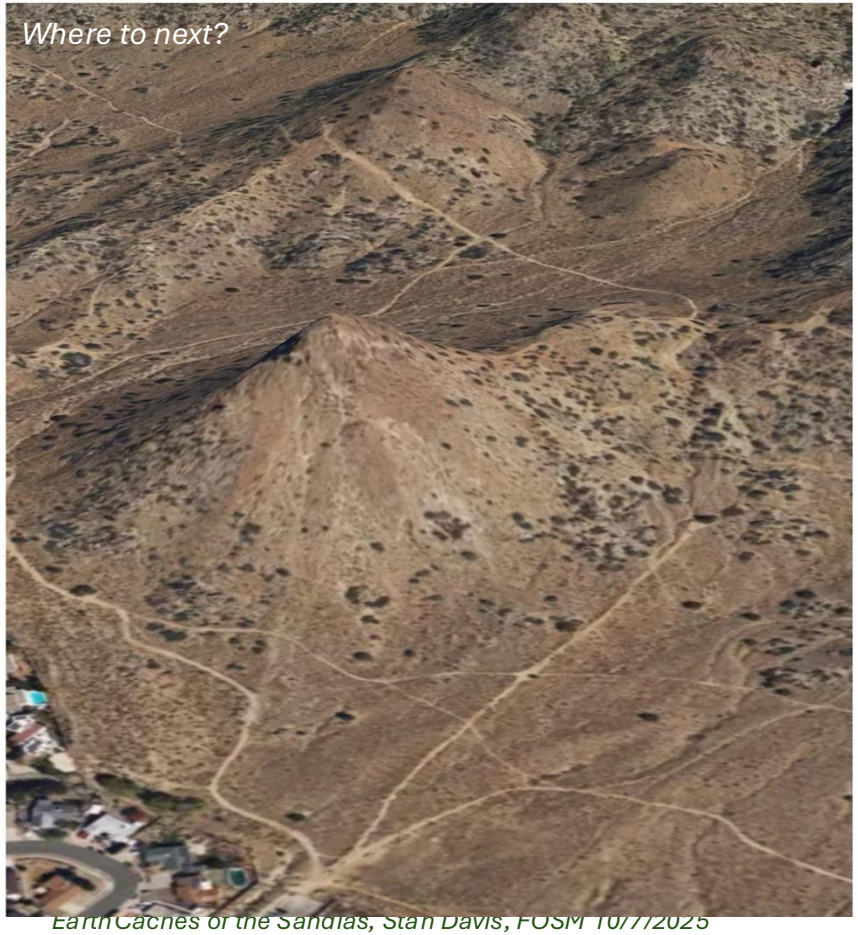
What are Trackable Items?

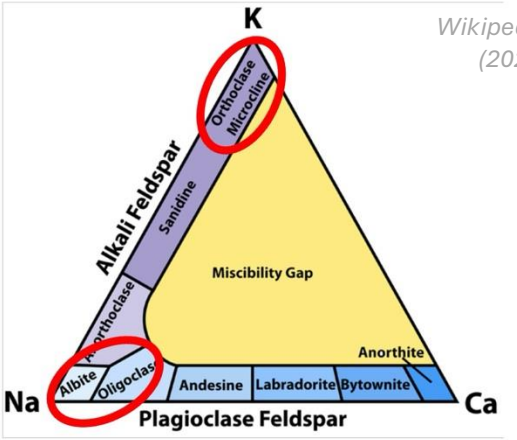
Bookmark Lists

2. “Renowned Ground at U-Mound” (365 Trail)



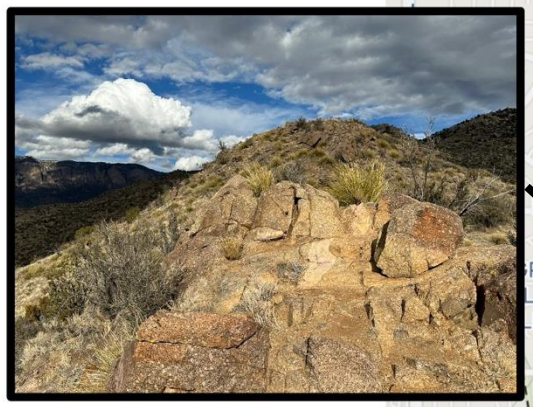


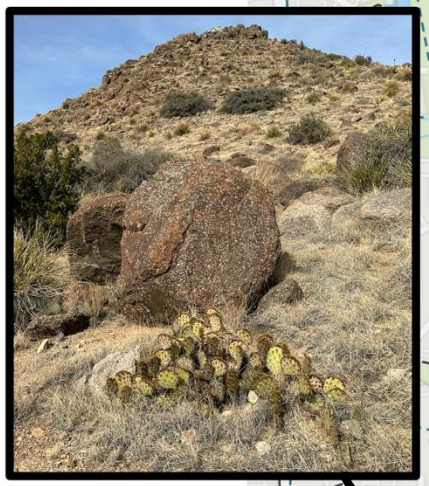


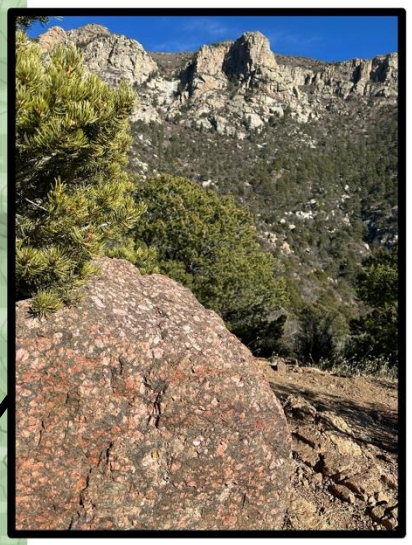


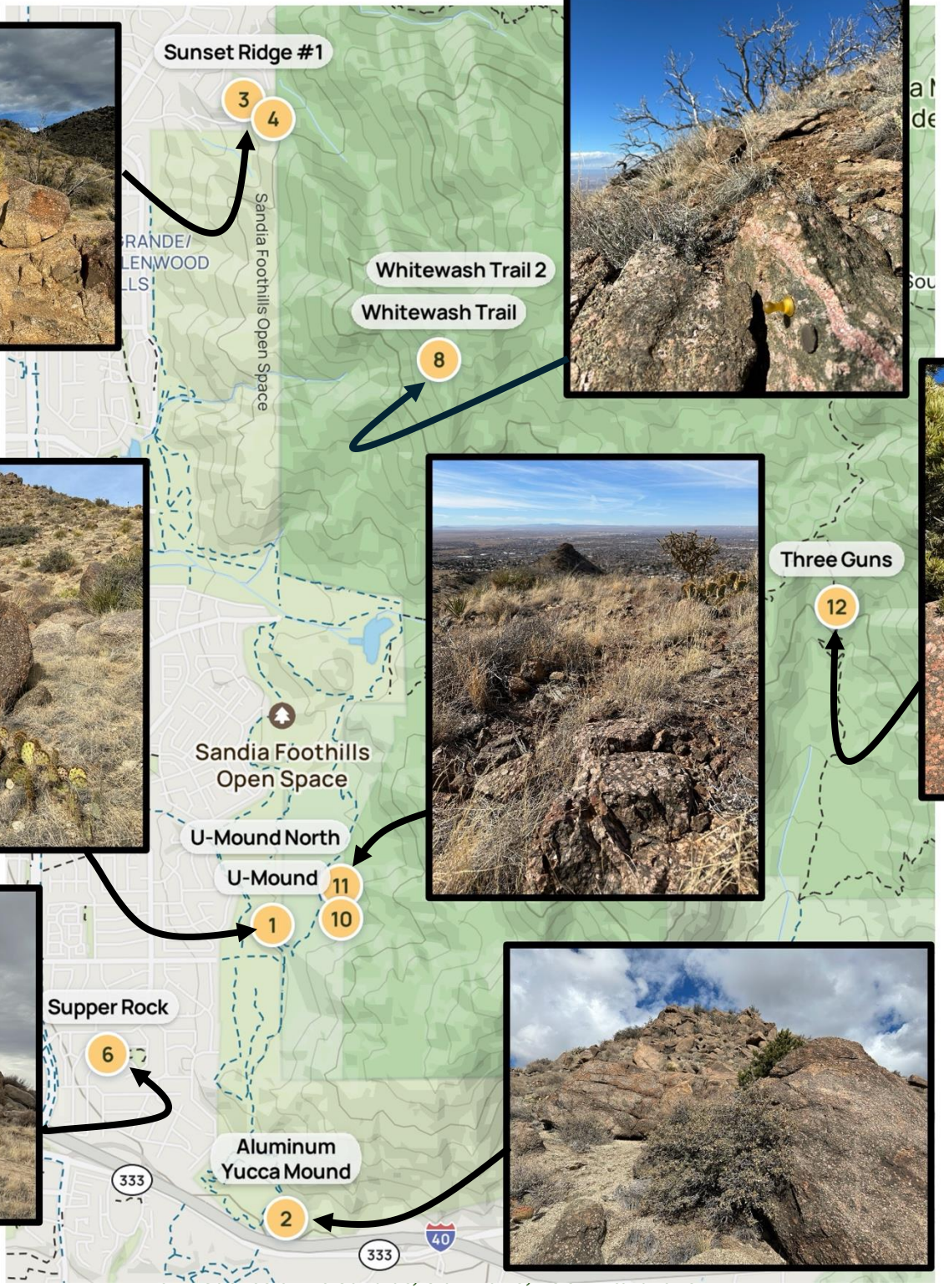
Wikipedia (2025)

2. *"Renowned Ground at U-Mound" (365 Trail)*









Locations of some other magnetic "polka-dot" granite outcrops

3. *"Yikes! White Dikes!" (Juan Tabo Canyon Trail)*

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Yikes! White Dikes!

GC9PY4C

A cache by ABQSnoopyfan Message this owner Hidden : 3/15/2022

Difficulty: ★★½☆☆ Terrain: ★★½☆☆ Size: (other) 2 Favorites

In New Mexico, United States
N 3.7 mi from your home location

10 Logs Driving Directions

Log geocache

View all logs (4)
View gallery (19)
Watchers (0)
Add to List
Ignore

Admin Tools
Update Coordinates
Edit
Upload Images
Archive
Disable

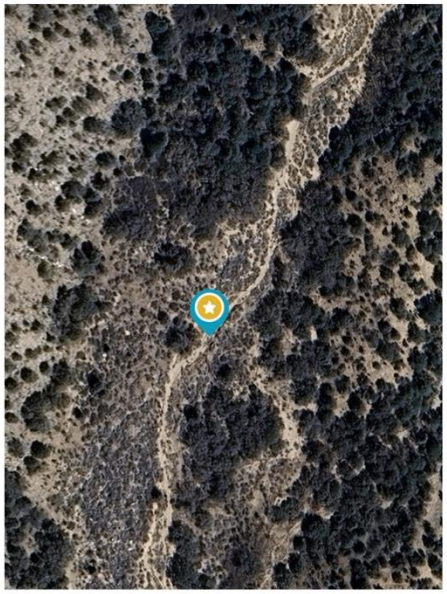
luhringnm
Found on 11/21/2022

YAY, it took several trips to complete this fascinating EarthCache; and it was well worth the effort. I learned new facts about the Sandias & new features to look for during my hikes. A superior cache in every way.

Please note Use of geocaching.com services is subject to the terms and conditions in our disclaimer.

Personal cache note

Click to enter a note



Geocache Description:

ATULATIONS TO GRASSHOPPERS&ANT FOR FTF !

t of this EarthCache, as the name indicates, is geologic dikes. Great examples of dikes are asaltic ones that radiate out from the Shiprock volcanic neck. But the dikes of interest here te dikes that are so striking in the Rincon Ridge and elsewhere in the Sandias. This asks you to navigate to Ground Zero and make some observations about the geology t two other Stages, take some pictures and answer some questions. You should look at figures and pictures attached to the Description, probably before you go into the field. tions will require you to consult the figures, but you can always do this back home in case ownload the pictures in the field or elect to not take some printouts of them with you. Note re no "trick" questions, and some questions may have various answers or be open to on.

ools":

to measure azimuths/orientations/projections (compass, GPSr, compass app…).

id

ext) shows the geocaching map next to the geologic map of the area at approximately the . Generally, a geologic map shows the types of rock formations that are exposed (or "crop out") at the surface. Different formations are displayed with different colors and symbols so they can be distinguished from each other, and each formation is also associated with an abbreviation, which often incorporates the geologic age. For example, "Q" represents relatively young Quaternary, while "Y" and

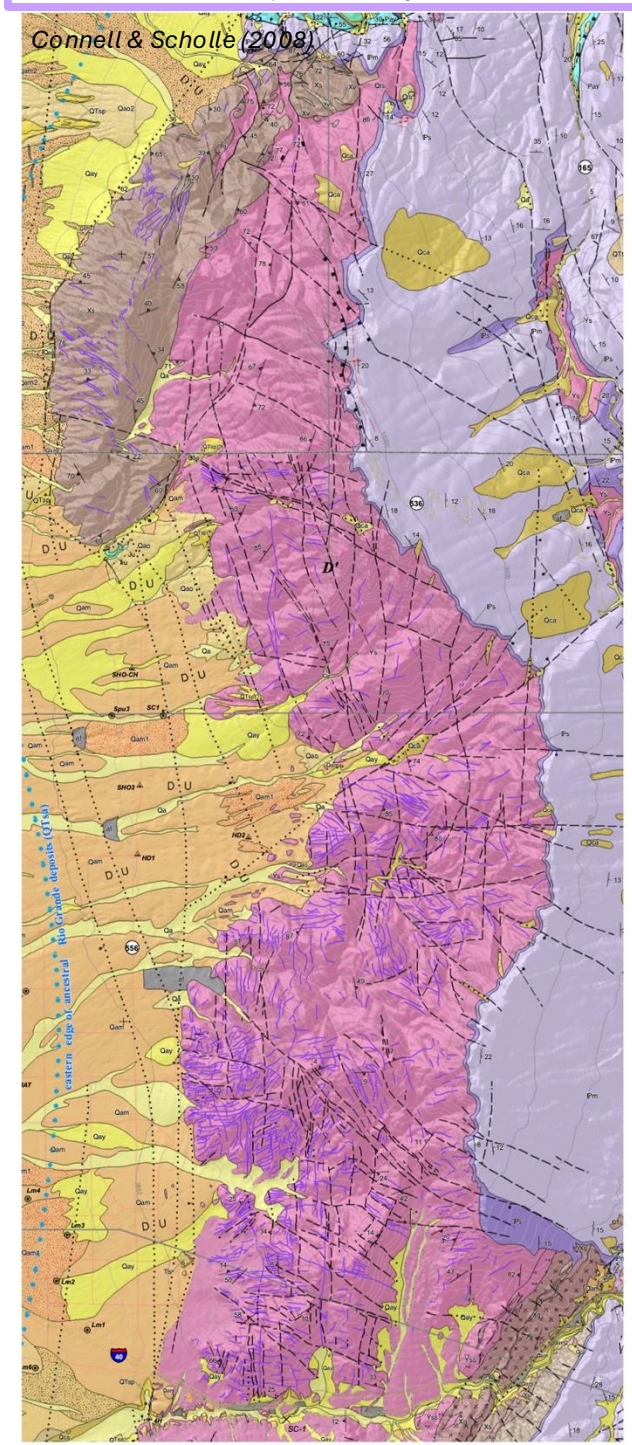
Inventory

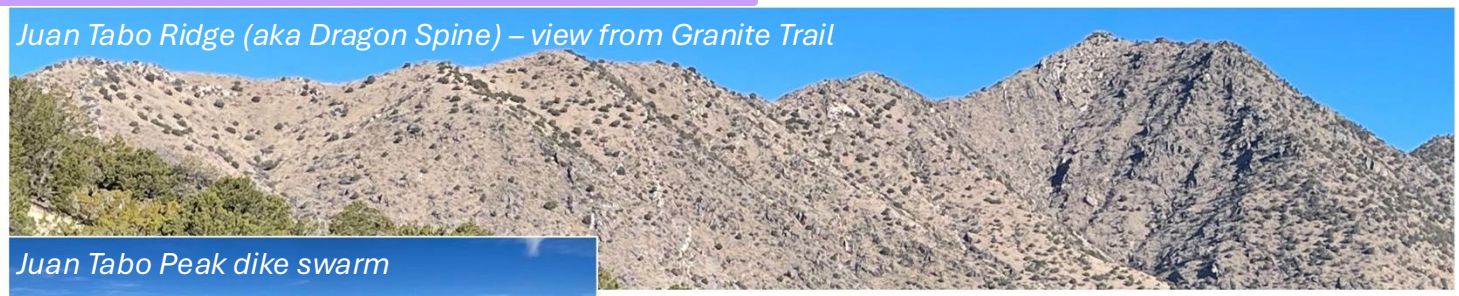
There are no Trackables in this cache.

View past Trackables
What are Trackable Items?

3. “Yikes! White Dikes!” (Juan Tabo Canyon Trail)

Felsic dike (Mesoproterozoic) — pegmatite and aplite dikes, pods and lenses; coeval with emplacement of Sandia granite (**Ys**); thickness ranges from 30 cm to over 15 m; up to 1600 m in length.





4. “Strata Gem” (#1 & #2) (South Crest Trail)

GEOCACHING 25 Play Community Shop

Strata Gem

A cache by ABQSnoopyfan Message this owner Hidden : 9/2/2022

Difficulty: ★★★★★ Size: (other)
Terrain: ★★★☆☆

10 Logs Driving Directions

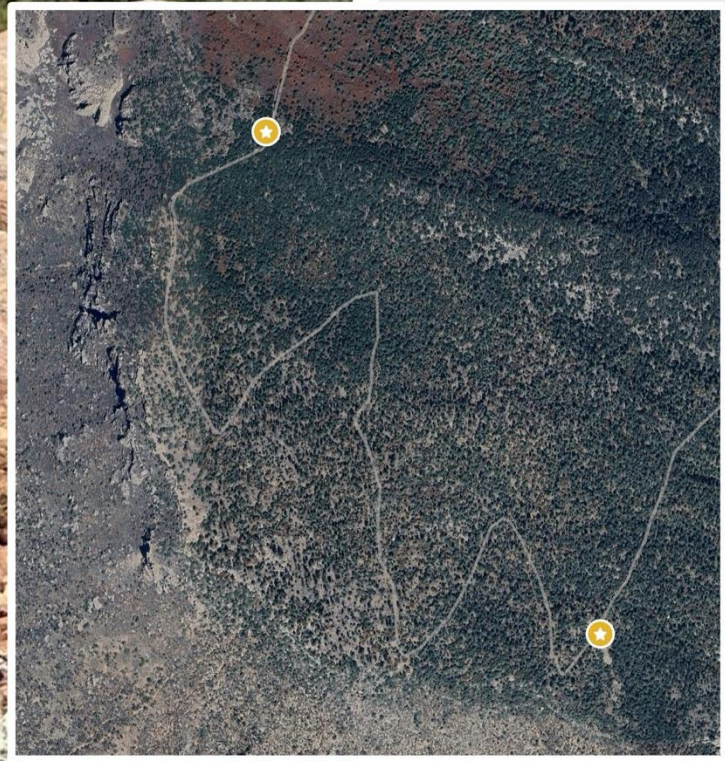
Sandpig
Found on 9/15/2022

Excellent hard Earth cache hiking hide. Perfect day to cache. I was with BB, Ant and the puppy Apollo.

Lots of Geology learning stops along the hike. Ant was walking point and saw a bear coming towards him. Yikes!

This mission was a group effort for all the answers. , Yeaaaaaaa we got the FTF too.

Thank you for placing this!
It was FUN.
Sandpig.



ABELI, SANDPI
THEIR CO-FTF! T
R HIKE!

e, Do the hike as reques
r answers and pictures
Zero, showing how muc
a Mountain District to tha
ns to obtain this permiss

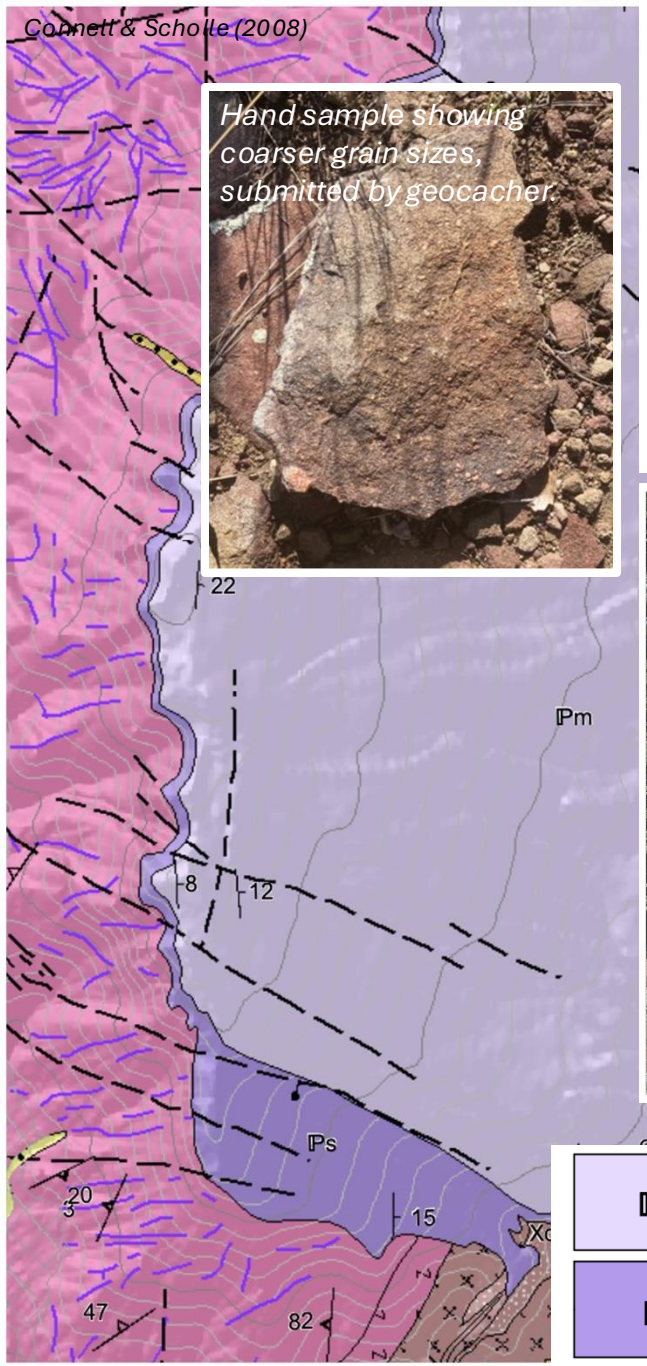
Strata Gem” Earth Cach
focus on one EC at a tir

is the colorful sandston
ntains.

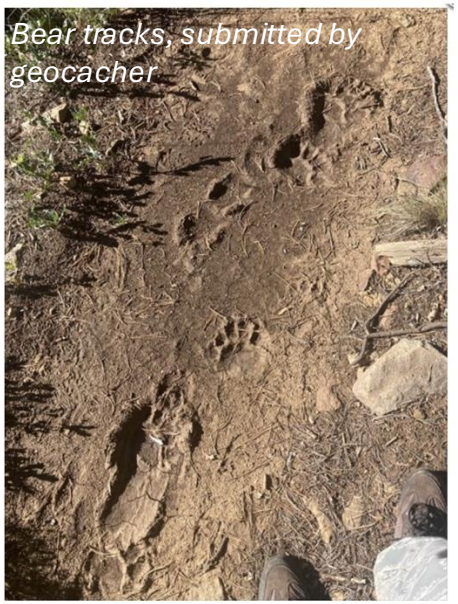
andias, such as “Sandia
(GC1YK8V) and “Great Sandia Un-Conformist, down-low”
re of the geology of the Sandias and Albuquerque Basin, and

What are Trackable Items?

Bookmark Lists



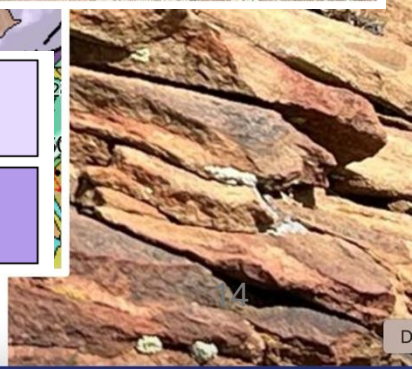
Hand sample showing coarser grain sizes, submitted by geocacher.



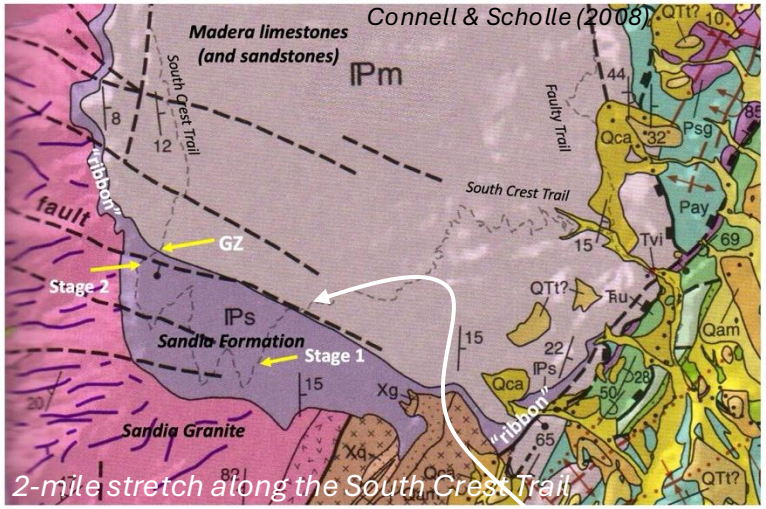
Bear tracks, submitted by geocacher

Bear(s) like this trail! View Log Print Picture

Tinaja in the Sandia Formation



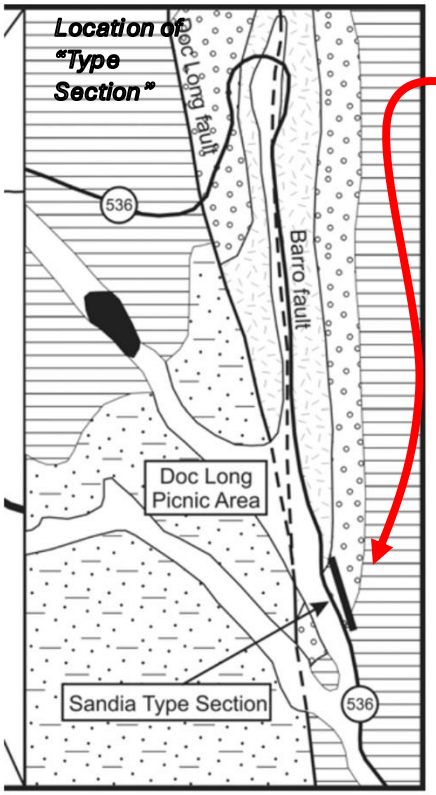
4. "Strata Gem" (#1 & #2) (South Crest Trail)



2-mile stretch along the South Crest Trail


Nearly vertical and jumbled up beds near fault

Grain size chart



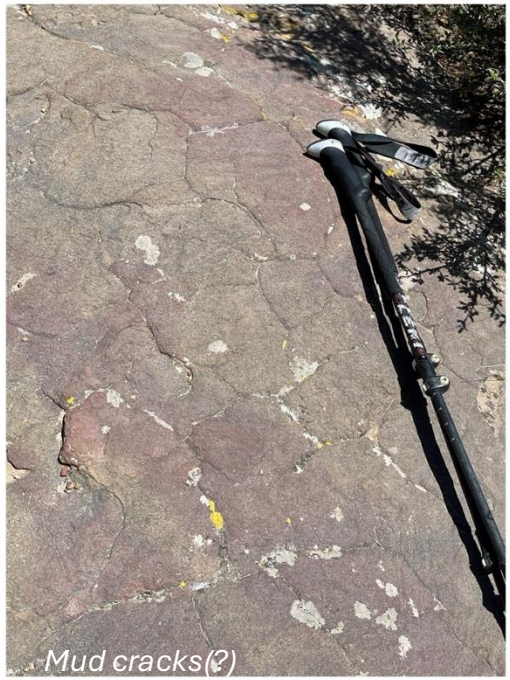
Sullivan et al., eds., 2011, Fossil Record 3. New Mexico Museum of Natural History and Science, Bulletin 53.

LECTOSTRATOTYPE SECTION OF THE PENNSYLVANIAN SANDIA FORMATION, BERNALILLO COUNTY, NEW MEXICO

- *"Type Section" near Doc Long along Crest Highway.*
- *Shale, sandstone, pebbly sandstone, fossiliferous limestone.*
- *Overlies Precambrian (Sandia) Granite w/ angular unconfirm.*
- *Almost entirely marine: low-energy middle-to-outer shelf deposits to high-energy shoreface and nearshore deposits.*


Effect of beds dipping slightly more steeply than the slope of the topgography (Stage 1)


Hand lens


Mud cracks(?)

5. “Sea Sea Sea Trail” (North Crest Trail via Ellis Trail)

GEOCACHING Play Community Shop ABQSnoopyfan 2,275 Finds

Sea Sea Sea Trail

A cache by ABQSnoopyfan Message this owner Hidden : 6/29/2023

Difficulty: ★★★★☆ Terrain: ★★★☆☆ Size: (other) 5 Favo

5° 27.021 N 3901720 In New Mexico, United N 5.7 mi from your home l

5 Logs 10 Logs Driving Directions

of geocaching.com services is subject to the terms and conditions in our discla

te

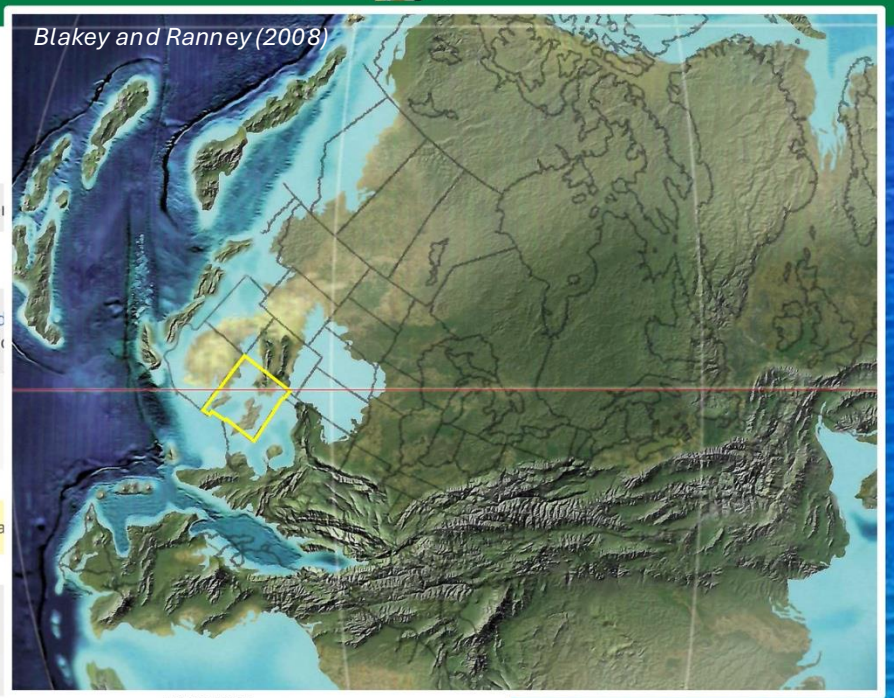
kiecker
Found on 8/19/2023

0.5, Kai, and I all made a family trip that helped us escape the 110F+ heat of Central Texas. I needed to be in Albuquerque, New Mexico for a couple days to work so we decided to book family time on both sides so we could explore the areas both to and from. The timing was perfect; for years 0.5 had wanted to attend the SWAIA event in Santa Fe and it just so happened it was happening the weekend before I needed to work so we quickly added that into the mix as well. An added bonus is we ended up meeting up with our good friends from CO (TacoTaco22T) in Santa Fe where one half of the group enjoyed the art scene, and the other half went for a nice long hike in the mountains.

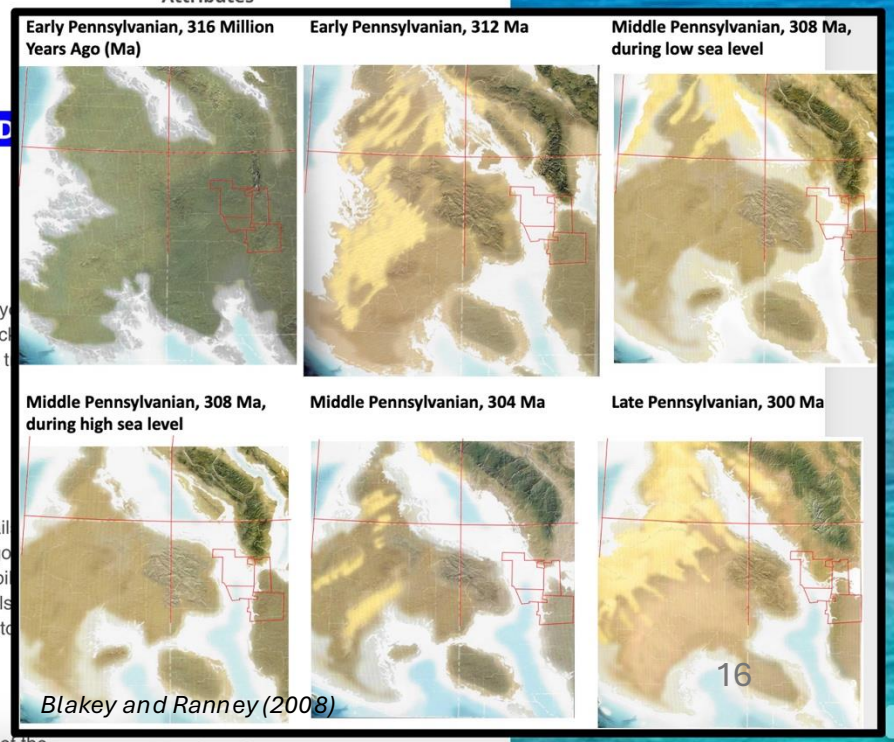
We, more or less, made a counterclockwise loop through TX, NM, CO, UT, and AZ where we linked together the following areas: Santa Fe, 4-Corners, Albuquerque, Apache National Forest, El Paso, the West Texas desert near the border, and then home through Fredericksburg. Our caching focus was mainly limited to unique DT/Type combinations, and new counties. With this trip we we able to complete the remaining counties we needed in New Mexico as well as make contiguous county connections all the way to the west coast. We we gone for 10 days and covered a bit over 3,500 miles. The trip was great and covered a bit of everything for each of us. Not to mentioned, at times the temperature 60F LESS then back home.

Today Kai and I teamed up with TacoTaco22T for a hike in the Sandia's. We covered about 10.5 miles, 22k steps, and 106 flights climbed while having some great views over Albuquerque. The glass of beer afterwards was absolutely delicious and we followed the up with a fantastic dinner with the entire group in Santa Fe.

Thanks to all the COs for both placing and maintaining these caches for all of us to find. For without you, this game would not exist.



Attributes



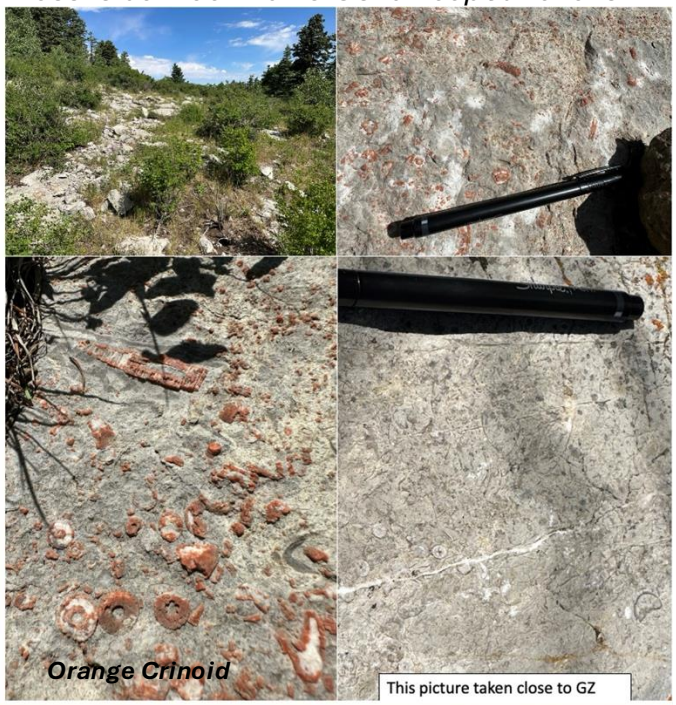
Other EC's in the Sandias/ABQ area provide some "big picture" background on the genesis of the

5. “Sea Sea Sea Trail” (North Crest Trail via Ellis Trail)

Fossils between Ellis Parking & Power Line

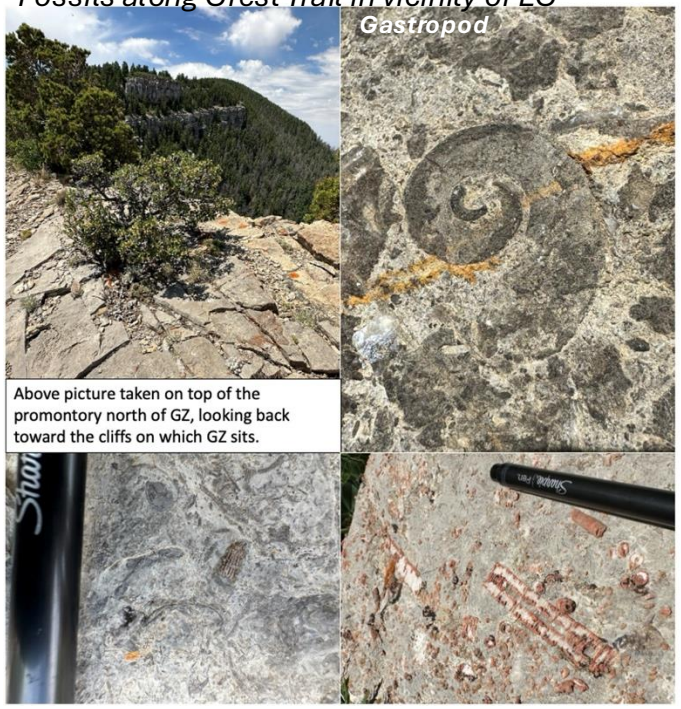
Fossils between Power Line & 10K Junction

Fossils between 10K & Osha Loop Junctions



Coarse-grained sandstones along Ellis

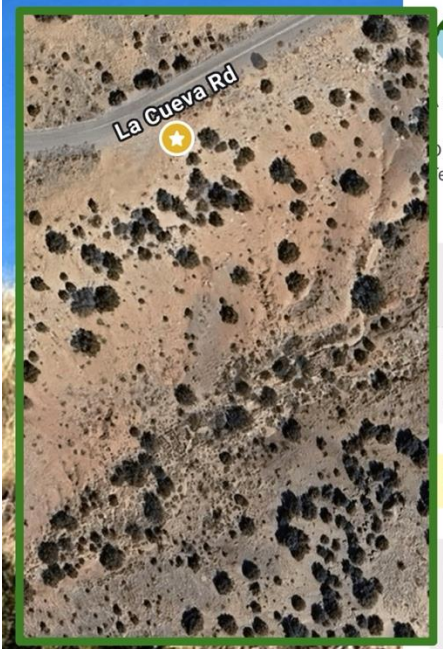
Fossils along Crest Trail in vicinity of EC



View from EarthCache site

6. “Jurassic-Triassic Park” (FR 333B)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds



Triassic-Jurassic Park

cache by ABQSnoopyfan Message this owner Hidden : 6/7/2024

Difficulty: ★★☆☆☆
Terrain: ★★☆☆☆

Size: (other)

2 Favorites

N 35° 12.156 W 106° 30.080
UTM: 13S E 363334 N 3896543

In New Mexico, United States
N 2.2 mi from your home location

Print: No Logs 5 Logs 10 Logs Driving Directions

Download GPX

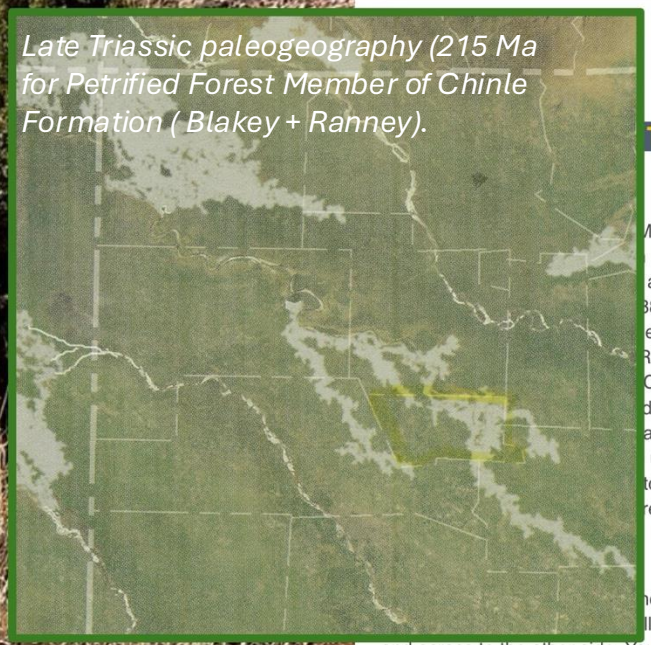
Please note Use of geocaching.com services is subject to the terms and conditions in our disclaimer.

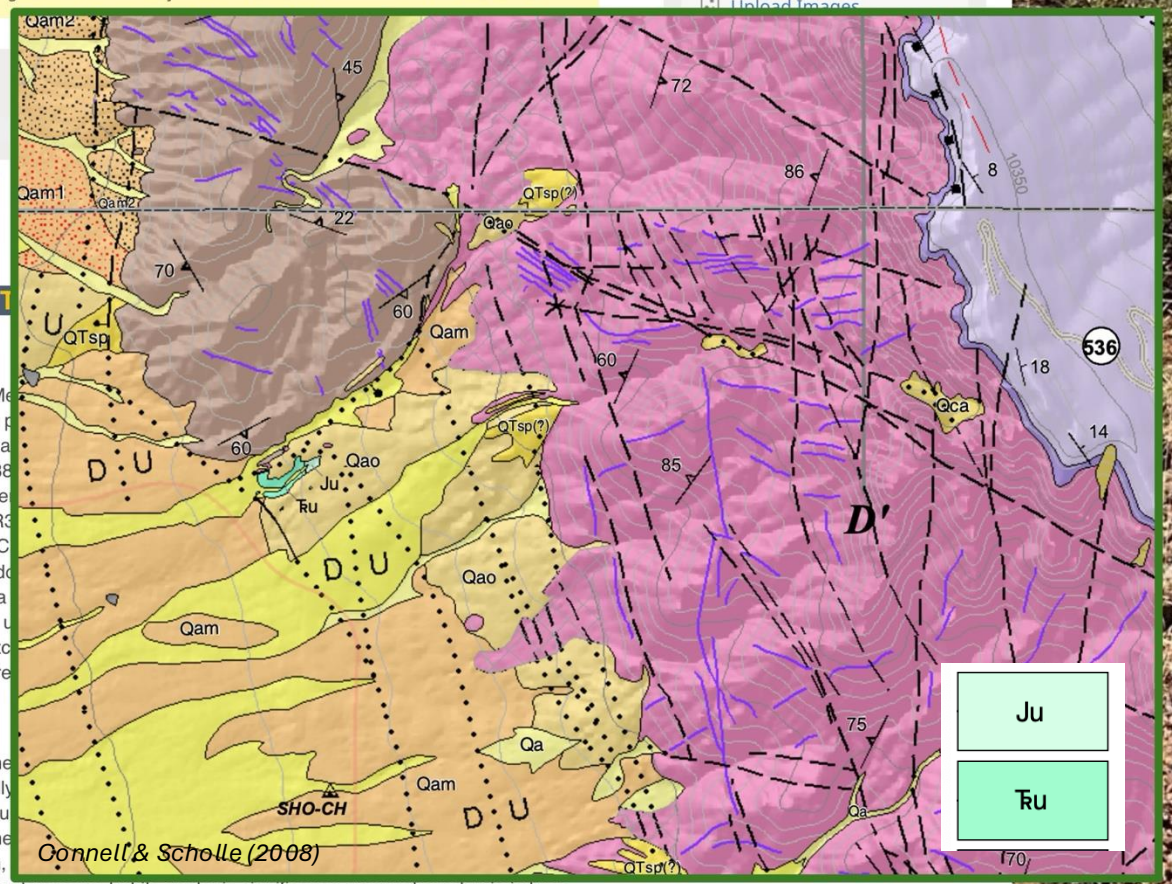
Personal cache note

Click to enter a note

Beachy2
Found on 9/4/2024

Traveling by RV from SC to the National parks of CO and WY. Stopped in ABQ to visit friends. Did a little targeted caching while there. Noticed this Earthcache was not far from our friends house. Decided to introduce them to earthcaches. We like to visit Earthcaches locations but often don’t submit answers for credit. Just enjoy the location. Decided we should start submitting answers more often and see how we do. Answers sent to the CO. Thanks for the opportunity to participate in this cache. Photo is our wooden geocoin near GZ.





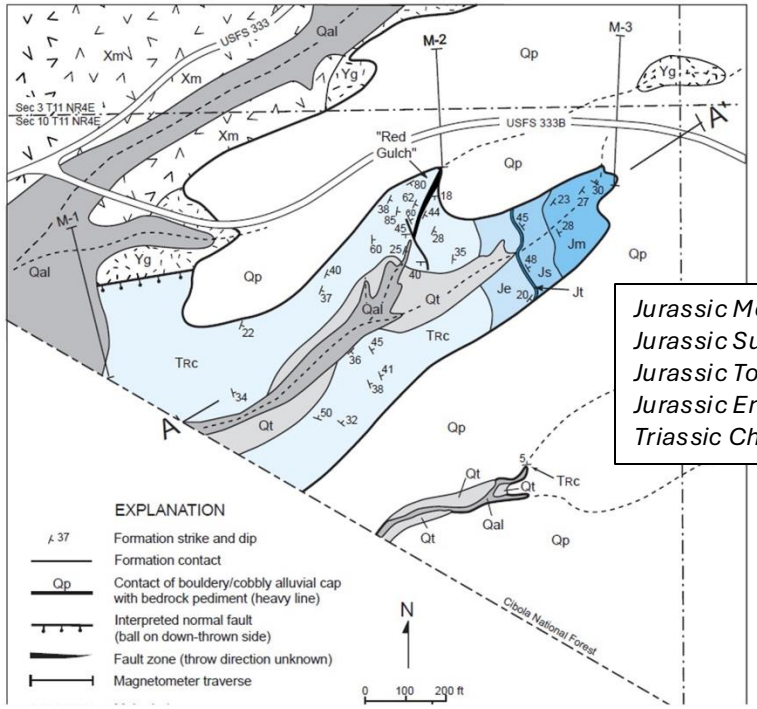
Connell & Scholle (2008)

and across to the other side. You
tumbled down from the lips of the
upper Triassic Chinle Formation,
this outcrop is relatively tiny, as outcrops go, but its geologic significance amongst academia is huge.

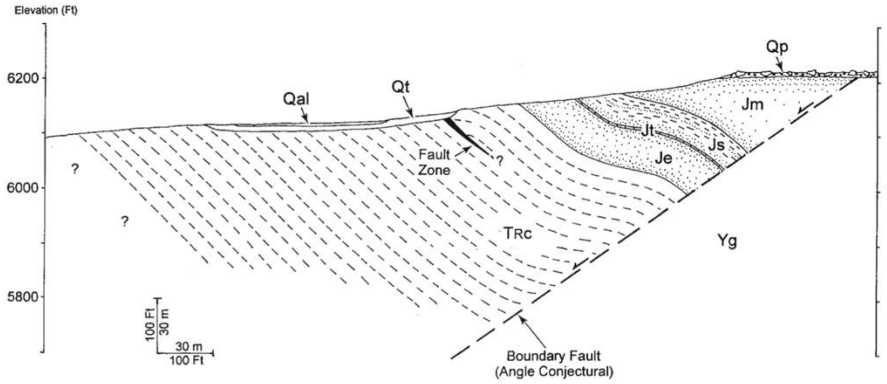
s.jpg

6. "Jurassic-Triassic Park" (FR 333B)

Van Hart, 1999

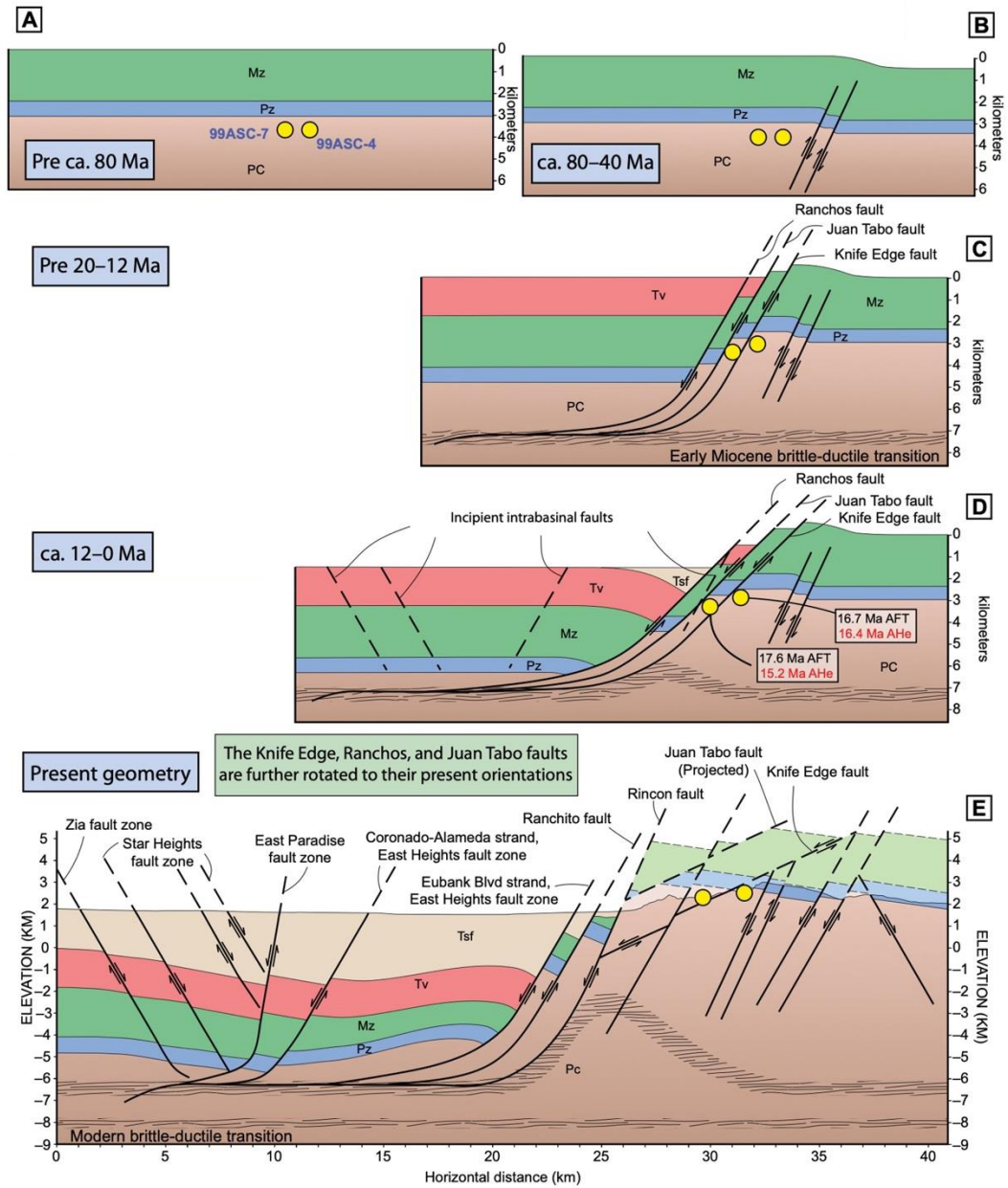


Jurassic Morrison
Jurassic Summerville
Jurassic Todilto
Jurassic Entrada
Triassic Chinle



Southwest *Northeast (toward Sandias)*

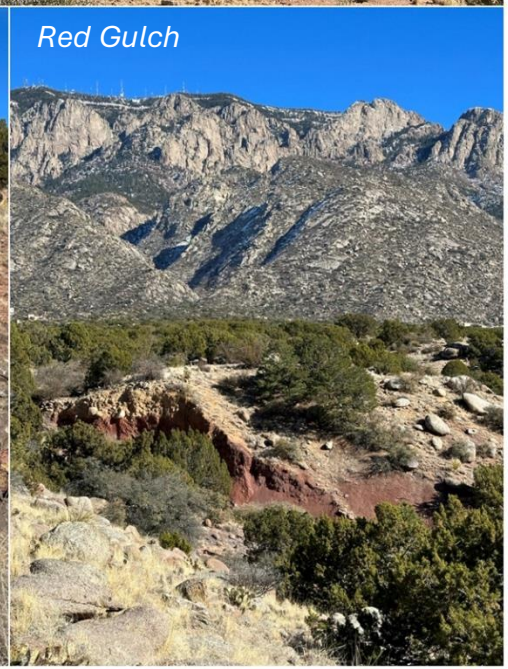
Ricketts, Karlstrom & Kelley, 2015



6. “Jurassic-Triassic Park” (FR 333B)


View from EarthCache location

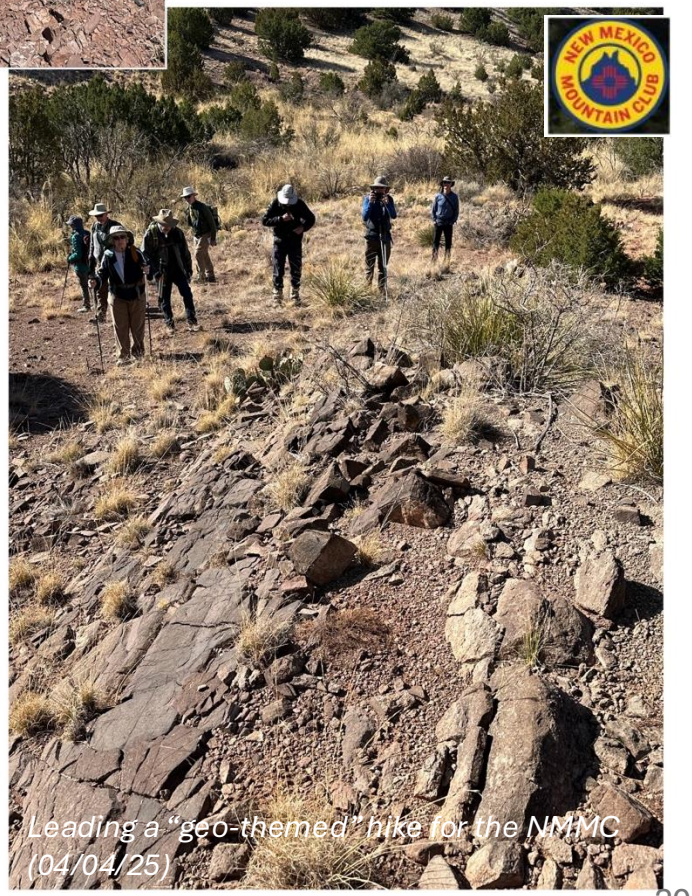

Steeply dipping sandstone beds in Triassic Chinle


Red Gulch

“Geo-hike” with Dirk Van Hart (blue shirt) + friends (03/20/24)


Dirk Van Hart (rt.) leading a “geo-hike”


Dirk Van Hart talking about the Jurassic Todilto Fm.


Leading a “geo-themed” hike for the NMMC (04/04/25)

7. “Follow That Dike!” (365 & 365A Trails)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Follow That Dike!

A cache by ABQSnoopyfan Message this owner Hidden : 4/7/2023

Difficulty: ★★½☆☆ Size: (other)
Terrain: ★★½☆☆

molnmar
Found on 7/25/2023

Thank you for creating such an interesting and informative cache. I really enjoyed this. It was cool to learn something new about an area I pass by all the time.

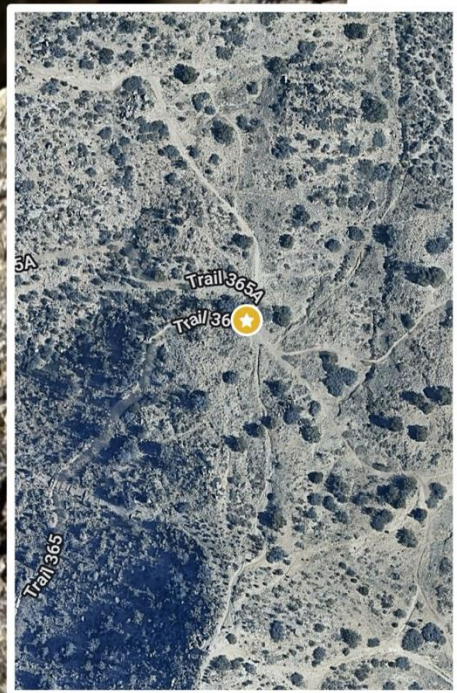
In
S 5.5 m

Logs Driving Directions

com services is subject to the terms and c

Personal cache note

Click to enter a note



he Description:

ATULATIONS TO GRASSHOPPERS&ANT FC

ents

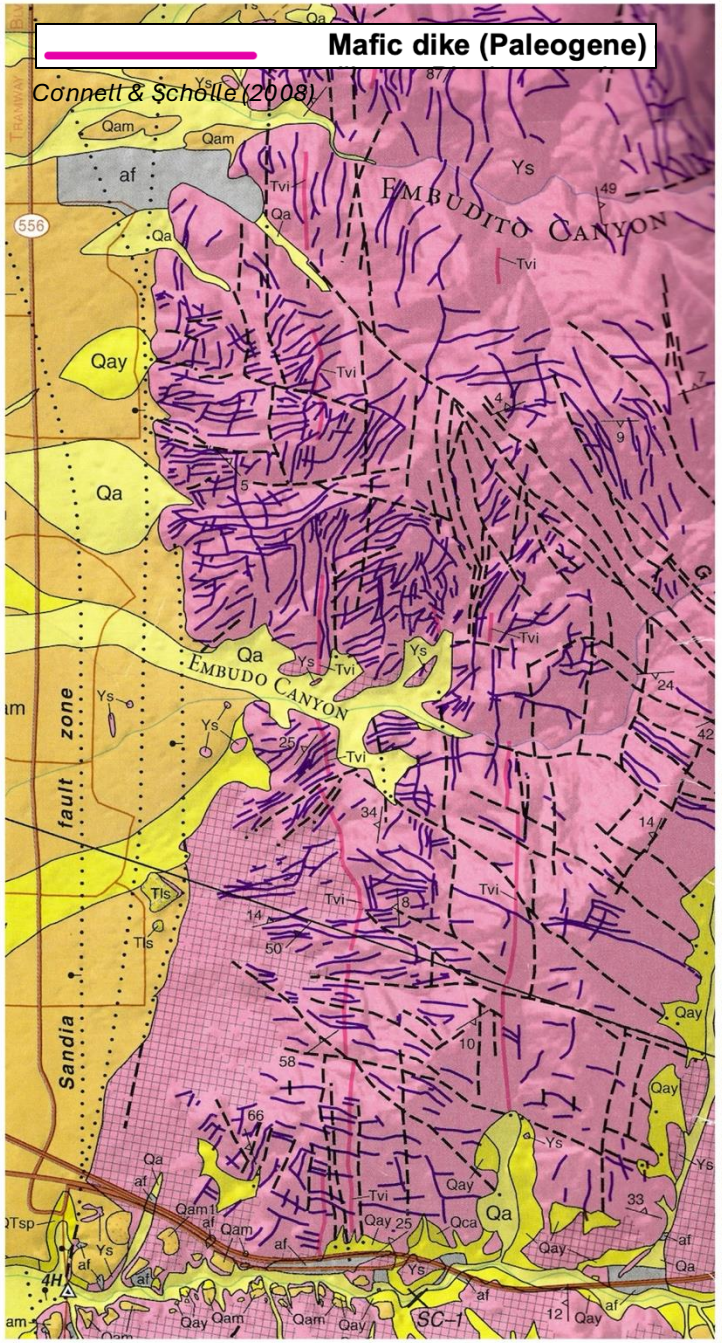
edit for “finding” this Earth Cache (EC), hike/navigate to Groun
ns, answer the questions, and take two pictures as described l
e 3”, which are close by, and answer a couple more questions.
es to the CO via the geocaching site. Do not include your pictu
r log will be deleted. If you were to take another picture showi
an show that to the Open Space folks to thank them for giving

on

mplements EC “Yikes! WhiteDikes!” (GC9PY4C), the subject
e Rincon and Sandias. The subject of this EC is “black” igneou
this area than the “white” ones are, and for that reason are pe

nd

In addiTion to “white” dikes, the Sandias are also host to “black” magmatic (or igneous) dikes.



Download

7. “Follow That Dike!” (365 & 365A Trails)


Hiking up to EC stop #3


Sean (l.) and Matt clambering up the dike near EC stop #19


Taking waypoints at EC stop #2


Deer crossing over buried dike


Jane pointing out stunning outcrop of interfingering dike and granite


Stop at “Sandia Stonehenge” along the way

7. “Follow That Dike!” (365 & 365A Trails)

Ronald Louis Bonewitz, 2012
DK Smithsonian Nature Guide
Rocks and Minerals

270 ROCKS | IGNEOUS ROCKS

PROFILE

- Extrusive
- Crystallization of an alkaline magma in a minor intrusion
- 1/256–1/16 in (0.1–2 mm)
- Orthoclase, plagioclase, biotite, hornblende
- Hornblende, magnetite, axinite, amphibole, pyroxene
- Dark brown to black

porphyritic texture

brown, weathered surface

Weathered lamprophyre
This weathered grayish brown specimen of lamprophyre has a porphyritic texture, with large crystals set in a fine matrix.

VARIANTS

Dark brown lamprophyre
A specimen of lamprophyre with mica flakes

Fine-grained lamprophyre
Lamprophyre with fine grains and no phenocrysts

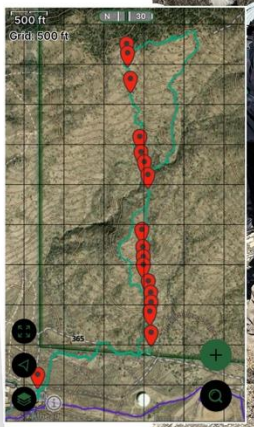
LAMPROPHYRE

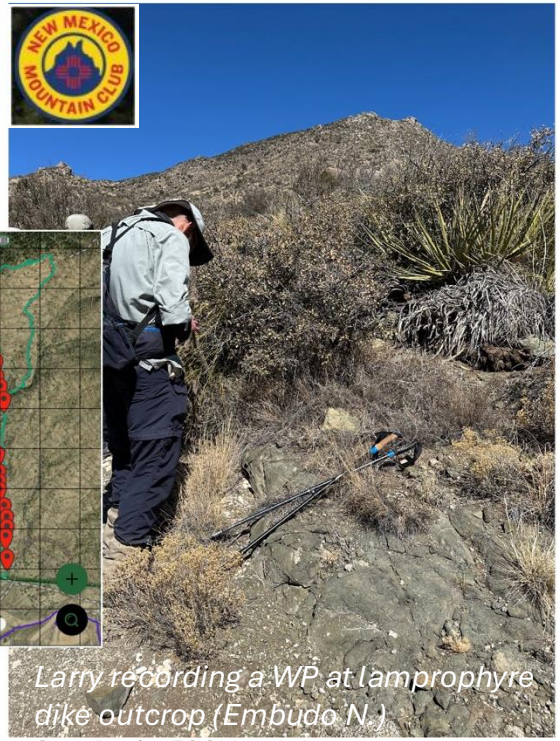
The term lamprophyre is used to refer to a group of igneous rocks with high potassium, magnesium, and iron content. Four minerals dominate these rocks: orthoclase (p.173), plagioclase, biotite (p.197), and hornblende (p.218). Amphibole and biotite tend to occur in a matrix of various combinations of plagioclase and other sodium- and potassium-rich feldspars, pyroxene, and feldspathoids (pp.182–84). Because of their relative rarity and varied composition, lamprophyres do not fit into standard geological classifications. In general, they form at great depth and are enriched in sodium, cesium, rubidium, nickel, and chromium, as well as potassium, iron, and magnesium. Some are also source rocks for diamonds.

The exact origin of lamprophyres is still debated. These rocks occur mainly in dykes, sills, and other small igneous intrusions. They form along the margins of some granites (pp.258–59) and are often associated with large bodies of intrusive granodiorite (p.263).

Cress and Lynn sitting on granite with feet on lamprophyre (inside NF near Elena Gallegos OS).

David standing on granite, looking down at lamprophyre dike (“Black Gulch”)





Larry recording a WP at lamprophyre dike outcrop (Embudo N.)

Eric hiking up lamprophyre dike (”Black Gulch”)

8. “Orange Crush” (North Crest Trail)

GEOCACHING 25 Play Communit

Orange Crush

A cache by ABQSnoopyfan Message this owner

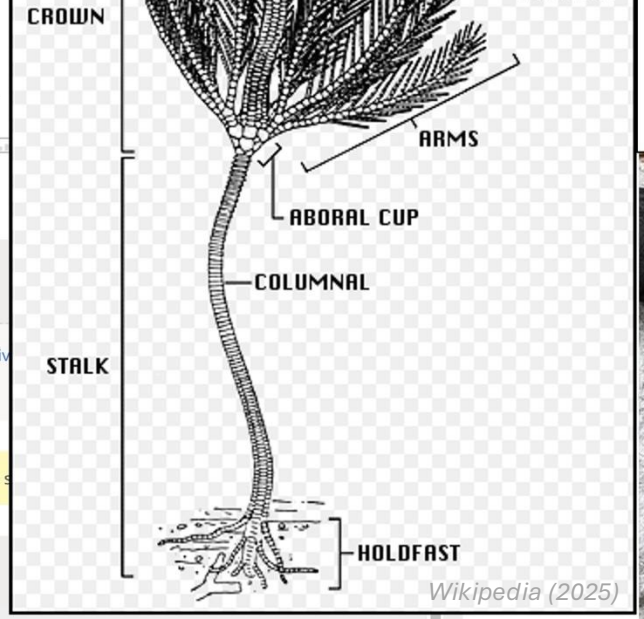
Difficulty: ★★★★☆ Size:
Terrain: ★★★½☆

luhringnm
Found on 7/22/2024

WOW, WOW, WOW, yes this was a strenuous hike, we came up the Del Orno Tr, but so worth the effort. I have known for decades that there are fossils visible in the limestone on the top of the Sandia Mountain. But I have not been patient enough to find them. ABQSnoopyFan's EarthCache has taught me about the fossils and taken me to see them. YAY! I got down on my knees and WOW, fossils all over the rocks. If you haven't done it yet, hike his Sea Sea Sea Trail EarthCache GCAAHGV to learn even more. The views along the North Crest Trail are magnificent too. THANK YOU ABQSnoopyFan!

Geocache Description:

Christina E. O'Malley, PhD (She/Her) · 3rd
Science Teacher, Ohio Academy of Science Trustee
Langley High School



Wikipedia (2025)

Dr. V. Lueth:
Replacement of limestone by chalcedony/jasper are not uncommon near areas of significant barite-fluorite mineralization up and down the Rio Grande Rift.
Red-colored fossils, where the original gray calcareous material was replaced by chalcedony colored by hematite, have been reported in the Madera Limestone.


Jasper(?) in limestone in vicinity of EC


Barite crystals at Land’s End Barite mine, Osha Springs Trail

VOLUME 96 NUMBER 4

THE JOURNAL OF GEOLOGY

July 1988

MECHANISM AND CONTROLS OF SILICIFICATION OF FOSSILS IN LIMESTONES[1]

ROBERT G. MALIVA AND RAYMOND SIEVER
Department of Earth and Planetary Sciences, Harvard University, Cambridge, MA 02138

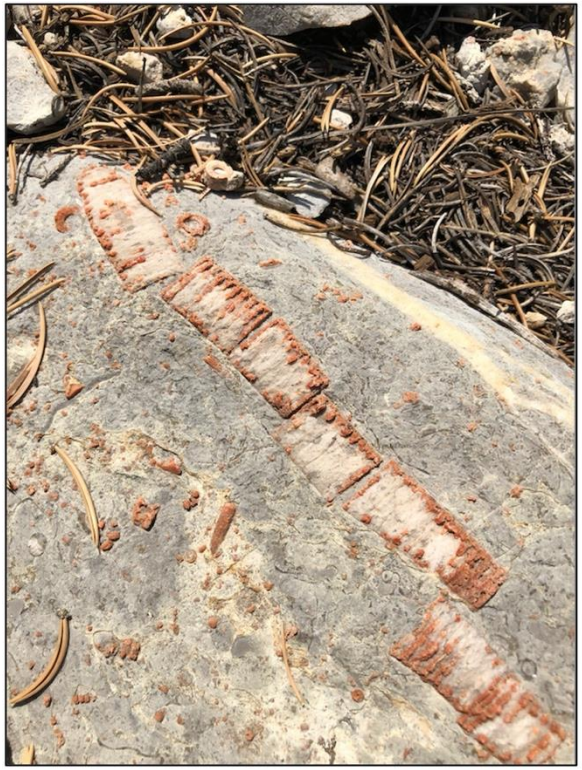
R. Maliva & R. Siever research:
“Biomarkers”, or traces of organic molecules (quinone-like) have been extracted from crinoid fossils. Different colored fossils have different types of quinones. But there is no evidence these are related to the true color of the animals when alive.

R. Maliva & R. Siever, paraphrase:
The phenomenon by which originally calcareous (calcite-rich), or magnesium-calcite-rich fossils become replaced by silica while the surrounding matrix limestone does not become replaced, is a well-observed phenomenon. It’s complicated! What is important is that the composition of the calcite in the fossils has to be sufficiently different from that of the limestone matrix so as to allow circulating silica-rich fluids to replace only the calcite in the fossils and not the limestone matrix.

Webster and Kues (2006) published an
in Pennsylvanian-age rocks in New Me
from 26 localities in the state, with the
in the Manzanita Mountains. Owing to t
Pennsylvanian – with numerous marine
sea level, there was opportunity for an explosive growth of new types of crinoids, and many in New Mexico are endemic (native) to here. The subject of this Earth Cache are the abundant crinoids seen in the Pennsylvanian-age Madera Group limestones in the Sandia Mountains, right along the trails, and in particular the interestingly colored ones that appear to be more common in the northern part of the

no Trackables in this
Trackables
What are Trackable Items?

8. “Orange Crush” (North Crest Trail)



9. “Streams of Consciousness” (Bootleg & Sidewinder Trails)

GEOCACHING Play Community Shop

Streams of Consciousness

A cache by ABQSnoopyfan Message this owner Hidden : 5/29/2023

Difficulty: ★★★★★ Size: (other)

Terrain: ★★☆☆☆

In New M
N 8.4 mi from

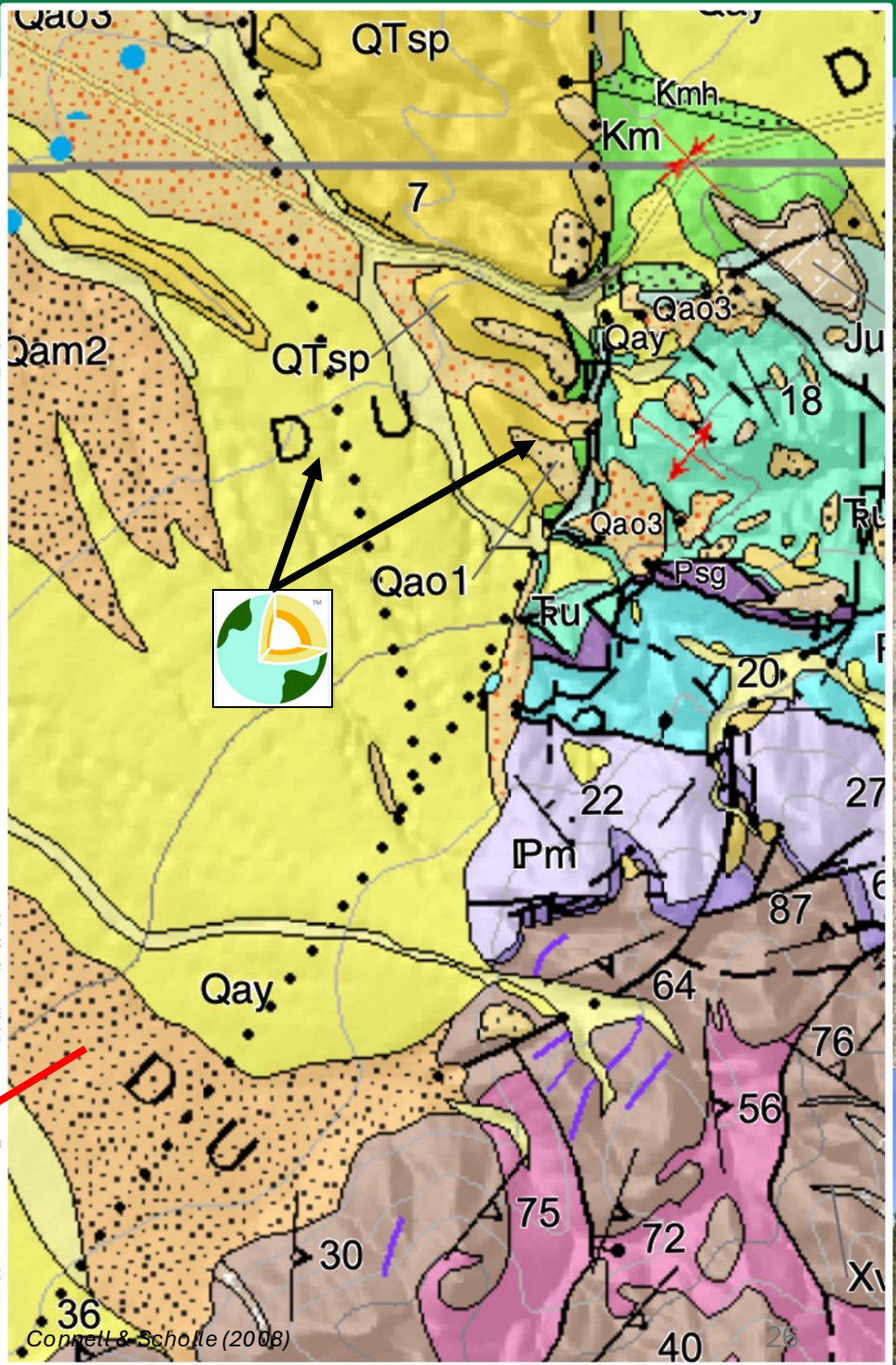
Driving Directions

rvices is subject to the terms and conditio

ZSteve

Found on 5/31/2024

Found this one with TTO1 today. We're visiting the area for a few days of hiking fun. This is our first day of hiking and we decided to come up this way to tackle the new puzzles in the area plus others along the way. Since it is our first day, it took us awhile to get used to the higher altitude (we live in TX after all) and there was some huffing and puffing along the way that wasn't solely due to the hill climbing that we were doing. But this was all great preparation for the hikes that we have planned for the next two days, so all is well. This earthcache was definitely on our list of target caches for this hike. I had a great time learning about some of the local geology and really appreciate the time and effor that it took to set this earthcache up! Email sent with our answers to the questions and pictures posted showing us at GZ and Stage 2. I really enjoyed exploring hiking around this area and our overall visit and look forward to coming back again soon. Favorite Point from me. Thanks for the fun!



The Great Sandia Un-Conformist EarthCache (GC1YK8V), which, in particular, includes lots of pictures

Download

9. “Streams of Consciousness” (Bootleg & Sidewinder Trails)

10. "Fun with Fe_3O_4" (Embudo Trail)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Fun with Fe3O4

GC9NAXF

A cache by ABQSnoopyfan Message this owner Hidden : 2/9/2022

Difficulty: ★★½☆☆ Terrain: ★★☆☆☆ Size: (other)

4 Favorites

N 35° 05.808 W 106° 27.888
UTM: 13S E 366487 N 3884759

In New Mexico, United States
S 5.4 mi from your home location

Print: No Logs 5 Logs 10 Logs Driving Directions

Download GPX

Please note Use of geocaching.com services is subject to the terms and conditions in our disclaimer.

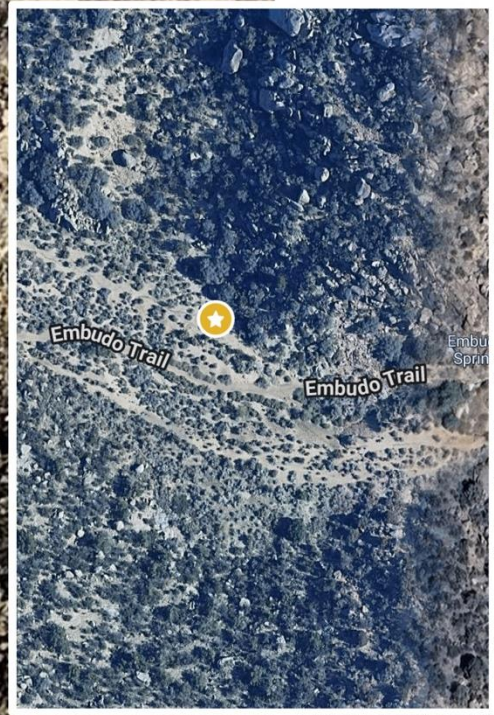
Personal cache note

Click to enter a note

Log geocache

View all logs (8)
View gallery (17)
Watchers (0)
Add to List
Ignore

Admin Tools
Update Coordinates
Edit
Upload Images
Archive
Disable



ɔtion:

ONS TO BUDABELI FOR FTF!

tional pictures showing how much fun you had, if you'd like to. I
anger at Cibola National Forest, to express our thanks to her gran
ent of this Earthcache. Earthcaches have to have permission gran
r geocaching.com to publish them, and in this case the land belo

lappens at the western foot of the Sandia Mountains. To observe t
Earthcache on the lower Embudo Trail. To accomplish this Earthca
(perhaps from your refrigerator) and take a few pictures. Finally, t
CO using the geocaching.com webmail, answer the questions pc
ctures. Note that it's best to do this cache when the sunlight is goc
and when the trail is not wet.

rest is EarthCache "GC7MPVN, "Rio Grande Valley transect – soi
ɔut weathering and soils.

s an iron oxide, Fe_3O_4, and as its name suggests, it is magnetic. Magnetite is
irally occurring magnetic minerals within the Earth's crust, particularly within
nic rocks. Within the Sandia Granite, magnetite is a common "accessory"
ated throughout the rock. An accessory mineral is one that occurs in very small
of up to a few percent – within the overall mineral composition of a rock. You
would be hard pressed to see magnetite grains within the Sandia Granite with your unaided eye. Your

luhringnm
Found on 12/10/2022

I can't believe I've lived in ABQ since I was a kid, have hiked Embudo maybe 50 times, & I didn't know about magnetite. This EarthCache is wonderful & easy. I showed some kids my kitchen magnet rubbed in the trail dirt so the could see the magnetite. They were appropriately amazed. THANK YOU. Photos attached.

trexblue
Found on 3/5/2022

found it with my momma and piggie poo. mom turned it into a science lesson and started talking about atomic numbers and weights...always learning! tftf

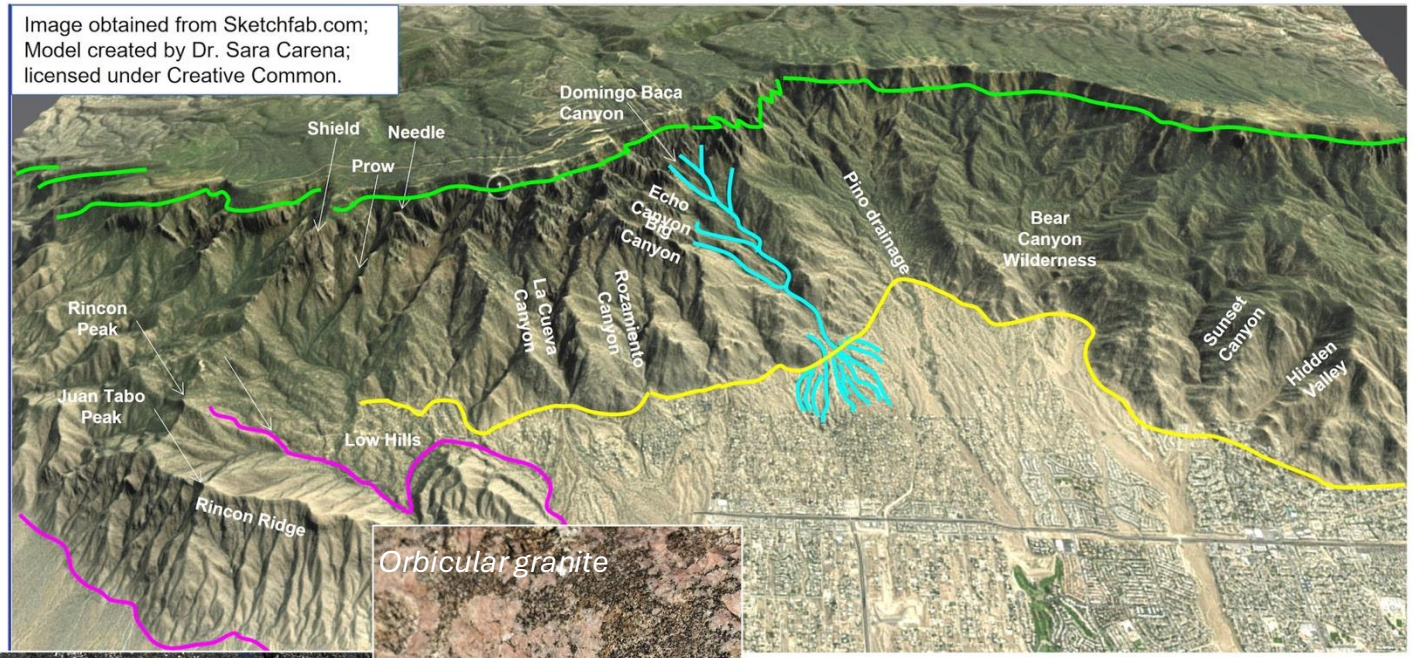
Sandpig sent in answers and I'm the kiddo in the photos!

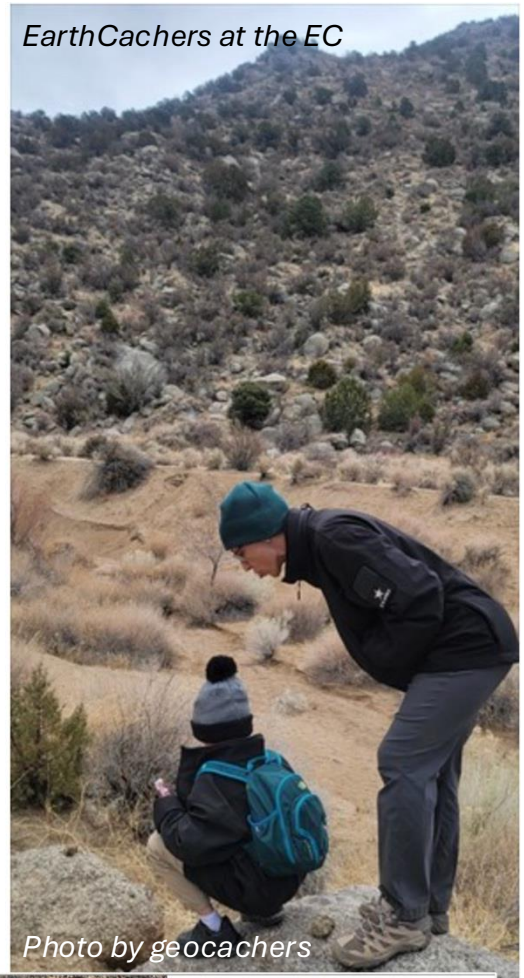
There are no Trackables in this cache.

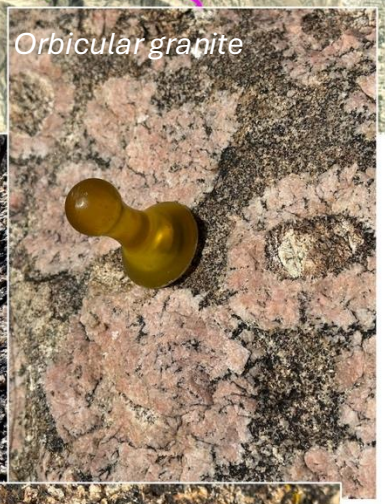
View past Trackables
What are Trackable Items?

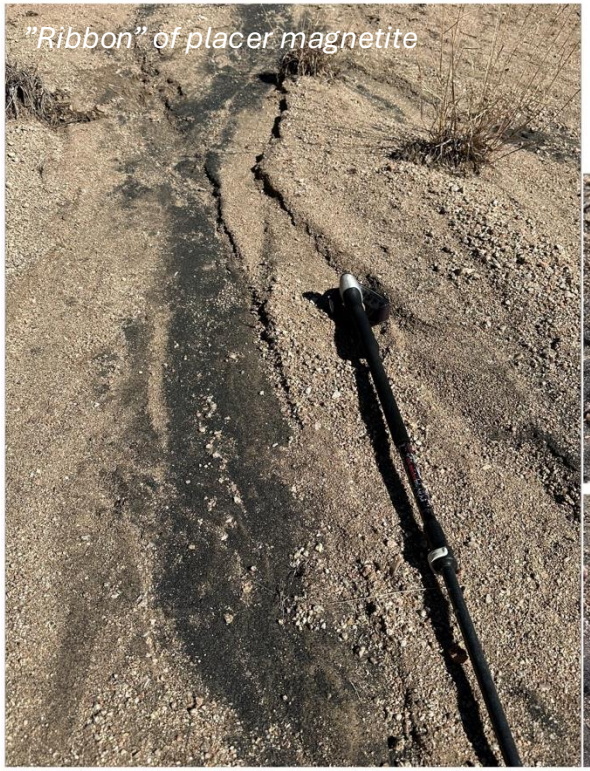
Download

10. "Fun with Fe_3O_4" (Embudo Trail)









Placer magnetite at EC site

11. “Romancing the Stone” (Juan Tabo Cabin Trail)

GEOCACHING 25 Play Community Shop ABQSnoopyfan 2,275 Finds

Romancing the Stone

A cache by ABQSnoopyfan Message this owner Hidden : 12/23/2023

Difficulty: ★★½☆☆ Terrain: ★½☆☆☆ Size: (other)

2bassetslaves
Found on 9/2/2024

Got an early morning start to visit a couple of earthcaches. Sure is nice to have overnight temperatures in the 50°'s again. I enjoyed the history of the cabin and tried to identify the rocks to the best of my ability. Answers sent. Thanks for an interesting earthcache.

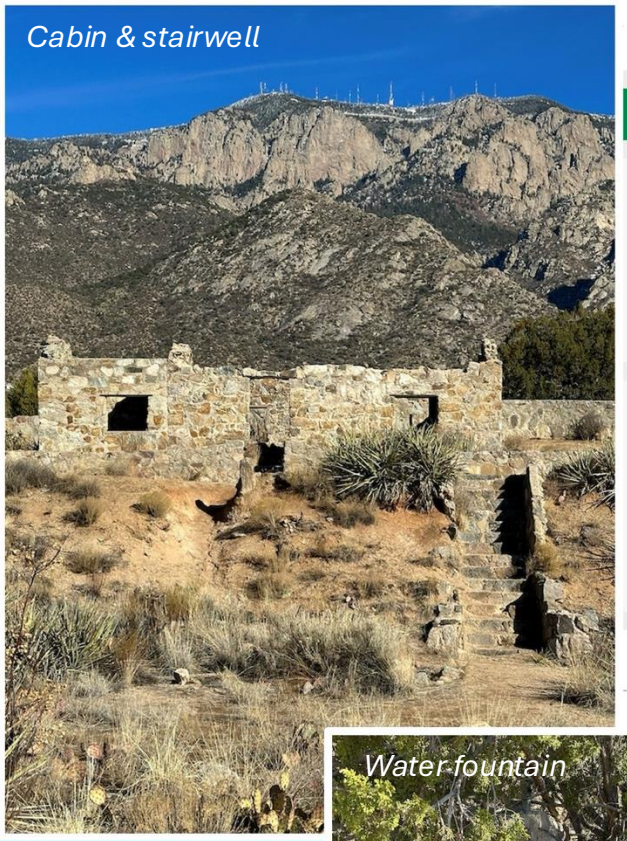
N 2.3

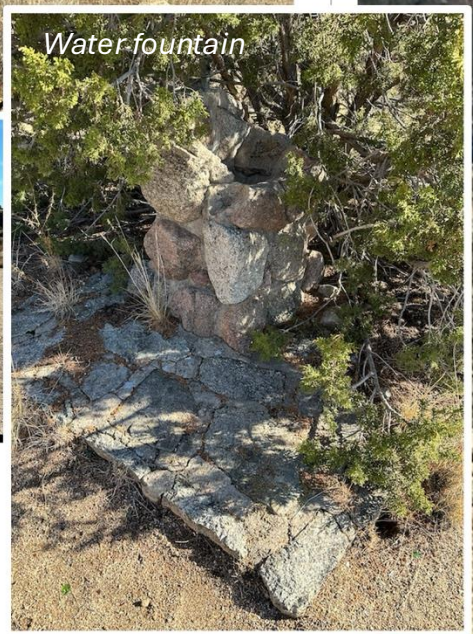
Logs Driving Directions

ng.com services is subject to the terms and

Personal cache note

Click to enter a note





gress Administration (WPA) through 1942. The small north room was added on . Whereas the wooden barracks and other buildings for this camp are mostly long ive stone structures are still standing. Early ranch life in the Rincon must have allenging, grimy and exhausting. But there seems to have been foresight by the wo stone benches flanking the front door on the west-facing side of the Cabin. s and CCC-ers might have captured some rest, after a long day's work, to sit s sunsets. Now *that's* romantic.

11. “Romancing the Stone” (Juan Tabo Cabin Trail)

Examples of “Granite”

Examples of “Schist”

Examples of “Gneiss”

Examples of others

- Large room walls of the Cabin;
- Bathroom walls;
- Small north room walls of the Cabin;
- Two benches on either side of the entrance door;
- Three steps leading up to the entrance door;
- 16 steps forming the long staircase leading up out of the deeper part of the arroyo;
- Perimeter wall forming the enclosure around the Cabin;
- Water fountain and the platform at its base.

Happy EarthCachers!










All photos submitted by EarthCachers

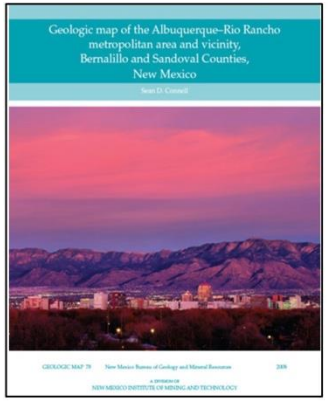
Thanks, Sandias!

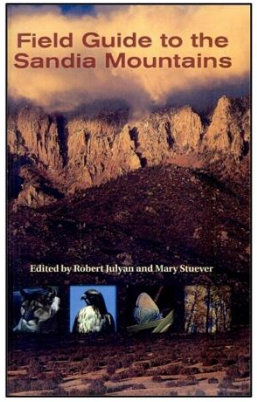
Thanks also to:

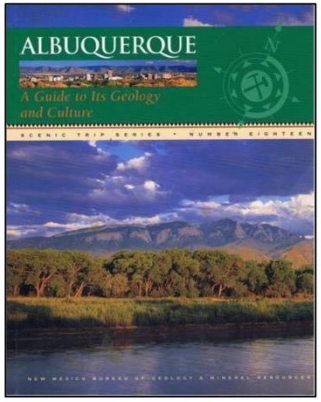
- Crystal Powell, Sandia Ranger District, Cibola National Forest, Chief Ranger
- City of Albuquerque OpenSpace
- Julie Padilla, SRD Recreational Staff Officer, Sandia RD
- Jenna Padilla, Forest Service Geologist, CNF
- Dirk Van Hart, Geologist, Sandia Labs (+other), CCC expert
- Dr. Virgil Yueth, Professor Emeritus, NM Bureau of Geology & Mineral Resources
- Dr. Sean D. Connell, NM Bureau of Geology/NM Tech; Chevron
- Dr. Karl E. Karlstrom, University of New Mexico
- Mike Coltrin for introducing me to all the Sandias Trails (via his Hiking Guide books)
- National Forest & Friends of the Sandia Mountains for maintaining the trails
- Hiking friends who introduced me to geocaching
- Geocaching friends who suggested I start making EarthCaches
- Groundspeak (Geocaching.com) for accepting my EC's

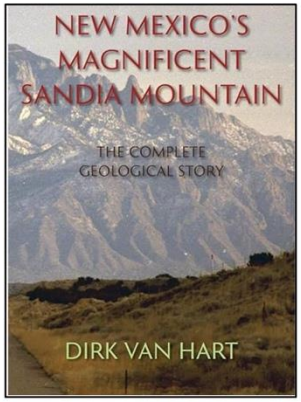
Picture by Rudy Schlaf (2024)

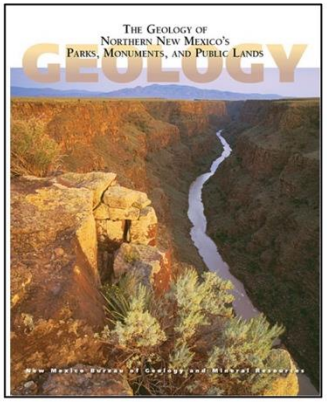
Selected References/Resources

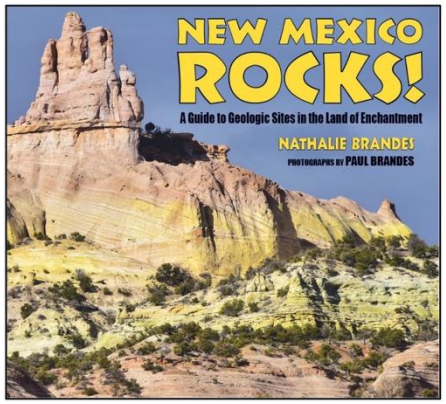


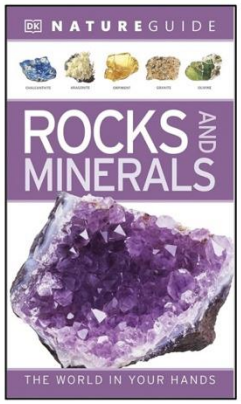


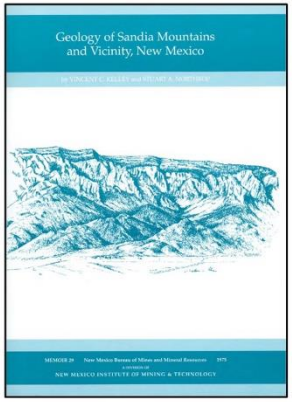


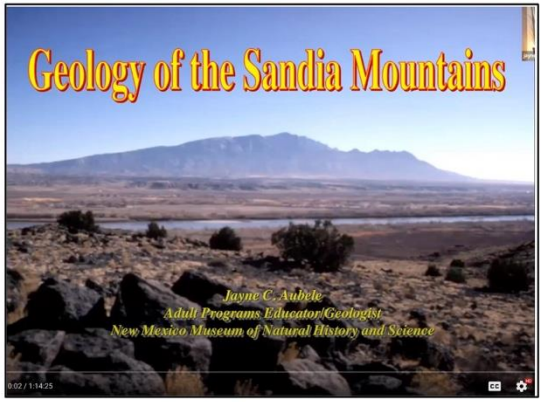


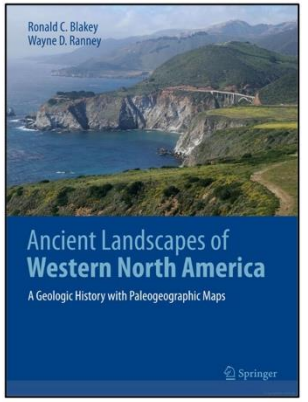


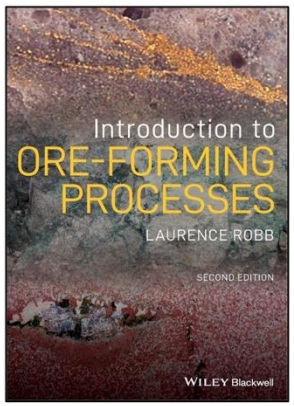


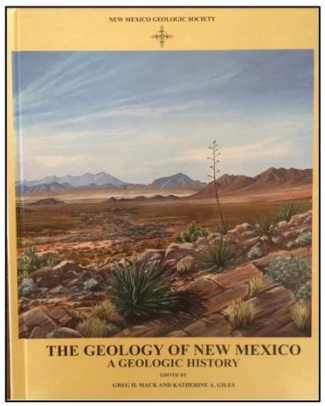


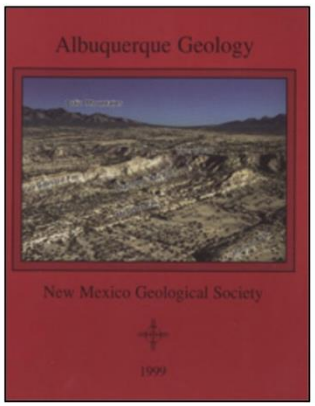


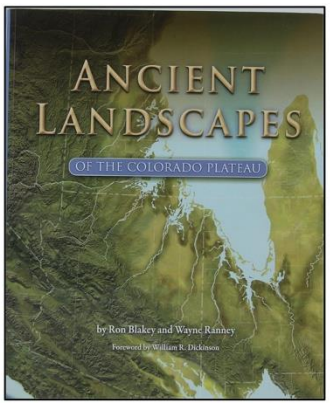












+ various academic papers; see list.

Selected References/Resources (p. 1)

Aubele, J., L. Crumpler, J. Deal, S. Lucas and P. Stubbe, 2005, Geology of the Sandia Mountains, Chapter 5, Field Guides to the Sandia Mountains, Editors R. Julyan and M. Stuever, University of new Mexico Press.

Bauer, P. W., R. P. Lozinsky, C. J. Condie and L. G. Price, Albuquerque – A guide to its geology and culture, New Mexico Bureau of Geology and Mnineral Resources, Socorro, NM, 2003.

Baer, S. H., 2004, Geologic and Tectonic Evolution of the Manzano Peak Quadrangle, central New Mexico, University of New Mexico, Earth and Planetary Sciences, Electronic Theses and Dissertations.

Blakey, R. C. and W. D. Ranney, 2017, Ancient Landscapes of Western North America, A Geologic History with Paleogeographic Maps, Springer.

Blakey, R. C. and W. D. Ranney, 2008, Ancient Landscapes of the Colorado Plateau, Grand Canyon Association, Grand Canyon, Arizona.

Brandes, N., 2021, New Mexico Rocks!, Mountain Press Publishing Company, Missoula, Montana.

Bonewitz, R. L., 2012, Rocks and Minerals, Smithsonian Nature Guide, Dorling Kindersley.

Connell, Sean D. and P. A. Scholle, 2008, Geologic Map of the Albuquerque – Rio Rancho metropolitan area and vicinity, Bernalillo and Sandoval Counties, NM, Geologic Map 78, NM Bureau of Geology and Mineral Resources (See also Connell, 2006, for online version by the same name).

Fossilera.com, 2022, About crinoids.

Gramling, C., 2007, The color of crinoids, Geotimes.

Holland, M., K. E. Karlstrom, T. A. Grambling and M. T. Heizler, 2016, Geochronology of Proterozoic rocks of the Sandia-Manzano-Los Pinos Uplift, implications for the timing of crustal assembly of the southwestern United States, New Mexico Geological Society Guidebook, p. 161-168.

Julyan, R. and M. Stuever, eds., Field Guide to the Sandia Mountains, University of New Mexico Press, Albuquerque.

Karlstrom, K. E., M. L. Williams, M. T. Heizler, M. E. Holland, R. A. Grambling and J. M. Amato, 2016, U-Pb Monazite and 40AR/39AR Data Supporting Polyphase Tectonism in the Manzano Mountains: A Record of Both the Mazatzal (1.66-1.60 GA) and Picuris (1.45 GA) Orogenies, New Mexico Geological Society Guidebook, 67th Field Conference, Geology of the Belen Area, p. 177-184.

Kelley, V. C. and S. A. Northrop, 1975, Geology of Sandia Mountains and vicinity, New Mexico, Memoir 28, NM Bureau of Mines and Mineral Resources.

Kirby, E., K. Karlstrom and C. Andronicos, 1995, Tectonic setting of the Sandia pluton: an orogenic 1.4 Ga granite in New Mexico, Tectonics, 14, 1, 185-201.

Selected References/Resources (p. 2)

Krainer, K., S. G. Lucas and D Vachard, 2011, Lectostratotype Section of the Pennsylvanian Sandia Formation, Bernalillo County, New Mexico, Sullivan et. al., eds., Fossil Record, New Mexico Museum of Natural History and Science, Bulletin 53.

Kues, B. S., 2001, The Pennsylvanian system in New Mexico, overview with suggestions for revision of stratigraphic nomenclature, NM Geology, 23, 4, 103-122.

Lueth, V., 2022, Professor Emeritus – Senior Mineralogist/Economic Geologist, NM Bureau of Geology and Mineral Resources, personal communication.

Maliva, R. G. and R. Siever, 1988, Mechanism and controls of silicification of fossils in limestones, the Journal of Geology, 96, 4, 387-398.

O'Sullivan, R. B., 1974, The Upper Triassic Chinle Formation in North-Central NM NMGS, 25th Annual Fall Field Conference Guidebook.

Price, L, G., Editor, The Geology of Northern New Mexico's parks, monuments and public lands, 2010, NM Bureau of Geology and Mineral Resources.

Rickets, W. J., KI. Karlstrom and S. A. Kelley, 2015, Embryonic core complexes in marrow continental rifts: The importance of low-angle normal faults in the Rio Grande rift of central NM, Geosphere, v.11, no.2.

Robb, L., 2021, Introduction to Ore-Forming Processes, 2nd Ed., Wiley Blackwell.

Sadler, C., W, Parker and S. Ash, 2014, Dawn of the dinosaurs – the last Triassic in the American southwest, Petrified Forest Museum Associaton.

Van Hart, D., 2023, NM's magnificent Sandia Mountain – the complete story, Sunstone Press, Santa Fe, NM.

Van Hart, D., 2020, Camps and Ampsites of the Civilian Conservation Corps (CCC) in New Mexico 1933-1942, Sunstone Press, Santa Fe, NM

Van Hart, D., 1999, Geology of Mesozoic sedimentary rocks in the Juan Tabo Area, northwest Sandia Mountains, Bernalillo County, NM, New Mexico Geology.

Wikipedia, The Free Encyclopedia.