Wet Mountains Field Trip Itinerary: September 23, 2023

Trip Leader: Jay Temple, Colorado Geological Survey

The field trip will focus on three different aspects of the geology of the Wet Mountains: (1) the complexities of the Proterozoic metamorphic and igneous intrusive phases of the Wets, (2) the three Cambrian to early Ordovician alkalic intrusive phases responsible for rare earth and Thorium mineralization, and (3) the Paleozoic through Tertiary geological development of south central Colorado beautifully displayed through Temple Canyon. We will have a full day and cover over 90 miles along both paved and dirt roadways. Expect to have an hour break for lunch in Westcliffe.

8:45 to 9 am. Meet and greet at Fremont County Airport, Fixed Base Operations conference room at end of road into the airport near the runways. Airport is south of Highway 50 midway between Penrose and Canon City.

9 am to 10 am. Lecture and discussion of geological history of the Wet Mountains.

10 am. Depart for field trip in as few vehicles as possible. We will return to the airport at the end of the trip to reclaim other vehicles.

10:15 am. Florence and Hwy 67. Road log starts here. We will head up Hwy 67 to Wetmore which is 10 miles to the south. Then, turn right on Hwy 96 to head up Hardscrabble Pass.

10:40 am. Stop 1 approximately 17.5 miles from start at a pullout with spectacular outcrops of the Proterozoic metamorphosed pelites and granitic intrusions. A discussion of migmatites will be a major topic here.

11:15 am. Stop 2 at 19 miles from start. Ilse fault zone at McKenzie Junction. More migmatities, metamorphics , and great fault gouge display of this major structure through the Wets.

11:40 am. Stop 3 at mile 20. We will have to park and walk up to an outcrop along the Hwy that consists of a Barite-Thorium vein highly mineralized with rare earths.

Noon. Stop 4 at approximately 30 miles (if time permits and there is interest). Bassick Mine, just south of Hwy 96 off of CR 341. Abandoned mine discovered in 1877 in the Rosita Hills District. Geology is primarily a series of breccia pipes of Oligocene age at the juncture of two major faults. Mining operations consisted of a vertical shaft and 12 levels up to 150 ft below the surface. Estimated production from 1877 to 1885 was about 80,000 oz of gold and several hundred thousand oz of silver, but little has been produced since. Maybe we could get some insight from one of our participants, Tim Brown, formerly exploration manager at the Cripple Creek mine, who reviewed the possibility of reopening the mine about ten years ago.

1 pm. Stop 5 at mile 40. Lunch at the Westcliffe Community Park and Smokey Jack Observatory on the west side of Westcliffe overlooking the Wet Mountain Valley and Sangre de Cristo Range. The Westcliffe market is nearby if you need to restock with refreshments. We will have about 45 minutes for lunch and a quick review of Silvercliff - Rosita late Oligocene to early Miocene volcanics.

2:30 pm. Stop 6 at approximately mile 60. Iron Mountain Mine in the McClure Mountain complex. We will discuss the mafic-ultramafic layered intrusion at this site as well as the magnetite ilmenite mine near this location. From the Westcliffe lunch stop we will head up Hwy 69 for 3 miles and turn right on Copper Gulch Rd (CR 215). At about 8 miles we will turn right on CR 29 for just a mile and jog left on CR 27a (still referred to as Copper Gulch Rd by the locals). Approximately 6 miles north on 27a we will turn right on Iron Mountain Rd (CR 1) and go about 3 miles to the Iron Mountain Mine north side.

3 pm. Stop 7 at approximately mile 64. We will back track on Iron Mountain Rd to Mac Donnell Dr and turn left to head south to Carpenter Tr, about 2 miles. A right on Carpenter leads us to the location of one of the best exposures of a primary and secondary carbonatite host for rare earth mineralization.

4 pm. Stop 8 at approximately mile 78. Ilse fault again as it creates the entrance to South Webster Park, a graben primarily composed of Cretaceous sedimentary rocks. Probably won’t get out of vehicles here as turn outs are small and dangerous with the curves of the road.

4:30 Stop 9 at approximately mile 83. Temple Canyon Rd outcrop of Jurassic Morrison Fm. sitting nonconformably on the Proterozoic gneisses. To get here we will turn right on to CR 3 off of Copper Gulch Rd. This is a hard right turn and can be easily missed. The turn is about 1 mile past the Ilse fault location. From the turn onto CR 3 we will go about a mile and turn right on Temple Canyon Rd. The outcrops on the left of the road (east) are primarily the Lytle/Plainview Sandstones of Aptian age (115 to 110 Ma) and represent the initial marine transgression into the Late Cretaceous Western Interior Seaway. To the right is a fold system composed primarily of shales of the Graneros, Greenhorn, and Carlile Formations.

Since it will be late in the day and we will be a bit worn, we will continue on Temple Canyon Rd through the heart of the northern Wet Mountains back to Canon City. There are numerous stops we can make to see the structure and stratigraphy of the sedimentary section and their relations to the Proterozoics as we progress back to the airport. I will let you decide as I could continue on until dark.

I have included as a pdf file the most recent publication of the results of our investigations on the alkali magmatism and rare earth mineralization in the Wet Mountains. This project was part of a joint effort between the CGS and USGS and the authors were all actively involved in the process. Mr. Magnin spent parts of the summers of 2021 and 2022 with me in the field.