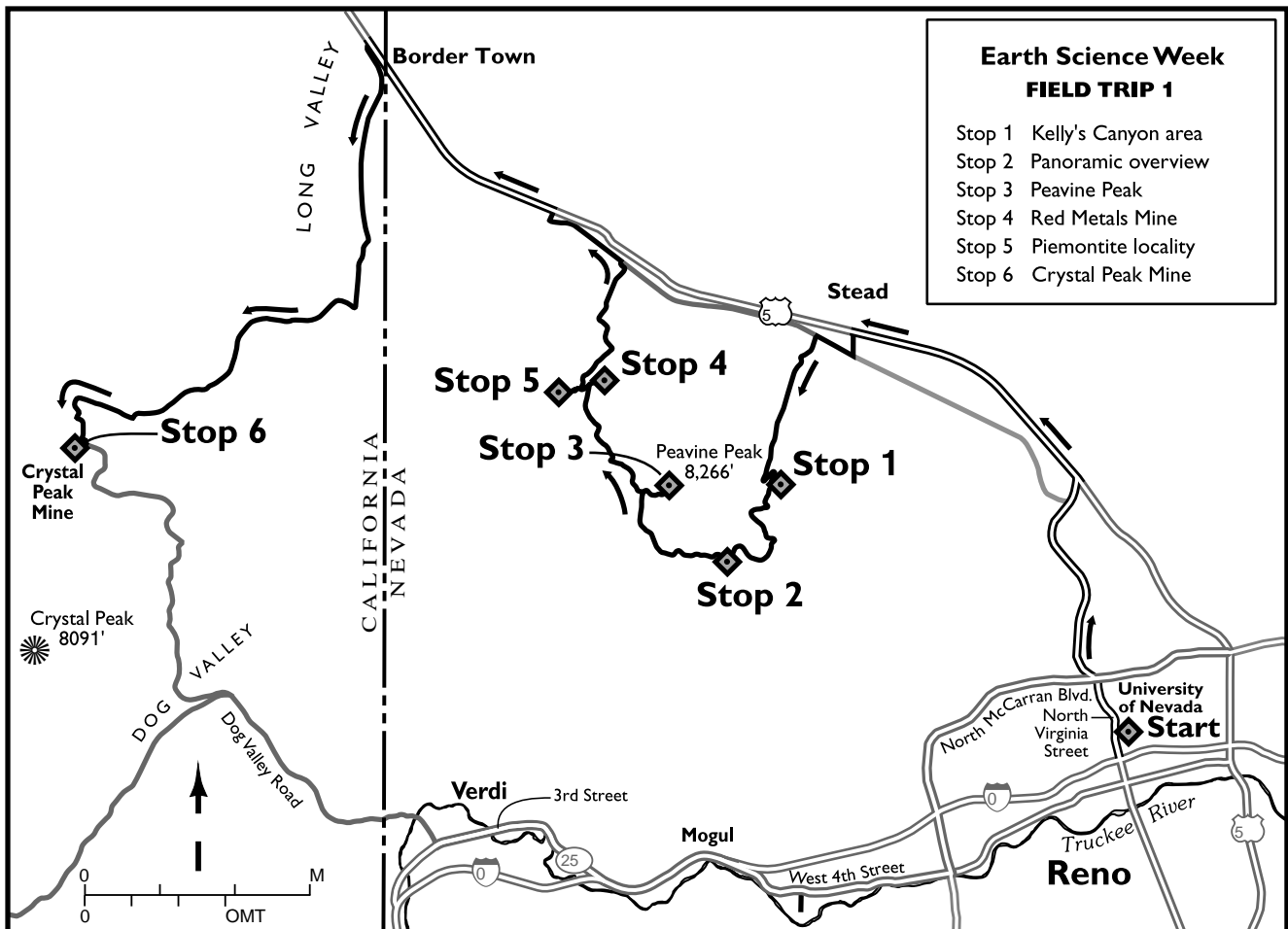


**Earth Science Week 2001 Field Trip #1**  
**Peavine Peak - Geology, Plants, and Mining History**  
**A Field Trip for Families and Rockhounds**

This is a field trip to learn about the geology, mining history, and vegetation of Peavine Peak. We will make several stops at areas of geological, historical, and natural history interest. We will collect rock and mineral samples and discuss the regional geology, plant life, and history of the area, and will end up at the Crystal Peak quartz mine to search for quartz crystals. There are no rest rooms on Peavine Peak. We will be traveling in part on unimproved gravel roads that are steep, narrow and rocky, so be patient, drive slowly, and save your tires!

For the most part, Peavine Peak is composed of the Peavine sequence, a pile of metamorphosed volcanic rocks of Mesozoic age (70 to 250 million years old). These rocks tell of a time when this area was similar geologically to the Cascades of Oregon and Washington today, with frequent volcanic eruptions due to a subducting tectonic plate to the west. The gold, copper, and iron deposits found on Peavine are the result of later hydrothermal activity that altered the volcanic rocks and formed veins of quartz and metallic minerals. Peavine Peak rose relative to the adjacent valleys along range-front faults that have been active over millions of years.



## ROAD LOG

### Cumulative miles

- 0.0 Leave UNR parking lot at Evans Ave. and Record St., turn left on Evans (becomes Ninth St.) and turn right on N. Virginia St.
- 1.5 Cross McCarran Blvd. The mine workings near Rancho San Rafael Park on the left are mostly the result of small underground mining activities between 1900 and 1930.
- 2.0 Note outcrop of andesitic volcanic rock in roadcut on left, part of the Alta Formation.
- On the hill to the right is Fulton's quarry, where volcanic rock was mined for building stone used in several of the early buildings on the UNR campus. The railroad that parallels Virginia Street here was originally planned in 1880 to run from Bodie, California to the Columbia River as a northern extension of the V&T railroad. The company went bankrupt in 1883 as a result of shady financing, slow construction, and feuding among the shareholders that included a gunfight at one board meeting. The line was purchased at a sheriff's sale and was extended to Amedee near Susanville and was marginally profitable for several years until it was sold to Western Pacific after 1900. The old name for the line was the NCO Railroad (Nevada, California and Oregon Railroad) but it was commonly referred to as the "Narrow, Crooked and Ornerly" or the "Northern California Outrage."
- 4.0 Jeffrey pines growing on hydrothermally altered acidic soil that will not support growth of diverse plant species.
- 4.9 Take entrance ramp onto U.S. Highway 395 North.
- Emigrant trail marker on right near the railroad marks the Beckwith trail, discovered by James Beckwith in 1851. It was heavily used by 1852, ending up in Marysville on the California side. It was very popular because the high point (Beckworth Pass) is only about 5200 feet high, lower than other routes farther south. Use declined by the mid 1860s, when it was supplanted by the Stevens-Donner route.
- 6.5 Pass Lemmon Valley exit. Just south of Silver Lake was the Peavine Ranch, one of the oldest ranches in Lemmon Valley, first settled in 1859. In 1862, Fielding Lemmon, first from Tennessee and later from Oregon, came to Nevada and purchased the ranch, after which the name of the area changed from Peavine Valley to Lemmon Valley. After Mr. Lemmon's death in 1898, his heirs sold the ranch to Henry Anderson, and the immediate area was referred to as Anderson Acres for many years.
- 7.9 Remains of placer mining activity in the 1860s to 1880s are visible to the west. For about 20 years starting in the 1860s, Solomon Lingle and several others worked this area for placer gold. They built a ditch to help catch and redirect the spring runoff and worked their sluices for a couple of months until the snowmelt was gone. Lingle reportedly made \$5,000 per year for his efforts. One can still pan a little "color" here today.
- 8.7 Take Stead exit, turn left at bottom of the off-ramp, go under the freeway and turn right at the end of the road onto old Virginia Street.
- 9.8 Turn left onto gravel road (just past the gray house) .We are now on the "Peavine Fan," an apron of sediments eroded from the peak and thinly covering altered, clay-rich Tertiary volcanic rocks visible in some roadcuts.
- 10.0 Cross railroad tracks (Nevada, California and Oregon RR right of way).
- 10.4 First good view of Peavine Peak. The northeast flank of Peavine ahead of us was first developed as a copper-mining area in the late 1850s, but the district was not organized until 1862. In the 1860s, copper and some silver were produced from claims in the Granite Hills just west of Red Rock Road near Silver Lake. Fielding Lemmon tried to establish a town called Peavine City on his ranch and ran a station called the Peavine Hotel to accommodate the activity. Several smelters were built and some bullion was poured, but the activity died out about 1868.
- 11.0 The dumps on the left are from the historical Fravel-Paymaster Mine on patented claims that are still worked by small operators. The Fravel-Paymaster Mining Co. was active from 1909 to 1931 and moved a lot of rock but produced little gold and went bankrupt during the Depression. The gold deposits are part of a high-sulfidation (pyrite-rich) vein system in pre-Tertiary rocks. Many of the gold and silver deposits that have been so important to Nevada are the result of similar hydrothermal activity that altered the rocks and deposited gold and silver. Nevada leads the nation in gold and silver production

and accounts for approximately 11% of current world production of gold. Nevada mines produce well over \$2.5 billion in gold annually.

- 12.0 Poeville was situated on the flat area to the right where the road turns up a switchback to the left. In 1872, John Poe, a prospector and promoter from Michigan (and alleged relative of Edgar Allen Poe) came from workings in Aurora, Nevada, and Calaveras County, California and made a modest silver discovery in Horse Canyon. This sparked a rush to Peavine, heralded as the “next Comstock.” In 1873, Mr. Poe and several other men founded the town of Peavine City (or Poeville), which eventually grew to nearly 500 people and supported three hotels and a smelter. P.N. Norton completed a toll road up Keystone Canyon, and a stagecoach could make the 6-mile trip from Reno in 2.5 hours. Unfortunately, the sulfide-rich ores of the main Paymaster and Golden Fleece Mines were nearly impossible to smelt with the primitive technology of the time, and water was a problem in the mines, so mining activity rapidly diminished and ceased in the late 1870s. By 1880, only 15 people remained in Poeville. Several small mining operations have come and gone since that time, but little production has resulted.
- 12.2 Location of the Poe claim.
- 12.8 **STOP 1. Kelly’s Canyon** – aspen trees and mine dumps on left – location of the old Golden Fleece Mine, (NOT Poeville site, as marked on the USGS topographic map). Discuss geology, rocks, plant life, and mining history.
- 13.3 A reservoir is visible down Kelly’s Canyon.
- 13.8 Area of mountain mahogany and pine trees. Rocks visible along roadside are greenish-gray metamorphosed volcanic rocks of the Mesozoic Peavine sequence.
- 14.5 TURN LEFT on gravel road to prominent knob.
- 14.7 **STOP 2. Panoramic overview of the Truckee Meadows.** Discuss regional geology, rocks, plant life, mining history.  
  
Return to main gravel road, turn left and continue up Peavine Peak. Rocks in roadcut along this stretch are “microdiorite” igneous rock.
- 16.0 Aspen groves in valley to left host “silvaglyphs” (tree carvings) by Basque shepherders, some dating to 100 years ago.
- 16.4 Pass Road 641A to left, leading to a popular hang glider take-off point.
- 16.7 Crystal Peak (white area on forested slope) is visible in the distance to the west.
- 16.9 View to north down Yuba Canyon.
- 17.1 **STOP 3. Peavine Peak.** Park in the saddle and walk up to the peak. Collect Mesozoic-age metavolcanic rocks. Look for a variety of minerals in these rocks: apple-green epidote often surrounding white albite feldspar crystals, blue-green copper minerals coating fractures, and magnetite. Return to vehicles and retrace route down hill to fork, turn right (northwest)
- 18.2 At fork, turn left on road marked 642B.
- 18.7 Look for large boulders of very coarse “mega-breccia” alongside the road in this area.
- 19.1 Pass the road that forks to right.
- 19.2 Pass the road that forks to left.
- 19.3 **STOP 4. Red Metals Mine.** The adjacent North Mountain patented claim dates to 1879 but the first recorded (small) production appears to be from the Red Metals Co., which operated this as an underground mine between 1910 and 1918. The pit postdates 1956 and is probably from the late 1950s when Julius Redelius was exploring for and mining some copper in the area and patented the claims in this area. Look for blue-green copper minerals (malachite, chrysocolla) as well as veins of massive “schorlite” rock consisting of black tourmaline and quartz. Return to vehicles and continue for about another half mile.
- 20.4 **STOP 5. Piemontite locality.** Collect samples from exposures along road of altered volcanic rocks colored blood-red by the presence of the mineral piemontite (a manganese epidote) and pale red by the mineral hematite. You may be lucky enough to find a tiny pocket of red piemontite crystals in the volcanic rock.

Turn vehicles around at the wide place in the road at the bottom of the hill and retrace route. Go about 0.7 mile and turn left (north) at fork in road. Pass another road on left after 0.1 mile. The Granite Hills are visible to the north across U.S. 395 Highway.

- 22.0 Cross the approximate trace of the range-front fault bounding the northeast side of Peavine Peak.
- 23.2 Cross railroad tracks.
- 23.3 Frontage road. You may return to Reno by turning right on the frontage road back to the Red Rock entrance ramp to U.S. 395, or continue on with us to Crystal Peak. If continuing, turn left on frontage road and follow it to Bordertown.
- 24.1 Pavement begins
- 24.4 Pass Cold Springs access to U.S. 395. The dumps and foundations to the north are part of the Nixon-Nevada Mine. This mine passed through several ownerships from 1915 to 1938, and produced a little copper in 1916. The ranch on the left (south) side of the frontage road dates to the early 1860s and was originally owned by the Lawton family. During the 1860s a couple of smelters were in operation just beyond the ranch fields.
- 27.1 Pass the Bordertown access to U.S. 395.
- 27.3 Pass Bordertown casino and turn left on gravel road immediately past the last parking lot.
- 27.4 Cross railroad tracks and state line, and take the RIGHT fork in the road. Follow the main gravel road to the south through Long Valley.
- 29.4 Pass old (1862) ranch on right and bear right after stop sign at ranch.
- 30.5 Cross cattle guard and enter Humboldt-Toiyabe National Forest (USFS sign on right). Continue on main gravel road for about 5 miles. You will start to see white quartz fragments in the road gravel.
- 35.5 Turn right at the road sign marked "Crystal Mine."

**STOP 6. The Crystal Peak Mine** area contains massive quartz composed of crystalline silicon dioxide ( $\text{SiO}_2$ ) with many pockets of clear to milky quartz crystals of all sizes. It probably formed late in the crystallization of a granitic magma chamber, because quartz is one of the last minerals to crystallize as a magma cools down. The crystal pockets probably represent pockets of accumulated volatiles that allowed formation of very large crystals at relatively shallow depths in the crust. Look carefully in this area and you may also find the mineral orthoclase feldspar ( $\text{KAlSi}_3\text{O}_8$ ), a pale salmon pink mineral showing nearly right-angle cleavage (planes of breakage). Some quartz is also coated with silvery-looking mica and blue-green copper minerals. During World War II, the Crystal Peak deposit produced crystals used for radio communication. Following the war years, sporadic mining of the deposit for metallurgical-grade bulk quartz continued into the early 1970s. The U.S. Forest Service now manages the area as a recreational site.

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*We hope you enjoyed the trip. If you have any questions about the geology, natural hazards, or mineral, energy, or other natural resources of Nevada, please feel free to contact the Nevada Bureau of Mines and Geology by telephone (784-6691), e-mail ([info@nbgm.unr.edu](mailto:info@nbgm.unr.edu)), or the Web ([www.nbgm.unr.edu](http://www.nbgm.unr.edu)), or visit the offices on the UNR campus between 7:30 a.m. and 2:30 p.m., Monday through Friday.*

*Thank you for helping us celebrate Earth Science Week, which has been officially designated as the second full week of October by the Nevada Governor, the U.S. Congress, and the Association of American State Geologists to recognize the importance of geology and other Earth sciences to society. This field trip is sponsored by volunteers from the Nevada Bureau of Mines and Geology, Department of Geological Sciences, and W.M. Keck Museum at the Mackay School of Mines, University of Nevada, Reno; Nevada Division of Minerals; Geological Society of Nevada; American Institute of Professional Geologists; Association of Engineering Geologists; Nevada Petroleum Society; Society for Mining, Metallurgy, and Exploration; U.S. Geological Survey; U.S. Bureau of Land Management; Nevada Mining Association and other members of the Nevada geologic community.*

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