

Big Rocks

Last Tuesday (22) I went to do flood relief again in Lyons, Colorado. [It was my wife's 67th birthday, but we had a family celebration of it the following day.] In the afternoon session we were upstream from Lyons, where the river comes out of the mountains. The flood moved boulders, pieces of buildings, and vehicles, as well as tree and plant debris. Here are photos:



damaged house

buried truck



overturned and buried car

overturned and buried truck



crushed, buried car, nearly overturned

overturned car

An obvious lesson: Do not be in a vehicle in a flash flood, nor in anything else. Escape quickly to

high ground away from any flowing water. All rocks in these photos were moved by the flood.



On Saturday (26) I was a driver and brief speaker for a tour of geology students and faculty from Cedarville and Loma Linda Universities, plus a few local people and students of Colorado School of Mines. Our first stop was at the Interstate-70 road cut south of Golden to look at the colorful rock strata. Dinosaur Ridge extends from here to the south for several kilometers. Bones of large dinosaurs (Stegosaurus, Apatosaurus, others) were first discovered here in America at this location in 1877 in the Morrison Formation on the right

side of the photo. Footprints are in strata on both sides of this ridge, the other side being the Dakota Formation. I have been a tour guide on this ridge since 1990.



Our next stop was at the Edgar Mine in Idaho Springs, operated by the Colorado School of Mines for training students and for scientific and equipment experiments. The right photo shows ore carts. This tour was much more educational than that offered by other area mines. The mine walls are punctured by thousands of drill holes (center photo) made by students over many decades, practicing their techniques. The white signs with red and blue reflectors show escape routes. Another location showed explosive device samples and how they are arranged in the rock.



The apparatus at the left is used for practice of emergency mine rescue techniques and equipment. Trainees must climb through the tight tubes and other structures in total darkness while wearing oxygen tanks and breathing devices in case of poisonous atmospheres.

We then went to Georgetown and discussed environmental hazards in that region, particularly rock falls from road cuts and steep cliffs, and debris flows during



flash flood events. The first photo shows our group with our five vehicles in the background. The second photo looks uphill from there at an active debris flow channel with a natural levee of rocks at its sides. The next discussion location for



environmental hazards was at Lookout Mountain. The photo shows the small town of Golden below. In the foreground is Colorado School of Mines (CSM) with some red roof buildings. The large white buildings are the factory for Coors beer. The flat-topped mountains beyond are North (left) and South (right) Table Mountains, capped with lava flows. My home is about in the center of the view behind North Table Mountain and therefore obscured. We then descended to CSM and visited the Geology

Museum. It has two floors with beautiful mineral, rock, and fossil samples from around Colorado (first photo and many other cabinets) and the world (showing the China cabinet).



Our trip ended with a visit to see dinosaur bones at Dinosaur Ridge, then Red Rocks Park and finally dinner at a restaurant.

Ed Holroyd, 28 October 2013