

Geology 875 Field Trip

Spring break at the Rio Grande rift

by Jean Bahr and Laurel Goodwin

At the start of spring break we set off in two vans with thirteen graduate students for a field trip to New Mexico. This trip was the culmination of seven weeks of reading, lively discussions, and excellent baked goods in a seminar on the structure and hydrogeology of the Rio Grande rift. After two days of driving, we reached Socorro and the comfortable guesthouse at NM Tech. The next morning we visited a research site along the modern Rio Grande where NM Tech hydrologist Rob Bowman and his group are studying groundwater-surface water interactions. We then explored axial river deposits of the ancestral Rio Grande with NM Tech sedimentologist Peter Mozley, paying particular attention to the fascinating concretions (including one in the shape of a large W) that record directions of paleo-groundwater flow. The next morning we drove north to the Albuquerque Basin to learn more about the stratigraphy and hydrostratigraphy of the Santa Fe Group sediments and for a close-up examination of the cemented and mixed zones of the Sand Hill Fault. Our guides for the day included NM Bureau of Geology and Mineral Resources geologists Sean Connell and Geoff Rawling. A late afternoon tour of a new water diversion facility along the river to supply Albuquerque (arranged by alumnus **Erik Webb**, a hydrologist with



Seann McClure with the “W” concretion.

Sandia National Lab) was followed by a delightful dinner with Geobadger alumni from the Albuquerque area at a local cafe.

After a night camping in a park near the Rio Grande, we made our way north to the Espanola Basin. There we were joined by alumna **Elizabeth Keating** (a hydrologist at Los Alamos National Lab) as well as by NM Bureau geologist Dan Koning. Elizabeth discussed her current work on anomalous CO₂ in groundwater near Chimayo and Dan led us on tour of stratigraphy, springs and major faults in the area. That night we camped in Bandelier National Monument. The chili dinner earned grad student **Andy Leaf** the 2008 STOOPS award. The Pajarito Plateau was the focus of the next field day. Hiking trails through cliff dwellings and into canyons, we examined deformation bands and shear fractures in the Bandelier Tuff and pondered the complex processes of groundwater recharge through these rocks. An evening dinner with alumni from Los Alamos and Santa Fe completed a memorable day. Our final day in New Mexico took us along the snowy rim of the Valles Caldera with NM Bureau geologist Shari Kelly and Los Alamos National Lab geologist Claudia Lewis as guides. We ended the geologic portion of our trip at the fault-fed springs of Soda Dam, where we happened upon **Phil Brown** and the undergrads on the 376 field trip. After a lunch break, Phil and his students headed on to the Valles Caldera, while we continued on towards Albuquerque to begin the long drive back to Madison. A signpost warning us to “Watch for Water” prompted a final stop to capture a photo for the hydro group web page.



In the valley of the ancestral Rio Grande. (Jean Bahr)

Reflecting on the trip in a wrap-up session after the break, students and faculty participants cited a number of highlights. In addition to the chance to examine, in person, the features described in our seminar readings, we appreciated the opportunity to compare observations and interpretations among structural geologists, hydrogeologists and sedimentary geologists. Dinner conversations with alumni, who have followed a number of career paths and had many adventures along the way, were an added bonus. We thank all the alumni and friends of the department who made this trip possible! ●



A sign of good things to come for hydros on a field trip. (Jean Bahr)