The Rocky Mountain Section Newsletter

February 2011

Association of Environmental and Engineering Geologists

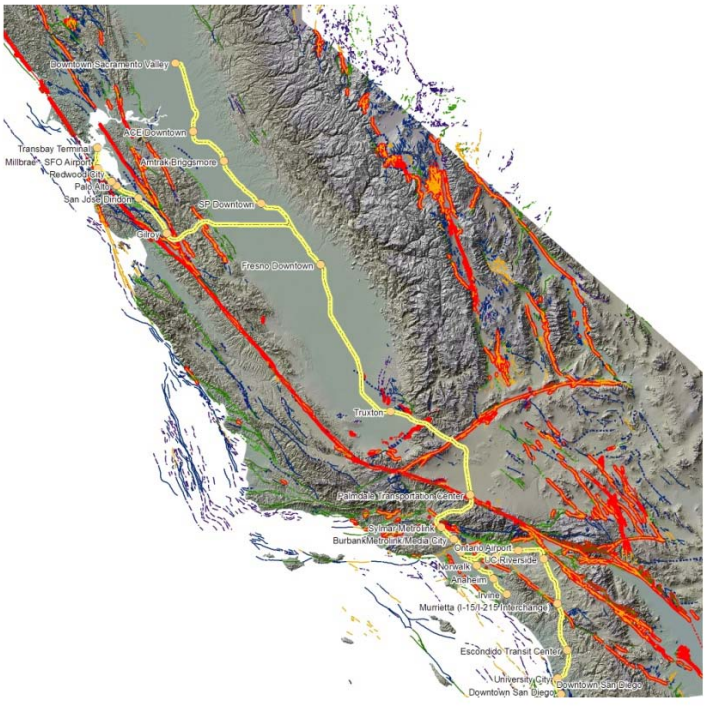
February 2011 Section Meeting with the AEG Executive Council
February 10, 2011, 5:45 p.m., Conference Room A
American Mountaineering Center, 710 10th St., Golden CO

CA High Speed Train – How to Cross Active Faults at 250 mph

Bruce Hilton, 2011 AEG President, Kleinfelder

In 1996, CA passed legislation that appropriated funds to begin environmental permitting processes for the first US high speed rail system that could operate at speeds up to 250 mph and provide a system that would enable travelers to go from Los Angeles to San Francisco in 2 hours. In 2009, CA approved Proposition 1A resulting in $10B in Bond sales followed by $2.25B in ARRA (Stimulus) dollars that have spring-boarded system-wide project design that is now well underway.

Geotechnical and engineering geologic hazards across nearly 800 miles of high speed corridor are daunting challenges. Among these, 42 active faults are crossed by the project that require analysis and mitigation to ensure passenger safety and relatively uninterrupted revenue service. This talk focuses on the history and project components of High Speed Train systems, the overall technical challenges, and in particular the risk-based methods of analysis and mitigation alternatives developed at fault crossings.



MEETING DATE

Thursday
February 10TH, 2011

TIME

5:45 p.m. Social Hour
6:30 p.m. Dinner
7:30 p.m. Presentation

LOCATION

American Mountaineering Center
710 10th St.
Golden, CO 80401
Conference Room A
See Map Below

COST

$25 Members
$27 Non-members

RESERVATIONS

meetings@aegrms.org
or
WWW.AEGRMS.ORG

BY NOON, TUESDAY
February 8TH

Words from the Chair

Greetings Rocky Mountain Section,

Next month, instead of our usual meeting, we will have a field trip to the Argo Wastewater Treatment Plant of Saturday March 12. The tour will last about 1 hour after which we will head to a local restaurant for some food and drinks. We will begin the tour at the treatment plant at 10:30am. The address is: 2300 Riverside Dr., Idaho Springs, CO. If you would like to accompany us on this interesting day, please RSVP to chair@aegrms.org no later than March 1st.

Below is some information and history about the plant. This excerpt is from:
http://www.cdphe.state.co.us/hm/clearcreek/index.htm

Gold was discovered near Idaho Springs in 1859 and in the Black Hawk/Central City area in 1860. For the next 20 years, the Black Hawk/Central City area was the leading mining center in Colorado with the construction of mills to process the gold and silver found through placer and hard rock mining. The decline of mining in the area began with the silver crash in the 1890's and the rise in mining in Leadville. However, mining continued to be an important industry in Clear Creek and Gilpin counties from the turn of the century until approximately 1950. Since 1950, mining in the area has been limited with only a handful of mines currently operating.

The site was placed on the list of Superfund sites in September 1983. Since that time, the Department, EPA and the local community have worked to clean up heavy metal contamination resulting from decades of hard rock mining in the area. The Department and EPA have developed clean-up plans to deal with the worst sources of contamination within the Clear Creek watershed.

In 1992, limited stakes gaming began in Central City and Black Hawk. Introduction of gambling has led to some land use changes. While these changes have the potential to increase the direct human exposure to mine wastes, many mine waste clean-up projects were implemented as property developed.
(*continued below)*

Black Hawk Smelters and Gregory Lode

The Argo Treatment Plant

(Denver Public Library Western History Images)

The Argo Tunnel, in Idaho Springs, is the largest single source of metals contamination to Clear Creek. Construction of a 700 gallon per minute treatment facility was completed in 1998. Full time operation of the treatment plant began in April 1998. Approximately 1200 pounds of metals are prevented from entering Clear Creek each day due to treatment of the Argo Tunnel. The removed metals are pressed into a solid waste and disposed of in a solid waste landfill. The treated water is discharged into Clear Creek.

Have a great February!

Nate Soule,
Section Chair

Local Geology Field Trips

The Hayman Fire Area/Lost Creek Wilderness

Pike National Forest-(allow at least a half-day for this trip)

View of the burn area showing grus soil

View of rockfall filling the canyon. Lost Creek is underneath about 20-30 ft of rock

The Hayman Fire was started back in June 2002 by forester Terry Barton in what has generally been accepted as cry for attention. It burned over 138,000 acres, 133 homes, indirectly caused six deaths and took over a month to contain. The result is a landscape full of (wo)man-made geologic hazards in addition to the many natural hazards it already possessed. On a darkly positive note the fire exposed miles and miles of breathtaking views that were previously covered or blocked by forest.

The easiest way to access the burned area is from the west of the town of Deckers in southern Jefferson County. From the North take US-285 to Pine Junction. Turn left/south at the light, Pine Valley Rd, and take the road for about twenty or so miles, becoming S Deckers Rd, until you get to the outskirts of Deckers. As you approach you will be descending a steep valley along Six Mile Creek which will join Wigwam Creek further down. After passing a trailhead parking lot on the right, look for Wigwam Creek Road and signs for Cheesman Reservior/Lake. Turn right onto Wigwam Creek Rd/Forest Rd 211. You will know it is the right road because it becomes dirt and quickly ascends the south side of the canyon. If you miss this turn you will soon intersect CO-67 and be in “downtown” Deckers.
(*continued below*)

From the East take US-85 to Sedalia and take CO-67 south and west to Deckers. From the South take US-24 to Woodland Park and then CO-67 north to Deckers. In both these routes you turn west onto S Deckers Rd (the only paved intersection in the town) and Wigwam Creek Rd/FR 211 will be on the left after about a half-mile. FR 211 bisects much of the Hayman Fire Area and provides access to countless minor roads that illustrate what this field trip is about.

The entire region of this trip is geologically simple: pink Pike Peak Granite (PPG) in every direction. The granite weathers into enormous domes and giant spherical boulders. The granite breaks down into what some call grus, a sand where the grains are generally the uncemented quartz and feldspar crystals from the granite. Just go up to any outcrop of PPG and with a brush of your hand you can convert the weathered PPG into grus. The grus washes away easily and keeps the bedrock in this region rather shallow. With the fire removing all of the trees and ground cover from this region a summer thunderstorm can easily mobilize the grus into sediment-laden floods and debris flows.

Debris flow deposits can be seen most easily in Wigwam Creek along S Deckers Rd just upstream from the intersection of FR 211. There are large deposits of sand/grus throughout the creek's floodplain and levees of the sand can be seen along the larger channels through these deposits. Throughout the burned area look for washed out areas of the road and similar smaller deposits can be found. There are most likely more small debris flows to be found if you leave the road and hike up any of the creeks and streams in the burned area. Just be sure to heed the "climb to safety when raining signs." As time heals the forest there will be less and less debris flows. Six-foot tall aspens are already beginning to cover much of the landscape so this portion of the field trip is fading fast.

The other main hazard in this area is rockfall. Many of the higher PPG domes break off into large boulders many house and mansion size. This is best illustrated in Lost Creek. Take FR 211 until you reach the Lost Creek Wilderness Trailhead. You have to hike about a mile up Lost Creek into and around a narrow steep canyon that was actually untouched by the fire due to its topography. The main trail parallels the creek above the canyon and there are several unmarked side trails that take you down to the several "Lost" stretches of the creek. In these areas large rockfalls of giant boulders have filled the canyon so that the creek flows underneath them and is "lost" to the common person. This is a very neat place to explore, and there are many trout to be found everywhere in the creek, however, many times the trails take you over bedrock and disappear making it is easy to become lost yourself.

Satellite picture showing extent of Hayman Fire, brown area in center. White at South is Pike Peak. White at north-west is Kenosha Mts

Engineering Wonder Cheesman Dam with burned area in the hills above

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