

**17<sup>th</sup> Annual Minerals Education  
Workshop  
Cheyenne High School, Las Vegas  
Nevada  
Field Trip #2**

**The Great Unconformity  
and PABCO Gypsum  
April 11, 2006**

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## Field Trip #2: The Great Unconformity and PABCO Gypsum

Today's field trip will first take us east on Lake Mead Blvd., to the place where the road passes over the northern part of Frenchman Mountain. We will stop for a short hike and discussion of one of the area's most interesting geological sites, the "Great Unconformity." This site is described in detail on the following pages which have been printed from an outstanding website by Steve Rowland, geology professor at UNLV.

After exploring the Great Unconformity, we will continue east on Lake Mead Blvd. over the low pass between Frenchman Mountain on our right and Sunrise Mountain on our left. The rocks forming the high ridge crest on the left are Permian age Kaibab Limestone – the same rock that forms the cliff rims at Grand Canyon National Park. On the east side of the pass, you will start to see bright red outcrops of Jurassic age Aztec sandstone at the base of the ridge south of the road. This is the same rock formation exposed at Red Rock canyon west of Las Vegas and in the Valley of Fire State Park to the east. The more gentle red hills closer to the road are composed of Triassic age Kayenta Formation that underlies the Aztec sandstone. The Kayenta contains some gypsum that weathers out of the rock to form the small crystal-clear shards you may see glistening in the sunlight along the route.

We will turn left onto the PABCO access road where for three miles we will pass through colorful outcrops of the Miocene-Pliocene age Muddy Creek Formation. Shiny gypsum crystals litter the surface in many places along the road. You may recognize some of the scenery from the James Bond film "Diamonds are Forever" as portions of the action scenes were filmed here.

At PABCO, we will tour both the mine and processing plant. Here you will observe all the steps involved in mining the raw material (gypsum rock) out of the ground all the way through the process of milling the material and making it into the wallboard (sheetrock) products used in constructing walls of buildings.

## Pabco Gypsum

Gypsum mining has been recorded in this area since the 1940s and probably started decades before that. Mining has been continuous since 1959, when PABCO Products Inc. first constructed a plant and moved their operations here from an earlier site at Rainbow Gardens about 8 miles to the southwest. In the early 1960s, the mined gypsum was washed and shipped to plants in Los Angeles and San Francisco to be processed into wallboard. PABCO built its own wallboard plant here in 1965 and has operated until the present time although under several different owners. The current parent company is Pacific Coast Building Products Inc.

The gypsum at the mine occurs in continental sedimentary rocks called the Muddy Creek Formation. The rocks of this formation were originally deposited as sediments in a lake-river environment 5 to 10 million years ago and formed siltstone, sandstone, gypsum, and conglomerate. In the mine area, the formation is entirely gypsum with minor clay layers intermixed. The gypsum layer is more than 100 feet thick, is horizontal, and is overlain by a less than six-foot-thick layer of sandy material. The mined rock averages about 85% gypsum.

Most gypsum deposits in the state were marine in origin, forming in shallow seawater, but the PABCO deposit is unique in having formed in a shallow playa lake environment. The PABCO mine typically produces more than a million tons of gypsum a year, and is the largest gypsum mine in Nevada.

There will be several geologists and mining professionals along on the trip with us available to answer any questions you may have about mining and geology on the field trip. Please do not hesitate to ask us anything about what you see. If it is too loud to hear everything in the plant, please remember your questions for later on the return bus trip. We hope you have an enriching educational experience on your field trip today; thank you for participating!

### References:

Stephen Rowland, website: <http://geoscience.unlv.edu/pub/rowland/Virtual/virtualfm.html>  
Ken Santini & Joe Tingley, 2003, Southern Nevada Industrial Minerals, Field Trip 8, 39th Forum on the Industrial Minerals