Collecting Trip to the Vulcan Materials Company Quarry, Racine, Wisconsin

I had the good fortunate to visit the Vulcan Materials Company quarry 3 miles north of Racine with a group of University of Wisconsin geology students and faculty. The visit was part of a conference jointly hosted last Fall by the U. of W.-Milwaukee and U.W.-Parkside geologists. This quarry has been in operation since the 1920's. It is in Silurian age carbonate rocks about 420 million years old. The quarry is a great place to hunt for fossils, with the formations recording a rich ecosystem around reefs and continental shelf environment. Fossils found include numerous corals, pentramites, brachiopods, crinoids and cephalopods.

Within the past few years, however, the quarry has breached an unusual vuggy zone which could be an old collapsed cave or perhaps a fault zone. This area is rich in crystals of calcite, marcasite, pyrite, sphalerite and other minerals. We stayed for about an hour in this zone.

The quarry can only be entered with permission of the Vulcan Materials company. We pulled the buses up to the quarry office., signed wavers, donned our hard hats and safety glasses, and followed our company guides into the quarry. This is an immense quarry that spans highway 32. The entrance is on the east side of the highway. We drove down to the bottom of the pit, then passed through a 1,000 foot long tunnel under the highway and under an abandoned water-filled quarry (the older Ives Quarry). Seeing water drip down the walls of this tunnel could make one very uneasy! We emerged from the tunnel into the quarry on the west side of the highway. Midway through the quarry, we stopped, got out, heard a brief discussion of the geology, and went to work. Within the breccia zone, crystals up to 2 inches long were everywhere, often in large slabs. The crystals were white or pale yellow, and dominated by the scalenohedron form ("dog tooth spar"). Some had tiny gray inclusions outlining earlier stages in the calcite's development. These tiny inclusions were likely either pyrite or marcasite that grew on the outer face of the crystals, then were covered by a new generation of calcite. These "phantom crystals" help geologists determine the details of the history of these minerals. Unfortunately, the quarry operation causes most of the large crystals to be "dinged" and cleaved. Also the selvage between the crystals and the hard dolomite matrix did not allow large clusters to be easily collected. Still, the sheer volume of crystals meant many good specimens could be found.

Other minerals of interest were marcasite, pyrite and sphalerite. The pyrite and marcasite were in well-formed crystals in veins in calcite. Sometimes both minerals could be found in the same specimen. Sphalerite occurred as

light brown cleavable masses, also in calcite. Wurtzite, a zinc mineral related to sphalerite has also been found, but not by us. Possibly the most interesting mineral found was large chunks of coarsely fibrous brassy sulfides, most likely marcasite. Strontianite, galena and gypsum also reportedly occur in vugs here, but were not seen on this trip.

Further quarrying will likely demolish this mineralized zone. With continuing quarrying, however, different mineralized zones may be intersected, adding to the diversity of minerals known from Wisconsin.

- Dr. Bill Cordua, University of Wisconsin-River Falls

References:

Mertens, Matthew J., 1996, "The Vulcan Materials Quarry, Racine, Wisconsin" in Urban and Shoreline Geology of southeastern Wisconsin, Guidebook, 25th U.W. Undergraduate Geology Field conference, U.W. Milwaukee and U.W. Parkside, p. 73-77.

Robinson, G.W. V.T. King, J. Scovil and F. Cureton, 1995, "World Review of Mineral Discoveries, 1993-1994", Mineralogical Record, vol. 26, p. 486.