

Learning Series: Alabama's Rocks and Minerals – The “Super Sites”

Lee County

Lee County is located in east-central Alabama and comprises just over 600 square miles. The northern half of the county is part of the Piedmont physiographic section, however, the southern portion is part of the Coastal Plain. The county is bordered by Chambers County to the north, the state of Georgia to the east, Russell County to the south, and Macon and Tallapoosa counties to the west.

The Chattahoochee River and its tributaries flow throughout the eastern half of the county and the Tallapoosa River and its tributaries flow throughout the western half. Loblolly and shortleaf pine forests dot the landscape. Some sources place Lee County in the eastern part of Alabama's Black Belt, but others do not. In either case, farming was the prevailing occupation until well into the twentieth century. The first major industry was the Opelika Cotton Mill, which opened in 1900.

Today, there are a number of recreational opportunities and historical attractions for those visiting Lee County. Chewacla State Park offers 696 acres of hiking and biking trails, camping setups and a 26-acre lake for swimming, fishing, boating, picnicking, etc. Among other things, nearby Auburn University boasts an arboretum that is home to 150 different tree species native to Alabama and the Southeast. The county offers a turn-of-the-century covered bridge and many homes and buildings on the National Register of Historic Places. There are many art and history museums, annual festivals and other cultural events in the area, as well.



Super Site Selection Criteria

Lee County was selected as a Super Site for this series on the basis of information reported in *Rocks and Minerals of Alabama – A Guide for Alabama Rockhounds (Circular 38, 1966)*.

The guide identified four minerals in the Auburn area as being prominent—gneiss, dolomite, marble, and quartzite. Gneiss and quartzite were found along a creek bed near Wright's Mill in Chewacla State Park. The marble, and associated dolomite, were located three miles east of the intersection of Highway 29 and Lee County Road 26 near the Auburn Marble Quarry.

Featured Rocks and Minerals

Gneiss – Note: this mineral was previously profiled in the Coosa County section of the *Learning Series: Alabama's Rocks and Minerals – “The Super Sites”*. Please see the June 2012 issue for complete details. It is available at www.wiregrassrockhounds.com.



Dolomite – $(\text{CaMg})(\text{CO}_3)_2$ – a carbonate mineral.

Dolomite is both a mineral and a rock; the term is used to describe the mineral in pure form and also the sedimentary carbonate rock referred to as dolostone, which often includes the impurities calcite, quartz, and feldspar. In nature, considerable variations in the composition of dolomite are found.

A member of the trigonal crystal system, dolomite usually occurs in white, and gray to pink tabular crystals, often with curved or saddle-shaped faces. These crystals represent a unique crystal habit that is well known as classical dolomite. There are also columnar, stalactitic, granular and massive examples, and darker colors—even black—are possible when iron is present. It has a brittle tenacity and a conchoidal fracture. Cleavage is perfect in three directions. Dolomite is a soft mineral (3.5 – 4.0 on the Mohs scale) which streaks white and manifests a vitreous to pearly luster. It may fluoresce white to pink under UV light and it is triboluminescent.

A common sedimentary rock-forming mineral, dolomite can be found all over the world in massive beds that may be several hundred feet thick. It is also found as sediments in ore veins such as limestone. At the present time, dolomite does not form on the surface of the earth. Some suspect the dolomite beds

found in ancient rocks formed in warm ocean-like environments through a process similar to metamorphism called diagenesis, however, disputes have arisen over that theory and the ongoing debate has even been given the name the “Dolomite Problem”.

Dolomite is chiefly used in the steel and glass industries, but it is also found in the chemical industries in the preparation of magnesium salts. In addition to its use as an ornamental and structural stone, good specimens are sought by collectors, especially those crystals displaying uncommon form or attractive color, such as the clear, transparent specimens from Spain and the hot-pink variety from the Congo.

Marble – CO₃ – a carbonate rock.

Marble is a non-foliated, granular metamorphic rock—found, literally, all over the world—that is formed by the metamorphosis of limestone and dolostone; usually regional metamorphism, but sometimes via contact metamorphism.

Geologists use the term "marble" to refer to metamorphosed limestone; however, by law, stonemasons and many others use the term to encompass all crystalline calcium carbonate or calcium magnesium carbonate rocks that can take a high polish.

While limestone frequently contains invertebrate fossils, these are almost always destroyed by the temperatures and pressures necessary to form marble. Another byproduct of that process is that marble is noticeably denser than limestone, though both rank at 3.0 – 4.0 on the Mohs scale.

The characteristic swirls and veins in marble are due to mineral impurities such as clay, silt, sand, iron oxides, or chert present during the recrystallization period; the result is a wide variety of patterns and colors. As an example, the purest calcite marble is white. Specimens containing hematite are reddish. Limonite generates a yellow marble, and serpentine results in green. In Alabama, high-quality marble occurs in cream and white varieties. Other lower-grade marbleized limestones occur in black and gray.

Marble has always been highly valued for its beauty, and its strength and resistance to fire and erosion. It is extensively used for sculpture, and as both an interior and exterior building material—everything from grand columns, to walls and floors. Smaller pieces of marble are crushed or ground and used as abrasives in soaps and other such products. While very pure calcite marble is translucent and used for most fine statues, the Chewacla marble quarried near Auburn is used for road material and as aggregate for paving roads.

Quartzite – **Note: this mineral was previously profiled in the Clay County section of the *Learning Series: Alabama's Rocks and Minerals – “The Super Sites”*. Please see the April 2012 issue for complete details. It is available at www.wiregrassrockhounds.com.**

Additional Minerals of Lee County

In addition to gneiss, dolomite, marble and quartzite, the www.mindat.org website currently lists the presence of 37 other mineral specimens or mineral variations in Lee County: “albite-anorthite series”, ‘allanite’, ‘apatite’, augite, baryte, biotite, calcite, diamond, epidote, ‘garnet’, gibbsite, graphite, grossular, ‘hornblende’, kaolinite, kyanite, microcline, molybdenite, ‘monazite’, muscovite, orthoclase, phlogopite, pigeonite, pyrite, pyrrhotite, quartz (var: rock crystal), schreibersite, ‘serpentine group’, sillimanite, titanite, tremolite, troilite, xenotime-(Y), and zoisite (var: thulite).

Over 30 mines are on record in Lee County. Most sites are clustered around the Auburn/Opelika area.

Sources:

<http://www.mindat.org/search.php?from=nsearch&loc=alabama>
<http://www.encyclopediaofalabama.org/face/Article.jsp?id=h-1288>
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