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A New Quartz Sand Horizon in the Cambrian of Mason County, Texas

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During the summer of 1942 while a detailed geologic map of the Llano River valley in Mason County, Texas, was being made, a new sand of Upper Cambrian age was discovered in the western part of that county. The sand outcrops in a narrow belt along the valley of Leon Creek southeast of Erna and will be known as the Erna sand. The outcrop, as shown on the accompanying map, extends in a north-south direction for about 2 miles. Owing to a complicated system of normal faults which occur in this region, the outcrop is repeated three times so that three narrow belts of the sand can be traced across the Cambrian area. The best exposures are on the middle belt along the east bluff of Leon Creek 2 miles southeast of Erna. The west belt is 1 mile west of the middle belt, and the east belt is 2-1/4 miles southeast of the middle belt (see map). The nearest railroad terminal is at Brady, 27 miles distant by air line. A good all-weather highway reaches to within one-half mile of the nearest good outcrop of the sand. The sand is medium to coarse grained, well assorted, well rounded, and free of silt and fine material. It is pure, very friable, and poorly cemented so that in most cases it can be crushed with a slight blow of the hammer and easily broken down into loose sand. A mechanical analysis of the sand follows:

Mechanical analysis^{1/} of quartz sand from bluff on Leon Creek, Mason County, showing size distribution of the sand grains.

<u>Size in millimeters</u>	<u>Percent by weight</u>
Greater than .84 - - - - -	.6
.42 - .84 - - - - -	33.0
.25 - .42 - - - - -	46.3
.149 - .25 - - - - -	17.7
.053 - .149 - - - - -	1.7
Less than .053 - - - - -	0.6

The sand is exceptionally pure, having a very low content of iron and little cementing material, as shown by the following analyses: 2/

	<u>Sample No. 1</u>	<u>Sample No. 2</u>
	<u>Percent by weight</u>	<u>Percent by weight</u>
Quartz - - - - -	99.961	99.976
Iron - - - - -	.039	.024
Calcium carbonate - - -	trace	0.000
Titanium - - - - -	0.00	0.000

The thickness of the outcrop varies from 10 to 25 feet, and the sand is quite homogeneous, although the amount of iron content as indicated by color varies somewhat. Some layers apparently are very pure, and others are stained slightly red.

^{1/} Analysis by Ernest E. Merkt.

^{2/} Analyses by R. M. Wheeler.

*Stencils re-cut February 1967.

The western belt, particularly along the valley of a small branch of Leon Creek south of Erna, appeared to be whitest and purest. The sand occurs near the middle part of the Wilberns Formation and is therefore of Upper Cambrian age. Upper Cambrian sands in the St. Louis, Missouri, region are used extensively for industrial purposes, particularly for the manufacture of glass.

It is thought that this Mason County sand because of its remarkable homogeneity, purity, lack of consolidation, and lack of overburden may find an application in industrial uses.

[illegible]

===== White quartz sand

SCALE

0 1 mile

0 5000 feet