

MAP SHOWING DISTRIBUTION PATTERN OF BARIUM FROM SAMPLES OF THE NONMAGNETIC FRACTION OF
HEAVY-MINERAL CONCENTRATES, NORTHERN SONORA, MEXICO

EXPLANATION

Reported Value (ppm) (by emission spectroscopy)	Frequency Reported	Percent of Observations	Plotted Symbols
100 (50)	1		
50	6		
70	5		
100	5		
150	5		
200	16		
300	36		
500	55		
700	64		
1,000	94		
1,500	63		
2,000	21		
3,000	26		
5,000	10		
7,000	17		
10,000	19		
61 (15,000)	79		

*N = not detected; L = present but below determination limit in parentheses; R = greater than upper determination limit in parentheses.

In the fall of 1975 the first phase of a two-year regional geochemical survey was conducted in the northern half of a study area in northern Sonora, Mexico, by a team of scientists representing the U.S. Geological Survey and the Consejo de Recursos Minerales de Mexico. Stream-sediment samples were collected at 823 sites and panned concentrate samples were collected at 531 of these sites. The sampling plan called for a sample site at each tributary draining an outcrop area of 5 to 10 km² in order to give a sample density of one sample/10 km²; however, accessibility controlled actual spacing. Five-pound composite stream sediment samples were scooped across the stream channels and sieved to -80 mesh. Additional samples were collected and panned to obtain a heavy mineral concentrate. Following heavy liquid separation, the heavy minerals were separated into several fractions based on magnetic susceptibility. The fractions include those minerals susceptible (1) to hand magnet, (2) to less than 0.6 amps on a Frantz separator, and (3) to greater than 0.6 amps on the Frantz separator. These three magnetic fractions plus the stream-sediment samples were analyzed by emission spectrography for 30 elements and by atomic absorption and wet chemical methods for six or more elements. The results were entered into the computerized Rock Analysis Storage System (RASS) and data sets were analyzed by various statistical programs in the USGS STATPAC system to produce element distribution maps and tabular statistics. The range of concentration of each element was subdivided into three or four intervals for plotting by symbols as shown in the above table.

SCALE 1:250,000

CONTOUR INTERVAL - FEET

By

Margaret I. Hinkle, Steven K. McIlana

George Benitez, and Luis Chavez

1977

U.S. Geological Survey
OPEN FILE REPORT
This map is preliminary and has not
been edited or reviewed for conformity
with Geological Survey standards.