Magnesium

The concentration of dissolved magnesium in water from the lower Wilcox aquifer, based on the median values of all samples in each 100-square-mile area, ranges from 0.1 mg/L in central Mississippi to 620 mg/L in a downdip area near the southern border of Mississippi (table 1). The concentration in the outcrop area generally ranges from 1 to 10 mg/L and shows no areal trend (fig. 9). In the northern part of the aquifer area the concentration ranges from 1 to 50 mg/L with the larger values occurring near the outcrop area and the smaller values occurring on either side of the Mississippi River. In the southern part of the aquifer area the concentration increases from about 1 mg/L near the outcrop to more than 600 mg/L downdip in southern Mississippi.

Sodium

The concentration of dissolved sodium in water from the lower Wilcox aquifer, based on the median values of all samples in each 100-square-mile area, ranges from 2 mg/L in the outcrop area of western Tennessee and eastern Mississippi to 39,000 mg/L in a downdip area near the southern border of Mississippi (table 1). The concentration in the outcrop area ranges from 2 mg/L along the northeastern part of the aquifer area to more than 200 mg/L in southwestern Alabama (fig. 10). In the northern part of the aquifer area the concentration generally increases from about 5 mg/L in western Kentucky to 100 mg/L in northwestern Mississippi. In the southern part of the area and east of the Mississippi River, the concentration generally increases from about 5 mg/L in some areas near the outcrop to more than 30,000 mg/L downdip in southeastern Mississippi West of the Mississippi River the concentration ranges from about 50 to more than 500 mg/L with no apparent areal trend.

Potassium

The concentration of dissolved potassium in water from the lower Wilcox aquifer, based on the median values of all samples in each 100-square-mile area, ranges from 0.4 mg/L in areas near the outcrop in western Kentucky and Tennessee to 360 mg/L in a downdip area in southern Mississippi (table 1). The concentration ranges from about 1 to 4 mg/L in the outcrop area with no apparent areal trend (fig. 11). In the northern part of the aquifer area the concentration ranges from less than 1 to 3 mg/L between the outcrop and the downdip limit of the data and has no apparent areal trend. In the southern part of the aquifer that is east of the Mississippi River the concentration ranges from about 1 mg/L in an area near the outcrop to more than 100 mg/L downdip in southern Mississippi. West of the Mississippi River the concentration ranges from 1 to 5 mg/L with the larger values in the southernmost part of the area.

Bicarbonate

The concentration of dissolved bicarbonate in water from the lower Wilcox aquifer, based on the median values of all samples in each 100-square-mile area, ranges from 6 mg/L near the outcrop in western Tennessee to 714 mg/L near middip in northwestern Louisiana (table 1). The concentration in the outcrop area ranges from about 10 mg/L in western Tennessee, western Kentucky, eastern Mississippi, and southwestern Arkansas to about 300 mg/L in southeastern Missouri with no indication of an areal trend (fig. 12). In the northern part of the aquifer area and east of the Mississippi River, the concentration generally ranges from about 10 mg/L near the outcrop to about 100 mg/L near the Mississippi River. In the southern part of the aquifer area the concentration ranges from about 10 mg/L near the outcrop to more than 500 mg/L near the downdip limit of the data. West of the Mississippi River between the outcrop and the downdip limit of the data the concentration ranges from about 10 to more than 500 mg/L and there is no discernible areal trend.

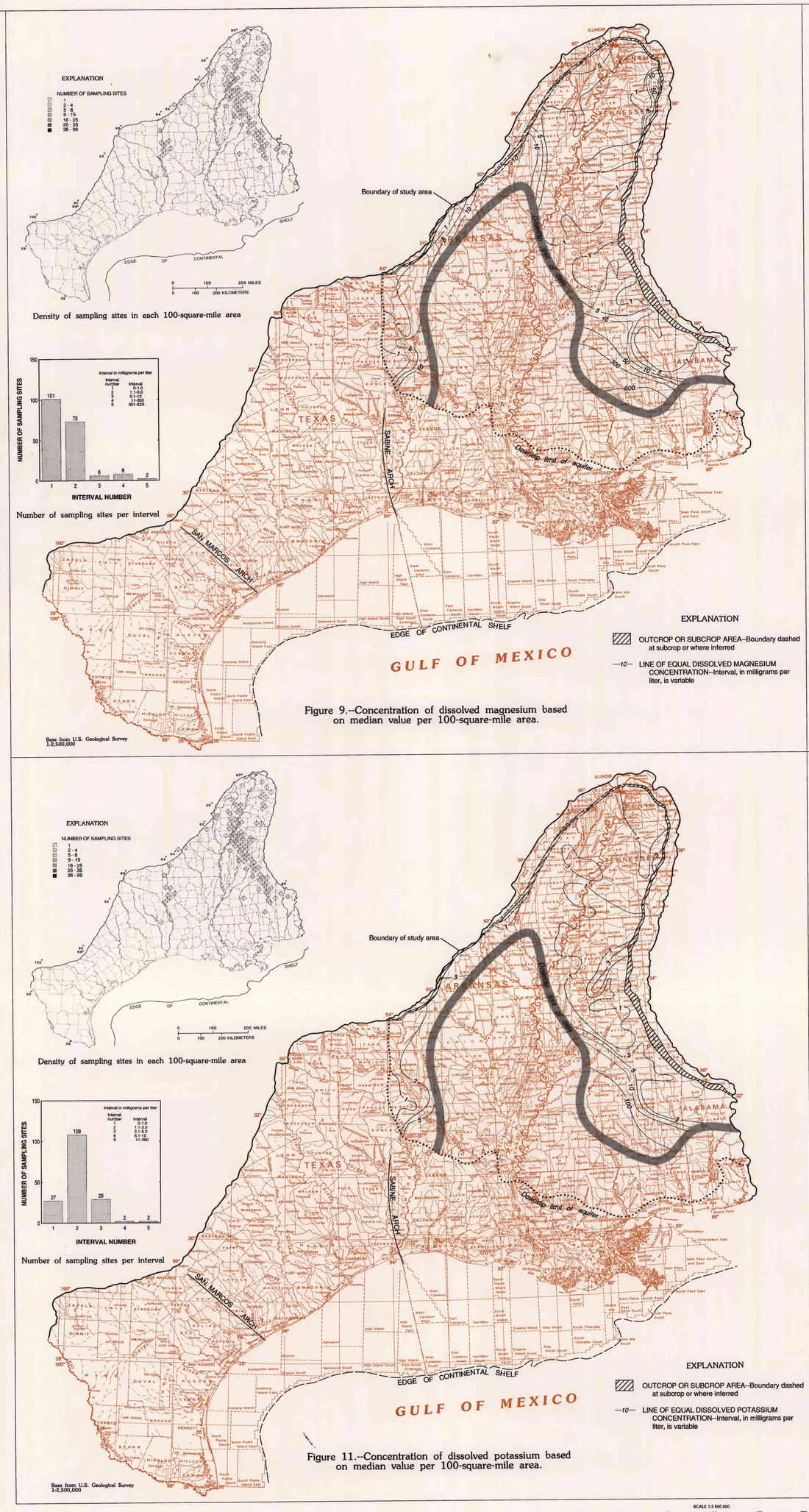

Figure 9.--Concentration of dissolved magnesium based on median value per 100-square-mile area.

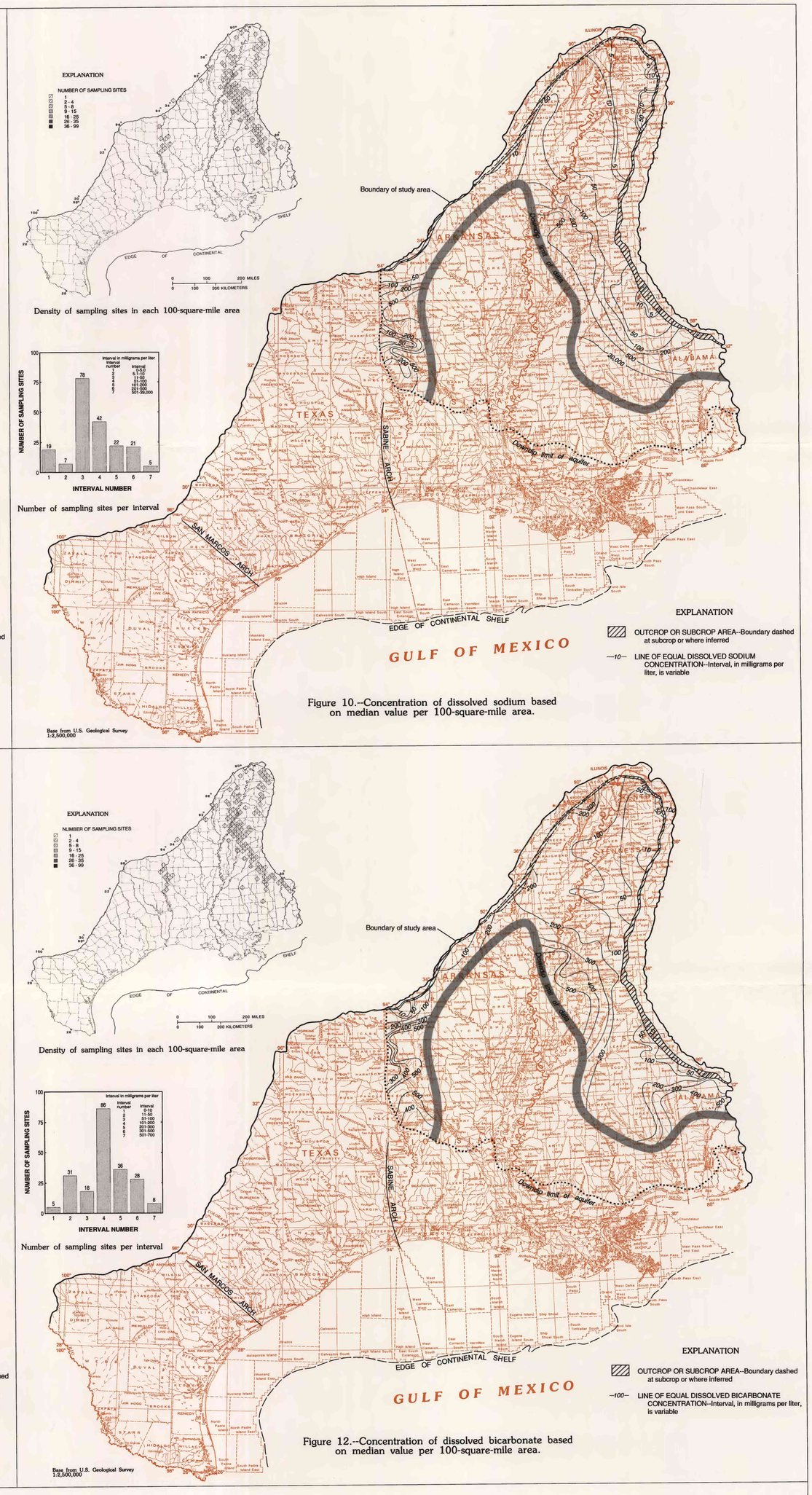

Figure 10.--Concentration of dissolved sodium based on median value per 100-square-mile area.

Figure 11.--Concentration of dissolved potassium based on median value per 100-square-mile area.

Figure 12.--Concentration of dissolved bicarbonate based on median value per 100-square-mile area.

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PROPERTIES AND CHEMICAL CONSTITUENTS IN GROUND WATER FROM THE LOWER WILCOX AQUIFER, MISSISSIPPI EMBAYMENT AQUIFER SYSTEM, SOUTH-CENTRAL UNITED STATES

by

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