

Table 3. Soil surface texture classifications from STATSGO data and assigned DRASTIC ratings for soil media

Soil Surface Texture		DRASTIC Rating for Soil Media
Classification	Description	
UWB	unweathered bedrock	10
WB	weathered bedrock	10
FS	fine sand	9
LS	loamy sand	8
LFS	loamy fine sand	8
C	clay (shrinking)	7
SIC	silty clay (shrinking)	7
FSL	fine sandy loam	6
VFSL	very fine sandy loam	6
L	loam	5
CB-L	cobbly to loam	5
CR-L	cherty to loam	5
CRV-SIL	very cherty to silt loam	5
ST-L	stony to loam	5
ST-FSL	stony to fine sandy loam	5
STV-FSL	very stony to fine sandy loam	5
GR-FSL	gravelly to fine sandy loam	5
GR-L	gravelly to loam	5
GRV-FSL	very gravelly to fine sandy loam	5
GRV-SIL	very gravelly to silt loam	5
SIL	silt loam	4
FL-SIL	flaggy to silt loam	4
SICL	silty clay loam	3
CL	clay loam	3

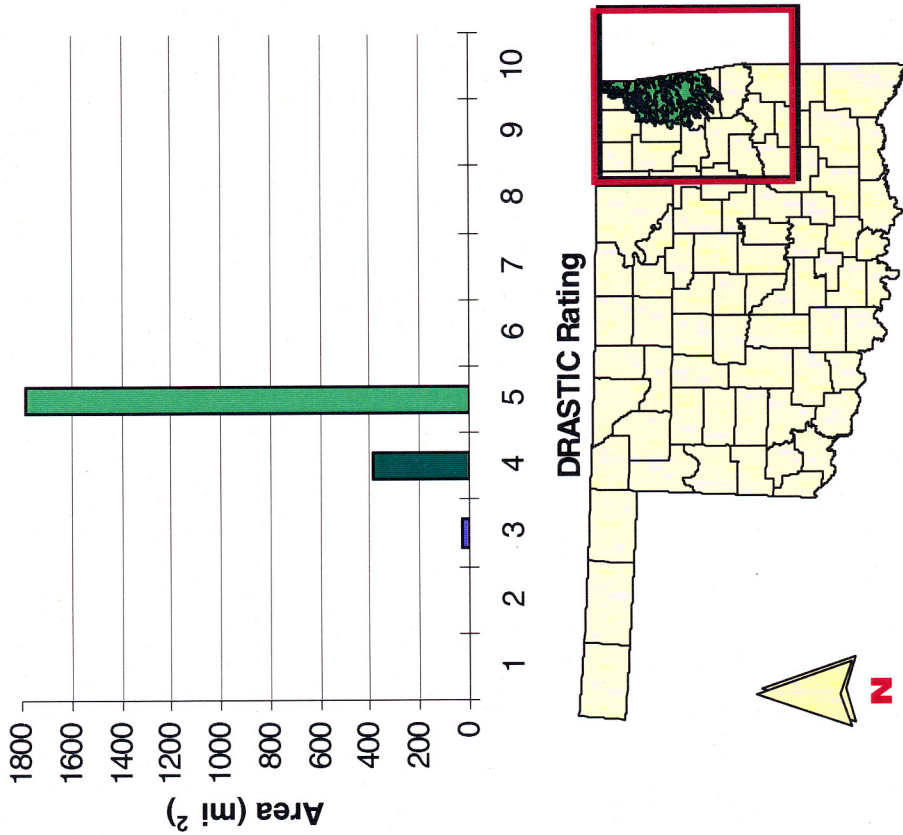
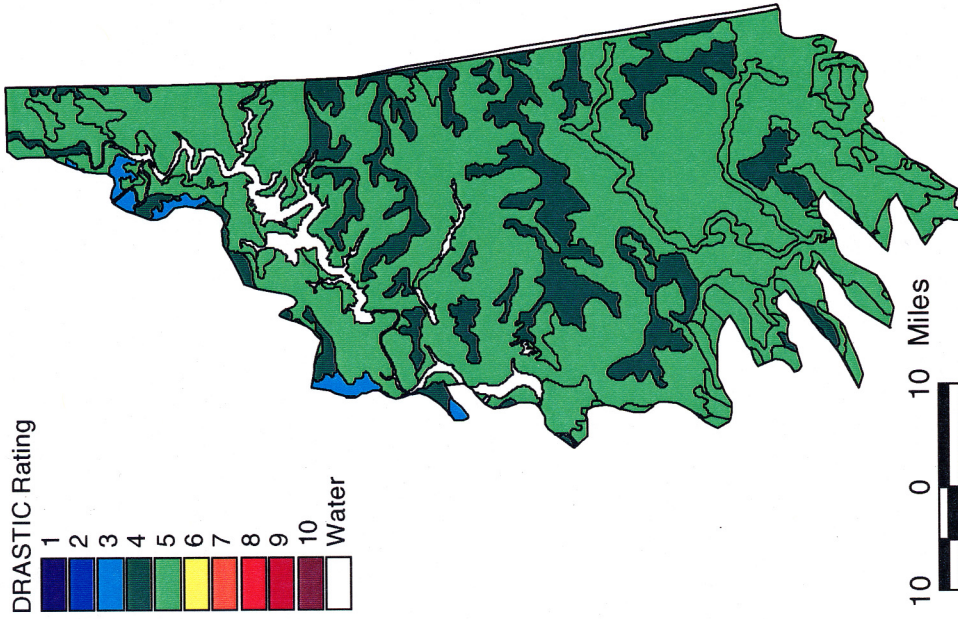


Figure 9. DRASTIC soil media rating for the Boone hydrogeologic basin.

Figure 10 shows the DRASTIC ratings for soil media by basin. Ratings range from 4 to 10, with most between 5 and 6. The highest (most vulnerable) rating of 10 was assigned to the Tishomingo granite, where the soil is thin or absent.

The DRASTIC ratings for topography (T) are based on percent slope. The GIS software calculated the average slope for each basin from the USGS's Digital Elevation Model (DEM), with a 60-meter cell resolution. As can be seen in Figure 11, most basins have average slopes in the ranges of 0-2 and 2-6 percent. The greatest degree of slope occurs in the Ouachita and Wichita mountains, with a range of 6-12 percent.

Hydraulic conductivity (C) values for the basins were derived from literature; when not available, values were estimated based on those basins with similar lithology. Figure 12 shows the DRASTIC ratings for hydraulic conductivity. Values range from 1-100 gpd/ft² for many bedrock basins to 700-1,000 gpd/ft² for the alluvium and terrace basins.

Results and Discussion

RESULTS

One DRASTIC vulnerability index was calculated for each hydrogeologic basin. The basins were then classified in five vulnerability groups based on their indices (Table 4). Table 5 lists the DRASTIC numbers, indices, and vulnerability classifications by hydrogeologic basin.

Table 4. Vulnerability classification and corresponding DRASTIC indices

DRASTIC Index	Vulnerability Classification
<80	Very Low
80-89	Low
90-119	Moderate
120-139	High
140-160	Very High

The statewide groundwater vulnerability map is displayed in Figure 13. Hydrogeologic basins with very low or low vulnerability are shown in purple and blue; basins with moderate vulnerability are shown in green; and basins with high or very high vulnerability are shown in yellow and orange.

The hydrogeologic basins composed of alluvium and terrace deposits are the most vulnerable, due to their high porosities and permeabilities and shallow water tables. Of the ten major

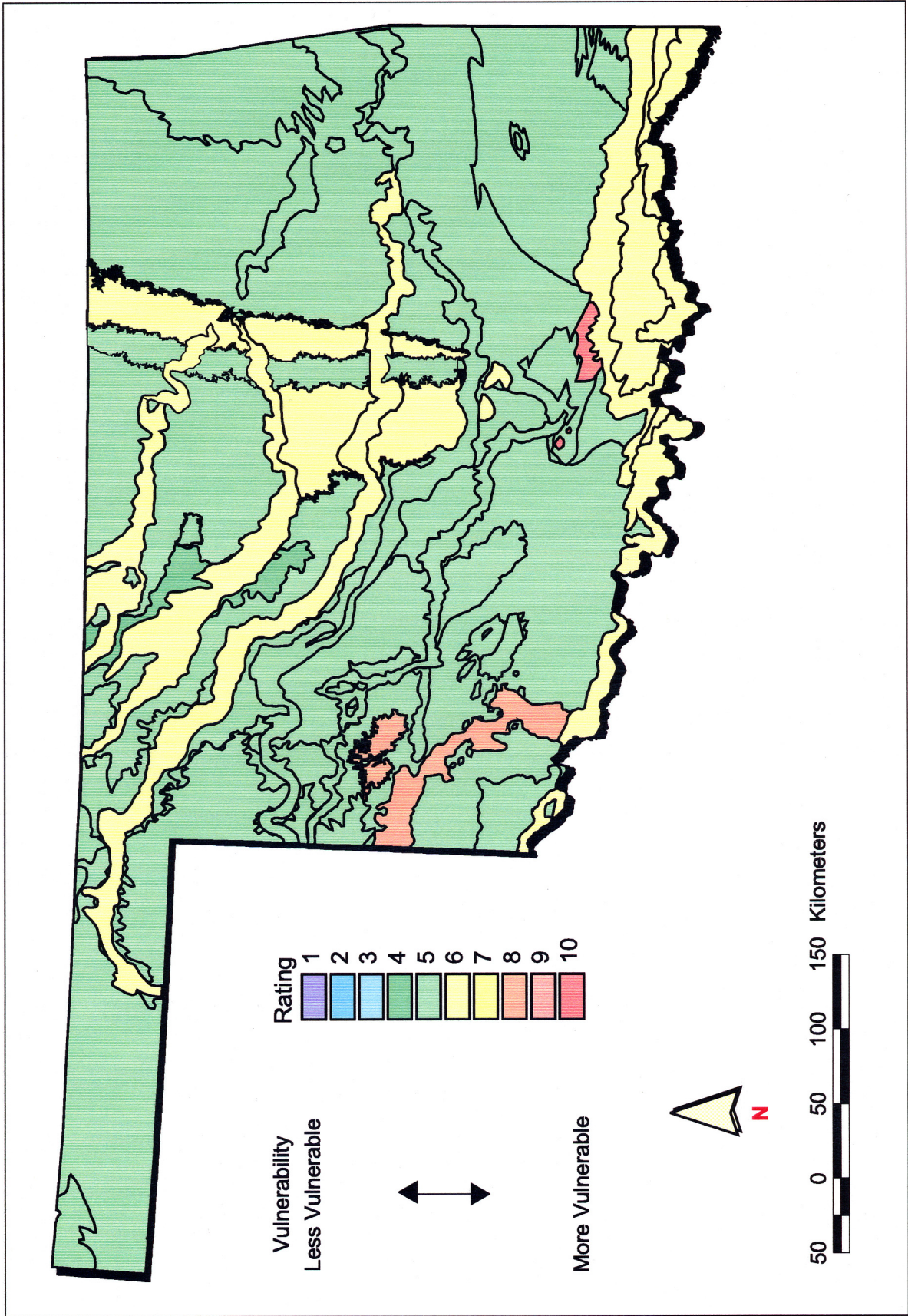


Figure 10. Map showing DRASTIC ratings for soil media (S), by hydrogeologic basin.

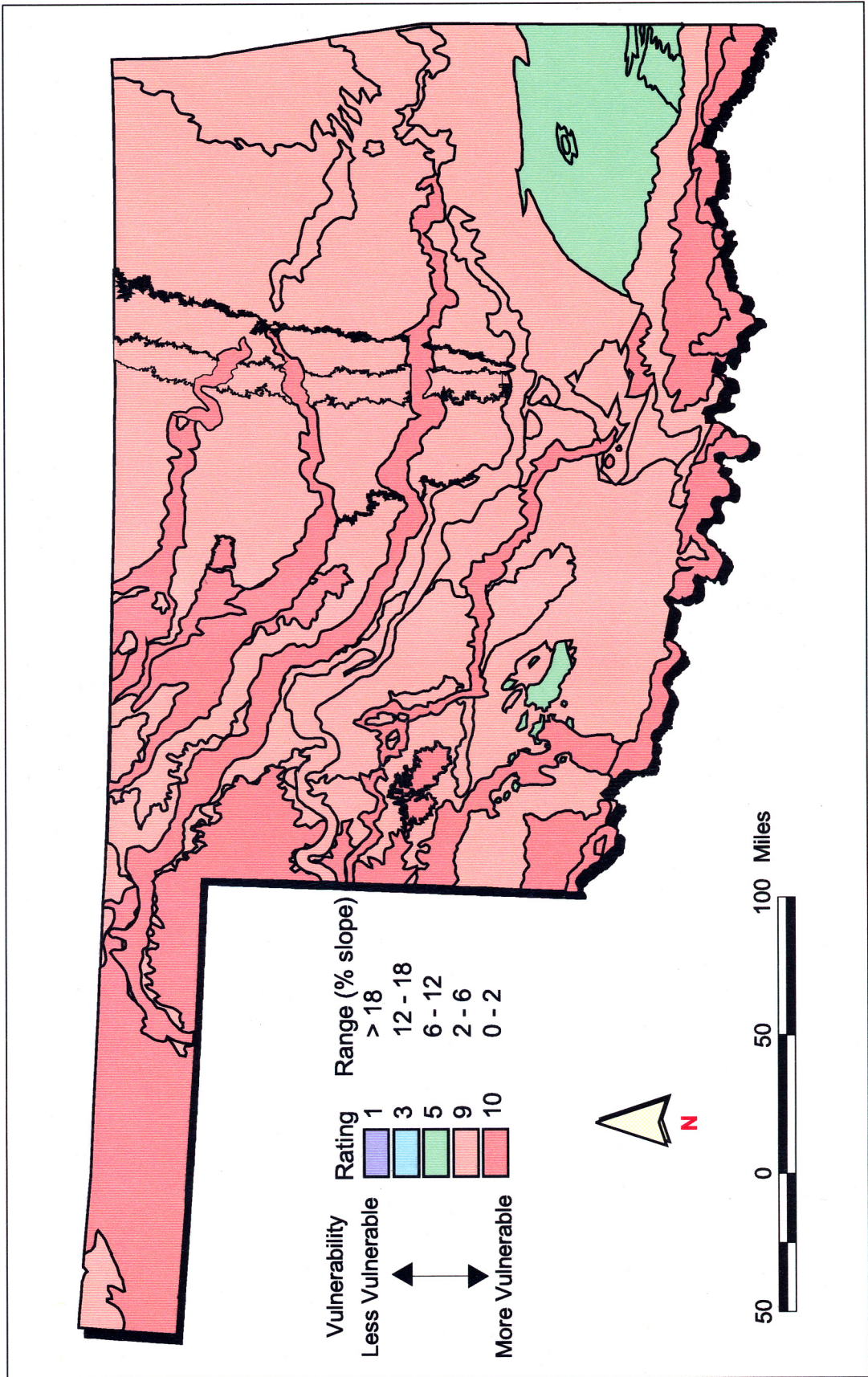


Figure 11. Map showing DRASTIC ratings for topography (T), by hydrogeologic basin.