

Ground water is the source of drinking water for 51 percent of the residents in Tennessee. Most of the rural residents in Bedford and Coffee Counties in south-central Tennessee (fig. 1) rely on domestic wells and springs as their primary source of drinking water. Limited data are available about the quality of ground water in these counties. A reconnaissance of ground-water quality in these counties was conducted during June and July 1991. The project was a cooperative effort between the U.S. Geological Survey (USGS), the University of Tennessee Agricultural Extension Service, and the Tennessee Farm Bureau.

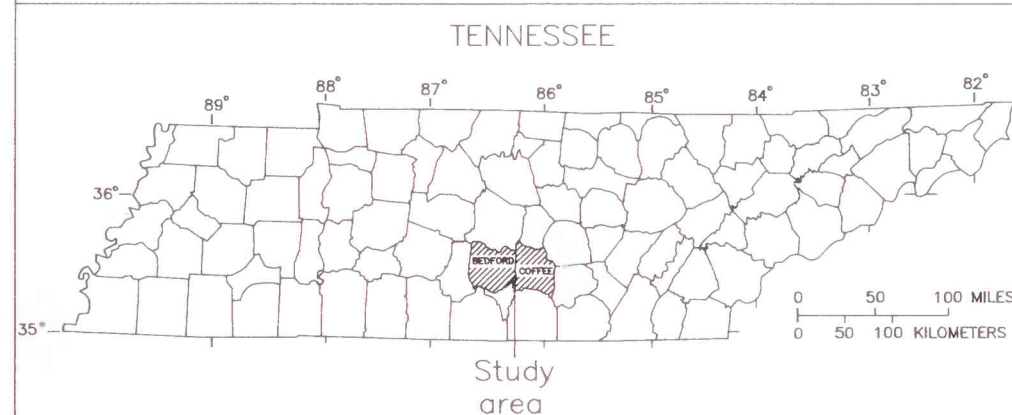


Figure 1.--Map showing location of study area

Water samples from 200 domestic wells and springs (fig. 2) were analyzed for selected water-quality constituents (tables 1 and 2). University of Tennessee Agricultural Extension Service agents and volunteers assisted the USGS in the selection, location, and sampling of the wells and springs included in the project. Collection and preservation of the samples followed USGS standard procedures (Wood, 1981). Upon collection, the samples were immediately transported to the USGS temporary field laboratory in the area.

Analyses for pH, specific conductance, fecal coliform and fecal streptococci bacteria were conducted at the field laboratory. Standard methods 423 and 205 (electrometric techniques) were used for the respective determination of pH and specific conductance (American Public Health Association and others, 1985). Bacteria analyses were conducted following methods described by Britton and Greeson (1987).

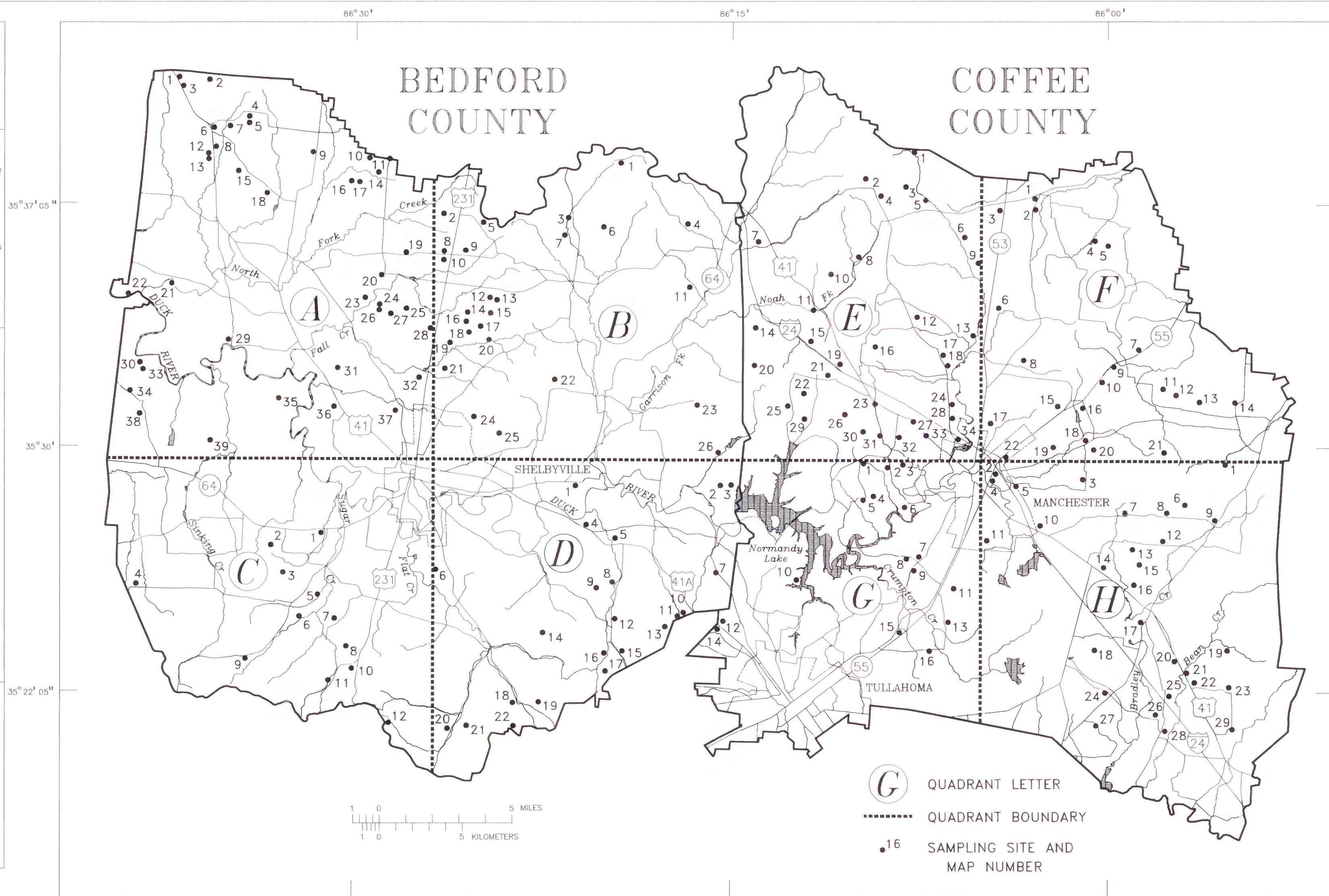
Analyses for nitrate, chloride, and sulfate were conducted within 2 days of sample collection at the USGS laboratory facilities in the Nashville Subdistrict Office. Ion selective electrodes were used for the nitrate and chloride analyses (Orion Research Incorporated, 1971). Sulfate analyses were conducted using photometric techniques (Hach Company, 1989). Calibration curves for nitrate, chloride, and sulfate were developed by analyzing commercially available standard solutions at the beginning and end of each day. Field and laboratory blank samples, representing 5 percent of the total number of samples, were analyzed as part of the quality assurance and quality control program. In addition, 10 percent of the samples were analyzed in duplicate. Nitrate values exceeding 5.0 milligrams per liter were confirmed by ion chromatography using U.S. Environmental Protection Agency method 300.0 (Pfaff and others, 1989).

Results of the sampling are shown in tables 1 and 2. Each county was divided into four quadrants labeled from A to H (fig. 2) and a map number was assigned to each sampling site. For example, well A15 is located in Bedford County in the northwest quadrant labeled A, while well G15 is located in Coffee County in the southwest quadrant labeled G.

<sup>a</sup>Use of firm names in this report is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

REFERENCES

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Digital data from the 1:100,000 National Mapping Division Universal Transverse Mercator projection. Projected in State Plane 1927 North American datum

Figure 2.--Map showing location of sampling sites.

Table 1.--Water-quality data for selected ground-water sites in Bedford County, Tennessee. Includes columns for Map number, Fecal coliform, Fecal streptococci, Chloride, Nitrate, Sulfate, pH, and Specific conductance.

Table 1.--Water-quality data for selected ground-water sites in Bedford County, Tennessee--Continued. Continuation of Table 1 with map numbers 17-39.

Table 2.--Water-quality data for selected ground-water sites in Coffee County, Tennessee. Includes columns for Map number, Fecal coliform, Fecal streptococci, Chloride, Nitrate, Sulfate, pH, and Specific conductance.

Table 2.--Water-quality data for selected ground-water sites in Coffee County, Tennessee--Continued. Continuation of Table 2 with map numbers 1-39.

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