Digital Data Acquisition and Development of Geographic Information System Coverages for Use with the Public Water-Supply Wells and Springs in Tennessee

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U.S. GEOLOGICAL SURVEY
Water-Resources Investigations Report 92-4178

Prepared in cooperation with the
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION,
DIVISION OF WATER SUPPLY

Nashville, Tennessee
1993

U.S. DEPARTMENT OF THE INTERIOR
MANUEL LUJAN, JR., Secretary

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CONTENTS

ILLUSTRATIONS

(plates are in pocket)

TABLES

Digital Data Acquisition and Development of Geographic Information System Coverages for Use with the Public Water-Supply Wells and Springs in Tennessee

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Abstract

A geographic information system (GIS) was used during 1991-92 to develop computerized files (coverages) that could be used to estimate the potential for contamination of the ground-water resources in Tennessee. The coverages included the principal surficial aquifers; location of karst areas; location of wells and springs used for public supply and the amount of water withdrawn; location of hazardous-waste sites inventoried under Comprehensive Environmental Response, Compensation Liability Act and Resource Conservation and Recovery Act; and population density within each county in Tennessee. The GIS capabilities were used to compute the percent of area in each county underlain by the principal aquifers. Computations also were made of the percent of karst terrain in each county within several categories that describe a karst-hazard assessment.

INTRODUCTION

About 51 percent of the people in Tennessee use ground water for drinking and other domestic uses (Hutson, 1991). Ground water can be susceptible to surface or near-surface contamination depending on its geohydrologic environment and proximity to sources of contamination. Susceptibility of ground water to surface contamination is greatest in unconfined aquifers and in areas where sinkholes or other karst-related surface-drainage features occur. In these areas, ground-water quality can be degraded by a variety of point and nonpoint sources of contamination. These sources include hazardous-waste sites regulated under the Comprehensive Environmental Response, Compensation Liability Act (CERCLA), and the Resource Conservation and Recovery Act (RCRA). Until recently, general methods to assess the potential for contamination of ground water from hazardous-waste sites included in the CERCLA and RCRA programs were not available.

In 1991, the U.S. Geological Survey (USGS), began the development of computerized geographic files from compiled data that could be used by the State to estimate the potential for contamination of the ground-water resources in Tennessee. The files were developed as part of a 2-year project in cooperation with the Division of Water Supply of the Tennessee Department of Environment and Conservation. A geographic information system (GIS) was used to develop "coverages" (computerized graphic files showing a particular feature such as wells and springs, their location, and detailed information about each site). Maps of each coverage can be retrieved easily from the GIS computer files. Coverages of different features can be overlain, and the computing capabilities of the GIS used to study interactions among different parameters.

This report summarizes the coverages developed during the project. It also describes the methods used to develop the coverages and lists principal aquifers. In areas where limestone rocks occur and sinkholes abound (karst terrain), a table is presented showing the percent of karst area for each of the classifications described by Crawford and Veni (1986). This classification provides an index of occurrence of sinkholes and is used to estimate a "karst-hazard assessment."

DIGITAL DATA ACQUISITION AND DEVELOPMENT OF GEOGRAPHIC INFORMATION SYSTEM COVERAGES

The following ARC/INFO GIS coverages were either acquired (coverages 1 and 2) or automated (coverages 3-7) from collected data:

1. County boundaries and names
2. Population density
3. Principal aquifer
4. Karst-hazard assessment
5. Public water-supply wells and springs
6. Selected CERCLA sites
7. RCRA Site

County Boundaries

A county boundary coverage (plate 1 in back of report), acquired from the Tennessee Wildlife Resources Agency, is based upon the political unit map associated with land use and land cover digital data (U.S. Geological Survey, 1986).

Population Density

A population density coverage was acquired from the USGS (plate 2 in back of report). The map is based on data from the U.S. Department of Commerce, 1990 decennial census files. Each dot in the coverage represents 1,000 people. A program developed by the USGS plots a dot at the centroid of the census track for the first 1,000 people. A random generator is used to locate points within the census track corresponding to each additional 1,000 people. Fractions of 1,000 are assigned to the centroid of the closest census track and, then, the process is repeated.

Principal Aquifers

A GIS coverage showing the principal aquifers of Tennessee (plate 3 in the back of the report) was constructed by digitizing a map, prepared by Bradley and Hollyday (1985), at a scale of 1:1,000,000. At the request of State officials, aquifer boundaries in the West Tennessee area were modified to reflect work reported by Parks and others (1982), which allowed separation of the confined and unconfined aquifer. The modified aquifer boundaries in West Tennessee and their designations are:

1. Alluvial, underlain by Tertiary and Cretaceous sand (unconfined or confined),
2. Tertiary sand (confined), underlain by Cretaceous sand (confined),
3. Tertiary sand (unconfined), underlain by Cretaceous sand (confined),
4. Cretaceous sand (unconfined), and
5. Alluvial, underlain by Cretaceous sand.

In addition, the Ordovician carbonate (faulted) aquifer underlying Sequatchie Valley, in southeastern Tennessee was separated from the Pennsylvanian aquifer because lithology and structure are distinctly different from any other principal aquifer. The percentage of area in each county underlain by each aquifer (table 1) was computed by intersecting the principal aquifer coverage with the county boundary coverage of Tennessee.

Karst-Hazard Assessment

A karst-hazard assessment map of Tennessee, developed for the U.S. Environmental Protection Agency at a scale of 1:1,000,000 by Crawford and Veni (1986), was scanned with an optical scanner and converted into a GIS coverage (plate 4 in back of report). The map by Crawford and Veni (1986) was based on rectangles of 1.25 minutes latitude and longitude and includes four karst classifications:

1. Noncarbonate areas.
2. Carbonate areas with less than 1 percent sinkholes,
3. Carbonate areas with 1 to 10 percent sinkholes, and
4. Carbonate areas with greater than 10 percent sinkholes.

By intersecting this GIS coverage with the county boundary coverage of Tennessee, a table was constructed to provide the percentage of area in each

Table 1. Percentage of area, by county, underlain by each principal aquifer

Principal aquifer designations are: Al, Alluvial, underlain by Tertiary and Cretaceous sand (unconfined or confined); T-sand(conf), Tertiary sand (confined), underlain by Cretaceous sand (confined); T-sand(uncf), Tertiary sand (unconfined), underlain by Cretaceous sand (confined); C-sand, Cretaceous sand (unconfined); Al(C-sand), Alluvial, underlain by Cretaceous sand; M-carb, Mississippian carbonate; O-carb, Ordovician carbonate; P-sand, Pennsylvanian sandstone; O-carb(fault), Ordovician carbonate (faulted); C/O-carb, Cambrian-Ordovician carbonate; C-rock, Crystalline rock. Due to rounding, totals may not equal 100 percent]

	Percent of area underlain by indicated principal aquifer										
County	Al	T-sand (conf)	T-sand (uncf)	C-sand	Al (C-sand)	M-carb	O-carb	P-sand	O-carb (fault)	C/O-carb	C-rock
Anderson	0	0	0	0	0	0	0	36	0	64	0
Bedford	0	0	0	0	0	1	99	0	0	0	0
Benton	0	0	0	50	0	50	0	0	0	0	0
Bledsoe	0	0	0	0	0	0	0	74	26	0	0
Blount	0	0	0	0	0	0	0	0	0	63	37
Bradley	0	0	0	0	0	0	0	0	0	100	0
Campbell	0	0	0	0	0	0	0	69	0	31	0
Cannon	0	0	0	0	0	41	60	0	0	0	0
Carroll	0	22	39	39	0	0	0	0	0	0	0
Carter	0	0	0	0	0	0	0	0	0	38	62
Cheatham	0	0	0	0	0	97	3	0	0	0	0
Chester	0	0	29	71	0	0	0	0	0	0	0
Claiborne	0	0	0	0	0	0	0	19	0	81	0
Clay	0	0	0	0	0	86	14	0	0	0	0
Cocke	0	0	0	0	0	0	0	0	0	64	36
Coffee	0	0	0	0	0	89	10	2	0	0	0
Crockett	11	89	0	0	0	0	0	0	0	0	0
Cumberland	0	0	0	0	0	0	0	95	5	0	0
Davidson	0	0	0	0	0	20	80	0	0	0	0
Decatur	0	0	0	57	1	42	0	0	0	0	0
Dekalb	0	0	0	0	0	51	49	0	0	0	0
Dickson	0	0	0	0	0	100	0	0	0	0	0
Dyer	50	50	0	0	0	0	0	0	0	0	0
Fayette	0	71	29	0	0	0	0	0	0	0	0
Fentress	0	0	0	0	0	19	0	81	0	0	0
Franklin	0	0	0	0	0	90	0	10	0	0	0
Gibson	6	95	0	0	0	0	0	0	0	0	0
Giles	0	0	0	0	0	40	60	0	0	0	0
Grainger	0	0	0	0	0	0	0	0	0	100	0
Greene	0	0	0	0	0	0	0	0	0	91	9
Grundy	0	0	0	0	0	17	0	83	0	0	0
Hamblen	0	0	0	0	0	0	0	0	0	100	0
Hamilton	0	0	0	0	0	0	0	19	0	81	0
Hancock	0	0	0	0	0	0	0	0	0	100	0
Hardeman	5	0	85	10	0	0	0	0	0	0	0
Hardin	0	0	0	64	30	6	0	0	0	0	0
Hawkins	0	0	0	0	0	0	0	0	0	100	0
Haywood	16	80	4	0	0	0	0	0	0	0	0
Henderson	0	0	18	82	0	0	0	0	0	0	0
Henry	0	7	47	42	0	4	0	0	0	0	0
Hickman	0	0	0	0	0	91	9	0	0	0	0
Houston	0	0	0	0	0	100	0	0	0	0	0
Humphreys	0	0	0	0	0	100	0	0	0	0	0
Jackson	0	0	0	0	0	43	57	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0	0	100	0

Table 1. Percentage of area, by county, underlain by each principal aquifer—Continued

County	Percent of area underlain by indicated principal aquifer										
	Al	T-sand (conf)	T-sand (uncf)	C-sand	Al (C-sand)	M-carb	O-carb	P-sand	O-carb (fault)	C/O-carb	C-rock
Johnson	0	0	0	0	0	0	0	0	0	1	99
Knox	0	0	0	0	0	0	0	0	0	100	0
Lake	100	0	0	0	0	0	0	0	0	0	0
Lauderdale	50	50	0	0	0	0	0	0	0	0	0
Lawrence	0	0	0	0	0	100	0	0	0	0	0
Lewis	0	0	0	0	0	100	0	0	0	0	0
Lincoln	0	0	0	0	0	38	62	0	0	0	0
Loudon	0	0	0	0	0	0	0	0	0	100	0
McMinn	0	0	0	0	0	0	0	0	0	100	0
McNairy	0	0	0	100	0	0	0	0	0	0	0
Macon	0	0	0	0	0	80	20	0	0	0	0
Madison	8	37	55	1	0	0	0	0	0	0	0
Marion	0	0	0	0	0	0	0	68	32	0	0
Marshall	0	0	0	0	0	0	100	0	0	0	0
Maury	0	0	0	0	0	16	84	0	0	0	0
Meigs	0	0	0	0	0	0	0	0	0	100	0
Monroe	0	0	0	0	0	0	0	0	0	52	48
Montgomery	0	0	0	0	0	100	0	0	0	0	0
Moore	0	0	0	0	0	43	57	0	0	0	0
Morgan	0	0	0	0	0	0	0	100	0	0	0
Obion	13	87	0	0	0	0	0	0	0	0	0
Overton	0	0	0	0	0	83	0	17	0	0	0
Perry	0	0	0	0	0	100	0	0	0	0	0
Pickett	0	0	0	0	0	81	0	20	0	0	0
Polk	0	0	0	0	0	0	0	0	0	26	74
Putnam	0	0	0	0	0	66	13	21	0	0	0
Rhea	0	0	0	0	0	0	0	46	0	55	0
Roane	0	0	0	0	0	0	0	10	0	90	0
Robertson	0	0	0	0	0	100	0	0	0	0	0
Rutherford	0	0	0	0	0	0	100	0	0	0	0
Scott	0	0	0	0	0	0	0	100	0	0	0
Sequatchie	0	0	0	0	0	0	0	79	21	0	0
Sevier	0	0	0	0	0	0	0	0	0	39	61
Shelby	25	75	0	0	0	0	0	0	0	0	0
Smith	0	0	0	0	0	1	100	0	0	0	0
Stewart	0	0	0	0	0	100	0	0	0	0	0
Sullivan	0	0	0	0	0	0	0	0	0	99	1
Sumner	0	0	0	0	0	51	50	0	0	0	0
Tipton	18	82	0	0	0	0	0	0	0	0	0
Trousdale	0	0	0	0	0	1	100	0	0	0	0
Unicoi	0	0	0	0	0	0	0	0	0	17	83
Union	0	0	0	0	0	0	0	0	0	100	0
Van Buren	0	0	0	0	0	24	0	77	0	0	0
Warren	0	0	0	0	0	92	0	8	0	0	0
Washington	0	0	0	0	0	0	0	0	0	100	0
Wayne	0	0	0	30	0	70	0	0	0	0	0
Weakley	0	100	0	0	0	0	0	0	0	0	0
White	0	0	0	0	0	75	0	25	0	0	0
Williamson	0	0	0	0	0	32	68	0	0	0	0
Wilson	0	0	0	0	0	0	100	0	0	0	0

county that is underlain by terrain of each karst classification (table 2).

Public Water-Supply Wells and Springs

A GIS point coverage was developed for 205 wells and 85 springs used for public water supply (plate 5 in back of report). Data were obtained from records of the Tennessee Department of Environment and Conservation, Division of Water Supply (DWS). Only community public water-supply wells and springs were included for the coverage. Community water systems serve the same 25 or more people or have at least 15 service connections on line for at least 60 days a year. Locations are as reported to the DWS. The DWS data were augmented with data of large springs in East Tennessee (Hollyday and Smith, 1990) and of well fields operated by the Memphis Light, Gas and Water Division (S.S. Hutson, 1992). In addition, utility districts were contacted to provide supplementary information, to locate wells or springs in question, and to identify those wells or springs not currently being used.

Information on water source, average daily ground-water withdrawals for 1990, principal aquifer, and karst classification for utility districts using wells or springs is presented in table 3 (in back of report). For utility districts that use both ground and surface water for public supply, ground-water use was computed from data reported by Hutson (1991). If data were not available, utility districts were contacted to provide this information. The principal aquifer at each site was determined by intersecting the public water-supply wells and springs coverage with the principal aquifer coverage. Similarly, the karst classification at each site was determined by intersecting the public water-supply wells and springs coverage with the karst-hazard assessment coverage.

Comprehensive Environmental Response, Compensation and Liability Act Sites

Data for 80 of the 161 sites on the July 1991 promulgated list of Comprehensive Environmental Response, Compensation and Liability Act sites were collected from the Tennessee Department of Environment and Conservation, Division of Superfund (DS), and automated into a GIS coverage (plate 6 in the back of report). Only those sites that had been field checked by DS personnel, and for which ground-water route score sheets (U.S. Environmental Protection Agency, 1982) had been completed and site locations plotted on a map, were included in the coverage. Site locations were transferred to USGS $7^1/_2$-minute quadrangle maps, digitized, and to a point coverage. Data on the ground-water route score sheets were added to the GIS data base. By intersecting the CERCLA coverage with the principal aquifer and karst-hazard assessment coverages, the principal aquifer and karst classification at each site were determined (table 4).

Resource Conservation and Recovery Act Sites

Resource Conservation and Recovery Act (RCRA) data were collected from the Tennessee Department of Environment and Conservation, Division of Solid Waste Management, and automated into a GIS coverage (plate 7 in the back of the report). The data included a list of 505 large-quantity generators of waste, the U.S. Environmental Protection Agency identification number (EPA-ID) of each, company or parent company, and their address and telephone. Locations of 479 of the 505 generators were verified by a telephone survey. Locations of urban sites were first placed on city maps and then transferred to USGS $7^1/_2$-minute quadrangle maps; locations of rural sites were plotted directly on the quadrangle maps. Locations on the quadrangle maps were digitized as a point coverage, and the site name, EPA-ID, and quadrangle map name were added to the data base. Locations were verified by comparing the assigned quadrangle map name with the corresponding name given on the GIS quadrangle coverage of the State. In addition, the locations of 20 sites on three quadrangles were field checked for accuracy. One site location was in error by 2,000 feet, two site locations were in error by approximately 200 feet, and the remainder were found to be correct. By intersecting this coverage with the principal aquifer and karst-hazard assessment coverages, the principal aquifer and karst classification at each site were determined (table 5 in back of report).

Table 2. Percentage of area, by county, underlain by terrain of each karst classification

[Due to rounding, totals may not equal 100 percent]

County	Percent of area underlain by indicated type of karst terrain			
		Carbonate areas		
	Noncarbonate areas	Less than 1 percent sinkholes	1 to 10 percent sinkholes	Greater than 10 percent sinkholes
Anderson	48	30	22	0
Bedford	2	70	28	0
Benton	100	0	0	0
Bledsoe	68	28	4	0
Blount	43	34	21	2
Bradley	11	82	8	0
Campbell	60	17	23	1
Cannon	24	76	0	0
Carroll	100	0	0	0
Carter	61	23	16	1
Cheatham	67	14	19	0
Chester	100	0	0	0
Claiborne	15	37	39	9
Clay	0	78	20	2
Cocke	51	28	18	2
Coffee	35	49	17	0
Crockett	100	0	0	0
Cumberland	94	3	0	3
Davidson	18	66	16	0
Decatur	59	42	0	0
Dekalb	9	87	3	0
Dickson	29	67	4	0
Dyer	100	0	0	0
Fayette	100	0	0	0
Fentress	79	12	7	2
Franklin	11	61	15	13
Gibson	100	0	0	0
Giles	25	73	2	0
Grainger	0	46	54	0
Greene	11	55	33	1
Grundy	63	34	3	0
Hamblen	0	30	63	8
Hamilton	20	65	15	0
Hancock	0	44	54	2
Hardeman	100	0	0	0
Hardin	78	22	0	0
Hawkins	0	65	32	3
Haywood	100	0	0	0
Henderson	100	0	0	0
Henry	100	0	0	0
Hickman	63	36	1	0
Houston	22	75	4	0
Humphreys	60	40	0	0
Jackson	0	100	0	0
Jefferson	0	52	34	14
Johnson	63	37	0	0
Knox	0	51	47	2
Lake	100	0	0	0

Table 2. Percentage of area, by county, underlain by terrain of each karst classification—Continued

County	Percent of area underlain by indicated type of karst terrain			
		Carbonate areas		
	Noncarbonate areas	Less than 1 percent sinkholes	1 to 10 percent sinkholes	Greater than 10 percent sinkholes
Lauderdale	100	0	0	0
Lawrence	93	7	0	0
Lewis	87	13	0	0
Lincoln	0	100	0	0
Loudon	0	33	61	6
McMinn	5	72	23	0
McNairy	100	0	0	0
Macon	0	100	0	0
Madison	100	0	0	0
Marion	44	56	0	0
Marshall	0	62	29	8
Maury	15	66	19	0
Meigs	21	48	32	0
Monroe	51	28	20	1
Montgomery	2	54	27	17
Moore	28	66	6	0
Morgan	100	0	0	0
Obion	100	0	0	0
Overton	14	34	38	14
Perry	51	47	2	0
Pickett	23	37	40	0
Polk	75	18	8	0
Putnam	14	66	13	7
Rhea	41	45	14	0
Roane	18	60	21	1
Robertson	9	20	61	10
Rutherford	0	45	52	3
Scott	95	5	0	0
Sequatchie	72	25	3	0
Sevier	67	19	13	1
Shelby	100	0	0	0
Smith	0	95	5	0
Stewart	9	86	4	0
Sullivan	2	62	31	5
Sumner	16	70	14	0
Tipton	100	0	0	0
Trousdale	0	93	7	0
Unicoi	86	14	1	0
Union	0	60	40	0
Van Buren	60	28	8	4
Warren	6	55	29	10
Washington	12	54	28	6
Wayne	75	25	0	0
Weakley	100	0	0	0
White	18	30	39	13
Williamson	29	66	5	0
Wilson	0	73	26	1

Table 4. Field verified promulgated Comprehensive Environmental Response, Compensation and Liability Act sites in Tennessee with karst and principal aquifer classification, by county

[Principal aquifer designations are: Al, Alluvial underlain by Tertiary and Cretaceous sand (unconfined or confined); T-sand(conf), Tertiary sand (confined), underlain by Cretaceous sand (confined); T-sand(uncf), Tertiary sand (unconfined) underlain by Cretaceous sand (confined); C-sand, Cretaceous sand (unconfined); M-carb, Mississippian carbonate; O-carb, Ordovician carbonate; P-sand, Pennsylvanian sandstone; O-carb(fault), Ordovician carbonate (faulted); C/O-carb, Cambrian-Ordovician carbonate; C-rock, Crystalline rock; <, less than; >, greater than]

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Anderson				
Anderson County landfill	C/O-carb	0	36.048	84.193
Bradley				
Cleveland Plastics	C/O-carb	< 1	35.146	84.896
Carter				
East Tennessee Chair Company	C/O-carb	1 - 10	36.325	82.202
Ivan Miller/Roan Mountain	C-rock	0	36.183	82.066
Cocke				
Arapahoe (Rock Hill Labs.)	C/O-carb	1 - 10	35.967	83.132
Newport dump	C/O-carb	< 1	35.991	83.214
Wall Tube & Metal Products	C/O-carb	1 - 10	35.976	83.224
Davidson				
General Electric Shop	O-carb	< 1	36.092	86.745
Junkard Cave	O-carb	< 1	36.209	86.955
Pal Hawkins landfill	O-carb	< 1	36.246	86.662
Saad & Sons Inc.	O-carb	< 1	36.091	86.750
Fayette				
Gallaway Pits	T-sand(conf)	0	35.358	89.602
Franklin				
Batesville Casket Company Cowan site	M-carb	< 1	35.178	85.970
Gibson				
B&H Transformer	T-sand(conf)	0	36.091	89.118
Hamilton				
American Plating	C/O-carb	< 1	35.071	85.109
Birchwood Pike dump site	C/O-carb	< 1	35.234	85.071
D.M. Steward Mfg.	C/O-carb	1 - 10	35.001	85.298
Mor-Flo Industries	C/O-carb	1 - 10	34.995	85.300
Morgan Street Demolition Dump	C/O-carb	1 - 10	35.017	85.300
Morningside Chemicals	C/O-carb	< 1	34.997	85.312
National Microdynamics	C/O-carb	< 1	35.031	85.187
Henry				
Carl Wright Septic Service	T-sand(uncf)	0	36.272	88.343
Henry County Boneyard	T-sand(uncf)	0	36.334	88.340
Oak Grove site	C-sand	0	36.395	88.162
Hickman				
Wrigley Charcoal	M-carb	0	35.903	87.353
Knox				
C.A. Rose farm	C/O-carb	1 - 10	35.999	83.735
CAS Walker/Fountain City	C/O-carb	< 1	36.036	83.993
Foote Mineral Company	C/O-carb	1 - 10	35.967	84.060
Screen Art Inc.	C/O-carb	< 1	35.916	83.933
Southern Rail/Coster Shop	C/O-carb	< 1	35.985	83.948
Witherspoon landfill	C/O-carb	< 1	35.914	83.930
Witherspoon Recycling	C/O-carb	< 1	35.930	83.921
Lauderdale				
Kenneth Scollions	T-sand(conf)	0	35.775	89.449

Table 4. Field verified promulgated Comprehensive Environmental Response, Compensation and Liability Act sites in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Lawrence				
Horseshoe Bend dump	M-carb	0	35.210	87.385
Lewis				
General Electric	M-carb	0	35.557	87.553
Loudon				
Greenback Industries	C/O-carb	>10	35.640	84.150
Lenoir Car Works	C/O-carb	< 1	35.784	84.275
Madison				
American Creosote	Al	0	35.610	88.838
Iselin Yard site	T-sand(uncf)	0	35.602	88.799
Owens-Corning Euyher Davidson site	Al	0	35.621	88.859
Owens-Corning Blasdingame site	Al	0	35.619	88.876
Porter Cable Corp.	T-sand(uncf)	0	35.738	88.853
Marion				
North American Environmental Corp.	O-carb(fault)	< 1	35.124	85.547
Scratch Ankle Dump Road	P-sand	< 1	34.991	85.510
Marshall				
Lewisburg site	O-carb	1 - 10	35.482	86.784
Maury				
Industrial Liquids Recycling	O-carb	< 1	35.540	87.198
Old Victor Chemical dump	O-carb	< 1	35.510	87.227
McMinn				
Beaunit Mills	C/O-carb	1 - 10	35.373	84.520
Hullander	C/O-carb	< 1	35.278	84.652
McNairy				
General Electric	C-sand	0	35.169	88.601
Michie dump	C-sand	0	35.061	88.426
Monroe				
Ernest Lee site	C/O-carb	1 - 10	35.377	84.331
Red Ridge landfill	C/O-carb	< 1	35.592	84.360
Roane				
Roane Alloys	C/O-carb	< 1	35.886	84.660
Rutherford				
Melvin Hamby site	O-carb	1 - 10	35.960	86.478
Old Murfreesboro city dump	O-carb	1 - 10	35.866	86.419
Saad J. P., Smyrna site	O-carb	< 1	35.997	86.515
Saad & Sons, Silver Springs site	O-carb	1 - 10	35.951	86.485
Shelby				
Carrier	T-sand(uncf)	0	35.041	89.690
Chapman Chemical site	T-sand(conf)	0	35.067	90.052
Chromium Mining & Smelting Corp.	T-sand(conf)	0	35.275	89.953
Firestone Tire & Rubber	T-sand(conf)	0	35.177	90.030
Holmes Road site	T-sand(conf)	0	35.005	89.871
Jackson Pit dump	T-sand(conf)	0	35.017	89.961
LaRoche Industries	T-sand(conf)	0	35.042	90.102
North Hollywood dump	Al	0	35.185	89.973
Pulvair Corp.	T-sand(conf)	0	35.322	89.910
Shelby				
Tulane Road site	T-sand(conf)	0	35.058	90.046
W. R. Grace Company	T-sand(conf)	0	35.281	89.964

Table 4. Field verified promulgated Comprehensive Environmental Response, Compensation and Liability Act sites in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Sullivan				
Bethel Drive dump	C/O-carb	< 1	36.541	82.289
Bristol dump	C/O-carb	< 1	36.537	82.258
Earhart dump site	C/O-carb	< 1	36.534	82.263
Sperry Corp.	C/O-carb	1 - 10	36.524	82.270
Unicoi				
Bumpass Cove	C/O-carb	0	36.151	82.507
Morrill Electric Inc.	C-rock	0	36.037	82.551
Warren				
Century Electric Company	M-carb	1 - 10	35.692	85.761
Washington				
Cash Hollow dump	C/O-carb	< 1	36.363	82.334
Wayne				
Mallory Capacitor Company	M-carb	0	35.319	87.759
Wayne County landfill	M-carb	0	35.238	87.792
Williamson				
Kennon site	O-carb	< 1	35.957	86.762
Wilson				
Ross Gear Division	O-carb	< 1	36.220	86.316

SUMMARY

During 1991 and 1992, five GIS coverages of Tennessee were developed for use by water planners and managers in assessing the potential for contamination to public water-supply wells and springs from hazardous-waste sites. Coverages include (1) principal aquifers, (2) karst-hazard assessment, (3) public water-supply wells and springs, (4) selected CERCLA sites, and (5) RCRA sites. In addition, the State county boundaries and population density coverages were acquired. Maps were prepared based on these seven coverages. Tables describing selected information were produced for five of the coverages.

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Table 3. Public-supply ground-water systems in Tennessee with karst and aquifer classification

[Principal aquifer designations are: Al, Alluvial, underlain by Tertiary and Cretaceous sand (unconfined or confined); T-sand(conf), Tertiary sand (confined), underlain by Cretaceous sand (confined); T-sand(uncf), Tertiary sand (unconfined), underlain by Cretaceous sand (confined); C-sand, Cretaceous sand (unconfined); Al(C-sand), Alluvial, underlain by Cretaceous sand; M-carb, Mississippian carbonate; O-carb, Ordovician carbonate; P-sand, Pennsylvanian sandstone; O-carb(fault), Ordovician carbonate faulted; C/O-carb, Cambrian-Ordovician carbonate; C-rock, Crystalline rock; <, less than; >, greater than; PWSID, public water supply identification number; Mgal/d, million gallons per day; Assoc, Association; HOA, Home Owners Association; Mi, Mine; P U, Public Utility; Sch, School; Sp, Spring; U D, Utility District; W D, Water Department; W S, Water System.]

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
Adamsville W S	Well	0000002	0.6290	C-sand	0
Alamo W D	3 wells	0000005	.3090	T-sand(conf)	0
Ardmore W S	Wells (Ala.)	0000018	.1400	M-carb	< 1
Ardmore W S	Well (Tenn.)	0000018	.1750	M-carb	0
Arlington W S	Well	0000019	.4230	T-sand(conf)	0
Arnold Village	Well #12	0000830	.0200	M-carb	< 1
Arnold Village	Well #1	0000830	.0200	M-carb	< 1
Athens Utilities Board	New Spring	0000024	.3200	C/O-carb	< 1
Athens Utilities Board	Ingleside Sp	0000024	1.1200	C/O-carb	< 1
Atwood W S	Well	0000035	.1610	T-sand(conf)	0
Bachman Memorial Home	Well	0000118	.0080	C/O-carb	< 1
Baneberry U D	Well #2	0000329	.0075	C/O-carb	< 1
Baneberry U D	Well #1	0000329	.0075	C/O-carb	< 1
Bartlett W S	Well	0000765	1.4780	T-sand(conf)	0
Bells Public U D	Well	0000045	.2070	T-sand(conf)	0
Belvidere Rural U D	Well	0000046	.1320	M-carb	< 1
Benton W S	Springs	0000048	.2890	C/O-carb	< 1
Bethel Springs W S	Well	0000050	.0800	C-sand	0
Big Sandy W D	Well	0000051	.1900	C-sand	0
Bluff City W S	Underwood Sp	0000061	.2300	C/O-carb	< 1
Bolivar Water Plant	Well	0000063	1.2500	C-sand	0
Bon Aqua-Lyles U D	Mac Farland Sp	0000066	.0380	M-carb	0
Bradford W S	Well	0000067	.1820	T-sand(conf)	0
Brighton W S	Well	0000070	.1140	T-sand(conf)	0
Brownsville W D	Well	0000080	1.6000	T-sand(conf)	0
Bruceton W S	Well	0000081	.6000	C-sand	0
Carderview U D	Well #2	0000085	.0400	C-rock	0
Carderview U D	Well #1	0000085	.0400	C-rock	< 1
Caryville-Jacksboro U D	Cave Spring	0000322	.0612	C/O-carb	1 - 10
Casson's Apartments W S	Well	0000782	.0010	C/O-carb	< 1
Cedar Grove U D	2 wells	0000098	.1650	T-sand(uncf)	0
Center Grove-Winchester Springs	New Spring	0000101	.3380	M-carb	0
Chalet Village North	Well	0000849	.0550	C-rock	0
Chapel Hill W S	Town well	0000104	.1070	O-carb	1 - 10
Cherokee Hills U D	Springs	0000138	.0470	C-rock	0
Chinquapin Grove U D	L. Wcat Spring	0000062	.0450	C/O-carb	< 1
Chinquapin Grove U D	B. Wcat Spring	0000062	.0680	C/O-carb	< 1
Clarksburg U D	2 wells	0000115	.1050	C-sand	0
Clear Fork U D	Well #1	0000826	.0800	P-sand	0
Cleveland Utilities	Waterville Sp	0000117	1.2300	C/O-carb	< 1
Cold Springs U D	Leco Spring	0000485	.0740	C-rock	< 1
College Grove U D	Well	0000125	.0720	O-carb	< 1
Collierville W D	Deep wells	0000126	2.4000	T-sand(uncf)	0
Collinwood W D	Spring	0000127	.0780	M-carb	0

Table 3. Public-supply ground-water systems in Tennessee with karst and aquifer classification—Continued

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
Collinwood W D	3 springs	0000127	0.0780	M-carb	0
Copperhill W D	Springs	0000136	.2220	C-rock	0
County Wide U D	No. 3 Bonicord	0000006	.0620	T-sand(conf)	0
County Wide U D	No. 4 Old Field	0000006	.1870	T-sand(conf)	0
County Wide U D	No. 2 Salem	0000006	.2160	T-sand(conf)	0
County Wide U D	No. 5B Hwy 20	0000006	.1190	T-sand(conf)	0
County Wide U D	No. 6 Gadsden	0000006	.0370	T-sand(conf)	0
County Wide U D	No. 5A Egg Hill	0000006	.0920	T-sand(conf)	0
County Wide U D	No. 1 Gum Flat	0000006	.3320	T-sand(conf)	0
Covington W D	Deep wells	0000144	1.4040	T-sand(conf)	0
Cowan Board of P U	Spring	0000146	.1750	M-carb	1 - 10
Crockett Mills U D	2 deep wells	0000148	.0570	T-sand(conf)	0
Dandridge W D	Well #3 & #4	0000170	.2200	C/O-carb	1 - 10
Dandridge W D	Spring+well #1	0000170	.2200	C/O-carb	< 1
Decatur W D	Eaves Spring	0000183	.4140	C/O-carb	1 - 10
Decatur W D	Big Spring	0000183	.4140	C/O-carb	< 1
Decaturville W S	Well	0000186	.1320	C-sand	0
Decherd W D	2 wells	0000187	.2800	M-carb	> 10
Dickson W D	Well # 21	0000191	.0770	M-carb	< 1
Dixie Lee U D	Allen Fine Sp	0000397	.5960	C/O-carb	1 - 10
Dowelltown-Liberty U D	Well #1	0000403	.0380	O-carb	< 1
Dowelltown-Liberty U D	Well #2	0000403	.0380	O-carb	< 1
Dresden W D	3 deep wells	0000196	.5090	T-sand(conf)	0
Dyer W D	3 wells	0000209	.3100	T-sand(conf)	0
Dyersburg Sub Cons U D	3 wells	0000212	.3780	Al	0
Dyersburg W D	5 wells	0000211	4.4450	Al	0
East Sevier County U D	Well B	0000618	.0225	C/O-carb	0
East Sevier County U D	Well A	0000618	.0225	C/O-carb	0
Eastside U D	Well	0000219	3.6000	C/O-carb	< 1
Elbridge U D	2 deep wells	0000220	.2170	T-sand(conf)	0
Elizabethton W D	Big Springs	0000221	.5000	C/O-carb	1 - 10
Elizabethton W D	Valley Forge Sp	0000221	.5000	C/O-carb	< 1
Elizabethton W D	Hampton Spring	0000221	3.0000	C-rock	< 1
Elizabethton W D	Milligan Spring	0000221	.5000	C/O-carb	1 - 10
Erwin Utilities	Anderson Sp	0000231	.4030	C/O-carb	< 1
Erwin Utilities	Birchfield Sp	0000231	.5620	C-rock	< 1
Erwin Utilities	O'Brien Spring	0000231	.5480	C-rock	< 1
Erwin Utilities	Railroad well	0000231	.5380	C-rock	< 1
Estill Springs W D	Spring	0000232	.3690	M-carb	< 1
Fairview W S	Middle sch well	0000236	.1410	M-carb	0
Fayetteville W S	Teal Hollow Sp	0000242	.5800	M-carb	< 1
First U D of Knox County	Walker Springs	0000369	.1900	C/O-carb	1 - 10
First U D of Carter County	Campbell Sp	0000094	.7600	C/O-carb	< 1
First U D of Hawkins County	Hamilton Spring	0000855	.1500	C/O-carb	1 - 10
First U D of Hawkins County	#2 Lee Spring	0000855	.4500	C/O-carb	1 - 10
First U D of Tipton County	4 deep wells	0000703	.5370	T-sand(conf)	0
Fort Pillow State Farm	3 wells	0000245	.3050	T-sand(conf)	0
Foxfire Homeowners Assoc	Well	0000854	.0050	C/O-carb	< 1
Foxfire Homeowners Assoc	Well	0000854	.0050	C/O-carb	< 1
Franklin W D	Springs	0000246	.1820	O-carb	< 1
Friendship Water Company	2 wells	0000248	.1020	T-sand(conf)	0

Table 3. Public-supply ground-water systems in Tennessee with karst and aquifer classification—Continued

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
Gallaway W D	3 deep wells	0000254	0.2560	T-sand(conf)	0
Gates W D	2 wells	0000255	.0570	T-sand(conf)	0
Gatlinburg W D	Well #1	0000256	.0500	C-rock	0
Germantown W D	9 deep wells	0000262	4.9400	T-sand(conf)	0
Gibson County Municipal W D	#1 Grier's well	0000709	.1090	T-sand(conf)	0
Gibson County Municipal W D	#1 Idlewild well	0000709	.0270	T-sand(conf)	0
Gibson County Municipal W D	#1 Concord well	0000709	.0850	T-sand(conf)	0
Gibson County Municipal W D	#5 Eaton well	0000815	.1350	T-sand(conf)	0
Gibson County Municipal W D	#5 Fruitland well	0000815	.1420	T-sand(conf)	0
Gibson County Municipal W D	#5 Goat City well	0000815	.0430	T-sand(conf)	0
Gibson County Municipal W D	#7 Yorkville well	0000741	.1040	T-sand(conf)	0
Gibson W D	2 Wells	0000263	.0280	T-sand(conf)	0
Gleason W D	2 wells	0000265	.4090	T-sand(conf)	0
Grand Junction W D	2 wells	0000267	.1760	T-sand(uncf)	0
Grand Valley Lakes Own Assoc	Well	0000451	.0250	T-sand(uncf)	0
Graysville W D	Wells	0000269	.1990	P-sand	< 1
Great Smokey Mountains Nat'l. Park	Well	0000270	.0154	C-rock	0
Greenfield W D	Wells	0000276	.3330	T-sand(conf)	0
Halls W S	3 wells	0000279	.8650	T-sand(conf)	0
Hallsdale Powell U D	Granny Bri Sp	0000280	.2800	C/O-carb	1 - 10
Hallsdale Powell U D	Fowler Springs	0000280	1.0000	C/O-carb	1 - 10
Hampton U D	Spring	0000282	.6000	C-rock	0
Harpeth U D	Baker Spring	0000285	.1710	M-carb	< 1
Henderson W D	5 wells	0000293	.9190	C-sand	0
Henning W D	Well	0000295	.1430	T-sand(conf)	0
Henry W S	2 wells	0000296	.0870	T-sand(uncf)	0
Hickory Star Marina	Spring	0000899	.0120	C/O-carb	< 1
Hickory Valley W S	North well	0000874	.0180	T-sand(uncf)	0
Hickory Valley W S	South well	0000874	.0180	T-sand(uncf)	0
Hiwassee College	Hiwassee Sp	0000426	.1200	C/O-carb	< 1
Hixson U D	Cave Springs	0000303	5.1100	C/O-carb	< 1
Hohenwald W S	Spring	0000304	.1700	M-carb	0
Hohenwald W S	Well #2	0000304	.2500	M-carb	0
Hohenwald W S	Well #1	0000304	.8400	M-carb	0
Hornbeak U D	Wells #3	0000311	.0930	T-sand(conf)	0
Humbolt Utilities W D	4 wells	0000314	2.0400	T-sand(conf)	0
Huntingdon W D	2 deep wells	0000316	.5350	C-sand	0
Huntland W S	Well No. 1	0000317	.0530	M-carb	< 1
Huntland W S	Well No. 2	0000317	.0240	M-carb	1 - 10
Huntland W S	Well No. 3	0000317	.0340	M-carb	1 - 10
Iron City U D	City spring	0000320	.0340	M-carb	0
Jackson W S	North Well Field	0000299	9.5000	T-sand(uncf)	0
Jackson W S	South Well Field	0000299	1.7000	T-sand(uncf)	0
Jasper W D	Blue Springs	0000325	.6890	O-carb(fault)	< 1
Jefferson City Water & Sewer	Jarnigan Mi well	0000328	.7500	C/O-carb	> 10
Jefferson City Water & Sewer	Mossy Creek Sp	0000328	.7500	C/O-carb	1 - 10
Johnson City W D	Unicoi Springs	0000331	3.1800	C-rock	0
Jonesboro W D	Sinking Creek sp	0000338	.2200	C/O-carb	< 1
Kenton W D	2 wells	0000347	.1200	T-sand(conf)	0
Kentucky Lake Heights W S	2 wells	0000055	.0300	C-sand	0
Kingston W S	Swan Pond Sp	0000360	.1600	C/O-carb	< 1

Table 3. Public-supply ground-water systems in Tennessee with karst and aquifer classification—Continued

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
La Grange W D	3 deep wells	0000382	0.0390	T-sand(conf)	0
Lafayette W S	Spring Creek Sp	0000373	.6530	M-carb	< 1
Lakeland W S	Well	0000539	.0230	C-sand	0
Lauderdale County W S	4 wells	0000581	.6560	T-sand(conf)	0
Laurelbrook Sanitarium Sch	Well #1	0000178	.0340	P-sand	0
Leoma U D	Spring	0000399	.1050	M-carb	0
Lewands W S	Well #2	0000361	.0013	C/O-carb	< 1
Lewands W S	Well #1	0000361	.0013	C/O-carb	< 1
Lincoln County Board P U #1	Wells (Elora)	0000764	.1920	M-carb	< 1
Lincoln County Board P U #1	Wells (Taft)	0000764	.7680	M-carb	< 1
Lincoln Memorial University	Cudjo Cavern Sp	0000290	.1700	C/O-carb	1 - 10
Little Creek Sanitarium	Little Creek Sp	0000762	.0330	C/O-carb	1 - 10
Loon Bay Property Owners Assoc	Well #1	0000083	.0020	M-carb	< 1
Loon Bay Property Owners Assoc	Well #2	0000083	.0020	M-carb	< 1
Loretto W D	Stillhouse Sp	0000408	.1900	M-carb	0
Loudon Utility Board	Roberson Spring	0000409	.1800	C/O-carb	1 - 10
Luttrell-Blaine-Corryton U D	Phipps Spring	0000415	.0245	C/O-carb	< 1
Luttrell-Blaine-Corryton U D	Booker Spring	0000415	.1225	C/O-carb	< 1
Luttrell-Blaine-Corryton U D	Big Spring	0000415	.0980	C/O-carb	1 - 10
Martin W D	Wells	0000435	1.4370	T-sand(conf)	0
Mason W D	2 deep wells	0000440	.1510	T-sand(conf)	0
Maury City W D	2 wells	0000441	.0930	T-sand(conf)	0
Maynardville W D	Lay Spring	0000442	.1350	C/O-carb	< 1
Maynardville W D	Davis Spring	0000442	.1350	C/O-carb	1 - 10
McEwen W D	Well #2	0000420	.1100	M-carb	< 1
McEwen W D	Well #1	0000420	.1100	M-carb	< 1
McKenzie W D	Wells	0000421	.7000	T-sand(conf)	0
McClemoresville W D	2 wells	0000422	.0390	T-sand(conf)	0
Medina W D	2 wells	0000445	.0730	T-sand(conf)	0
Mercer U D	Well	0000453	.0150	T-sand(conf)	0
Memphis Light, Gas and Water	Lng Well Field	0000450	.4090	T-sand(conf)	0
Memphis Light, Gas and Water	Morton Station	0000450	12.5000	T-sand(conf)	0
Memphis Light, Gas and Water	McCord Station	0000450	18.0080	T-sand(conf)	0
Memphis Light, Gas and Water	Shaw Station	0000450	5.4180	T-sand(conf)	0
Memphis Light, Gas and Water	Mallory Station	0000450	19.6460	T-sand(conf)	0
Memphis Light, Gas and Water	Sheahan Station	0000450	20.9460	T-sand(conf)	0
Memphis Light, Gas and Water	Allen Station	0000450	24.0640	T-sand(conf)	0
Memphis Light, Gas and Water	Litchtermann Sta.	0000450	22.9180	T-sand(conf)	0
Memphis Light, Gas and Water	Davis Station	0000450	11.3090	T-sand(conf)	0
Memphis Light, Gas and Water	Palmer Station	0000450	3.9550	T-sand(conf)	0
Michie W D	Wells	0000454	.1970	C-sand	0
Middleton W D	Well	0000455	.0760	C-sand	0
Middleton W D	Well	0000455	.0760	C-sand	0
Milan Arsenal #1	Wells	0000798	.3350	T-sand(conf)	0
Milan W D	3 wells	0000458	1.2300	T-sand(conf)	0
Millington W D	Wells	0000463	1.0800	T-sand(conf)	0
Mooresburg U D	Spring	0000472	.0700	C/O-carb	< 1
Morristown W D	Wells	0000474	.0002	C/O-carb	1 - 10
Morristown W D	Havley Spring	0000474	1.7300	C/O-carb	1 - 10
Moscow W D	Well	0000477	.0750	T-sand(uncf)	0
Mount Pleasant W S #1	Sps-Sandy Hook	0000488	.8930	M-carb	0

Table 3. Public-supply ground-water systems in Tennessee with karst and aquifer classification—Continued

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
Mountain City W D	Silverlake Sp	0000479	0.8190	C-rock	< 1
Mountain City W D	Rambo Spring	0000479	.3140	C-rock	< 1
Munford W D	4 wells	0000490	.2190	T-sand(conf)	0
Munford W D	3 wells	0000490	.2190	T-sand(conf)	0
Murfreesboro W D	Spring & well	0000491	.3300	O-carb	< 1
Naval Air Station, Memphis	5 deep wells	0000468	1.8900	T-sand(conf)	0
Newbern W D	3 deep wells	0000496	.9250	T-sand(conf)	0
Newport Resort W S	Well	0000657	.0070	C/O-carb	< 1
Nolensville U D	Wells	0000511	.1710	O-carb	< 1
Norris Water Commission	Clear Creek Sp	0000513	.3390	C/O-carb	< 1
North Anderson County U D	Shetterly Sp	0000514	.2400	C/O-carb	< 1
North East Henry County U D	3 deep wells	0000540	.2630	C-sand	0
North Stewart U D	Wells	0000195	.1860	M-carb	< 1
Northwest Dyersburg U D	Wells	0000518	.2540	T-sand(conf)	0
Oakland W D	3 wells	0000521	.1640	T-sand(conf)	0
Obion W D	2 wells	0000524	.2090	T-sand(conf)	0
Ocoee W S	Wildwood Spring	0000525	.8630	C/O-carb	< 1
Oliver Springs Water Board	Bacon Spring	0000523	.5100	C/O-carb	< 1
Oneida W&S Comm.	Verdun Well	0000532	.0800	P-sand	0
Orman's Trailer Park	Well	0000029	.0172	T-sand(conf)	0
Orme W S	Spring #1	0000535	.0370	P-sand	< 1
Orme W S	Spring #2	0000535	.0370	P-sand	< 1
Paris Board of Public Utility	4 wells	0000536	2.1100	T-sand(uncf)	0
Pikeville W S	4 wells	0000551	.4100	O-carb(fault)	< 1
Piney U D	Piney Spring	0000410	.2310	C/O-carb	1 - 10
Plateau U D	Well #2	0000729	.4080	P-sand	0
Poplar Grove U D	2 deep wells	0000201	.3170	T-sand(conf)	0
Poplar Grove U D	2 deep wells	0000201	.3170	T-sand(conf)	0
Puryear W S	2 deep wells	0000568	.0760	T-sand(uncf)	0
Ramer W D	Deep well	0000571	.0500	C-sand	0
Red Boiling Springs W S	McClellan Sp	0000572	.2820	M-carb	< 1
Red Boiling Springs W S	Sabens Springs	0000572	.2980	M-carb	< 1
Reelfoot U D	2 wells	0000575	.1440	Al	0
Ridgely W S	2 wells	0000579	.3160	Al	0
Ripley W S	4 wells	0000580	1.8700	T-sand(conf)	0
Riveria U D Cherokee Landing	Well	0000797	.2100	T-sand(uncf)	0
Roan Mountain U D	Well #2	0000584	.0200	C-rock	0
Roan Mountain U D	Well #4	0000584	.0200	C-rock	0
Roan Mountain U D	Well #1	0000584	.0100	C-rock	0
Roan Mountain U D	Well #5	0000584	.0500	C-rock	0
Rogers Springs HOA	Well	0000452	.0190	C-sand	0
Rossville W S	2 wells	0000597	.1100	T-sand(uncf)	0
Rutherford W S	2 deep wells	0000599	.1290	T-sand(conf)	0
Sale Creek U D	2 wells	0000605	.2040	C/O-carb	< 1
Saltillo U D	2 deep wells	0000606	.0760	Al(C-sand)	0
Sardis W S	Wells	0000609	.0490	C-sand	0
Savannah Public U D	7 wells	0000611	1.7300	Al(C-sand)	0
Savannah Valley U D	Wells	0000613	.8290	C/O-carb	< 1
Scotts Hill W S	4 deep wells	0000614	.2490	C-sand	0
Selmer W S	Wells	0000615	4.4700	C-sand	0
Sequatchie Water Works	Blowing Cave Sp	0000616	.0850	O-carb(fault)	< 1

Table 3. Public supply ground-water systems in Tennessee with karst and aquifer classification—Continued

Name of public-supply system	Source of water	PWSID	Ground-water withdrawal, in 1990 (Mgal/d)	Principal aquifer	Karst classification at site, in percent sinkholes
Sharon W S	Wells	0000627	0.1350	T-sand(conf)	0
Sneedville U D	Fall Branch Sp	0000640	.1100	C/O-carb	1 - 10
Soddy-Daisy, Falling U D	Soddy well #1	0000169	1.0900	C/O-carb	< 1
Somerville W S	5 wells	0000641	.6090	T-sand(uncf)	0
South Fulton W S	Deep wells	0000648	.5260	T-sand(conf)	0
Spring City W S	Spring	0000656	.2000	C/O-carb	< 1
Spring Creek U D	3 wells	0000665	.2900	T-sand(uncf)	0
St. Joseph W S	Spring	0000604	.0900	M-carb	0
Stanton W S	2 wells	0000672	.1300	T-sand(conf)	0
Summertown W S	2 wells	0000676	.1100	M-carb	0
Surgoinsville U D	Jennings Spring	0000682	.1300	C/O-carb	1 - 10
Sweetwater Utility Board	Cannon Spring	0000687	1.1000	C/O-carb	1 - 10
Tellico Plains W D	Wells	0000693	.3620	C/O-carb	1 - 10
Tennessee Ridge W S	2 wells	0000698	.1860	M-carb	< 1
The Farm W S	Well	0000678	.0100	M-carb	0
The Farm W S	Well	0000678	.0100	M-carb	0
Tiptonville W S	3 wells	0000700	.5180	Al	0
Toone W S	3 wells	0000704	.1910	T-sand(uncf)	0
Tracy City W S	Mine sp #2	0000706	.3110	P-sand	0
Tracy City W S	Well field	0000706	.0030	P-sand	0
Tracy City W S	Mine spring #1	0000706	.0030	P-sand	0
Trenton W S	3 wells	0000707	.5950	Al	0
Trezevant W S	2 wells	0000710	.0990	T-sand(conf)	0
Trimble W S	2 wells	0000711	.1060	T-sand(conf)	0
Troy W S	2 wells	0000712	.2130	T-sand(conf)	0
Union City W D	Wells	0000720	2.9630	T-sand(conf)	0
Union Fork-Bakewell U D	3 wells	0000037	.1870	C/O-carb	< 1
Vanleer W S	Col Caverns Sp	0000724	.1370	M-carb	1 - 10
Walden Ridge U D	Well	0000635	.5760	C/O-carb	< 1
Wartrace W S	Spring	0000730	.4200	M-carb	0
Watertown W S	Well #2	0000732	.0640	O-carb	< 1
Watertown W S	Well #3	0000732	.0640	O-carb	< 1
Watertown W S	Well #1	0000732	.0640	O-carb	< 1
Watts Bar U D	Wells	0000872	.3430	C/O-carb	< 1
Waverly W S	Wells	0000733	.6260	M-carb	0
Western State Hospital	Wells	0000064	.1520	T-sand(uncf)	0
White Pine W S	Well #1	0000746	.1200	C/O-carb	< 1
White Pine W S	Well #2	0000746	.0600	C/O-carb	< 1
Whiteville W D	3 wells	0000748	.1460	T-sand(uncf)	0
Woodbury W S	Spring	0000756	.3320	O-carb	< 1
Woodrun Lakes Subdivision	Well	0000446	.0080	C-sand	0
Yost Trailer Park	Well #1	0000663	.0020	C/O-carb	1 - 10

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county

[Principal aquifer designations are: Al, Alluvial, underlain by Tertiary and Cretaceous sand (unconfined or confined); T-sand(conf), Tertiary sand (confined), underlain by Cretaceous sand (confined); T-sand(uncf), Tertiary sand (unconfined), underlain by Cretaceous sand (confined); C-sand, Cretaceous sand (unconfined); M-Carb, Mississippian carbonate; O-carb, Ordovician carbonate; P-sand, Pennsylvanian sandstone; O-carb(fault), Ordovician carbonate (faulted); C/O-carb, Cambrian-Ordovician carbonate; C-rock, Crystalline rock; <, less than; >, greater than]

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Anderson				
Boeing Tennessee Inc.	C/O-carb	< 1	36.006	84.228
EG&G Ortec	C/O-carb	0	36.003	84.239
Home-Crest Corp.	C/O-carb	1 - 10	36.150	84.150
Hydraulic Repair and Supply	C/O-carb	< 1	36.225	84.157
Modine Manufacturing Company	C/O-carb	0	36.090	84.112
Quadrex HPS Inc. Recycle Ctr.	C/O-carb	0	36.016	84.237
Tennelec	C/O-carb	< 1	36.030	84.230
TVA, Bull Run Fossil Plant	C/O-carb	< 1	36.022	84.157
U.S. Department of Energy, Y-12 Plant	C/O-carb	< 1	35.986	84.257
Bedford				
Calsonic Manufacturing	O-carb	1 - 10	35.500	86.457
Calsonic Manufacturing	O-carb	1 - 10	35.500	86.456
Empire Berol USA	O-carb	1 - 10	35.478	86.475
Modern Mold & Tool Industries	O-carb	< 1	35.469	86.489
National Pen Corp., Tenn. Division	O-carb	< 1	35.470	86.488
Stanley Tools Division	O-carb	< 1	35.494	86.401
Blount				
Allied-Signal Inc., Bendix	C/O-carb	1 - 10	35.759	84.008
Aluminum Company of America	C/O-carb	1 - 10	35.792	83.987
Aluminum Company of America N	C/O-carb	< 1	35.812	83.970
Aluminum Company of America S	C/O-carb	1 - 10	35.776	83.972
Gilded Mirrors	C/O-carb	1 - 10	35.669	84.091
Vertiflite	C/O-carb	1 - 10	35.763	84.024
Bradley				
American Hardwood Frames	C/O-carb	< 1	35.183	84.827
Duracell, USA	C/O-carb	1 - 10	35.203	84.855
Olin Corporation	C/O-carb	< 1	35.307	84.782
Scholl Inc.	C/O-carb	< 1	35.188	84.815
Westvaco-Virginia Folding Box	C/O-carb	< 1	35.177	84.831
Carroll				
Tennesee Metal Specialty	C-sand	0	36.020	88.373
Carter				
Jarl Extrusions Division	C/O-carb	1 - 10	36.314	82.200
Mapes Piano String Company	C/O-carb	1 - 10	36.351	82.217
North American Rayon Corp.	C/O-carb	1 - 10	36.352	82.238
Snap-On Tools Corp.	C/O-carb	1 - 10	36.314	82.200
Tri-City Plating Company Inc.	C/O-carb	1 - 10	36.354	82.222
Cheatham				
State Industries	M-carb	0	36.275	87.070
Timco Inc.	O-carb	0	36.233	87.023
Cocke				
Eastern Plating	C/O-carb	< 1	35.982	83.215
Flura Corp.	C/O-carb	1 - 10	35.967	83.132
GLI Inc.	C/O-carb	< 1	35.982	83.214
Great Lakes Chemicals	C/O-carb	< 1	35.982	83.214

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Coffee				
Arnold Engineering Development	M-carb	< 1	35.380	86.048
Batesville Casket Company	M-carb	0	35.501	86.069
M-Tek Inc.	M-carb	< 1	35.445	86.026
Middle Tennessee Fiberglass	M-carb	0	35.360	86.193
PCA Apparel Industries	M-carb	< 1	35.473	86.087
Crockett				
ABB Power T&D Company	T-sand(conf)	0	35.780	89.129
Volunteer Circuits	T-sand(conf)	0	35.733	89.071
Davidson				
A.A.A. Plating	O-carb	< 1	36.209	86.748
Advanced Plating	O-carb	< 1	36.205	86.748
Aladdin Industries	O-carb	< 1	36.134	86.724
Amoco Oil	O-carb	< 1	36.166	86.849
Amtrol Inc.	O-carb	< 1	36.013	86.601
Anchor Wire Corp.	O-carb	< 1	36.329	86.712
Arcata Graphics/Baird Plant 2	O-carb	< 1	36.100	86.762
Arcata Graphics/Baird	O-carb	< 1	36.112	86.769
Armstrong Rubber	O-carb	< 1	36.292	86.698
Ashland Petroleum	O-carb	1 - 10	36.170	86.775
AT&T Microelectronics	O-carb	< 1	36.136	86.748
Beaman Toyota-Pontiac	O-carb	< 1	36.156	86.791
Boyles Galvanizing Company	O-carb	< 1	36.151	86.823
Bruce Hardwood	O-carb	< 1	36.164	86.847
Cargill Steel & Wire	O-carb	1 - 10	36.183	86.778
Citgo Petroleum	O-carb	1 - 10	36.155	86.771
Conoco Terminal	O-carb	< 1	36.169	86.863
Dodge Cleaners #5	O-carb	< 1	36.075	86.920
E.I. Du Pont De Nemours	O-carb	< 1	36.272	86.657
Ford Nashville	O-carb	< 1	36.182	86.873
General Adhesive	O-carb	< 1	36.169	86.860
Gulf/BP Oil	O-carb	< 1	36.164	86.850
Koch Materials Company	O-carb	< 1	36.109	86.768
Lojac Enterprises	O-carb	< 1	36.183	86.623
Malone & Hyde Inc.	O-carb	< 1	36.320	86.707
Marathon Petroleum	O-carb	< 1	36.185	86.834
Matlack Inc.	O-carb	< 1	36.143	86.716
Nashville Bridge Company	O-carb	1 - 10	36.165	86.773
Nashville Graphic Finishers	O-carb	< 1	36.117	86.757
Nashville Wire Products	O-carb	1 - 10	36.157	86.758
Ouimet Corp.	O-carb	< 1	36.108	86.757
Park View Medical Center	O-carb	< 1	36.155	86.811
Parts Washers of Tennessee	O-carb	< 1	36.140	86.742
Parts Washers of Tennessee	O-carb	< 1	36.140	86.742
Peterbilt Motors Company	O-carb	< 1	36.283	86.696
Porcelain Industries	O-carb	< 1	36.159	86.811
Rand McNally	O-carb	< 1	36.110	86.756
Rhone Poulenc Basic Chemicals	O-carb	< 1	36.164	86.844
Scoles Cadillac	O-carb	< 1	36.187	86.800

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Davidson—Continued				
Service Paint and Coatings	O-carb	< 1	36.178	86.631
Shell Oil	O-carb	< 1	36.167	86.851
Sinclair & Valentine Company	O-carb	1 - 10	86.757	36.161
Star Enterprise	O-carb	< 1	86.858	36.168
State of Tennessee Department of Transportation	O-carb	< 1	86.807	36.156
Stevens Aviation	O-carb	< 1	86.671	36.119
Stratos Boats Inc.	O-carb	< 1	86.656	36.267
Temtex Products	O-carb	< 1	86.835	36.153
Tennessee Department of Transportation	O-carb	< 1	86.807	36.156
Textron Aerostructures	O-carb	< 1	86.694	36.122
Tom Bannen Chevrolet	O-carb	< 1	86.682	36.309
Tom Bannen Chevrolet	O-carb	< 1	86.682	36.309
Triangle Refineries	O-carb	1 - 10	86.762	36.153
Tricil Environmental Services	O-carb	< 1	86.679	36.066
Warren Paint & Color Company	O-carb	< 1	86.777	36.135
Werthan Industries	O-carb	< 1	86.779	36.143
Whirlpool Corp., Lavergne Div.	O-carb	< 1	86.603	36.023
Whiteway Cleaners	O-carb	< 1	86.791	36.143
Decatur				
Kaddis Manufacturing Corp.	C-sand	< 1	88.134	35.650
Dickson				
Wabash Alloys	M-carb	< 1	87.344	36.044
Dyer				
Bekaert Dyersburg Steel Cord Company	T-sand(conf)	0	89.343	36.053
Heckethorn Mfg. Company	Al	0	89.414	36.034
Tokheim Corp.	T-sand(conf)	0	89.247	36.122
Trunkline Gas Company	T-sand(conf)	0	89.308	35.939
Fayette				
Alpha Resins Corp.	T-sand(uncf)	0	89.627	35.046
Glasteel Industrial Laminates	T-sand(uncf)	0	89.627	35.044
Glasteel, Tennessee Inc.	T-sand(uncf)	0	89.628	35.045
Ross Metals	T-sand(uncf)	0	89.548	35.049
Troxel Manufacturing	T-sand(uncf)	0	89.319	35.054
Gibson				
CECO Corp.	T-sand(conf)	0	88.760	35.893
EKCO/GLACO Inc.	T-sand(conf)	0	88.914	35.830
General Metal Products Inc.	T-sand(conf)	0	88.923	35.832
Milan Army Ammunition	T-sand(conf)	0	88.725	35.912
NCR Corp.-Media Products Div.	T-sand(conf)	0	88.924	35.838
Teledyne, W.F. Industries	T-sand(conf)	0	88.998	36.093
Wilson Sporting Goods	T-sand(conf)	0	88.905	35.828
Windsor Corporation	T-sand(conf)	0	88.760	35.882
Windsor Corporation	T-sand(conf)	0	88.995	36.067
Giles				
Fafnir Bearing	O-carb	< 1	87.044	35.179
Gabriel Division-Maremont Corp.	O-carb	< 1	87.058	35.210
Ganton Technologies	O-carb	< 1	87.049	35.213
Wolverine Tube	M-carb	< 1	86.844	34.998

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Greene				
Ball Zinc Products	C/O-carb	< 1	82.744	36.195
Dea-Mar Corp.	C/O-carb	1 - 10	82.832	36.176
Hurd Lock & Mfg. Company	C/O-carb	1 - 10	82.827	36.176
Lectro Chem Metal Finishing	C/O-carb	1 - 10	82.893	36.176
Phillips Consumer Electronics	C/O-carb	< 1	82.788	36.190
Phillips Consumer Electronics	C/O-carb	< 1	82.814	36.173
Plus Mark Inc.	C/O-carb	< 1	82.732	36.195
TRW Ross Gear Division	C/O-carb	1 - 10	82.788	36.190
Hamblen				
Camvac International	C/O-carb	> 10	83.385	36.169
Forenta	C/O-carb	1 - 10	83.325	36.206
Lea Industries	C/O-carb	1 - 10	83.308	36.205
Lear Siegler Seating Corp.	C/O-carb	1 - 10	83.320	36.202
Mahle Inc.	C/O-carb	1 - 10	83.215	36.249
NCR Corp. Systemedia Group	C/O-carb	1 - 10	83.207	36.248
Pioneer Plastics Corp.	C/O-carb	1 - 10	83.204	36.247
Shelby Williams Industries	C/O-carb	1 - 10	83.211	36.247
Triangle Pacific Corp. Plant 2	C/O-carb	1 - 10	83.283	36.217
Universal Bedroom Furniture	C/O-carb	1 - 10	83.202	36.252
W.R. Grace & Company	C/O-carb	> 10	83.388	36.169
Hamilton				
ABB Combustion Engineering Sys.	C/O-carb	< 1	85.321	35.042
ABB Combustion Engineering Sys.	C/O-carb	< 1	85.321	35.042
Accu-Cast Inc.	C/O-carb	1 - 10	85.251	35.062
Ahlstrom Filtration	C/O-carb	< 1	85.315	35.001
American Mfg. Company	C/O-carb	1 - 10	85.256	35.074
American Printing Ink	C/O-carb	< 1	85.233	35.138
Amoco Oil Company	C/O-carb	1 - 10	85.193	35.069
BASF Corp., Fibers Division	C/O-carb	1 - 10	85.196	35.048
Brown Galvanizing Corp.	C/O-carb	< 1	85.245	35.095
Cannon/Cumberland Corp.	C/O-carb	1 - 10	85.285	35.054
Chattanooga Corp.	C/O-carb	< 1	85.304	35.098
Chattem Chemicals	C/O-carb	< 1	85.332	35.012
Cherokee Warehouse Inc.	C/O-carb	1 - 10	85.308	35.033
Citgo Petroleum Corp.	C/O-carb	1 - 10	85.194	35.068
Coors Electronic Package	C/O-carb	< 1	85.316	35.062
E.I. Du Pont De Nemours	C/O-carb	< 1	85.245	35.111
Gearrin Enterprises	C/O-carb	1 - 10	85.295	34.986
Gilman Company	C/O-carb	< 1	85.323	35.050
Industrial Plating Company	C/O-carb	1 - 10	85.257	35.074
Komatsu Dresser Company	C/O-carb	< 1	85.331	35.092
Olan Mills Incorporated	C/O-carb	1 - 10	85.189	35.053
Royal Incorporated	C/O-carb	< 1	85.266	35.080
Shell Oil Company	C/O-carb	1 - 10	85.193	35.070
Southern Centrifugal Inc.	C/O-carb	< 1	85.246	35.094
Southern Railway, Citico Shop	C/O-carb	1 - 10	85.282	35.048
Star Enterprise	C/O-carb	< 1	85.323	35.059
TVA, Sequoyah Nuclear Plant	C/O-carb	< 1	85.091	35.226
U.S. Pipe & Foundry, Pipe	C/O-carb	1 - 10	85.321	35.027
U.S. Pipe & Foundry, Valve	C/O-carb	< 1	85.323	35.024
Velsicol Chemical Corp.	C/O-carb	< 1	85.315	34.994
Wheland Foundry	C/O-carb	1 - 10	85.319	35.025

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Hardeman				
Armira Inc.	C-sand	0	88.976	35.269
Armira Inc.	C-sand	0	88.976	35.269
Dover Elevator Systems	C-sand	0	88.890	35.048
Harman Automotive	C-sand	0	8.986	35.266
Kellogg & Associates	C-sand	0	88.976	35.269
Kilgore Corporation	T-sand(uncf)	0	88.950	35.352
Hawkins				
C.H. Geiger & Sons	C/O-carb	< 1	82.824	36.458
Holliston Mills	C/O-carb	< 1	82.768	36.511
Holston Army Ammunition Plant	C/O-carb	< 1	82.628	36.533
I.P.C. Dennison	C/O-carb	1 - 10	83.017	36.401
TVA, John Sevier Fossil Plant	C/O-carb	< 1	82.967	36.375
Haywood				
American Air Filter Company	T-sand(conf)	0	89.243	35.603
Cub Cadet Corp.	T-sand(conf)	0	89.236	35.599
Pure Industries Brownsville	T-sand(conf)	0	89.241	35.598
Henderson				
Anchor Swan Div., Harvard Indus.	C-sand	0	88.390	35.703
Century Electric Inc.	C-sand	0	88.377	35.670
Columbus McKinnon	C-sand	0	88.415	35.624
Johnson Controls Inc.	C-sand	0	88.379	35.664
Outboard Marine Corp.	C-sand	0	88.385	35.698
Henry				
Cavalier Metal Corp.	T-sand(uncf)	0	88.506	36.151
Emerson Electric	C-sand	0	88.308	36.276
Mark I Molded Plastics of Tennessee	T-sand(uncf)	0	88.414	36.201
Mohon International Inc.	T-sand(uncf)	0	88.325	36.325
Republic Builders Products	T-sand(uncf)	0	88.506	36.153
Hickman				
Turney Center Indus. Prison	M-carb	< 1	87.688	35.832
Universal Fasteners	O-carb	< 1	87.471	35.771
Houston				
CSX Transportation Inc.	M-carb	< 1	87.693	36.318
Humphreys				
E.I. Du Pont De Nemours	M-carb	0	87.982	36.043
TVA, Johnsonville Fossil Plant	M-carb	0	87.986	36.028
Jackson				
Nielsen & Bainbridge	O-carb	< 1	85.639	36.382
Jefferson				
Bayliner Marine	C/O-carb	1 - 10	83.425	36.033
Phillips Electronics	C/O-carb	> 10	83.475	36.137
Rittenhouse Inc. Tennessee	C/O-carb	> 10	83.478	36.131
Knox				
Allied Products, Div. Carrier	C/O-carb	< 1	83.830	35.956
Allied-Signal/Bendix	C/O-carb	< 1	84.009	35.958
Amoco Oil	C/O-carb	< 1	84.004	35.956
Athletic Helmet Inc.	C/O-carb	< 1	83.838	35.949
BP Oil, Gulf Oil Div., Knoxville	C/O-carb	< 1	83.993	35.966

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Knox—Continued				
Citgo Petroleum	C/O-carb	< 1	35.960	84.000
Clayton Nissan	C/O-carb	1 - 10	36.001	83.973
Conoco Inc.-Knoxville Terminal	C/O-carb	< 1	35.962	83.994
CSX Transportation	C/O-carb	< 1	35.946	83.932
Cummins Cumberland	C/O-carb	< 1	36.009	83.875
Dixie Barrel & Drum	C/O-carb	< 1	35.956	83.909
Exxon Company, Chattanooga Term.	C/O-carb	< 1	35.962	83.999
Exxon Company, Knoxville Term.	C/O-carb	< 1	35.961	83.999
Finclair Corp.	C/O-carb	< 1	35.959	84.014
Florida Steel, Knoxville	C/O-carb	< 1	35.975	83.959
Franks Executive Cleaner	C/O-carb	< 1	35.930	84.027
Holston Glass	C/O-carb	< 1	35.958	83.911
IT Corporation	C/O-carb	< 1	35.954	84.011
Karns Cleaners	C/O-carb	1 - 10	35.979	84.117
Marathon Petroleum	C/O-carb	< 1	35.962	84.001
Modine Manufacturing Company	C/O-carb	< 1	35.942	83.838
Plasti-Line Inc.	C/O-carb	< 1	36.060	83.980
Robertshaw, Tennessee Div.-K	C/O-carb	< 1	35.952	83.941
Rohm and Hass	C/O-carb	< 1	35.963	83.938
Sea Ray Boats Inc. of Brunswick	C/O-carb	< 1	35.947	83.844
Shell Oil	C/O-carb	< 1	35.962	83.997
Southern Railway Coster Shop	C/O-carb	< 1	35.986	83.945
Stowers Machinery Corp.	C/O-carb	1 - 10	36.025	83.852
University of Tennessee	C/O-carb	< 1	35.958	83.925
Unocal Knoxville	C/O-carb	< 1	35.879	84.240
Vulcan Materials	C/O-carb	< 1	35.906	83.955
Lake				
Helena Chemicals Company	Al	0	36.263	89.492
Lauderdale				
American Greeting Corp.	T-sand(conf)	0	35.774	89.520
Anderson Hickey Company	T-sand(conf)	0	35.887	89.403
Correctional Enterprises	T-sand(conf)	0	35.663	89.756
Harvard Industries Diecasting	T-sand(conf)	0	35.719	89.554
SR of Tennessee	T-sand(conf)	0	35.783	89.513
Tennessee Electroplating Company	T-sand(conf)	0	35.720	89.549
Lawrence				
Graphic Packaging Company	M-carb	0	35.271	87.329
Modine Manufacturing Company	M-carb	0	35.269	87.327
Murray Ohio Mfg. Company	M-carb	0	35.262	87.327
Lewis				
Boston Industrial Products	M-carb	0	35.559	87.533
Lincoln				
Blaylocks Circuits	M-carb	< 1	34.995	86.565
Amana Refrigeration	O-carb	< 1	35.144	86.581
Cadwell Chemical Coating	O-carb	< 1	35.118	86.571
Copperweld Southern	O-carb	< 1	35.167	86.567

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Loudon				
A.E. Staley Mfg. Company Loudon	C/O-carb	1 - 10	35.742	84.327
Maremont Corp.	C/O-carb	1 - 10	35.742	84.341
Quazite Recycle Center Inc.	C/O-carb	< 1	35.785	84.267
Viskase Corp.	C/O-carb	1 - 10	35.743	84.327
Yale Security	C/O-carb	< 1	35.786	84.265
McMinn				
American Electric	C/O-carb	< 1	35.444	84.628
Athens Furniture	C/O-carb	< 1	35.451	84.598
Athens Furniture & Bed	C/O-carb	< 1	35.442	84.613
Bowater Inc., Southern Division	C/O-carb	1 - 10	35.296	84.758
Davidson Interior Trim	C/O-carb	< 1	35.468	84.601
GSX	C/O-carb	< 1	35.460	84.578
WCI Athens Products	C/O-carb	< 1	35.459	84.569
McNairy				
Aqua Glass Corp.	C-sand	0	35.256	88.390
General Electric	C-sand	0	35.175	88.583
Madison				
Devilbiss Company	Al	0	35.638	88.905
Bruce Hardwood Floors	T-sand(uncf)	0	35.621	88.838
Citiplate Inc.	T-sand(uncf)	0	35.606	88.796
Consolidated Aluminum Corp.	T-sand(uncf)	0	35.638	88.799
Florida Steel	T-sand(uncf)	0	35.738	88.853
James River Corp.	T-sand(uncf)	0	35.632	88.907
JT Baker Inc.	T-sand(uncf)	0	35.635	88.908
Touchstone Inc.	T-sand(uncf)	0	35.619	88.835
Marion				
Lodge Manufacturing	O-carb(fault)	< 1	35.011	85.703
TVA, Nickajack Hydro Plant	O-carb(fault)	< 1	35.003	85.621
Marshall				
Cosmolab	O-carb	< 1	35.427	86.760
Inter-City Products	O-carb	< 1	35.459	86.801
Ken-Koat of Tennessee	O-carb	< 1	35.428	86.758
Ken-Koat Plant 2	O-carb	< 1	35.433	86.765
Kantus Corp.	O-carb	< 1	35.439	86.757
Teledyne Monarch Rubber	O-carb	< 1	35.422	86.751
Teledyne Monarch Rubber	O-carb	< 1	35.422	86.751
Teledyne of Lewisburg	O-carb	< 1	35.435	86.768
Tenn. Technical Coating Corp.	O-carb	< 1	35.437	86.772
Maury				
General Electric Company	O-carb	< 1	35.631	87.071
ICI Americas Inc.	O-carb	< 1	35.536	87.246
Monsanto Chemical Company	O-carb	< 1	35.663	87.118
Rhone-Poulenc Ag Company	O-carb	< 1	35.510	87.191
Saturn Corporation	O-carb	< 1	35.739	86.960
Texas Eastern, Mt. Pleasant Sta.	O-carb	< 1	35.540	87.199
Monroe				
Langdale Forest Products	C/O-carb	1 - 10	35.589	84.468
National Seating Company	C/O-carb	< 1	35.602	84.250
TRW Koyo Steering Systems	C/O-carb	< 1	35.592	84.242

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Montgomery				
101st Airborne Division	M-carb	> 10	36.621	87.413
Arcata Graphics/Baird Ward	M-carb	> 10	36.602	87.260
International Label Co.	M-carb	> 10	36.586	87.268
Trane Company Div. of Am. Stan.	M-carb	> 10	36.583	87.292
Obion				
Bryan Custom Plastics	T-sand(conf)	0	36.205	89.013
Goodyear Tire and Rubber	T-sand(conf)	0	36.452	89.062
Nanneys Body & Hydraulic Equipment	T-sand(conf)	0	36.483	89.112
Sta-Rite Ind.	T-sand(conf)	0	36.437	89.057
Thomas Plating	T-sand(conf)	0	36.500	88.874
Polk				
Tennessee Chemical Company	C-rock	0	35.000	84.381
Putnam				
Delbar Products	M-carb	1 - 10	36.141	85.524
Duriron Company Inc. Valve	M-carb	1 - 10	36.140	85.532
Fleetguard Inc.	M-carb	1 - 10	36.132	85.483
Teledyne Still-Man	M-carb	> 10	36.186	85.482
Rhea				
La-Z-Boy Tennessee	C/O-carb	< 1	35.521	85.002
Tennessee Valley Performance Prod.	C/O-carb	< 1	35.524	85.002
TVA, Watts Bar Hydro	C/O-carb	< 1	35.611	84.782
TVA, Watts Bar Nuclear Plant	C/O-carb	< 1	35.605	84.782
TVA, Watts Bar Central Maint.	C/O-carb	< 1	35.606	84.783
Roane				
Diversified Scientific Service	C/O-carb	< 1	35.875	84.440
IT Corp., Oak Ridge Laboratory	C/O-carb	< 1	35.913	84.382
TVA, Kingston Fossil Plant	C/O-carb	< 1	35.898	84.519
U.S. Department of Energy, K-25 Site	C/O-carb	0	35.935	84.395
U.S. Department of Energy, ORNL	C/O-carb	< 1	35.927	84.318
U.S. Department of Energy, X-10 Facilities	C/O-carb	< 1	35.928	84.312
Robertson				
CEI Co. Ltd.	M-carb	< 1	36.494	86.863
Grace and Wylie Fabrication	M-carb	< 1	36.500	86.877
Holly Replacement Parts Div.	M-carb	< 1	36.501	86.872
UNARCO Materials Storage	M-carb	< 1	36.500	86.879
Rutherford				
Better-Bilt Aluminum Prod.	O-carb	< 1	36.002	86.498
Chromalox Div., Emerson Elec.	O-carb	1 - 10	35.854	86.398
Cumberland-Swan	O-carb	< 1	36.000	86.501
Cummings Incorporated	O-carb	1 - 10	35.879	86.425
Ecovar Inc.	O-carb	< 1	35.992	86.596
General Electric Company	O-carb	1 - 10	35.881	86.426
Greer Smyrna Div. of Everlock	O-carb	< 1	35.978	86.508
Javelin Boats	O-carb	1 - 10	35.800	86.386
Nissan Motor Mfg. Corp.	O-carb	1 - 10	35.967	86.486
Paramount Packaging Corp.	O-carb	< 1	35.829	86.396
Paulo Products Company	O-carb	< 1	35.826	86.403
Quality Industries Inc.	O-carb	< 1	36.008	86.599

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Rutherford—Continued				
Samsonite Furniture Company	O-carb	< 1	35.826	86.399
Spaulding Composites Company	O-carb	< 1	35.997	86.498
Texas Eastern-Gladville Sta.	O-carb	< 1	36.002	86.497
Thompson Machinery	O-carb	< 1	36.008	86.605
Scott				
Fruehauf Trailer Corp.	P-sand	0	36.413	84.515
Sequatchie				
C&D Charter Power Systems	O-carb(fault)	< 1	35.394	85.374
Sevier				
Harman Automotive	C/O-carb	< 1	35.869	83.540
Shelby				
American Commercial Liq. Term.	Al	0	35.124	90.074
Apex Oil Company	Al	0	35.112	90.077
Ashland Chemicals	Al	0	35.085	90.115
Chemtech Industries	Al	0	35.081	90.125
Croda Inks	Al	0	35.091	90.112
Dixico Inc.	Al	0	35.107	90.073
ETI Tank Cleaning	Al	0	35.180	90.030
Exxon Company USA	Al	0	35.114	90.081
Fleet Transport Company	Al	0	35.100	90.104
Great Dane Trailers	Al	0	35.107	90.091
Jehl Cooperage Company	Al	0	35.126	90.062
Kimberly-Clark Corp.	Al	0	35.183	90.042
Lilly Industrial Coatings	Al	0	35.083	90.120
Mapco Petroleum	Al	0	35.086	90.077
Marco Commercial Products	Al	0	35.117	90.067
Matlack Inc.	Al	0	35.100	90.108
Paulo Products Company	Al	0	35.094	90.110
Presidents Island Steel & Wire	Al	0	35.108	90.089
Sonoco Products Company	Al	0	35.086	90.122
St. Jude Children's Hospital	Al	0	35.153	90.043
Technology Lab. International	Al	0	35.131	90.055
TVA, Allen Fossil Plant	Al	0	35.076	90.149
Unocal Memphis Terminal	Al	0	35.117	90.075
Carrier Air Condition	T-sand(uncf)	0	35.042	89.690
Aircraft Converters	T-sand(conf)	0	35.129	90.051
Baptist Memorial Hospital	T-sand(conf)	0	35.141	90.031
Bryce Corp.	T-sand(conf)	0	35.040	89.913
Buckman Laboratories	T-sand(conf)	0	35.172	89.994
Chuck Hutton Chevrolet	T-sand(conf)	0	35.082	89.894
Ciba-Geigy Corp.	T-sand(conf)	0	35.052	90.046
Cleo Inc.	T-sand(conf)	0	35.048	89.927
Courtesy Honda	T-sand(conf)	0	35.074	89.879
CTC Industrial Serv.	T-sand(conf)	0	35.095	90.052
D & W Plating Company	T-sand(conf)	0	35.044	89.935
Defense Depot Memphis	T-sand(conf)	0	35.086	89.997
Diesel Recno Company	T-sand(conf)	0	35.155	89.968
Dow Corning Wright	T-sand(conf)	0	35.279	89.668

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Shelby—Continued				
E.I. Du Pont De Nemours	T-sand(conf)	0	35.271	89.976
Earth Industrial Waste Management	T-sand(conf)	0	35.272	89.941
Exxon Company	T-sand(conf)	0	35.072	89.908
Exxon Company #5-0037	T-sand(conf)	0	35.070	89.760
Flint Hydrostatics	T-sand(conf)	0	35.020	89.882
Fluid Power of Memphis	T-sand(conf)	0	35.048	89.936
Jordan Companies	T-sand(conf)	0	35.041	89.907
Jostens, Inc.	T-sand(conf)	0	35.049	89.791
Kirby Chevrolet	T-sand(conf)	0	35.138	90.035
Layne and Bowler	T-sand(conf)	0	35.173	89.989
Memphis Drum Service	T-sand(conf)	0	35.050	90.043
Memphis Publishing	T-sand(conf)	0	35.140	90.042
Memphis Shelby Airport Authority	T-sand(conf)	0	35.062	89.969
Mobile Water Technology	T-sand(conf)	0	35.089	89.987
Naval Air Station, Memphis	T-sand(conf)	0	35.347	89.873
Oakley-Keese Ford	T-sand(conf)	0	35.135	89.970
Osmose Wood Preserving Inc.	T-sand(conf)	0	35.278	89.945
Plough Inc.	T-sand(conf)	0	35.162	89.962
Plough Inc.	T-sand(conf)	0	35.162	89.961
Precision Hydrostatics	T-sand(conf)	0	35.040	89.970
Procter & Gamble Cellulose	T-sand(conf)	0	35.158	89.963
Production Finishes	T-sand(conf)	0	35.044	89.938
QO Chemicals Inc.	T-sand(conf)	0	35.174	89.947
Refined Metals Corp.	T-sand(conf)	0	35.086	90.073
Richards Medical Company	T-sand(conf)	0	35.062	90.018
River City Chrome	T-sand(conf)	0	35.140	90.039
Shelby County Board of Education	T-sand(conf)	0	35.048	89.806
Shirlo Inc.	T-sand(conf)	0	35.031	89.922
Shulton Inc.	T-sand(conf)	0	35.101	90.057
Taylor Forge International	T-sand(conf)	0	35.273	89.942
Terminix International	T-sand(conf)	0	35.107	89.869
Total Roadrunner Inc.	T-sand(conf)	0	35.042	89.910
United Paint Company	T-sand(conf)	0	35.087	90.049
VA Medical Center	T-sand(conf)	0	35.143	90.026
Velsicol Chemical	T-sand(conf)	0	35.163	89.963
Wall Chemical	T-sand(conf)	0	35.074	90.074
Smith				
Robertshaw Tennessee Division	O-carb	< 1	36.263	85.957
William L. Bonnell Company	O-carb	< 1	36.204	85.943
Stewart				
TVA, Cumberland Fossil Plant	M-carb	< 1	36.395	87.654
Sullivan				
A Cleaner World	C/O-carb	< 1	36.548	82.562
Aarberg Printing Inks	C/O-carb	1 - 10	36.546	82.588
Arcata Graphics/Kingsport	C/O-carb	1 - 10	36.553	82.565
Bristol Metals Inc.	C/O-carb	< 1	36.542	82.187
Columbus Electric	C/O-carb	< 1	36.424	82.301
Davidson Interior Trim	C/O-carb	< 1	36.533	82.314

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Sullivan—Continued				
Power Equipment	C/O-carb	< 1	36.472	82.545
Raytheon Company	C/O-carb	< 1	36.545	82.189
Sullivan County Department of Education	C/O-carb	< 1	36.529	82.387
Tennessee Eastman Company	C/O-carb	1 - 10	36.517	82.536
Tennessee Investment Casting	C/O-carb	1 - 10	36.564	82.257
Unisys Corporation	C/O-carb	1 - 10	36.524	82.271
Unisys Earhart Site	C/O-carb	< 1	36.534	82.263
Sumner				
Crown Coating of Tennessee	M-carb	< 1	36.596	86.519
Del Met of Tennessee	M-carb	< 1	36.603	86.527
Fleet Design	M-carb	< 1	36.576	86.516
ABC Technologies	O-carb	< 1	36.379	86.433
Bendix Automotive Systems	O-carb	1 - 10	36.381	86.478
Cresent Enterprises Inc.	O-carb	< 1	36.380	86.456
General Electric Company	O-carb	< 1	36.304	86.619
GF Furniture Systems Inc.	O-carb	< 1	36.383	86.427
Globe Business Furniture	O-carb	< 1	36.309	86.623
Hoeganaes Corporation	O-carb	< 1	36.380	86.428
R R Donnelley & Sons Company	O-carb	< 1	36.385	86.425
Rappahannock Wire Company	O-carb	< 1	36.385	86.422
TVA, Gallatin Fossil Plant	O-carb	< 1	36.315	86.402
Tipton				
Delfield Company	T-sand(conf)	0	35.540	89.650
ITW Paslode	T-sand(conf)	0	35.543	89.661
Kirsch Div. of Cooper Ind.	T-sand(conf)	0	35.540	89.652
Trousdale				
Feldkircher Wire Fabricating	O-carb	< 1	36.400	86.157
Mueller Brass Company	O-carb	< 1	36.401	86.157
Unicoi				
H S Automotive	C-rock	< 1	36.131	82.433
Union				
Marlock Inc.	C/O-carb	1 - 10	36.194	83.893
Warren				
Calsonic Yorozu Corp.	M-carb	< 1	35.625	85.890
Carrier Corp.	M-carb	< 1	35.613	85.904
Duromatic Products Corp.	M-carb	> 10	35.770	85.624
Oster, Div. of Sunbeam	M-carb	< 1	35.702	85.742
Washington				
Aerojet Ordnance	C/O-carb	< 1	36.255	82.523
Gordons Inc.	C/O-carb	< 1	36.310	82.365
Kawneer Commercial Windows	C/O-carb	< 1	36.353	82.365
Kennamental Inc.	C/O-carb	1 - 10	36.354	82.319
Mo-Flo Industries	C/O-carb	1 - 10	36.322	82.352
Snap-On Tools	C/O-carb	1 - 10	36.355	82.321
Wayne				
Lincoln Brass Works	M-carb	< 1	35.326	87.756

Table 5. Resource Conservation and Recovery Act sites of large-quantity waste generators in Tennessee with karst and principal aquifer classification, by county—Continued

County and site name	Principal aquifer	Karst classification at site, in percent sinkholes	Latitude, in decimal degrees	Longitude, in decimal degrees
Weakley				
Quality & Service Electroplate	T-sand(conf)	0	36.208	88.606
Ringier America Inc.	T-sand(conf)	0	36.260	88.662
White				
Mallory Timers Company	M-carb	1 - 10	35.943	85.482
Williamson				
Aeroquip Corp.	O-carb	< 1	35.921	86.857
CPS Corporation	O-carb	< 1	35.903	86.874
Essex Group Industrial Product	O-carb	< 1	35.893	86.871
Fashion Cleaners	O-carb	< 1	35.922	86.873
Fibertek Inc.	O-carb	< 1	35.899	86.882
General Smelting & Refinery	O-carb	< 1	35.800	86.663
Lasko Metal Products Inc.	O-carb	< 1	35.905	86.869

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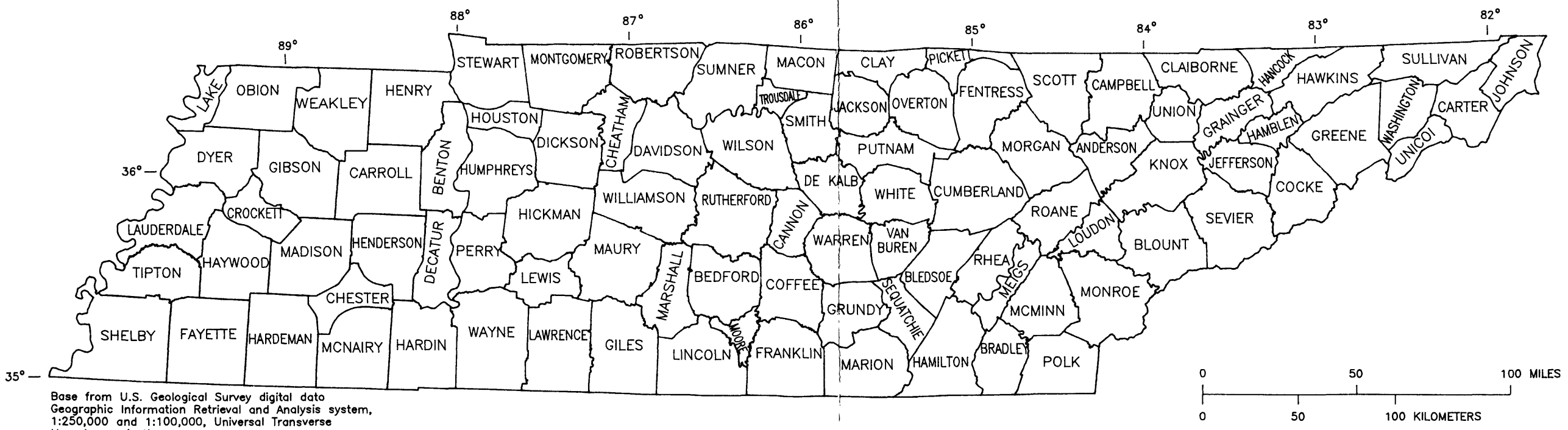
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION,
DIVISION OF WATER SUPPLY

WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 1 (1 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

MAP SHOWING THE COUNTY BOUNDARIES OF TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee:
U.S. Geological Survey Water-Resources Investigations Report 92-4178

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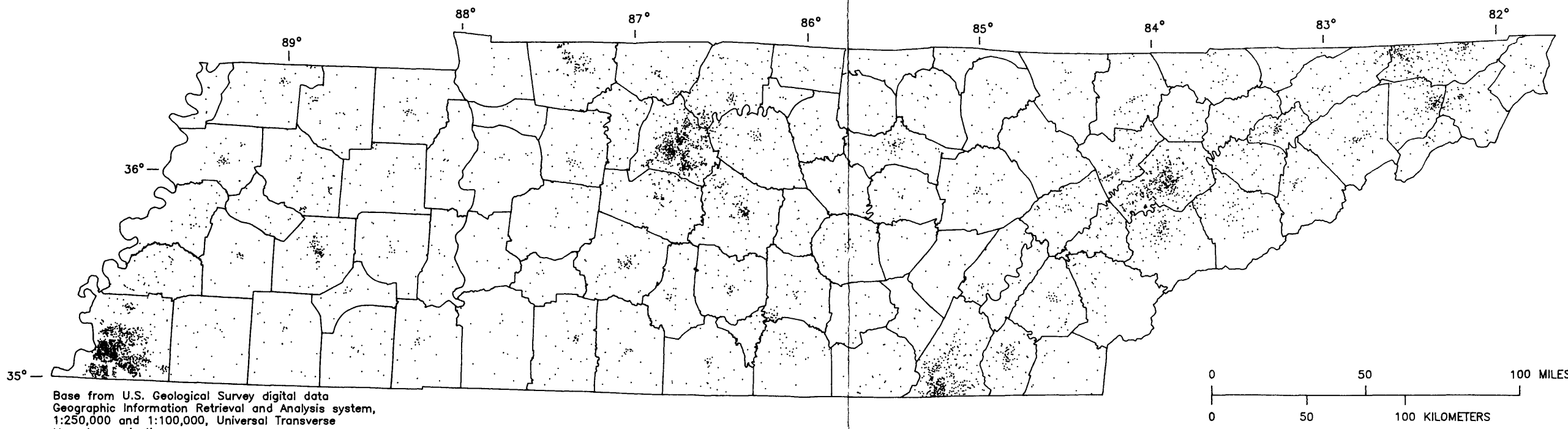
WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 2 (2 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

EXPLANATION

· EACH DOT REPRESENTS 1,000 PEOPLE,
COVERAGE IS BASED ON 1990 CENSUS

MAP SHOWING POPULATION DENSITY OF TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee:
U.S. Geological Survey Water-Resources Investigations Repart 92-4178

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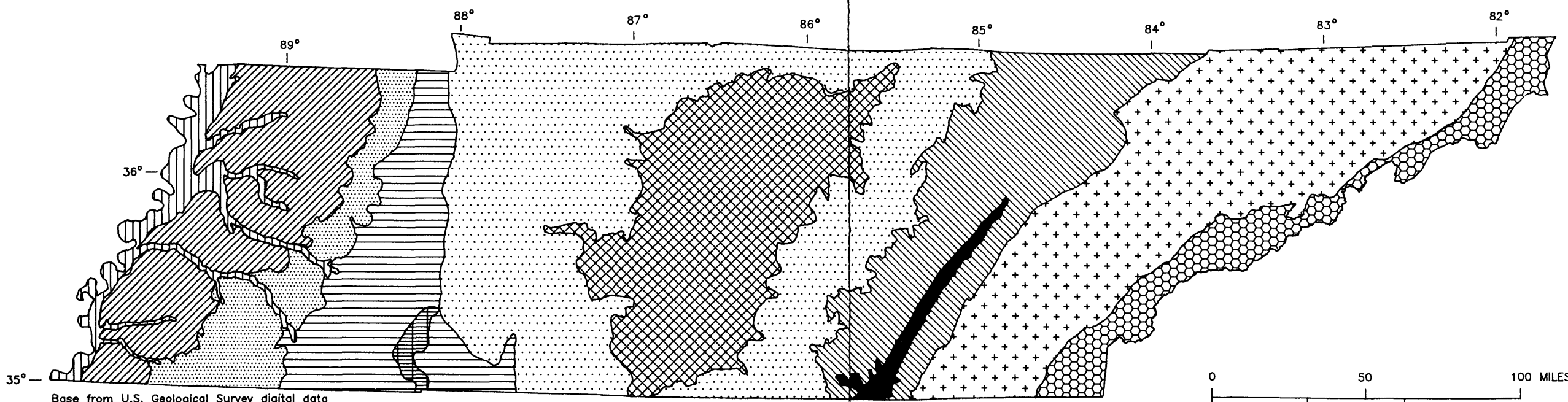
WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 3 (3 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

Modified from M.W. Bradley and E.F. Hollyday (1985)
and N.S. Parks and others (1982)

EXPLANATION

- ALLUVIAL--Underlain by Tertiary and Cretaceous sand (unconfined or confined)
- TERTIARY SAND (CONFINED)--Underlain by Cretaceous sand (confined)
- TERTIARY SAND (UNCONFINED)--Underlain by Cretaceous sand (confined)
- CRETACEOUS SAND (UNCONFINED)
- ALLUVIAL--Underlain by Cretaceous sand
- MISSISSIPPIAN CARBONATE
- ORDOVICIAN CARBONATE
- PENNSYLVANIAN SANDSTONE
- ORDOVICIAN CARBONATE (FAULTED)
- CAMBRIAN AND ORDOVICIAN CARBONATE
- CRYSTALLINE ROCK

MAP SHOWING THE PRINCIPAL AQUIFERS OF TENNESSEE AND MODIFIED AQUIFER BOUNDARIES IN WEST TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee:
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U.S. DEPARTMENT OF THE INTERIOR
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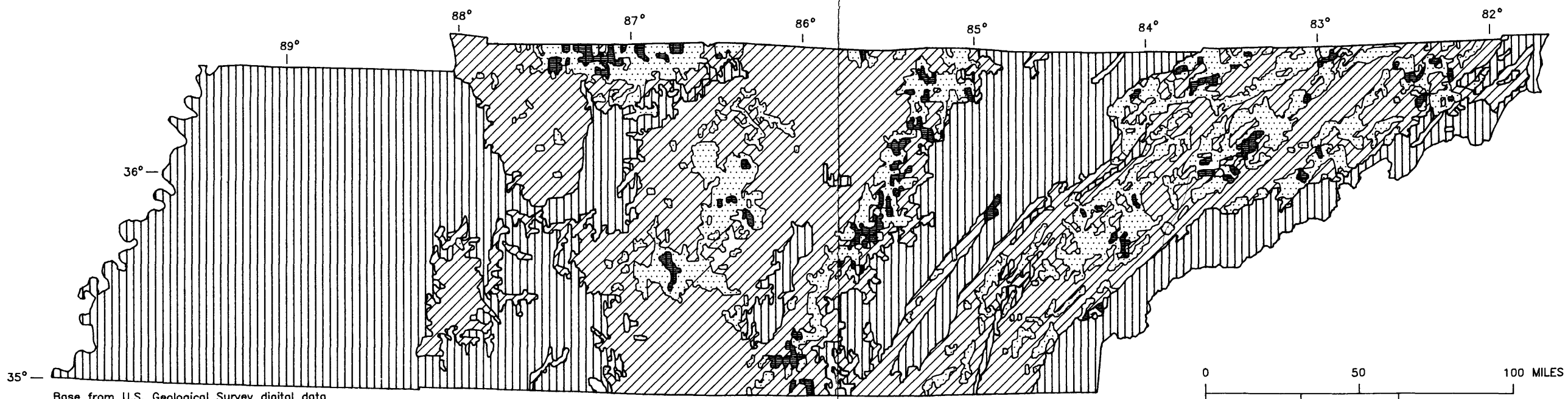
DIVISION OF WATER SUPPLY

WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 4 (4 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

From N. Crawford and G. Veni (1986)

EXPLANATION

KARST CLASSIFICATION

- Noncarbonate areas
- Carbonate areas with less than 1 percent sinkholes
- Carbonate areas with 1 to 10 percent sinkholes
- Carbonate areas with greater than 10 percent sinkholes

MAP SHOWING KARST-HARZARD ASSESSMENT OF TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee:
U.S. Geological Survey Water-Resources Investigations Report 92-4178

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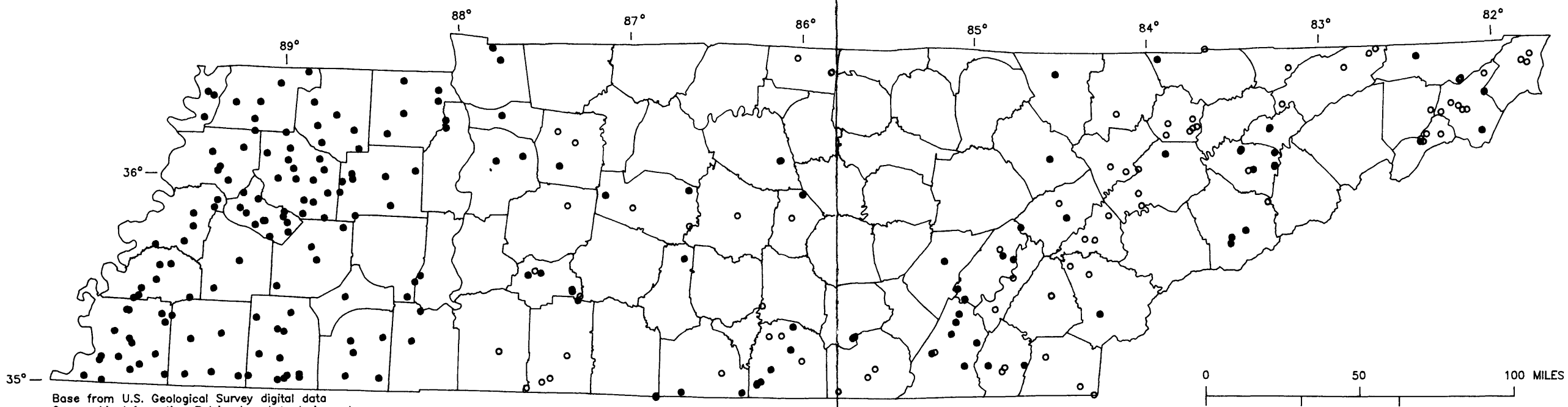
Prepared in cooperation with the
TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION,
DIVISION OF WATER SUPPLY

WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 5 (5 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

EXPLANATION

- ∘ SPRING
- • WELL

MAP SHOWING PUBLIC WATER-SUPPLY WELLS AND SPRINGS IN TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee: U.S. Geological Survey Water-Resources Investigations Report 92-4178

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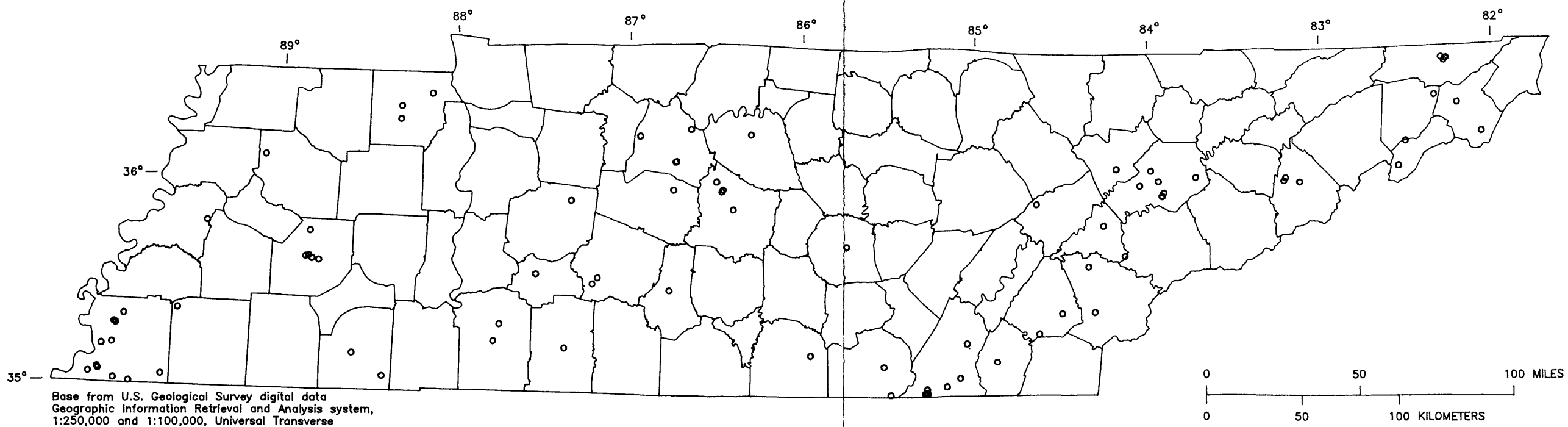
DIVISION OF WATER SUPPLY

WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 6 (6 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

EXPLANATION

∘ CERCLA SITE

MAP SHOWING SELECTED COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA) SITES IN TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee: U.S. Geological Survey Water-Resources Investigations Report 92-4178

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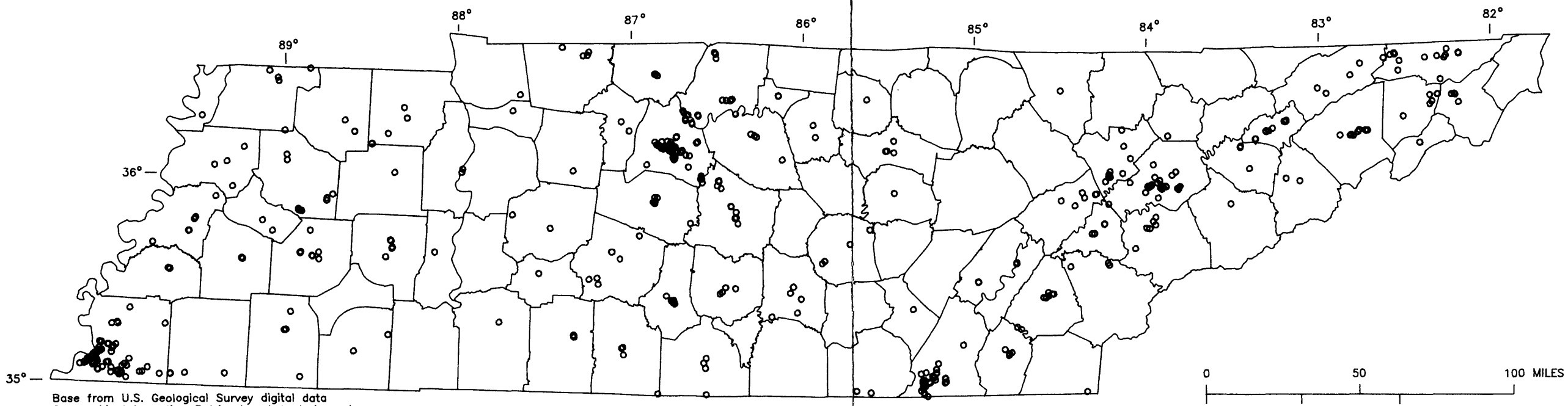
WATER-RESOURCES INVESTIGATIONS REPORT
92-4178
PLATE 7 (7 of 7)



Base from U.S. Geological Survey digital data
Geographic Information Retrieval and Analysis system,
1:250,000 and 1:100,000, Universal Transverse
Mercator projection,
Zones 15, 16 and 17.

EXPLANATION

○ RCRA SITE

MAP SHOWING RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) SITES OF LARGE-QUANTITY WASTE GENERATORS IN TENNESSEE

By
Joseph F. Connell and William R. Barron, Jr.

1993

Connell, J.F., and Barron, W.R., Jr., 1993, Digital data acquisition and development of geographic information system coverages for use with the public water-supply wells and springs in Tennessee: U.S. Geological Survey Water-Resources Investigations Report 92-4178