PUBLIC WATER-SUPPLY IN MASSACHUSETTS, 1986

By Lisa Bratton

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U.S. DEPARTMENT OF THE INTERIOR

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ILLUSTRATIONS

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CONVERSION FACTORS AND ABBREVIATIONS

Multiply	By	To obtain
	Area	
square mile (mi^2)	2.590	square kilometer
	Flow	
cubic foot per second (ft^3/s)	0.02832	cubic meter per second
million gallons per day (Mgal/d)	3,785	cubic meter per day
gallon per day (gal/d)	0.003785	cubic meter per day

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ABSTRACT

Massachusetts had approximately 280 public water-supply systems that include 900 wells and 200 surface-water intakes in 26 river basins. The systems withdrew an average of 812 million gallons per day during 1986; about 185 million gallons per day from ground water and 627 million gallons per day from surface water. Data on withdrawal-site locations, withdrawal amounts, interbasin transfers and populations served by public water-supply were collected and placed into the Site-Specific Water-Use Database System (SSWUDS). Withdrawal locations were transferred to a geographic-information system and plotted within each river basin. A data-base-management software package organized SSWUDS data into tables and calculated the withdrawal amounts and population served for each public water-supply system and basin.

The five river basins out of 26 basins with systems withdrawing the most surface water were the Chicopee (204.21 million gallons per day), the Nashua (135.00 million gallons per day), the Westfield (51.40 million gallons per day), the Merrimack (46.79 million gallons per day), and the Taunton (34.44 million gallons per day). Metropolitan areas accounted for the large surface-water withdrawals: Boston and communities on the Massachusetts Water Resource Authority (MWRA) system (Chicopee and the Nashua River basins); Springfield (Westfield River basin); Lowell (Merrimack River basin); and New Bedford (Taunton River basin). The withdrawals of the MWRA system far exceeded that of any other public water-supply system in the State. Most of the surface-water withdrawals from the Chicopee, Nashua and Taunton River basins were transferred out of the basin.

The five river basins with systems withdrawing the most ground water were the Cape Cod (19.15 million gallons per day), the Boston Harbor (18.96 million gallons per day), the Concord (18.79 million gallons per day), the Taunton (18.55 million gallons per day) and the Charles (15.94 million gallons per day). Unlike surface water, large ground-water withdrawals were in suburban areas such as Cape Cod. Groundwater withdrawals from Boston Harbor River basin were significant despite the fact that the MWRA, serving most of metropolitan Boston, used large amounts of surface water, but imported the water from outside the basin.

The five river basins with public water-supply systems withdrawing the most water were the Chicopee (208.16 million gallons per day), the Nashua (141.53 million gallons per day), the Westfield (56.52 million gallons per day), the Merrimack (55.76 million gallons per day) and the Taunton (52.99 million gallons per day).

The five river basins with the largest estimated populations served by surface water were the Nashua (2,106,800), the Chicopee (2,021,900), the Merrimack (347,700), the Westfield (308,500) and the Blackstone (213,800). The five river basins with the largest estimated populations served by ground water were the Cape Cod (383,200), Boston Harbor (186,700), the Charles (150, 250), the South Coastal (139,500), and the Taunton (119,000). The five river basins with the largest estimated populations served by public water-supply were the Nashua (2,217,700), the Chicopee (2,060,000), the Cape Cod (435,200), the Merrimack

(413,900), and the Taunton (356,900) River basins. The largest estimated populations served by ground water are suburban and the largest populations served by surface water are metropolitan.

INTRODUCTION

Increased water demand has put stress on water resources in Massachusetts. Boston and vicinity, in particular, has recently experienced growth in population, and industry. As a result of the strong demand for water, State and Federal agencies must regulate and manage water use. In order to accomplish this tasks, these agencies need easily accessible water-use information, such as withdrawal, use, diversion, and return-flow data. Two State agencies regulate and manage water resources in Massachusetts. The Department of Environmental Management is a planning agency responsible for effective and environmentally sound use of water in the 28 State-designated planning river basins and 10 subbasins (fig. 1). The Department of Environmental Protection (formerly the Department of Environmental Quality Engineering (DEQE)) is a regulatory agency responsible for enforcing water-protection laws.

The Massachusetts State Legislature has passed regulations for using the State's water resources. The Interbasin Transfer Act (Chapter 658, Acts of 1983) gave the Massachusetts Water Resources Commission a mandate to review any significant transfer of water or wastewater outside a river basin. The Commission is a committee appointed by the governor comprised of people from State and Federal agencies and nongovernment organizations who are interested in water resources. The Commission defines transfers and any amount less than 1 Mgal/d can be classified as insignificant. The Massachusetts Water Management Act, passed in 1985, gave the Massachusetts Department of Environmental Protection the responsibility for regulating water withdrawals greater than 100,000 gal/d.

It was recognized by the Department of Environmental Management, Office of Water Resources (OWR) (formerly the Division of Water Resources (DWR)) and the U.S. Geological Survey that a computerized, readily accessible data base would enhance the utility of the water-use data. OWR and the Geological Survey entered into a cooperative agreement in which the Geological Survey would collect and store water-use data, focusing on water withdrawals, in the Site-Specific Water Use data base System (SSWUDS) (formerly State Water-Use data base System (SWUDS)). This agreement was linked with another cooperative agreement with the Department of Environmental Protection, Division of Water Supply (DWS), and the Geological Survey to field identify locations of new public water-supply wells.

Purpose and Scope

This report presents accurate locations for both ground-water and surface-water withdrawal sites for public water-supply systems and documents 1986 withdrawals. In this report, ground-water withdrawal sites are called wells, and surface-water withdrawal sites are called surface-water intakes. Location and description of withdrawal-sites with withdrawal amounts are presented in tables organized by river basin. Maps, which compliment the tables, show the position of the withdrawal sites. In addition, estimated populations served by public water-supply and interbasin transfers are presented.

SSWUDS was used to store descriptive information on wells and surface-water intakes along with 1980 and 1986 withdrawal amounts. SSWUDS can trace the movement of water from withdrawal to return-flow. This paper focuses on withdrawal and the 1986 data.

Twenty-six of the 28 State-designated planning river basins are presented; the Farmington River basin has no public water-supply systems and the Massachusetts Coastal River basin has no land area. A few large river basins, extending into other New England states, have been broken down into smaller basins for planning purposes. For example, the Connecticut River basin, which extends into New Hampshire and Connecticut, contains the Millers, Deerfield, Chicopee, Westfield, Farmington, and Connecticut planning river basins in Massachusetts. Some of the basins, such as Cape Cod, South Coastal, North Coastal and Islands do not have a major river system within their boundaries. But, because the majority of planning basins boundaries are major river basin boundaries, the State-designated planning river basins are called river basins in the report. Four of the river basins are broken down further and discussed as subbasins.

The 351 towns and cities in Massachusetts are strong political entities and most of the public water-supply systems service a town or city. A few exceptions exist

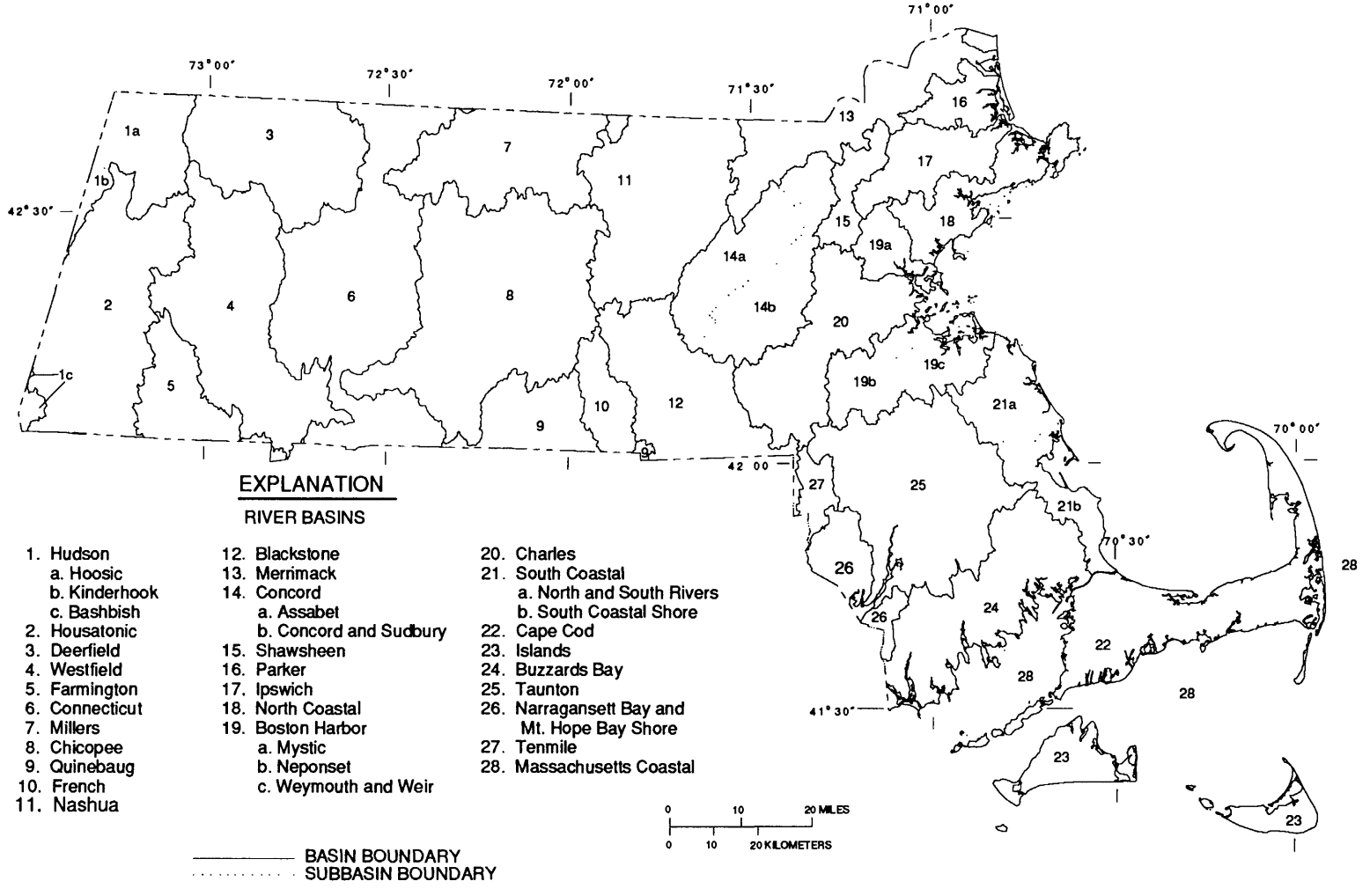

Figure 1.--Location of river basins in Massachusetts.

where the town may have more than one public water-supply system or two towns are joined together under one public water-supply system. These exceptions are identified in the text and tables. Otherwise, in this report the town or city is synonymous with the public water-supply system. Towns and cities will be referred to as municipalities.

The Massachusetts Water Resource Authority (MWRA) is the largest public water-supply system in Massachusetts and serves 43 communities including the Boston metropolitan area. Only a limited discussion of the MWRA system is presented because its complex system is beyond the scope of this report. This report discusses the two major MWRA sources, Quabbin Reservoir and Wachusett Reservoir, two interbasin transfers and the population served by the MWRA. The report does not present water withdrawals by municipalities or interbasin transfers between municipalities within the system.

Previous Investigations

Before 1985, the only information collected on water use in Massachusetts has been for the 5-year national reports published by the U.S. Geological Survey. This general description of water use in the State has been done since 1950 (MacKichan, 1951, 1957; MacKichan and Kammerer, 1961; Murray, 1968; Murray and Reeves, 1972, 1977; Solley and others, 1983; Solley and others, 1988). However, within the last five years several other reports have been done on water use in Massachusetts. OWR published a report on the average daily demand for public water-supply systems from 1980 through 1984 (Massachusetts Department of Environmental Management, 1985) and also has an unpublished report on agricultural water-use in Massachusetts (Massachusetts Department of Environmental Management, 1984). The Survey published a brief discussion of historical water-use in Massachusetts describing the commercial, industrial and agricultural water-use categories the State. This was part of the 1987 National Water Summary report (Simcox and others, 1989).

In addition, the Massachusetts Department of Environmental Management has recently started writing a series of reports to provide technical support for long-range water-resource planning for the 28 river basins in the Commonwealth. Volume I reports in the series presents an inventory and analysis of water-use data for each river basin as the first step in the planning process. The reports include data on the river basin's current and projected water demand, water-supply sites, and short-and long-term demographic profiles for communities in the basin. Volume I reports have been completed for the Blackstone River basin (Massachusetts Department of Environmental Management, 1985), the Charles River basin (Massachusetts Department of Environmental Management, 1988), the Concord River basin (Massachusetts Department of Environmental Management, 1989), the Hudson River basin (Massachusetts Department of Environmental Management, 1989), the Ipswich River basin (Massachusetts Department of Environmental Management, 1987) the Nashua River basin (Massachusetts Department of Environmental Management, 1987), and the Taunton River basin (Massachusetts Department of Environmental Management, 1989).

Volume II reports in the series present the results of a computer analysis to determine subbasin water yield in drought conditions. This analysis uses the inventory data and short- and long-term water demand projections. The analysis includes the OWR recommended guidelines for the minimum streamflow threshold to offer protection for in-stream environmental water uses. After analysis, a basin water budget can be prepared to estimate the volume of water available under both average precipitation and drought conditions. Volume II reports have been completed for the Ipswich River basin (Massachusetts Department of Environmental Management, 1987).

The third and last volume in this series will focus on developing water supply alternatives, primarily for communities which are projected to have difficulty meeting water demands. Volume III includes the Ipswich River basin (Massachusetts Department of Environmental Management, 1989).

Acknowledgments

The author thanks the personnel of the Massachusetts Department of Environmental Management, Office of Water Resources and the Massachusetts Department of Environmental Protection, Division of Water Supply for providing information on description of withdrawal sites and on withdrawal amounts. Public water suppliers were also very helpful in clarifying and expanding on data stored at the Office of Water Resources and the Division of Water Supply. Bill Mullen of the U.S. Army Corps of Engineers provided information on interbasin transfers and Marcus

Kemp of the MWRA supplied information on inter-basin transfers within their system.

METHODS OF STUDY

Review of Available Data

The U.S. Geological Survey maintains data in several computerized water resources data bases. One data base is the Ground-Water data base which is part of the Geological Survey National Water Information System (NWIS). It contains physical, hydrological, and geological data on wells, but also includes test holes, springs, tunnels, drains, ponds, other excavations and outcrops. In addition, specialized wells, such as well groups and collection wells, are in the data base (Baker and Foulk, 1975). This data base lists 650 public water-supply wells for the State of Massachusetts.

Another data base developed by the Geological Survey to store water-use information on a site-specific basis is SSWUDS (Site-Specific Water-Use Data System). SSWUDS contains descriptive information on public water-supply systems, measurement points such as wells, and annual and(or) monthly water withdrawal data. Users are grouped by water-use categories, such as public water, domestic, agricultural, commercial, or types of power generation. Sites are either categorized as ground water, surface water, or transfer water. Ground-water sites include wells, well fields, and springs. Surface-water sites include reservoirs, rivers, brooks, streams, ponds, lakes, and quarries (Mathey, 1990). SSWUDS currently has approximately 280 public water-supply systems that include 900 ground-water withdrawal sites and 200 surface-water withdrawal sites in Massachusetts.

The OWR and DWS maintain paper files with information on public water-supply systems. The OWR has files with questionnaires containing information on withdrawal sites (ground water and surface water), average daily demand, maximum daily demand, transfer of water, conservation measures, and projected use and populations. The DWS has paper files with withdrawal site descriptions, monthly withdrawals and populations served by public water-supply.

Description and Entry of Data

Prior to this project, information on about one-third of the public water-supply wells was entered in SSWUDS along with combinations of withdrawal data from 1980, 1981 or 1983. Thus, it was necessary to enter descriptive and location information for two-thirds of the public water-supply wells and all of the surface-water intakes. Latitude and longitude for each well were confirmed through the Survey's GWSI data base when possible. If no cross-reference could be made, U.S. Geological Survey paper files on the municipalities were consulted. Public suppliers were contacted by telephone for a description of surface-water intakes. This information was plotted by hand on a Geological Survey quadrangle map and the latitude and longitude determined. Descriptive and location information from OWR, DWS, and public suppliers was added to SSWUDS and existing data in SSWUDS modified as necessary.

Withdrawal data for 1986 were collected and entered into SSWUDS. For the 1986 withdrawal data, most public water suppliers provided information by withdrawal site. For those suppliers who did not break down their withdrawal information the total withdrawal amount was divided by the number of sites. Withdrawal amounts have been converted to million gallons per day (Mgal/d) because the units for amounts varied among the suppliers.

In addition to data on withdrawal sites, information for better cross-referencing between Federal and State agencies was entered into SSWUDS. The U.S. Geological Survey 15-digit identification number for wells was used when possible and the GWSI data base number, which identifies the municipality where a well was located, were both incorporated into SSWUDS. Also, the 8-digit State number assigned to public water-supply systems was entered into SSWUDS. The database was also modified to include the State-designated planning river basin numbers.

Quality control for the data entered into SSWUDS was of concern. A field within the SSWUDS data base was set aside to indicate whether the location of withdrawal sites had been field verified by Geological Survey personnel. Wells were either designated as field checked (YES) or unchecked (NO). All surface-water intakes were designated as unchecked, because locations were determined through a telephone survey. Withdrawal data were also given a quality control indicator by noting whether the number obtained from DWS was metered (M) or estimated (E).

LOCATION AND DESCRIPTION OF WITHDRAWAL SITES WITH 1986 WITHDRAWAL AMOUNTS

This section presents the public water-supply data in the SSWUDS data base by river basin shown in figure 1. A general description of each river basin's physiography and the number of municipalities in each river basin is presented (A. Simcox, written communication, 1989). More detailed information on each river basin is available in the selected references at the end of the report. Interbasin transfers, as documented by the U.S. Army Corps of Engineers (1988), are also presented.

The data from SSWUDS are presented by table and map. A data-base-management software package, INFO[1], has been used to organize SSWUDS data by river basin, municipality and public water-supply system. Withdrawal amounts have been calculated through INFO for each public water-supply system and for the river basin. The river basin maps for the report have been generated using a geographic-information system (GIS). The latitude and longitude for withdrawal sites have been transferred from INFO to GIS and the withdrawal sites plotted with the river basin and municipal boundaries.

Hudson River basin

The Hudson River basin (fig. 1) drains 164 mi^2 and covers all or part of 12 municipalities. The basin includes the three subbasins of the Hoosic, Kinderhook in New York State, and Bashbish. The Hoosic River subbasin is the only subbasin with public water-supply systems. Five municipalities in the subbasin have public water-supply systems; Cheshire has two systems (table 1). Thirteen wells and 10 surface-water intakes are in the Hoosic River subbasin (fig. 2). Approximately 4.77 Mgal/d (82 percent) of the total water used in the basin came from surface water during 1986 (table 32).

Housatonic River Basin

The Housatonic River basin (fig. 1) drains 500 mi^2 and contains all or part of 25 municipalities. The basin has thirteen municipalities on public water-supply systems; Stockbridge has two systems (table 2). Seven wells and eighteen surface-water intakes are in the river basin (fig. 3). Surface water accounted for about 16.25 Mgal/d (97 percent) of the water used for public water-supply during 1986 (table 32).

Deerfield River Basin

The Deerfield River basin (fig. 1) drains 347 mi^2 and includes part of all of 20 municipalities. The basin has six municipalities on public water-supply systems (table 3) with a total of 11 wells and three surface-water intakes (fig. 4). Approximately 0.28 Mgal/d (53 percent) of the water for public water-supply came from ground water in 1986 (table 32). The Deerfield Fire District also is served by a well in the Connecticut River basin (fig. 6 and table 5).

Westfield River Basin

The Westfield River basin (fig. 1) drains 516 mi^2 and includes all or part of 29 municipalities. The basin has ten municipalities on public water-supply systems (table 4) with a total of 16 wells and ten surface-water intakes (fig. 5). About 51.4 Mgal/d (91 percent) of withdrawals are provided by surface water during 1986 (table 32). Holyoke is served by a reservoir in the Connecticut River basin (fig. 6 and table 5) and Springfield is served by a reservoir in the Chicopee River basin (fig. 8 and table 7). Springfield and Holyoke transferred water from the Westfield to the Connecticut River basin in 1986 (U.S. Army Corps of Engineers, 1988).

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[1] Use of trade names in this paper is for identification purposes only and does not constitute endorsement by the U.S. Geological Survey.

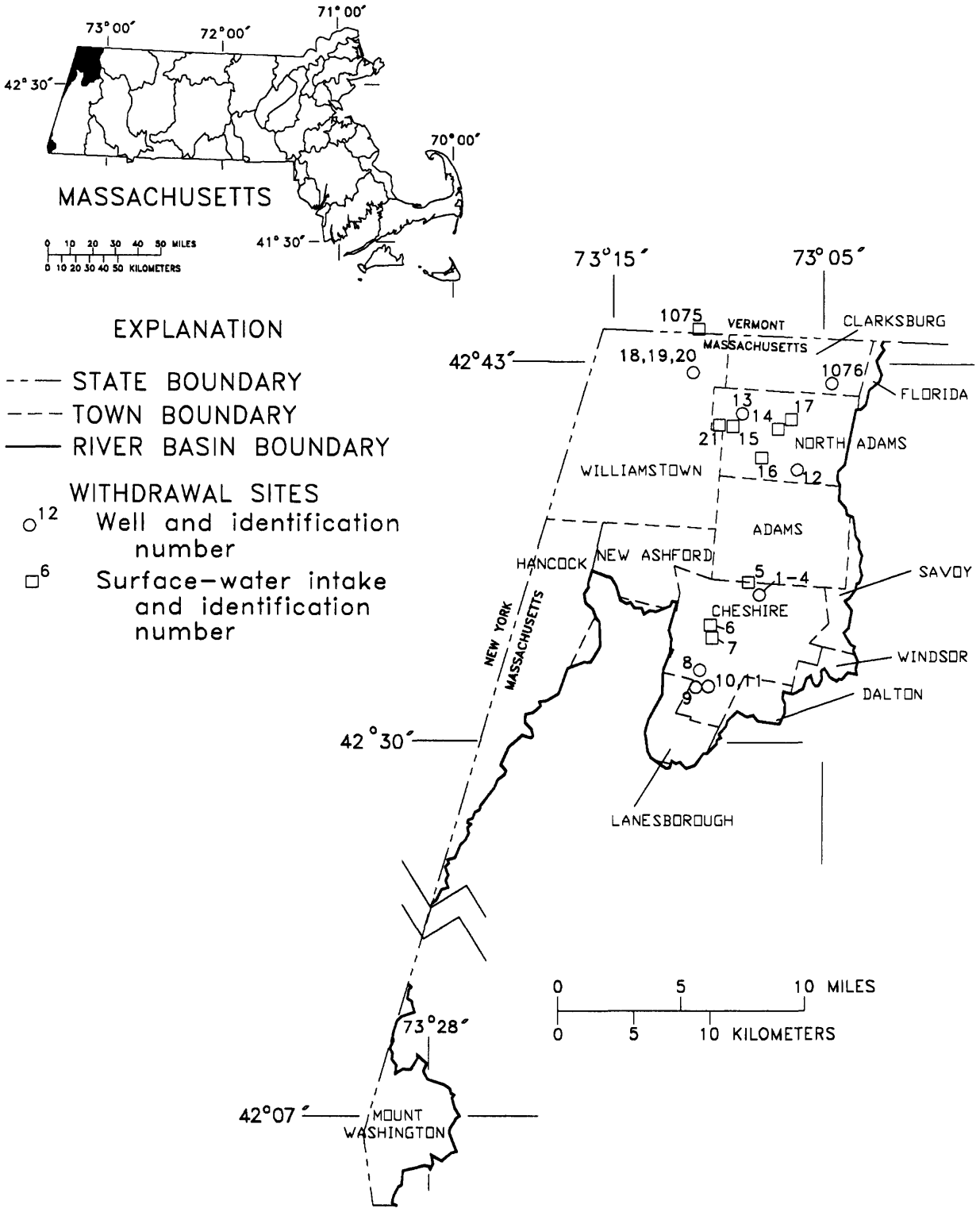

Figure 2.--Location of public water-supply withdrawal sites in the Hudson River basin.

Table 1.—*Description of public water-supply withdrawal sites and withdrawal amounts in the Hudson River basin (Hoosic subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 2 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ADAMS	ADAMS FIRE DISTRICT	1	CHESHIRE HARBOR WELL 1	GW	42 35 24	73 08 25	NO	0.00	E	
		2	CHESHIRE HARBOR WELL 2	GW	42 35 22	73 08 24	YES	.26	E	
		3	CHESHIRE HARBOR WELL 3	GW	42 35 11	73 08 29	YES	.26	E	
		4	CHESHIRE HARBOR WELL 4	GW	42 35 18	73 08 29	YES	.26	E	
		5	BASSET BROOK RESERVOIR	SW	42 35 44	73 08 46	NO	1.18	E	
							Total	1.96		10,000
CLARKSBURG	RED MILLS WATER SUPPLY	1076	WELL 1	GW	42 42 56	73 04 20	NO	0.01	E	
							Total	0.01		200
CHESHIRE	CHESHIRE WATER DEPARTMENT	6	KITCHEN BROOK RESERVOIR	SW	42 34 11	73 10 39	NO	0.15	M	
		7	THUNDER BROOK RESERVOIR	SW	42 33 51	73 10 46	NO	.00	E	
							Total	0.15		1,600
	HUTCHINSON WATER COMPANY	8	WELL 1	GW	42 32 06	73 10 59	YES	0.00	E	
		9	WELL 2	GW	42 31 50	73 11 06	YES	.01	E	
		10	WELL 3	GW	42 31 53	73 10 46	YES	.01	E	
		11	WELL 4	GW	42 31 52	73 10 46	YES	.01	E	
							Total	0.03		200
NORTH ADAMS	NORTH ADAMS WATER SUPPLY COMPANY	12	CURAN HIGHWAY WELL	GW	42 39 55	73 06 31	YES	0.00	M	
		13	GREYLOCK WELL	GW	42 41 49	73 09 17	YES	.00	M	
		14	LOWER RESERVOIR	SW	42 41 29	73 07 07	NO	.00	M	
		15	MOUNT WILLIAMS RESERVOIR	SW	42 41 10	73 09 28	NO	.66	M	
		16	NOTCH RESERVOIR	SW	42 40 20	73 08 10	NO	.83	M	
		17	UPPER RESERVOIR	SW	42 41 20	73 07 24	NO	.00	M	
		1075	BROAD BROOK RESERVOIR	SW	42 44 48	73 11 05	NO	1.24	M	
							Total	2.73		16,000
WILLIAMSTOWN	WILLIAMSTOWN WATER DEPARTMENT	18	STETSON ROAD WELL 1	GW	42 43 09	73 11 35	YES	0.18	M	
		19	STETSON ROAD WELL 2	GW	42 43 09	73 11 33	YES	.06	M	
		20	RATTLESNAKE RESERVOIR	SW	42 43 58	73 12 13	NO	.37	M	
		21	SHERMAN SPRINGS RES	SW	42 41 09	73 10 21	NO	.34	M	
							Total	0.95		8,000
						Total for river basin		5.83		36,000

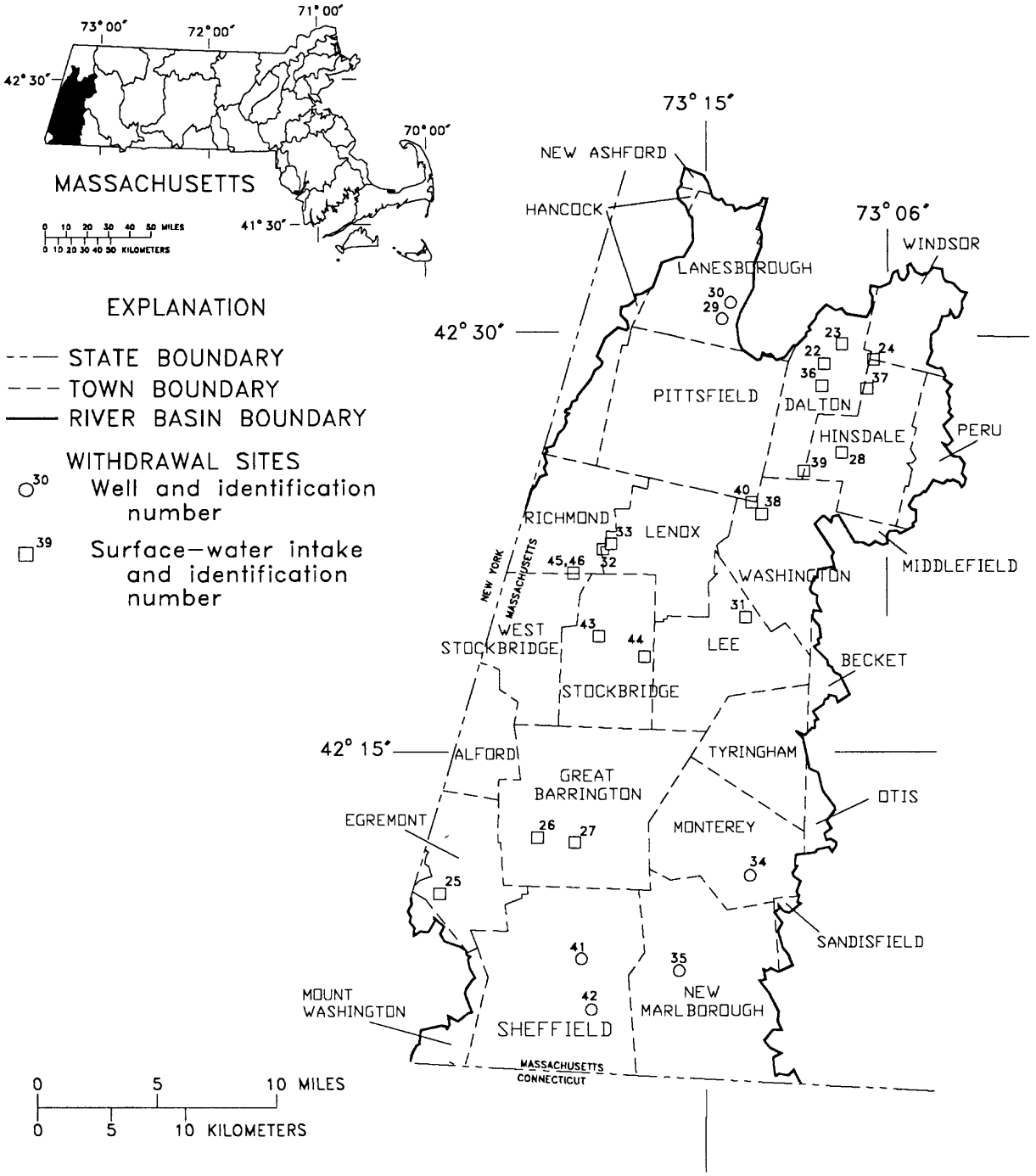

Figure 3.--Location of public water-supply withdrawal sites in the Housatonic River basin.

Table 2.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Housatonic River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 3 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
DALTON	DALTON FIRE DISTRICT	22	ANTHONY RESERVOIR	SW	42 29 11	73 09 12	NO	0.02	M	
		23	EGYPT BROOK RESERVOIR	SW	42 29 56	73 08 21	NO	.09	M	
		24	WINDSOR RESERVOIR	SW	42 29 19	73 06 39	NO	.58	M	
							Total	0.69		6,100
EGREMONT	SOUTH EGREMONT WATER COMPANY	25	KARMER BROOK	SW	42 09 25	73 27 42	NO	0.11	M	
							Total	0.11		600
GREAT BARRINGTON	GREAT BARRINGTON FIRE DISTRICT	26	GREEN MOUNTAIN RESERVOIR	SW	42 11 17	73 21 05	NO	0.75	M	
		27	GREEN RIVER INFILTRATION GALLERY	SW	42 11 23	73 23 09	NO	.33	M	
							Total	1.08		3,900
HINSDALE	HINSDALE DEPARTMENT OF PUBIC WORKS	28	BELMONT RESERVOIR	SW	42 25 52	73 08 23	NO	0.22	M	
							Total	0.22		1,500
LANESBOROUGH	LANESBOROUGH FIRE AND WATER DISTRICT	29	MINER STREET WELL 2	GW	42 30 34	73 14 09	YES	0.11	E	
		30	BRIDGE STREET WELL 1	GW	42 31 21	73 13 56	NO	.11	E	
							Total	0.22		700
LEE	LEE WATER DEPARTMENT	31	LEAHY RESERVOIR	SW	42 19 40	73 12 55	NO	1.40	M	
							Total	1.40		6,000
LENOX	LENOX WATER DEPARTMENT	32	LOWER ROOT RESERVOIR	SW	42 22 05	73 19 41	NO	0.47	M	
		33	UPPER ROOT RESERVOIR	SW	42 22 15	73 19 27	NO	.25	M	
							Total	0.72		6,000
MONTEREY	MONTEREY WATER WATER COMPANY	34	SANDISFIELD ROAD WELL 1	GW	42 10 09	73 12 10	YES	0.01	M	
							Total	0.01		200
NEW MARLBOROUGH	MILLERS RIVER TAKERS ASSOCIATION	35	MILL RIVER ROAD WELL	GW	42 06 38	73 15 52	YES	0.01	E	
							Total	0.01		100

Table 2.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Housatonic River basin*--Continued

Municipality name	Public water supplier	Figure 3 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
PITTSFIELD	PITTSFIELD DEPARTMENT OF PUBLIC WORKS	36	ASHLEY LAKE RESERVOIR	SW	42 28 17	73 09 48	NO	0.00	M	
		37	CLEVELAND BROOK RES	SW	42 28 09	73 06 55	NO	9.59	M	
		38	FARNHAM RESERVOIR	SW	42 23 28	73 12 18	NO	2.17	M	
		39	L SACKETT RESERVOIR	SW	42 25 18	73 10 00	NO	.00	M	
		40	MILL BROOK RESERVOIR	SW	42 23 47	73 12 46	NO	.00	M	
							Total	11.76		50,000
SHEFFIELD	SHEFFIELD WATER COMPANY	41	MASSACHUSETTS PIKE WELL 2	GW	42 05 01	73 20 12	YES	0.11	E	
		42	WATER FARM SPRINGS	GW	42 07 01	73 20 55	NO	.18	E	
							Total	0.29		1,200
STOCKBRIDGE	STOCKBRIDGE WATER DEPARTMENT	43	LAKE AVERIC	SW	42 18 54	73 20 17	NO	0.24	M	
							Total	0.24		2,300
	HILL WATER COMPANY	44	RATTLESNAKE MTN SPRINGS	GW	42 18 16	73 17 57	NO	0.01	E	
							Total	0.01		100
WEST STOCKBRIDGE	WEST STOCKBRIDGE WATER COMPANY	45	SARTORI QUARRY	SW	42 21 06	73 21 44	NO	0.03	E	
		46	SARTORI SPRINGS	SW	42 21 03	73 21 46	NO	.00	E	
							Total	0.03		1,500
						Total for river basin		16.79		80,200

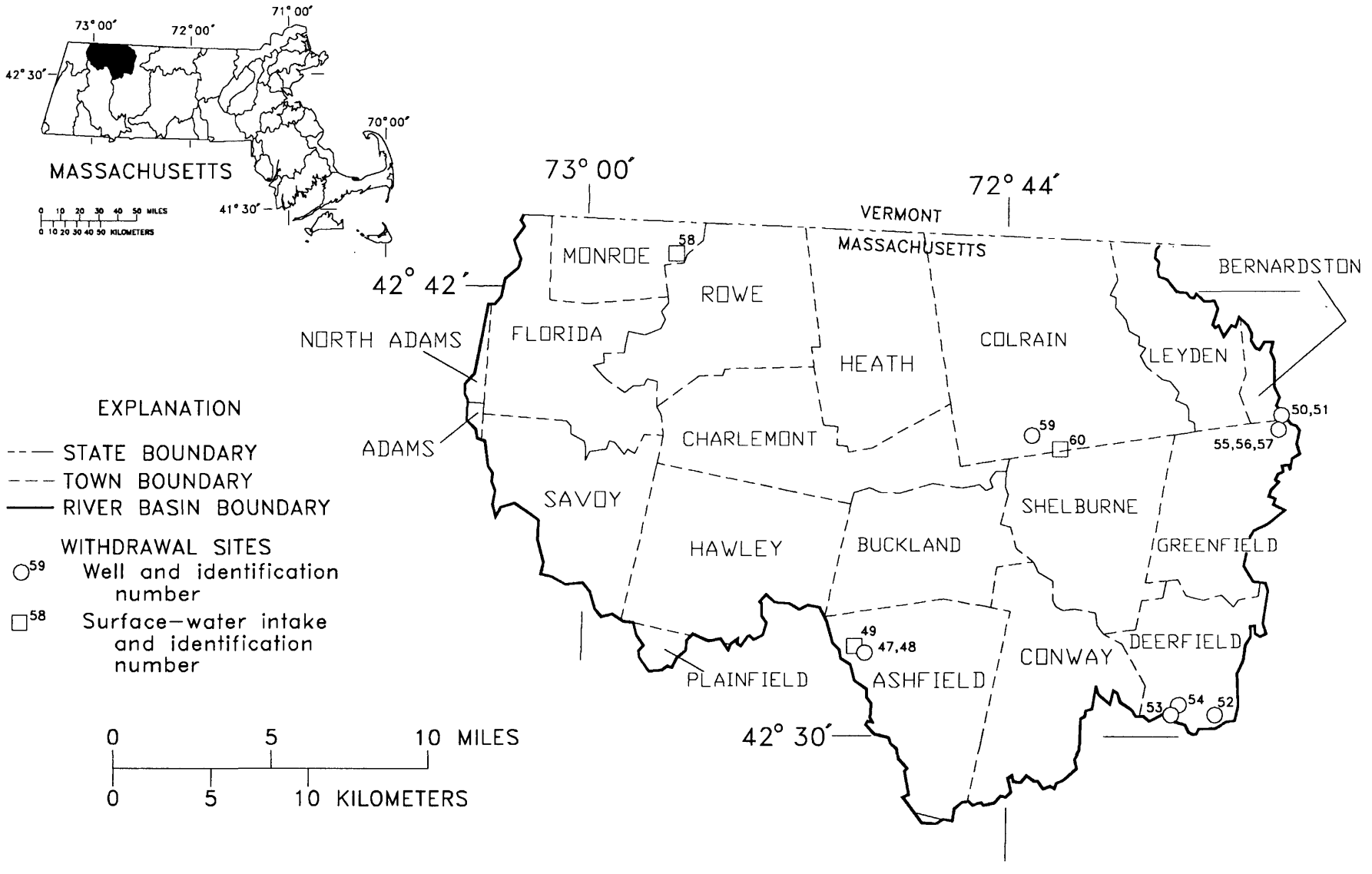

Figure 4.--Location of public-supply withdrawal sites in the Deerfield River basin.

Table 3. *--Description of public water-supply withdrawal sites and withdrawal amounts in the Deerfield River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 4 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ASHFIELD	ASHFIELD WATER COMPANY	47	HIGHLAND RESERVOIR WELL	GW	42 32 15	72 49 05	YES	0.01	M	
		48	L HIGHLAND SPRINGS WELL	GW	42 32 16	72 49 05	NO	.00	E	
		49	U HIGHLAND SPRINGS RES	SW	42 32 21	72 49 23	NO	.02	M	
							Total	0.03		500
BERNARDSTON	BERNARDSTON	50	BARTON ROAD DUG WELL 1	GW	42 39 13	72 34 05	YES	0.05	M	
		51	BARTON ROAD GP WELL 2	GW	42 39 13	72 34 05	YES	.13	M	
							Total	0.18		1,300
DEERFIELD	DEERFIELD FIRE DISTRICT[1]	52	WAPPING WELL	GW	42 31 10	72 36 24	YES	0.00	E	
		53	HARRIS SPRINGS	GW	42 31 11	72 37 56	YES	.01	M	
		54	STILLWATER WELL	GW	42 32 22	72 37 37	YES	.07	M	
							Total	0.08		900
GREENFIELD	GREENFIELD	55	MILLBROOK WELL 1	GW	42 38 40	72 34 22		0.00	M	
		56	MILLBROOK WELL 2	GW	42 38 44	72 34 20		.00	M	
		57	MILLBROOK WELL 3	GW	42 38 40	72 34 26		.00	M	
							Total	0.00		0
MONROE	MONROE WATER DISTRICT	58	MONROE RESERVOIR	SW	42 43 37	72 56 48	NO	0.01	M	
							Total	0.01		100
SHELBURNE FALLS	SHELBURNE FALLS FIRE DISTRICT	59	CALL ROAD WELL 1	GW	42 38 32	72 43 05	YES	0.01	M	
		60	FOX BROOK RESERVOIR	SW	42 38 21	72 42 15	NO	.22	M	
							Total	0.23		2,600
							Total for river basin	0.53		5,400

[1] Deerfield Fire District has one well in the Connecticut River basin.

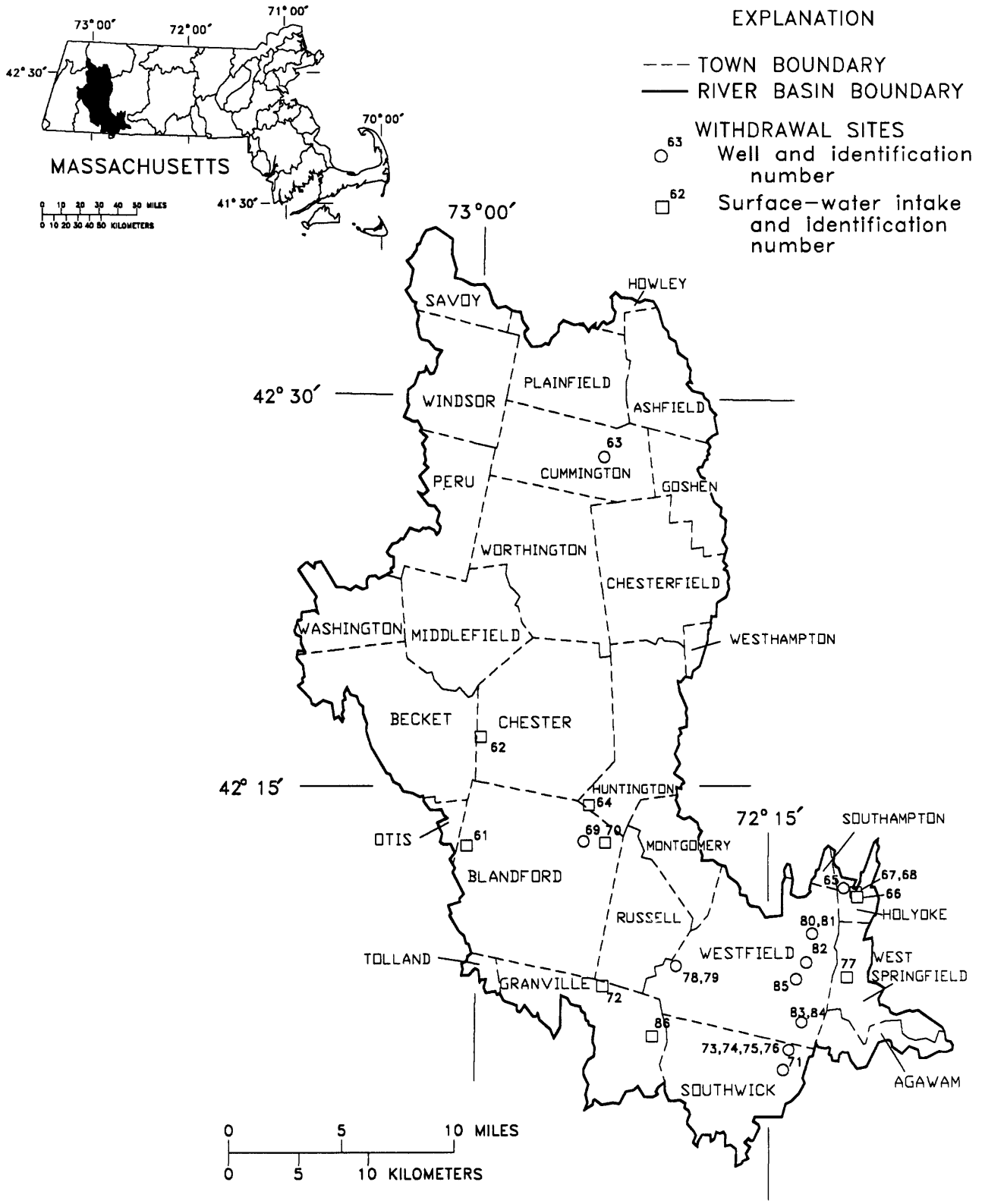

Figure 5.--Location of public water-supply withdrawal sites in the Westfield River basin.

Table 4.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Westfield River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 5 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BLANDFORD	BLANDFORD WATER DEPARTMENT	61	LONG POND	SW	42 12 22	73 00 25	NO	0.08	M	
							Total	0.08		600
CHESTER	CHESTER WATER DEPARTMENT	62	AUSTIN BROOK RESERVOIR	SW	42 16 50	72 59 51	NO	0.09	M	
							Total	0.09		700
CUMMINGTON	WEST CUMMINGTON WATER DEPARTMENT	63	ROUTE 9 WELL	GW	42 27 44	72 53 50	YES	0.01	M	
							Total	0.01		300
GRANVILLE	SPRINGFIELD[1] WATER WORKS	72	COBBLE MTN RESERVOIR	SW	42 07 05	72 53 30	NO	39.50	M	
							Total	39.50		230,000
HUNTINGTON	HUNTINGTON WATER DEPARTMENT	64	COLD BROOK RESERVOIR	SW	42 14 05	72 54 36	NO	0.00	E	
							Total	0.00		0
HOLYOKE[2]	HOLYOKE WATER WORKS	65	CORONET HOMES WELL	GW	42 10 52	72 41 05	NO	0.03	M	
		66	ASHLEY POND	SW	42 10 43	72 40 17	NO	3.97	M	
		67	MCLEAN RESERVOIR	SW	42 11 03	72 40 07	NO	3.76	M	
		68	WRIGHT POND	SW	42 10 58	72 40 17	NO	.00	M	
							Total	7.76		39,500
RUSSEL	RUSSEL WATER DEPARTMENT	69	HUNTINGTON ROAD WELL	GW	42 11 25	72 54 36	YES	0.04	E	
		70	BLACK BROOK RESERVOIR	SW	42 12 40	72 53 23	NO	.36	E	
							Total	0.40		1,200
SOUTHWICK	SOUTHWICK WATER DEPARTMENT	71	FEED HILL ROAD WELL 1	GW	42 03 46	72 44 21	YES	0.49	M	
							Total	0.49		1,800
WEST SPRINGFIELD	WEST SPRINGFIELD DEPARTMENT OF PUBLIC WORKS	73	SOUTHWICK WELL 1	GW	42 04 50	72 43 44	YES	0.00	M	
		74	SOUTHWICK WELL 2	GW	42 04 51	72 43 40	YES	.00	M	
		75	SOUTHWICK WELL 3	GW	42 04 41	72 43 51	YES	.00	M	
		76	SOUTHWICK WELL 4	GW	42 04 56	72 43 41	YES	.00	M	
		77	BEAR HOLE RESERVOIR	SW	42 07 31	72 40 56	NO	.99	M	
							Total	0.99		26,000

Table 4.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Westfield River basin*--Continued

Municipality name	Public water supplier	Figure 5 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WESTFIELD	WESTFIELD WATER DEPARTMENT	78	NORTHWEST ROAD WELL 5	GW	42 07 53	72 49 27	YES	0.05	E	
		79	NORTHWEST ROAD WELL 6	GW	42 07 52	72 49 27	YES	.05	E	
		80	OWEN DISTRICT ROAD W 7	GW	42 09 15	72 42 31	YES	.58	M	
		81	OWEN DISTRICT ROAD W 8	GW	42 09 22	72 42 31	YES	.64	M	
		82	SOUTH HOLYOKE WELL 1	GW	42 08 10	72 42 51	YES	.95	M	
		83	SHAKER ROAD WELL 3	GW	42 05 42	72 43 05	YES	.25	M	
		84	SHAKER ROAD WELL 4	GW	42 05 48	72 43 01	YES	1.02	M	
		85	UNION STREET WELL 2	GW	42 07 32	72 43 17	YES	1.01	M	
		86	GRANVILLE RESERVOIR	SW	42 05 15	72 50 53	NO	2.65	M	
							Total	7.20		30,000
					Total for river basin			56.52		330,100

1 Springfield Water Works has one reservoir in the Chicopee River basin.

2 Holyoke has one reservoir in the Connecticut River basin.

Connecticut River Basin

The Connecticut River (fig. 1) drains 669 mi^2 and contains all or part of 46 municipalities. The basin has fifteen municipalities on public water-supply systems (table 5) with a total of 33 wells and 18 surface-water intakes in the basin (fig. 6).

Ground water supplied 9.14 Mgal/d (56 percent) of the public water-supply during 1986 (table 32). The Deerfield Fire District is served by several wells in the Deerfield River basin (fig. 4 and table 3) and Holyoke has a well and surface-water intakes in the Westfield River basin (fig. 5 and table 4). The municipalities of West Springfield and Holyoke transferred water from the Westfield River basin into the Connecticut River basin and Belchertown transferred water from the Chicopee River basin into the Connecticut River basin (U.S. Army Corps of Engineers, 1988).

Millers River Basin

The Millers River basin (fig. 1) drains 313 mi^2 and includes all or part of 18 municipalities. The basin has six municipalities on public water-supply (table 6) with a total of eight wells and eight surface-water intakes (fig. 7). Surface water provided approximately 3.97 Mgal/d (71 percent) of the public water-supply in 1986 (table 32).

Chicopee River Basin

The Chicopee River basin (fig. 1) drains 723 mi^2 and includes all or part of 39 municipalities. The basin has fourteen municipalities on public water-supply systems (table 7) with a total of 30 wells and ten surface-water intakes (fig. 8). The municipalities of Hardwick and Warren have two public water-supply systems and the municipality of Palmer has three. Springfield is served by a reservoir in the Westfield River basin (fig. 5 and table 4) and Fitchburg has most of its reservoirs in the Nashua River basin (fig. 11 and table 10). Surface water provided about 204.21 Mgal/d (98 percent) of the withdrawals during 1986 (table 32). Approximately 200.80 Mgal/d (98 percent) of the surface water is withdrawn from the Quabbin Reservoir by the Massachusetts Water Resources Authority (MWRA) supplying water to 43 communities including metropolitan Boston. The MWRA and the city of Fitchburg transferred surface water into the Nashua River basin. Belchertown transferred water into the Connecticut River basin (U.S. Army Corps of Engineers, 1988).

Quinebaug River Basin

The Quinebaug River basin (fig. 1). The basin drains 154 mi^2 and includes all or part of 15 municipalities. The basin has two municipalities on public water-supply systems (table 8) with a total of three wells and four surface-water intakes (fig. 9). Surface water accounted for about 1.89 Mgal/d (75 percent) of the public water-supply water use during 1986 (table 32).

French River Basin

The French River basin (fig. 1) drains 95 mi^2 and includes all or part of 10 municipalities. Four municipalities have public water-supply systems (table 9) with a total of 13 wells and one surface-water intake (fig. 10). Leicester has three public water-supply systems. The Leicester Water Supply District has four wells in the Blackstone River basin (fig. 12 and table 11.) Ground water accounted for about 3.29 Mgal/d (93 percent) of the withdrawals in 1986 (table 32).

Nashua River Basin

The Nashua River basin (fig. 1) drains 443 mi^2 and includes all or part of 27 cities and municipalities. The basin has 16 municipalities on public water-supply systems (table 10) with a total of 43 wells and 22 surface-water intakes (fig. 11). Ayer and Townsend have two public water suppliers. Surface water supplied about 135.00 Mgal/d (95 percent) of the water during 1986 (table 32). Worcester has 2 wells and 7 reservoirs in the Blackstone River basin (fig. 12 and table 11); Fitchburg has two reservoirs in the Chicopee River basin (fig. 8 and table 7); and Ayer has one well in the Merrimack River basin (fig. 13 and table 12). Fitchburg transferred water into the Nashua River basin from the Chicopee River basin. Holden, Paxton, and Rutland transferred water from the Nashua River basin to the Blackstone River basin (U.S. Army Corps of Engineers, 1988). The population figures for the MWRA in the Chicopee (table 7) and Nashua River basin are almost identical because the water is transferred from the Quabbin reservoir to the Wachusett reservoir to be used in the metropolitan Boston area.

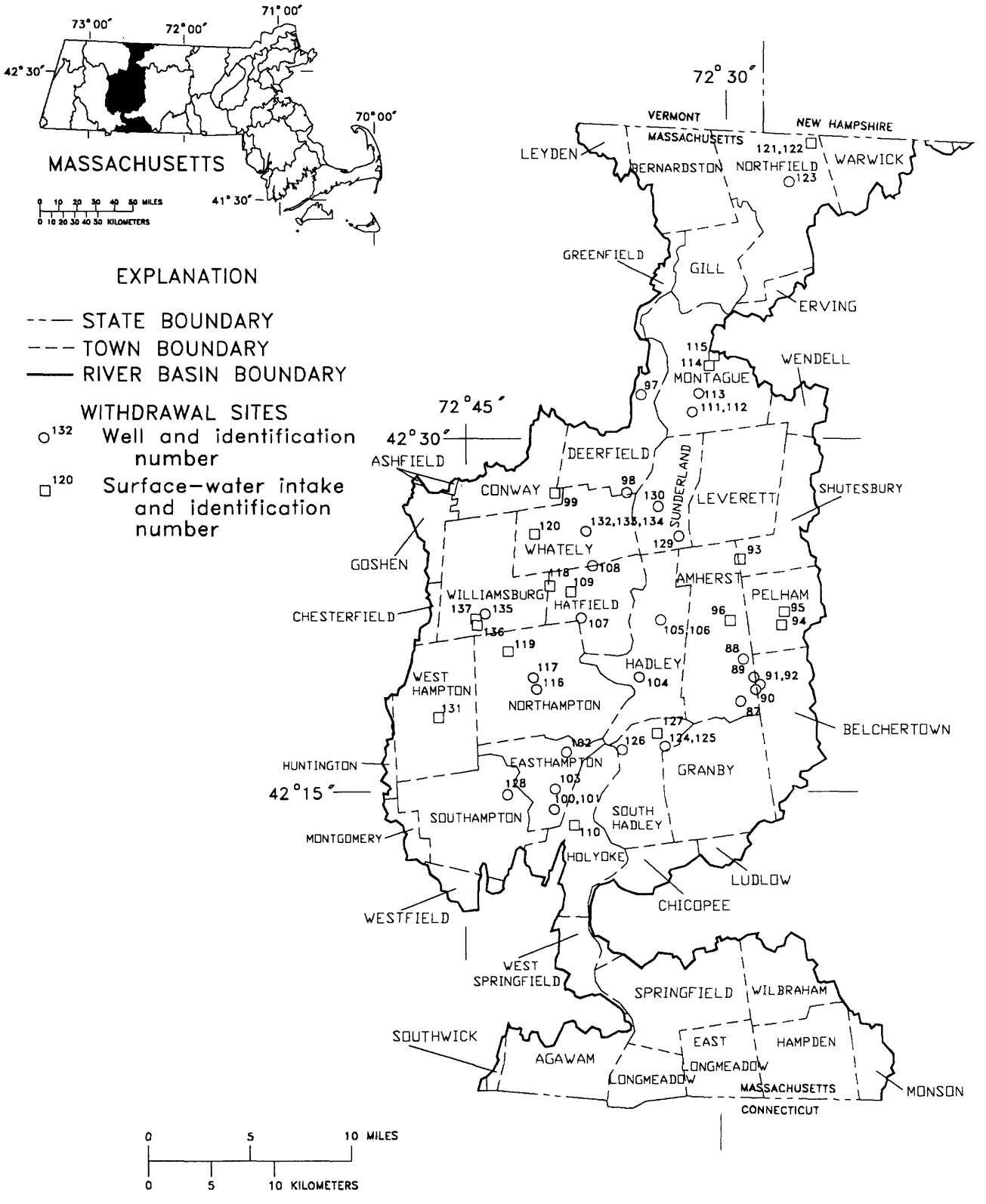

Figure 6.--Location of public water-supply withdrawal sites in the Connecticut River basin.

Table 5.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Connecticut River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 6 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
AMHERST	AMHERST PUBLIC WORKS DEPARTMENT	87	BAY ROAD WELL 5	GW	42 19 04	72 29 04	YES	0.13	M	
		88	BRICKYARD WELL FIELD	GW	42 20 50	72 29 10	YES	.00	M	
		89	BROWN WELL 3	GW	42 19 47	72 27 39	YES	.85	M	
		90	LAWREN SWAMP WELL 4	GW	42 19 22	72 28 25	YES	.35	M	
		91	SOUTH AMHERST WELL 1	GW	42 19 54	72 28 13	YES	.33	E	
		92	SOUTH AMHERST WELL 2	GW	42 19 56	72 28 12	YES	.33	E	
		93	ATKINS RESERVOIR	SW	42 25 32	72 29 15	NO	.77	M	
		94	HAWLEY RESERVOIR	SW	42 22 30	72 26 38	NO	.00	E	
		95	HILL RESERVOIR	SW	42 22 54	72 26 33	NO	.00	E	
		96	PELHAM RESERVOIR STotal	SW	42 22 36	72 29 43	NO	1.08	M	
							Total	3.84		33,000
DEERFIELD	DEERFIELD FIRE DISTRICT[1]	97	KEATS SPRINGS	GW	42 32 22	72 35 14	YES	0.01	M	
							Total	0.01		100
	SOUTH DEERFIELD WATER DISTRICT	98	SURGARLOAF WELL FIELD	GW	42 28 03	72 35 54	NO	0.00	M	
		99	ROARING BROOK RESERVOIR	SW	42 28 08	72 39 53	NO	.59	M	
							Total	0.59		3,500
EASTHAMPTON	EASTHAMPTON WATER DEPARTMENT	100	HENDRICK STREET WELL	GW	42 14 22	72 39 43	YES	0.00	M	
		101	HENDRICKS STREET WF	GW	42 14 27	72 39 37	YES	2.31	M	
		102	LOVEFIELD WF	GW	42 16 50	72 39 08	YES	.52	M	
		103	NONOTUCK WELL	GW	42 15 17	72 39 42	YES	.45	M	
							Total	3.28		16,000
HADLEY	HADLEY WATER DEPARTMENT	104	CALLAHAN WF	GW	42 19 58	72 34 51	YES	0.01	E	
		105	MOUNT WARNER ROAD WELL 1	GW	42 22 34	72 33 54	YES	.39	E	
		106	MOUNT WARNER ROAD WELL 2	GW	42 22 30	72 33 52	YES	.39	E	
							Total	0.79		4,300
HATFIELD	HATFIELD WATER DEPARTMENT	107	BETSOLD WELL	GW	42 22 36	72 38 23	YES	0.09	M	
		108	OMASTA WELL	GW	42 24 49	72 37 39	YES	.23	M	
		109	RUNNING GUTTER BROOK RES	SW	42 23 47	72 38 55	NO	.00	M	
							Total	0.32		3,200

Table 5.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Connecticut River basin*--Continued

Municipality name	Public water supplier	Figure 6 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
HOLYOKE[2]	HOLYOKE WATER WORKS	110	WHITING STREET RESERVOIR	SW	42 13 48	72 38 32	NO	1.11	M	
							Total	1.11		5,000
MONTAGUE	MILLERS FALLS FIRE DISTRICT	111	RIVER ROAD WELL	GW	42 35 24	72 29 34	YES	0.09	M	
							Total	0.09		1,600
	MONTAGUE CENTER WATER DEPARTMENT	112	MONTAGUE CENTER WELL	GW	42 31 31	72 32 04	YES	0.04	E	
							Total	0.04		1,000
	TURNERS FALLS WATER DEPARTMENT	113	WELL PUMP STATION	GW	42 32 14	72 31 28	YES	1.00	M	
		114	GREEN POND	SW	42 34 00	72 30 39	NO	.00	E	
		115	LAKE PLEASANT	SW	42 33 28	72 30 56	NO	.07	M	
							Total	1.07		5,600
NORTHAMPTON	NORTHAMPTON WATER DEPARTMENT	116	CLARK STREET WELL 1	GW	42 19 28	72 40 52	YES	0.58	M	
		117	SPRING STREET WELL 2	GW	42 19 44	72 41 05	YES	.19	M	
		118	MOUNTAIN STREET RES	SW	42 24 02	72 40 16	NO	3.29	M	
		119	ROBERTS MEADOW RESERVOIR	SW	42 21 04	72 42 38	NO	.00	M	
		120	RYANS/WHATE RESERVOIR	SW	42 26 13	72 41 08	NO	.00	E	
							Total	4.06		29,000
NORTHFIELD	EAST NORTHFIELD WATER COMPANY	121	GRANDIN RESERVOIR	SW	42 43 09	72 25 35	NO	0.08	M	
		122	LOUISIANA RESERVOIR	SW	42 43 10	72 25 25	NO	.00	E	
							Total	0.08		1,600
	NORTHFIELD WATER DISTRICT	123	STROWBRIDGE ROAD WELL	GW	42 41 30	72 26 35	YES	0.01	M	
							Total	0.01		600
SOUTH HADLEY	SOUTH HADLEY FIRE DISTRICT 2	124	ELMER BROOK WELL 1	GW	42 17 12	72 33 12	YES	0.03	E	
		125	ELMER BROOK WELL 2	GW	42 17 12	72 33 26	YES	.03	E	
		126	DRY BROOK WELL	GW	42 16 53	72 35 56	NO	.41	M	
		127	LYTHIA SPRINGS RESERVOIR	SW	42 17 42	72 34 02	NO	.07	E	
							Total	0.54		4,400
SOUTHAMPTON	SOUTHAMPTON WATER DEPARTMENT	128	COLLEGE HIGHWAY WELL	GW	42 14 49	72 42 30	NO	0.04	M	
							Total	0.04		2,500

Table 5.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Connecticut River basin*--Continued

Municipality name	Public water supplier	Figure 6 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
SUNDERLAND	SUNDERLAND WATER DISTRICT	129	HUBBARD WELL	GW	42 26 07	72 32 42	YES	0.17	M	
		130	RALICKI WELL	GW	42 27 31	72 33 54	YES	.11	M	
							Total	0.28		2,600
WESTHAMPTON	WESTHAMPTON WATER COMPANY	131	WESTHAMPTON RESERVOIR	SW	42 18 19	72 46 49	NO	0.00	M	
							Total	0.00		0
WHATELY	WHATELY WATER DISTRICT	132	WELL 1	GW	42 26 20	72 38 10	YES	0.01	E	
		133	WELL 2	GW	42 26 20	72 38 10	YES	.00	E	
		134	WELL 3	GW	42 26 19	72 38 11	YES	.00	E	
							Total	0.01		100
WILLIAMSBURG	WILLIAMSBURG WATER DEPARTMENT	135	SOUTH STREET WELL	GW	42 22 48	72 43 39	YES	0.04	M	
		136	L UNQUOMONK RESERVOIR	SW	42 22 18	72 44 15	NO	.19	M	
		137	U UNQUOMONK RESERVOIR	SW	42 22 31	72 44 31	NO	.00	E	
							Total	0.23		500
						Total for river basin		16.39		114,600

[1] Deerfield Fire District has three wells in the Deerfield River basin.

[2] Holyoke has one well and three reservoirs in the Westfield River basin.

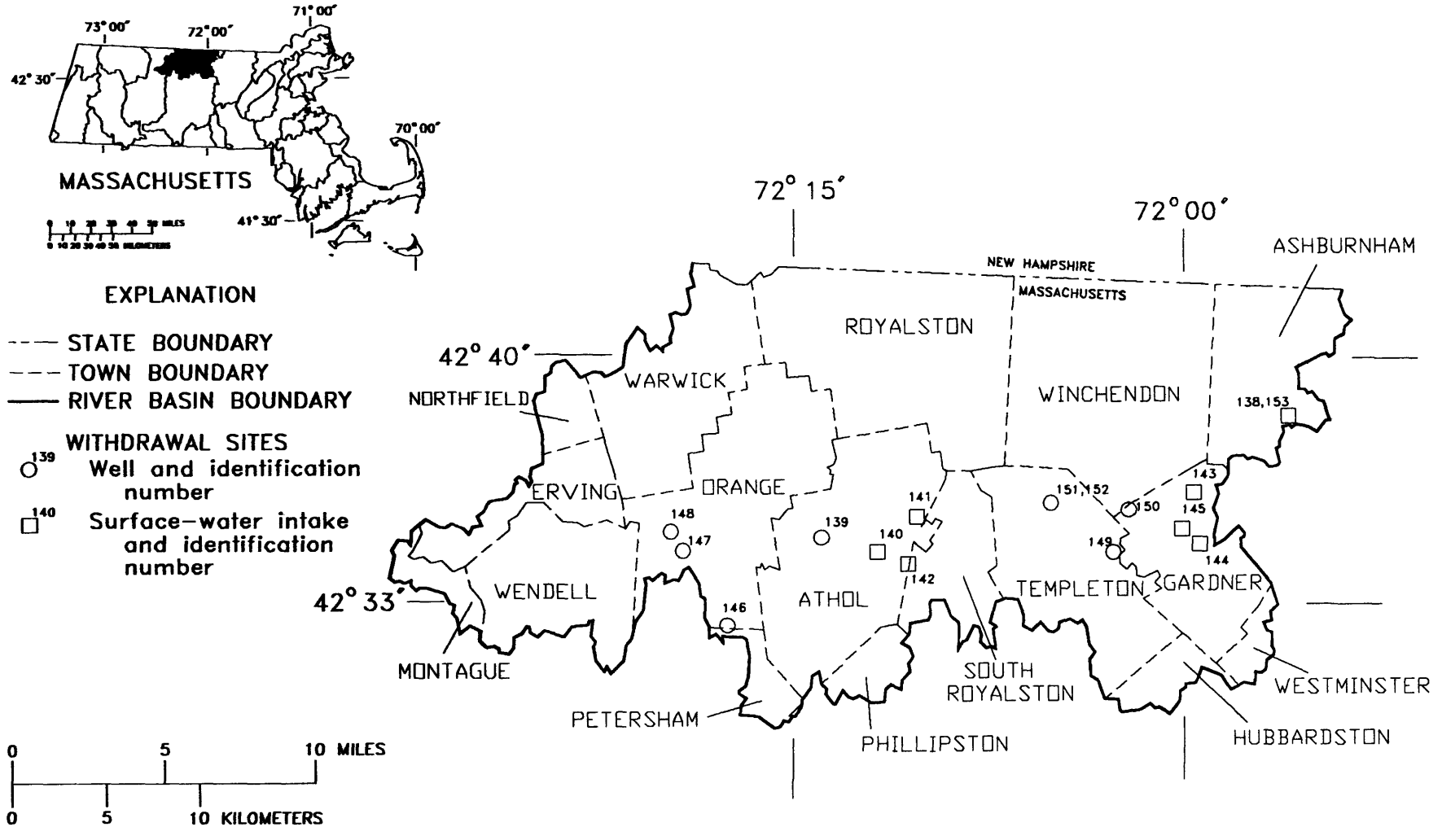

Figure 7.–Location of public water-supply withdrawal sites in the Millers River basin.

Table 6.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Millers River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 7 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ASHBURNHAM	ASHBURNHAM WATER DEPARTMENT	138	UPPER NAUKEAG LAKE	SW	42 39 02	71 55 40	NO	0.21	M	
							Total	0.21		6,000
ATHOL	ATHOL WATER DIVISION	139	SOUTH STREET WELL	GW	42 35 24	72 14 22	YES	0.17	M	
		140	LAKE ELLIS	SW	42 34 55	72 12 25	NO	.05	M	
		141	NEWTON RESERVOIR	SW	42 36 05	72 10 31	NO	.40	M	
		142	PHILLIPSTON RESERVOIR	SW	42 34 44	72 10 53	NO	.28	M	
							Total	0.90		10,000
GARDNER	GARDNER WATER DEPARTMENT	143	COWEE POND	SW	42 36 39	71 59 10	NO	0.00	M	
		144	CRYSTAL LAKE	SW	42 34 56	71 59 24	NO	1.81	M	
		145	PERLEY BROOK RESERVOIR	SW	42 35 21	72 00 15	NO	.52		
							Total	2.33		16,000
ORANGE	ORANGE WATER DEPARTMENT	146	DAN SHAY HIGHWAY WELL 3	GW	42 32 54	72 17 44	YES	0.76	M	
		147	HOLTSHIRE ROAD WELL 1	GW	42 34 52	72 19 42	YES	.00	M	
		148	MAGEE MEADOW WELL 2	GW	42 35 28	72 19 59	YES	.09	M	
							Total	0.85		6,800
TEMPLETON	TEMPLETON WATER DEPARTMENT	149	OTTER RIVER WELL	GW	42 35 10	72 02 55	YES	0.11	M	
		150	SAWYER STREET WELL	GW	42 36 15	72 02 00	YES	.31	M	
		151	BIRCH HILL WELL 1	GW	42 36 17	72 05 07	NO	.09	M	
		152	BIRCH HILL WELL 2	GW	42 36 17	72 05 07	NO	.09	E	
							Total	0.60		6,000
WINCHENDON	WINCHENDON WATER DEPARTMENT	153	UPPER NAUKEAG LAKE	SW	42 39 02	71 55 40	NO	0.70	M	
							Total	0.70		5,500
						Total for river basin		5.59		50,300

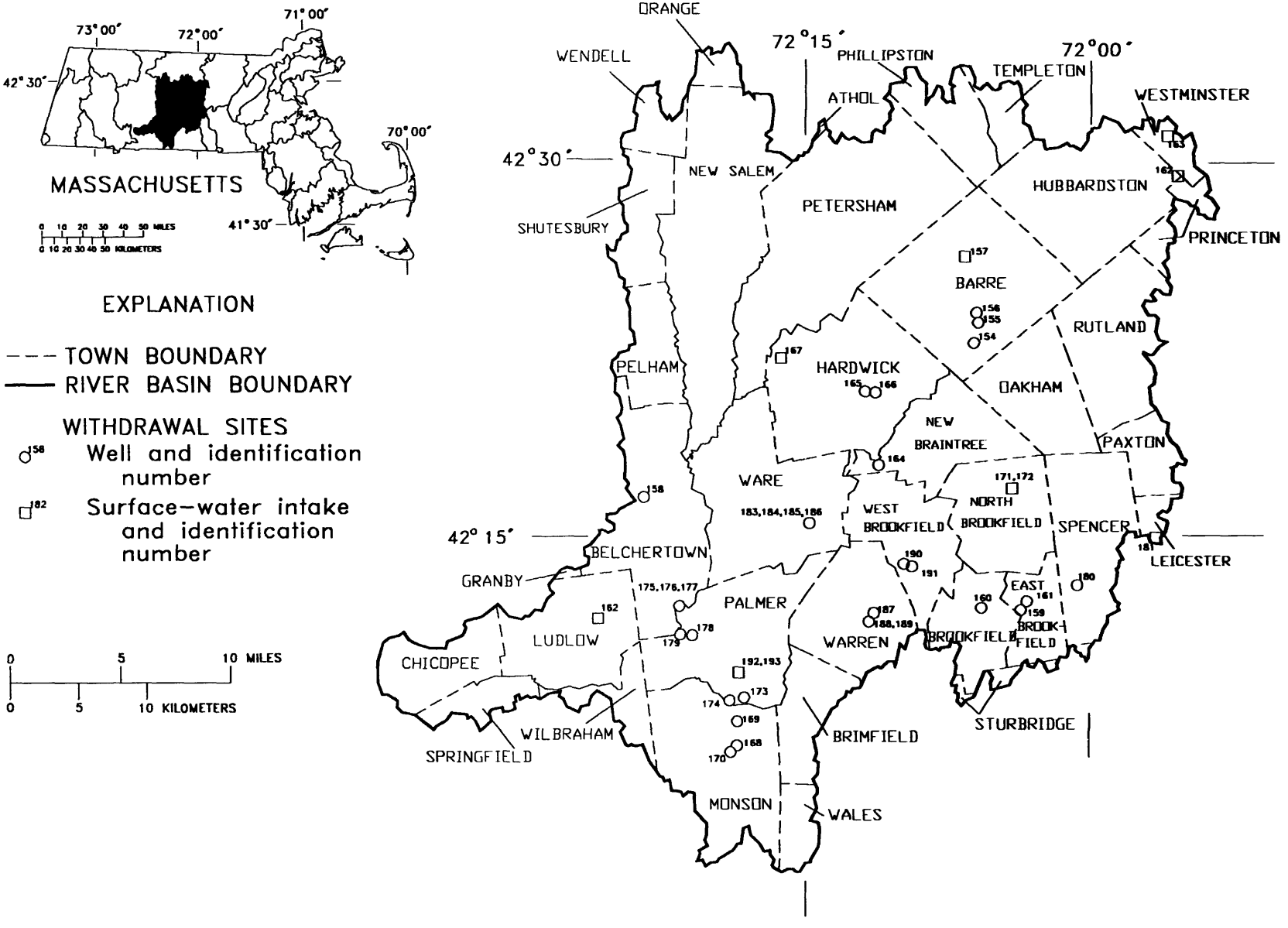

Figure 8.--Location of public water-supply withdrawal sites in the Chicopee River basin.

Table 7.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Chicopee River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 8 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BARRE	BARRE WATER DEPARTMENT	154	BARRE COMB WOOL WELL	GW	42 22 42	72 06 07	YES	0.12	M	
		155	SOUTH BARRE ROAD WELL 1	GW	42 23 37	72 06 10	YES	.08	M	
		156	VALLEY ROAD WELL 2	GW	42 24 03	72 06 03	YES	.07	M	
		157	ALLEN HILL RESERVOIR	SW	42 26 17	72 06 53	NO	.07	M	
							Total	0.34		3,800
BELCHERTOWN	BELCHERTOWN WATER DISTRICT	158	BELCHERTOWN WELL FIELD	GW	42 16 50	72 23 35	YES	0.22	M	
							Total	0.22		3,000
BROOKFIELD	BROOKFIELD WATER DEPARTMENT	159	QUABOAG STREET PUMP STA	GW	42 12 23	72 03 35	YES	0.09	M	
		160	MILLER STREET PUMP STA	GW	42 12 25	72 05 53	NO	.00	M	
							Total	0.09		2,000
EAST BROOKFIELD	EAST BROOKFIELD WATER DEPARTMENT	161	WEST STREET WELL	GW	42 12 43	72 03 23	YES	0.15	M	
							Total	0.15		1,900
HARDWICK	GILBERTVILLE WATER DEPARTMENT	164	NEW BRAINTREE PUMP STA	GW	42 18 08	72 11 28	YES	0.08	M	
							Total	0.08		1,200
	HARDWICK CENTER WATER DEPARTMENT	165	PETERSHAM ROAD WELL 2	GW	42 21 07	72 12 01	NO	0.01	E	
		166	RUGGLES HILL ROAD WELL 1	GW	42 21 03	72 11 38	NO	.00	E	
							Total	0.01		100
	MASSACHUSETTS WATER RESOURCE AUTHORITY	167	QUABBIN RESERVOIR	SW	42 22 17	72 16 45	NO	200.80	M	
							Total	200.80		2,000,000
LUDLOW	SPRINGFIELD WATER WORKS[1]	182	LUDLOW RESERVOIR	SW	42 12 00	72 26 00	NO	2.06	M	
							Total	2.06		10,000
MONSON	MONSON WATER DEPARTMENT	168	BETHANY ROAD WELL 1	GW	42 06 52	72 18 42	YES	0.01	M	
		169	BUNYUN ROAD WELL 3	GW	42 07 55	72 18 42	YES	.59	M	
		170	PALMER ROAD WELL 2	GW	42 06 41	72 18 53	YES	.00	M	
							Total	0.60		5,000

Table 7.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Chicopee River basin*--Continued

Municipality name	Public water supplier	Figure 8 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
NORTH BROOKFIELD	NORTH BROOKFIELD WATER DEPARTMENT	171	DOANE POND	SW	42 17 22	72 04 25	NO	0.00	E	
		172	NORTH POND	SW	42 17 26	72 04 25	NO	.41	E	
							Total	0.41		3,000
PALMER	PALMER FIRE DISTRICT # 1	173	GALAXY WELL FIELD	GW	42 08 55	72 18 13	YES	0.00	M	
		174	SALEM STREET GP WELL 2	GW	42 08 50	72 19 13	YES	.13	M	
		192	L GRAVES BROOK RESERVOIR	SW	42 09 40	72 08 45	NO	.15	M	
		193	U GRAVES BROOK RESERVOIR	SW	42 09 44	72 08 43	NO	.33	M	
							Total	0.61		4,000
	BONDSVILLE FIRE WATER DISTRICT	175	WELL 1	GW	42 12 42	72 21 54	YES	0.12	E	
		176	WELL 2	GW	42 12 43	72 21 57	YES	.12	E	
		177	WELL 3	GW	42 12 38	72 21 56	NO	.12	M	
							Total	0.36		3,000
	THREE RIVERS FIRE DISTRICT	178	OAK STREET WELL 2	GW	42 11 22	72 21 02	YES	0.13	M	
		179	ROUTE 181 WELL 1	GW	42 11 18	72 21 27	YES	.26	M	
							Total	0.39		3,700
SPENCER	SPENCER WATER DEPARTMENT	180	CRANBERRY BOG WELL	GW	42 13 27	72 00 42	YES	0.12	M	
		181	SHAW POND	SW	42 15 30	71 56 36	NO	.39	M	
							Total	0.51		5,500
WARE	WARE WATER DEPARTMENT	183	BARNES ROAD WELL 1	GW	42 15 48	72 14 54	YES	0.22	E	
		184	BARNES ROAD WELL 2	GW	42 15 49	72 14 55	YES	.22	E	
		185	BARNES ROAD WELL 3	GW	42 15 47	72 14 56	YES	.22	E	
		186	BARNES ROAD WELL 4	GW	42 15 52	72 14 55	YES	.29	M	
							Total	0.95		7,500
WARREN	WARREN WATER DISTRICT	187	WELL FIELD	GW	42 12 20	72 11 36	YES	0.21	M	
							Total	0.21		2,600
	WEST WARREN WATER DEPARTMENT	188	BRIMFIELD ROAD WELL 5	GW	42 12 01	72 11 52	YES	0.03	E	
		189	BRIMFIELD ROAD WELL 6	GW	42 12 01	72 11 52	YES	.03	E	
							Total	0.06		1,200

Table 7.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Chicopee River basin*--Continued

Municipality name	Public water supplier	Figure 8 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WEST BROOKFIELD	WEST BROOKFIELD WATER DEPARTMENT	190	OLD WARREN ROAD WELL 2	GW	42 14 08	72 10 00	YES	0.08	M	
		191	WARE POINT WELL 1	GW	42 14 06	72 09 29	YES	.23	M	
							Total	0.31		2,800
WESTMINSTER	FITCHBURG DEPARTMENT OF PUBLIC WORKS WATER DIVISION[2]	162	BICKFORD POND	SW	42 29 32	71 55 36	NO	0.00	M	
		163	MARE MEADOW RESERVOIR	SW	42 31 07	71 55 53	NO	.00	M	
							Total	0.00		0
						Total for river basin		208.16		2,060,300

[1] Springfield Water Works has one reservoir in the Westfield River basin.

[2] Fitchburg has eight reservoirs in the Nashua River basin.

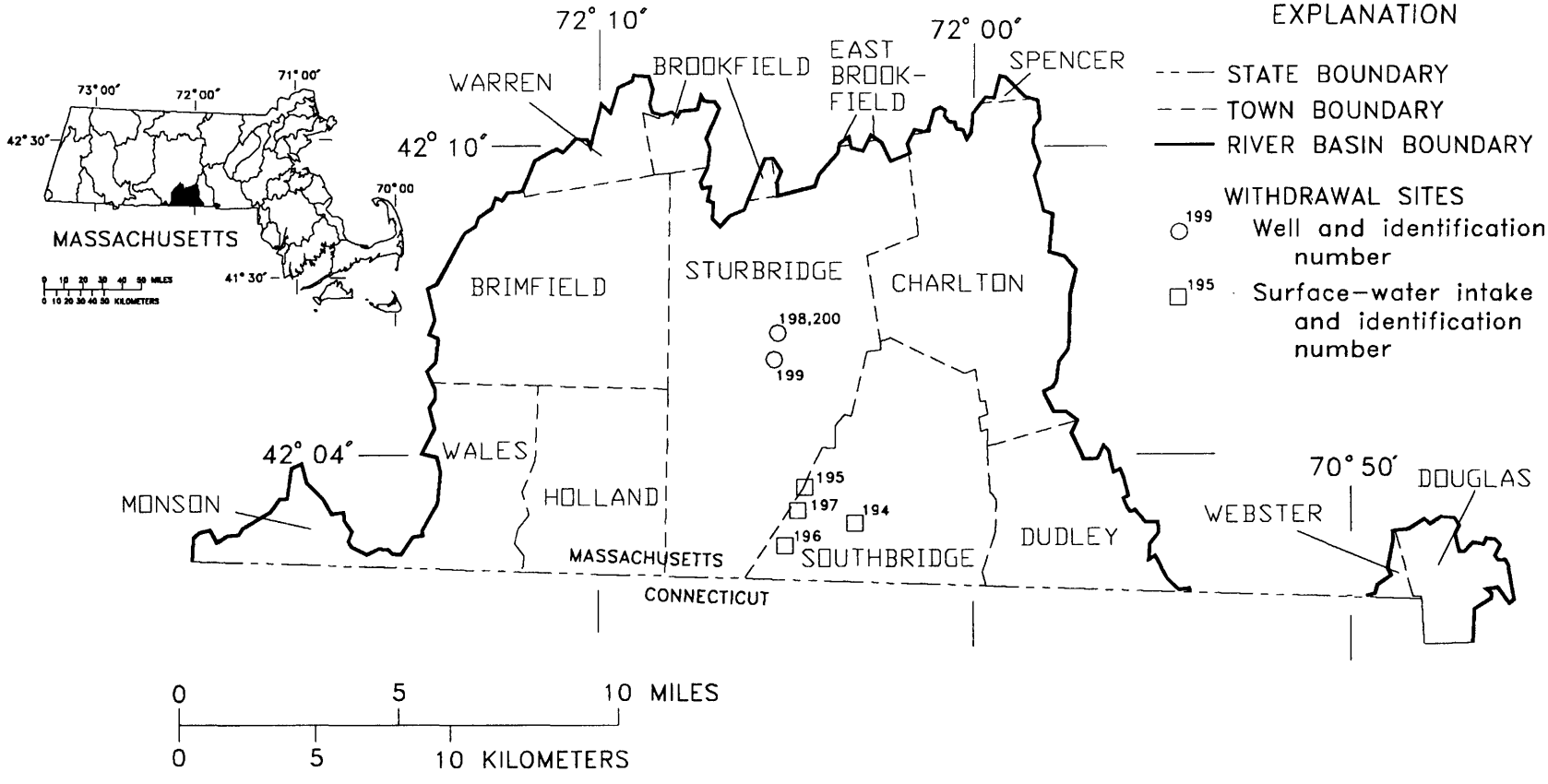

Figure 9.--Location of public water-supply withdrawal sites in the Quinebaug River basin.

Table 8.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Quinebaug River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 9 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
SOUTHBRIDGE	SOUTHBRIDGE WATER SUPPLY COMPANY	194	COHASSET BROOK RESERVOIR	SW	42 02 48	72 03 10	NO	0.00	M	
		195	HATCHET BR RESERVOIR 3	SW	42 03 25	72 04 22	NO	.71	E	
		196	HATCHET BR RESERVOIR 4	SW	42 03 03	72 04 32	NO	.71	E	
		197	HATCHET BR RESERVOIR 5	SW	42 02 22	72 04 55	NO	.47	M	
							Total	1.89		17,000
STURBRIDGE	STURBRIDGE WATER DEPARTMENT	198	OLD STURBRIDGE WELL 2	GW	42 06 31	72 05 36	YES	0.13	M	
		199	OLD STURBRIDGE WELL 3	GW	42 06 05	72 05 38	YES	.01	M	
		200	WATERWORKS ROAD WELL 1	GW	42 06 30	72 05 32	YES	.54	M	
							Total	0.68		12,000
						Total for river basin		2.57		29,000

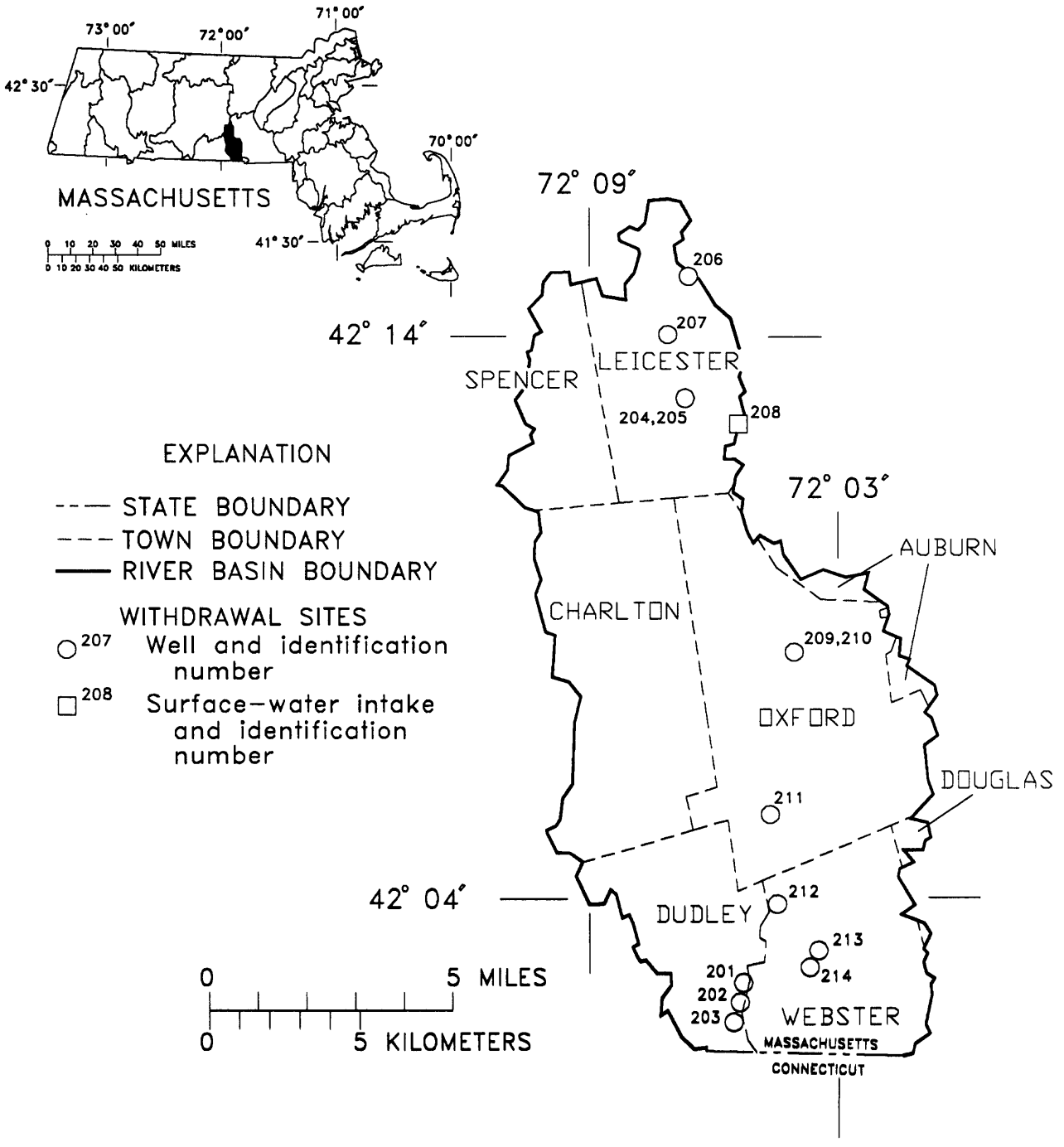

Figure 10.--Location of public water-supply withdrawal sites in the French River basin.

Table 9.--*Description of public water-supply withdrawal sites and withdrawal amounts in the French River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 10 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
DUDLEY	DUDLEY WATER DEPARTMENT	201	MAIN STREET WELL FIELD	GW	42 02 43	71 53 27	YES	0.55	M	
		202	SCHOFIELD AVENUE WELL 6	GW	42 02 22	71 53 27	YES	.45	M	
		203	SCHOFIELD AVENUE WELL 5	GW	42 01 59	71 53 37	YES	.00	M	
							Total	1.00		8,600
LEICESTER	HILLCREST WATER DISTRICT	204	PLEASANT STREET WELL 2	GW	42 13 16	71 54 51	YES	0.03	E	
		205	WELL 1	GW	42 13 13	71 54 50	YES	.03	E	
							Total	0.06		1,300
	LEICESTER WATER SUPPLY DISTRICT[1]	206	ROCK WELL 4	GW	42 15 26	71 54 37	YES	0.01	M	
		207	ROCK WELL 5	GW	42 14 23	71 55 11	YES	.00	M	
							Total	0.01		2,000
	CHERRY VALLEY AND ROCHDALE WATER DISTRICT	208	HENSHAW POND	SW	42 12 50	71 53 36	NO	0.25	E	
							Total	0.25		5,000
OXFORD	MASSACHUSETTS AMERICAN WATER COMPANY/OXFORD WATER COMPANY	209	NORTH MAIN STREET WELL 1	GW	42 08 38	71 52 06	YES	0.35	M	
		210	NORTH MAIN STREET WELL 2	GW	42 08 38	71 52 07	YES	.36	M	
		211	NELSON STREET WELL	GW	42 05 46	71 52 40	YES	.21	M	
							Total	0.92		6,300
WEBSTER	WEBSTER WATER DEPARTMENT	212	BIGELOW ROAD WELL 3	GW	42 04 08	71 52 32	YES	0.41	M	
		213	MEMORIAL BEACH WELL 2	GW	42 03 13	71 51 38	YES	.13	M	
		214	THOMPSON ROAD TUBULAR WF	GW	42 03 01	71 51 44	YES	.76	M	
							Total	1.30		15,000
						Total for river basin		3.54		38,200

[1] The Leicester Water Supply District has four wells in the Blackstone River Basin.

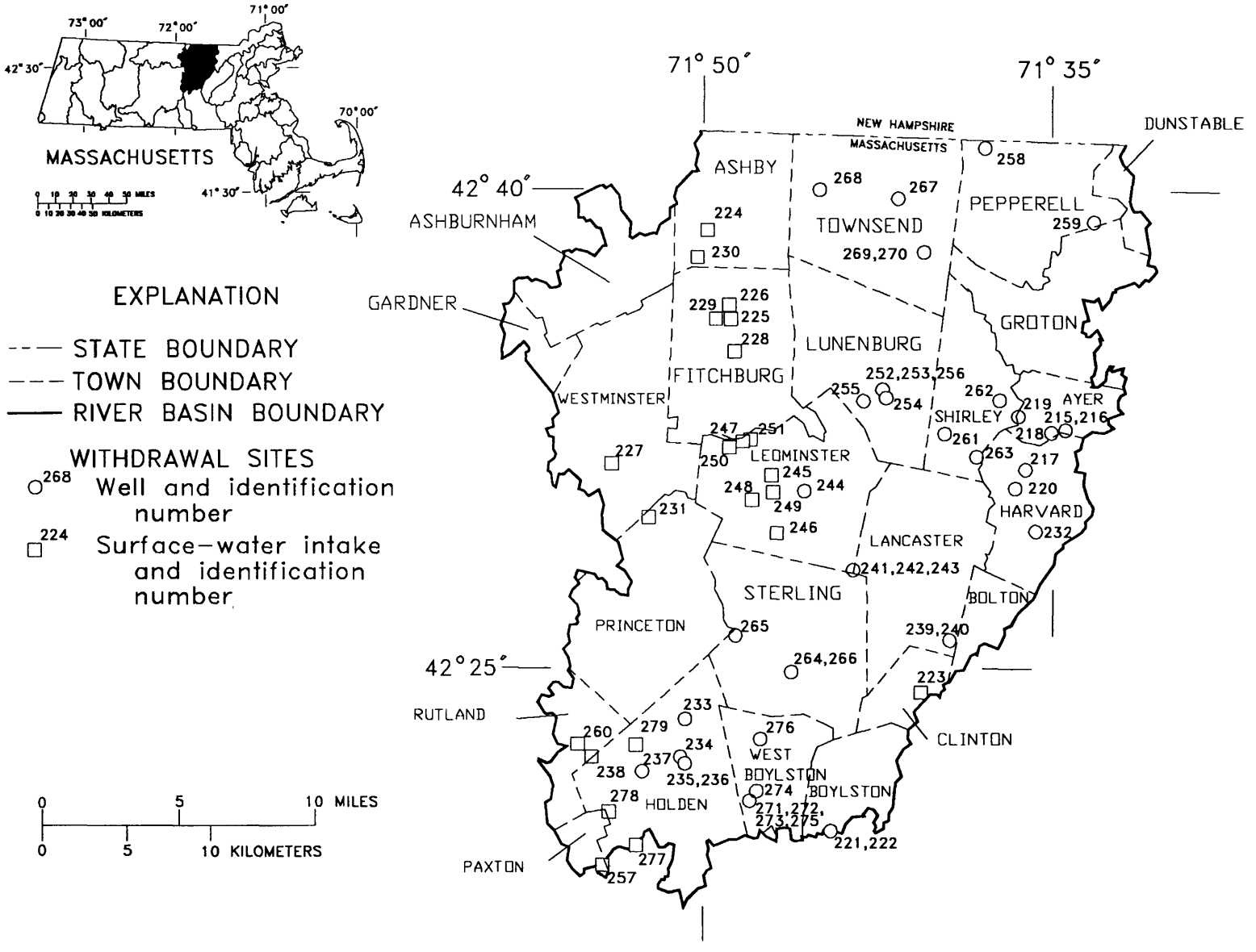

Figure 11.--Location of public water-supply withdrawal sites in the Nashua River basin.

Table 10.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Nashua River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 11 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
AYER[1]	AYER DEPARTMENT OF PUBLIC WORKS	215	GROVE POND WELL 1	GW	42 33 03	71 34 53	YES	0.27	M	
		216	GROVE POND WELL 2	GW	42 33 03	71 34 53	YES	.27	E	
							Total	0.54		6,000
	FORT DEVENS	217	PATTON WELL	GW	42 31 46	71 36 22	YES	0.07	M	
		218	GROVE POND WELL	GW	42 33 03	71 35 12	YES	.02	M	
		219	MCPHERSON WELL	GW	42 33 27	71 36 41	YES	.44	M	
		220	SHABOKIN WELL	GW	42 31 11	71 36 48	YES	.72	M	
							Total	1.25		8,000
BOYLSTON	BOYLSTON WATER DISTRICT	221	WELL 1	GW	42 20 17	71 44 46	YES	0.10	E	
		222	WELL 2	GW	42 20 19	71 44 48	NO	.10	E	
							Total	0.20		3,000
CLINTON	MASSACHUSETTS WATER RESOURCE AUTHORITY	223	WACHUSETT RESERVOIR	SW	42 24 13	71 41 35	YES	113.90	M	
							Total	113.90		2,000,000
FITCHBURG[2]	FITCHBURG DIVISION OF PUBLIC WORKS, WATER DEPARTMENT	224	ASHBY RESERVOIR	SW	42 39 31	71 50 03	NO	0.00	E	
		225	FALLULAH RESERVOIR	SW	42 36 48	71 49 10	NO	1.44	M	
		226	LOVELL RESERVOIR	SW	42 36 57	71 49 12	NO	.00	E	
		227	MEETINGHOUSE POND	SW	42 32 05	71 54 18	NO	4.12	M	
		228	OVERLOOK RESERVOIR	SW	42 35 38	71 49 01	NO	.31	M	
		229	SCOTT RESERVOIR	SW	42 36 40	71 49 45	NO	.33	M	
		230	SHATTUCK RESERVOIR	SW	42 38 39	71 50 37	NO	.00	E	
		231	WACHUSETTS LAKE	SW	42 30 22	71 52 30	NO	.00	M	
							Total	6.20		40,000
HARVARD	HARVARD WATER DEPARTMENT	232	POND ROAD WELL	GW	42 29 51	71 35 52	YES	0.01	M	
							Total	0.01		300
HOLDEN	HOLDEN DEPARTMENT OF PUBLIC WORKS	233	MASON ROAD WELL FIELD	GW	42 23 55	71 51 01	YES	0.06	M	
		234	MILL STREET WELL FIELD	GW	42 22 43	71 51 20	YES	.15	M	
		235	QUINAPOXET WELL 1	GW	42 22 30	71 51 04	YES	.21	E	
		236	QUINAPOXET WELL 2	GW	42 22 32	71 51 10	YES	.20	E	
		237	SPRING STREET WELL	GW	42 22 07	71 52 54	YES	.20	M	
		238	MASCHOPAUGE RESERVOIR	SW	42 22 47	71 55 10	NO	.33	M	
							Total	1.15		13,000

Table 10.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Nashua River basin*--Continued

Municipality name	Public water supplier	Figure 11 identification number	Site name	Site type	Latitude ° ′ ″	Longitude ° ′ ″	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
HOLDEN (Continued)	WORCESTER PUBLIC WATER DEPARTMENT[3]	277	KENDALL RESERVOIR	SW	42 19 42	71 53 00	NO	9.52	E	
		278	PINE HILL RESERVOIR	SW	42 21 00	71 54 21	NO	.00	E	
		279	QUINAPOXET RESERVOIR	SW	42 23 06	71 53 15	NO	.00	E	
							Total	9.52		70,000
LANCASTER	LANCASTER WATER DEPARTMENT	239	WELL 1	GW	42 26 19	71 39 44	YES	0.27	M	
		240	WELL 2	GW	42 26 20	71 39 43	YES	.23	M	
							Total	0.50		6,000
LEOMINSTER[4]	LEOMINSTER WATER DEPARTMENT	241	SOUTHEAST WELL 1	GW	42 28 40	71 43 46	YES	0.03	E	
		242	SOUTHEAST WELL 2	GW	42 28 36	71 43 49	YES	.03	E	
		243	SOUTHEAST WELL 3	GW	42 28 35	71 43 45	YES	.03	E	
		244	WASS MEADOW WELL	GW	42 31 07	71 45 49	YES	.00	M	
		245	DISTRIBUTING RESERVOIR	SW	42 31 39	71 47 14	NO	.47	E	
		246	FALL BROOK RESERVOIR	SW	42 29 51	71 47 01	NO	.00	M	
		247	GOODFELLOW RESERVOIR	SW	42 32 47	71 48 38	NO	1.00	E	
		248	HAYNES RESERVOIR	SW	42 30 51	71 48 10	NO	.47	E	
		249	MORSE RESERVOIR	SW	42 31 08	71 47 25	NO	.47	E	
		250	NO-TOWN RESERVOIR	SW	42 32 34	71 49 05	NO	1.00	E	
		251	SIMMONS POND RESERVOIR	SW	42 32 51	71 48 14	NO	1.00	E	
							Total	4.50		35,000
LUNENBERG	LUNENBERG WATER DISTRICT	252	LANCASTER AVENUE WELL 1	GW	42 34 14	71 42 38	YES	0.06	M	
		253	LANCASTER AVENUE WELL 2	GW	42 34 07	71 42 34	YES	.07	M	
		254	LANCASTER AVENUE WELL 3	GW	42 34 04	71 42 28	YES	.00	M	
		255	LANCASTER AVENUE WELL 4	GW	42 33 59	71 42 77	YES	.09	M	
		256	LANCASTER AVENUE WELL 5	GW	42 34 19	71 42 35	YES	.09	M	
							Total	0.31		5,000
PAXTON	PAXTON WATER DEPARTMENT	257	AONEBUMSKIT RESERVOIR	SW	42 19 14	71 54 34	NO	0.30	M	
							Total	0.30		3,700
PEPPERELL	PEPPERELL WATER DEPARTMENT	258	BEMIS ROAD WELL 2	GW	42 42 07	71 37 58	YES	0.62	M	
		259	JERSEY STREET WELL 1	GW	42 39 39	71 33 36	YES	.16	M	
							Total	0.78		5,500
RUTLAND	RUTLAND DEPARTMENT OF PUBLIC WORKS, WATER DIVISION	260	MUSCHOPAUGE POND	SW	42 23 05	71 55 30	NO	0.34	M	
							Total	0.34		3,000

Table 10.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Nashua River basin*--Continued

Municipality name	Public water supplier	Figure 11 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
SHIRLEY	SHIRLEY VILLAGE WATER DEPARTMENT	261	CATAGUNAMUG WELL	GW	42 32 52	71 39 54	YES	0.05	M	
		262	PATTERSON ROAD WELL	GW	42 33 54	71 37 23	YES	.16	M	
		263	SAMSON DUG WELLS	GW	42 32 10	71 38 34	YES	.06	M	
							Total	0.27		3,000
STERLING	STERLING WATER DEPARTMENT	264	ROUTE 12 WELL 2	GW	42 25 17	71 46 29	YES	0.02	E	
		265	ROUTE 12 WELL FIELD[1]	GW	42 25 18	71 46 27	YES	.02	E	
		266	ROUTE 40 WELL 3	GW	42 26 31	71 46 46	YES	.39	M	
							Total	0.43		4,200
TOWNSEND	TOWNSEND WATER DEPARTMENT	267	CROSS STREET WELL 2	GW	42 40 25	71 41 44	YES	0.17	E	
		268	MAIN STREET WELL FIELD[1]	GW	42 40 35	71 45 15	YES	.39	E	
							Total	0.56		5,000
	WITCHES BROOK WATER COMPANY	269	WITCHES BROOK WELL 1	GW	42 38 42	71 40 55	YES	0.09	M	
		270	WITCHES BROOK WELL 2	GW	42 38 42	71 40 50	YES	.16	M	
							Total	0.25		1,000
WEST BOYLSTON	WEST BOYLSTON WATER DISTRICT	271	LEE STREET WELL 1	GW	42 21 16	71 23 19	YES	0.00	M	
		272	LEE STREET WELL 2	GW	42 21 16	71 48 18	YES	.00	M	
		273	LEE STREET WELL 3	GW	42 21 16	71 48 18	YES	.00	M	
		274	LEE STREET WELL 4	GW	42 21 36	71 47 56	YES	.28	M	
		275	PLEASANT VALLEY WELL 1	GW	42 21 27	71 23 20	YES	.09	M	
		276	OAKDALE WELL 1	GW	42 23 14	71 47 51	NO	.15	M	
							Total	0.52		6,000
							Total for river basin	141.53		2,217,700

[1] Ayer has one well in the Merrimack River basin.

[2] Fitchburg has two reservoirs in the Chicopee River basin.

[3] Worcester has two wells and seven reservoirs in the Blackstone River basin.

[4] Leominster Water Department has two distribution reservoir systems. The public supplier actually only draws water from the Distribution and No-town reservoirs. However, each reservoir has been assigned some withdrawal amount to indicate that it contributes to a system.

Blackstone River Basin

The Blackstone River basin (fig. 1) drains 335 mi^2 and includes all or part of 30 municipalities. The basin has sixteen municipalities on public water-supply systems; Grafton has two public water-supply systems (table 11) The river basin has a total of 56 wells and 8 surface-water intakes (fig. 12). Approximately 17.23 Mgal/d (63 percent) of public water-supply came from surface water during 1986 (table 32). Bellingham has three wells in the Charles River basin (fig. 20 and table 22); Leicester has two wells in the French River basin (fig. 10 and table 9); and Worcester has three reservoirs in the Nashua River basin (fig. 11 and table 10). Hopedale was the only municipality to transfer water into the Blackstone River basin from the Charles River basin whereas Paxton, Rutland and Worcester brought water into the basin from the Nashua River basin. Leicester transferred water from the Blackstone River basin to the French River basin (U.S. Army Corps of Engineers, 1988).

Merrimack River Basin

The Merrimack River basin (fig. 1) drains 279 mi^2 and includes all or part of 28 municipalities. The basin has 17 municipalities on public water-supply systems; Chelmsford has two public water-supply systems (table 12). The river basin has a total 42 wells and 14 surface-water intakes (fig. 13). For the basin, about 46.79 Mgal/d (84 percent) of the water came from surface water during 1986 (table 32). Ayer has two wells in the Nashua River basin (fig. 11 and table 10) and both public water-supply systems in Chelmsford have wells in the Concord River basin (fig. 14 and table 14). Tewksbury transferred water into the basin from the Shawsheen River basin (U.S. Army Corps of Engineers, 1988).

Concord River Basin

The Concord River basin (fig. 1) drains 398 mi^2 and includes all or part of 36 municipalities. Fifteen municipalities have public water-supply systems in the Concord River basin (tables 13 and 14) with 68 wells and 7 surface-water intakes (fig. 14). The river basin includes the Assabet River subbasin and the Concord and Sudbury River subbasin. The municipalities of Concord and Westborough have wells in both subbasins. Approximately 18.79 Mgal/d (71 percent) of the public water-supply water in the basin came from ground water during 1986 (table 32).

The Assabet River has seven municipalities on public water-supply systems (table 13). The subbasin has a total of 22 wells and 5 surface-water intakes within the subbasin (fig. 14). Approximately 6.12 Mgal/d (71 percent) of the water for the public water-supply came from ground water (table 32).

The Concord and Sudbury River subbasin has ten municipalities on public water-supply systems; Chelmsford has two systems (table 14). The subbasin has 46 wells and 2 surface-water intakes (fig. 14). Both systems in Chelmsford have wells in the Merrimack River basin (fig. 13 and table 12). Lincoln and Natick have wells in the Charles River basin (fig. 20 and table 22). Approximately 12.67 Mgal/d (71 percent) of the public water-supply came from ground water during 1986 (table 32). Water was transferred from the Concord River basin to the Shawsheen River basin and the Charles River basin by the municipalities of Bedford and Natick (U.S. Army Corps of Engineers, 1988).

Shawsheen River Basin

The Shawsheen River basin (fig. 1) drains 78 mi^2 and includes all or part of 13 municipalities. Three municipalities, Bedford, Burlington, and Tewksbury, are on a public water-supply system (table 15) with a total of 35 wells (fig. 15). Burlington has a reservoir in the Ipswich River basin (fig. 17 and table 17) and a well in the Mystic River subbasin (fig. 19 and table 19). The total withdrawal for the wells in the Shawsheen River basin during 1986 was about 2.10 Mgal/d (table 32). All the municipalities made interbasin transfers from the Shawsheen River basin. Bedford transferred water to the Concord River basin; Burlington transferred water to the Mystic and Ipswich River basins; and Tewksbury transferred water to the Merrimack River basin (U.S. Army Corp of Engineers, 1988).

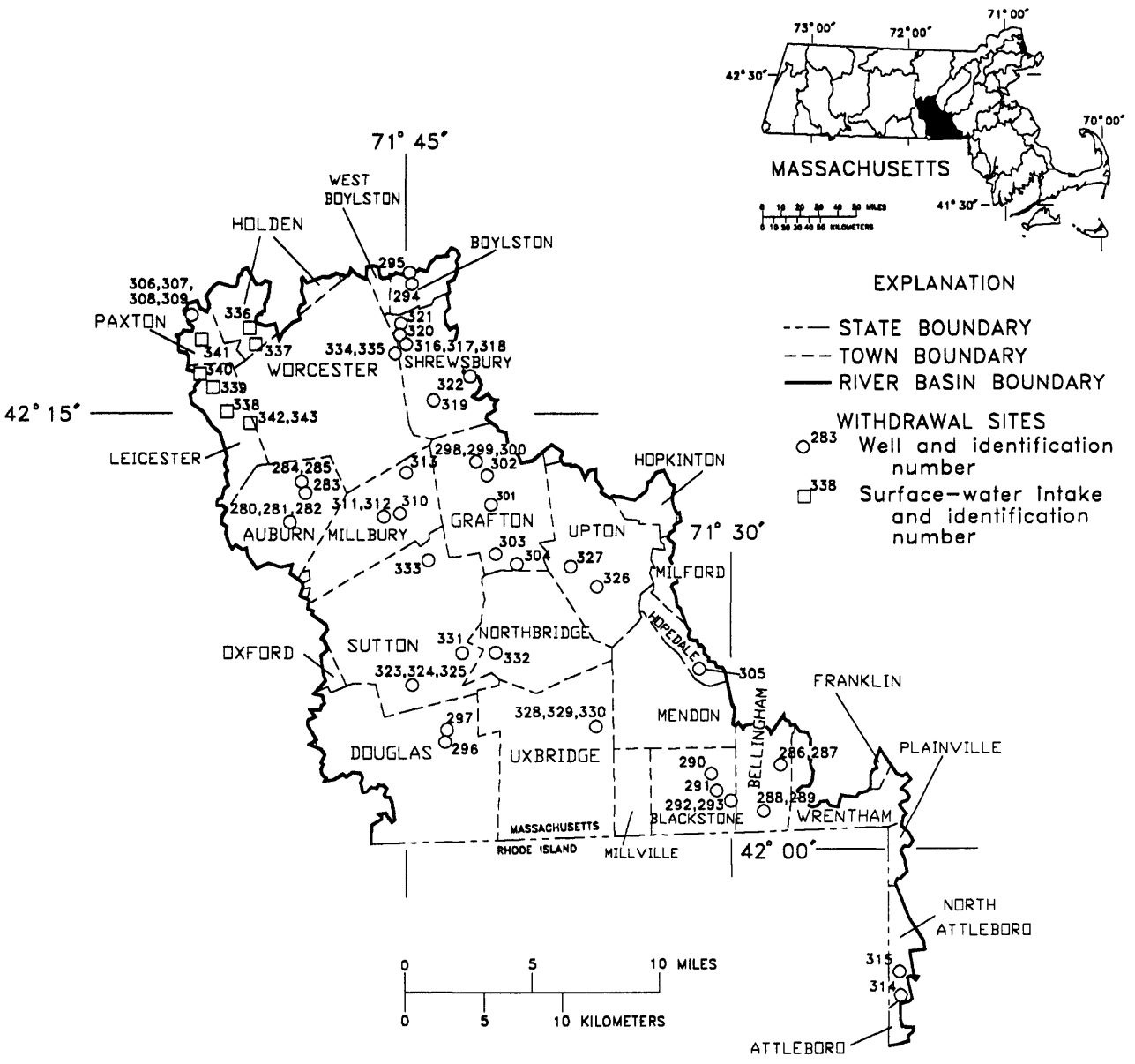

Figure 12.--Location of public water-supply withdrawal sites in the Blackstone River basin.

Table 11.—*Description of public water-supply withdrawal sites and withdrawal amounts in the Blackstone River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; —, no data; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 12 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
AUBURN	AUBURN WATER DISTRICT	280	CHURCH STREET 1	GW	42 11 46	71 50 35	YES	---	E	
		281	CHURCH STREET 2	GW	42 11 45	71 50 39	YES	---	E	
		282	CHURCH STREET 3	GW	42 11 41	71 50 34	YES	---	E	
		283	SOUTHBRIDGE STREET 6	GW	42 12 39	71 49 55	YES	---	E	
		284	WALSH STREET 4	GW	42 12 55	71 49 54	YES	---	E	
		285	WALSH STREET 5	GW	42 12 57	71 49 53	YES	---	E	
							Total	---		0
BELLINGHAM[1]	BELLINGHAM WATER DEPARTMENT	286	CROSS STREET 1	GW	42 03 16	71 27 58	YES	0.21	M	
		287	CROSS STREET 2	GW	42 03 17	71 28 02	YES	.07	M	
		288	WRENTHAM ROAD 3	GW	42 01 39	71 28 53	YES	.22	M	
		289	WRENTHAM ROAD 4	GW	42 01 42	71 28 46	YES	.49	M	
							Total	0.99		10,300
BLACKSTONE	BLACKSTONE WATER DEPARTMENT	290	ELM STREET 3	GW	42 03 00	71 31 08	YES	0.00	M	
		291	ELM STREET 4	GW	42 02 03	71 30 16	YES	.19	M	
		292	SUMMER STREET 1	GW	42 02 26	71 30 58	YES	.03	M	
		293	SUMMER STREET 2	GW	42 02 25	71 30 58	YES	.00	M	
							Total	0.22		7,000
BOYLSTON	MORNINGDALE WATER DISTRICT	294	MORNINGDALE WELL 1	GW	42 19 49	71 44 47	YES	0.11	E	
		295	MORNINGDALE WELL 2	GW	42 19 49	71 44 45	YES	.11	E	
							Total	0.22		1,800
DOUGLAS	DOUGLAS WATER DEPARTMENT	296	WEST STREET TUBULAR WP	GW	42 04 09	71 43 19	YES	0.12	M	
		297	WEST STREET WELL 1	GW	42 04 19	71 43 22	YES	.09	M	
							Total	0.21		2,500
GRAFTON	MASSACHUSETTS AMERICAN WATER COMPANY	298	CENTER STATION	GW	42 13 50	71 42 10	YES	0.01	M	
		299	EAST STREET WELL 2	GW	42 13 50	71 42 11	YES	.03	M	
		300	EAST STREET WELL 3	GW	42 13 47	71 42 10	YES	.00	M	
		301	MILLBURY STREET DUG WELL	GW	42 12 19	71 41 38	YES	.00	M	
		302	WORCESTER STREET WELL	GW	42 13 13	71 41 35	YES	.57	M	
							Total	0.61		6,400
	SOUTH GRAFTON WATER DISTRICT	303	FERRY STREET WELL	GW	42 10 26	71 41 22	YES	0.14	M	
		304	PROVIDENCE ROAD WELL	GW	42 10 07	71 40 17	YES	.07	M	
							Total	0.21		1,000

Table 11.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Blackstone River basin*--Continued

Municipality name	Public water supplier	Figure 12 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
HOPEDALE	HOPEDALE WATER DEPARTMENT	305	MILL STREET WELL FIELD	GW	42 06 39	71 31 33	YES	0.43	M	
							Total	0.43		4,500
MILLBURY	MASSACHUSETTS AMERICAN WATER COMPANY	310	MILLBURY AVENUE DUG WELL	GW	42 11 59	71 45 25	YES	0.00	M	
		311	NORTH MAIN STREET WELL 1	GW	42 11 54	71 46 24	YES	.50	M	
		312	NORTH MAIN STREET WELL 2	GW	42 11 50	71 46 19	YES	.15	M	
		313	OAK POND AVENUE WELL	GW	42 13 21	71 45 15	YES	.54	M	
							Total	1.19		6,900
NORTH ATTLEBORO[2]	NORTH ATTLEBORO WATER DEPARTMENT	314	ADAMSDALE WELL	GW	41 55 19	71 22 34	NO	0.42	M	
		315	LONGVIEW DRIVE WELL	GW	41 56 06	71 22 27	YES	.04	M	
							Total	0.46		4,000
PAXTON	LEICESTER WATER SUPPLY DISTRICT[3]	306	JIM DANDY DUG WELL	GW	42 18 44	71 54 48	YES	0.04	M	
		307	ROCK WELL 1	GW	42 18 37	71 54 54	YES	.04	M	
		308	ROCK WELL 2	GW	42 18 32	71 54 55	YES	.04	M	
		309	ROCK WELL 3	GW	42 18 40	71 54 47	YES	.04	M	
							Total	0.16		3,100
SHREWSBURY	SHREWSBURY WATER DEPARTMENT	316	HOME FARM WELL 6	GW	42 17 58	71 45 17	YES	1.50	M	
		317	LAMBERTS WELL 1	GW	42 17 34	71 45 10	YES	.08	M	
		318	LAMBERTS WELL 2	GW	42 17 39	71 45 09	YES	.01	M	
		319	OAK STREET WELL 3	GW	42 15 56	71 43 53	YES	.00	M	
		320	SEWELL STREET WELL 4	GW	42 18 17	72 45 10	YES	.93	E	
		321	SEWELL STREET WELL 5	GW	42 18 19	71 45 12	YES	.48	M	
		322	SOUTH STREET WELL 7	GW	42 17 01	71 42 12	YES	.15	M	
							Total	3.15		21,000
SUTTON	MANCHUNG WATER DISTRICT	323	PUTMAN HILL ROAD WELL 1	GW	42 05 56	71 44 59	YES	0.01	E	
		324	PUTMAN HILL ROAD WELL 2	GW	42 05 55	71 44 59	YES	.01	E	
		325	PUTMAN HILL ROAD WELL 3	GW	42 05 53	71 44 59	YES	.01	E	
							Total	0.03		700
	WHITINSVILLE WATER COMPANY	331	SUTTON WELL FIELD	GW	42 07 05	71 42 46	YES	0.71	M	
		332	WHITINSVILLE WELL FIELD	GW	42 07 03	71 41 13	YES	.27	M	
							Total	0.98		
	WILKINSONVILLE WATER DISTRICT	333	HATCHERY ROAD WELL 1	GW	42 10 21	71 44 07	YES	.10	M	
							Total	0.10		10,800

Table 11.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Blackstone River basin*--Continued

Municipality name	Public water supplier	Figure 12 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
UPTON	UPTON WATER AND SEWER DEPARTMENT	326	SHAUGHNE WELL 1	GW	42 09 18	71 36 31	YES	0.21	M	
		327	TUBULAR WELL FIELD	GW	42 10 07	71 37 43	YES	.13	M	
							Total	0.34		2,300
UXBRIDGE	UXBRIDGE WATER DEPARTMENT	328	BLACKSTONE STREET WELL 1	GW	42 04 38	71 36 29	YES	0.36	M	
		329	BLACKSTONE STREET WELL 2	GW	42 04 39	71 36 28	YES	.33	M	
		330	BLACKSTONE STREET WELL 3	GW	42 04 39	71 36 29	YES	.00	M	
							Total	0.69		6,600
WORCESTER[4]	WORCESTER PUBLIC WATER DEPARTMENT	334	COAL MINE BROOK WELL	GW	42 17 27	71 45 33	YES	0.00	M	
		335	SHREWSBURY WELL	GW	42 18 05	71 45 35	YES	.00	M	
		336	HOLDEN RESERVOIR 1	SW	42 18 21	71 52 20	NO	.00	E	
		337	HOLDEN RESERVOIR 2	SW	42 17 45	71 51 56	NO	10.39	M	
		338	KETTLE BROOK RESERVOIR 1	SW	42 15 25	71 53 28	NO	.00	E	
		339	KETTLE BROOK RESERVOIR 2	SW	42 16 18	71 54 03	NO	.00	E	
		340	KETTLE BROOK RESERVOIR 3	SW	42 16 55	71 54 32	NO	.00	E	
		341	KETTLE BROOK RESERVOIR 4	SW	42 16 49	71 54 33	NO	.00	E	
		342	LYNDE BROOK RESERVOIR	SW	42 15 02	71 52 28	NO	3.38	M	
		343	LYNDE BROOK RESERVOIR	SW	42 15 05	71 52 25	NO	3.46	M	
							Total	17.23		200,000
					Total for river basin			27.22		288,900

[1] Bellingham has four wells in the Charles River basin.

[2] North Attleboro has seven wells in the Tenmile River basin.

[3] Leicester has two wells in the French River basin.

[4] Worcester has three reservoirs in the Nashua River basin.

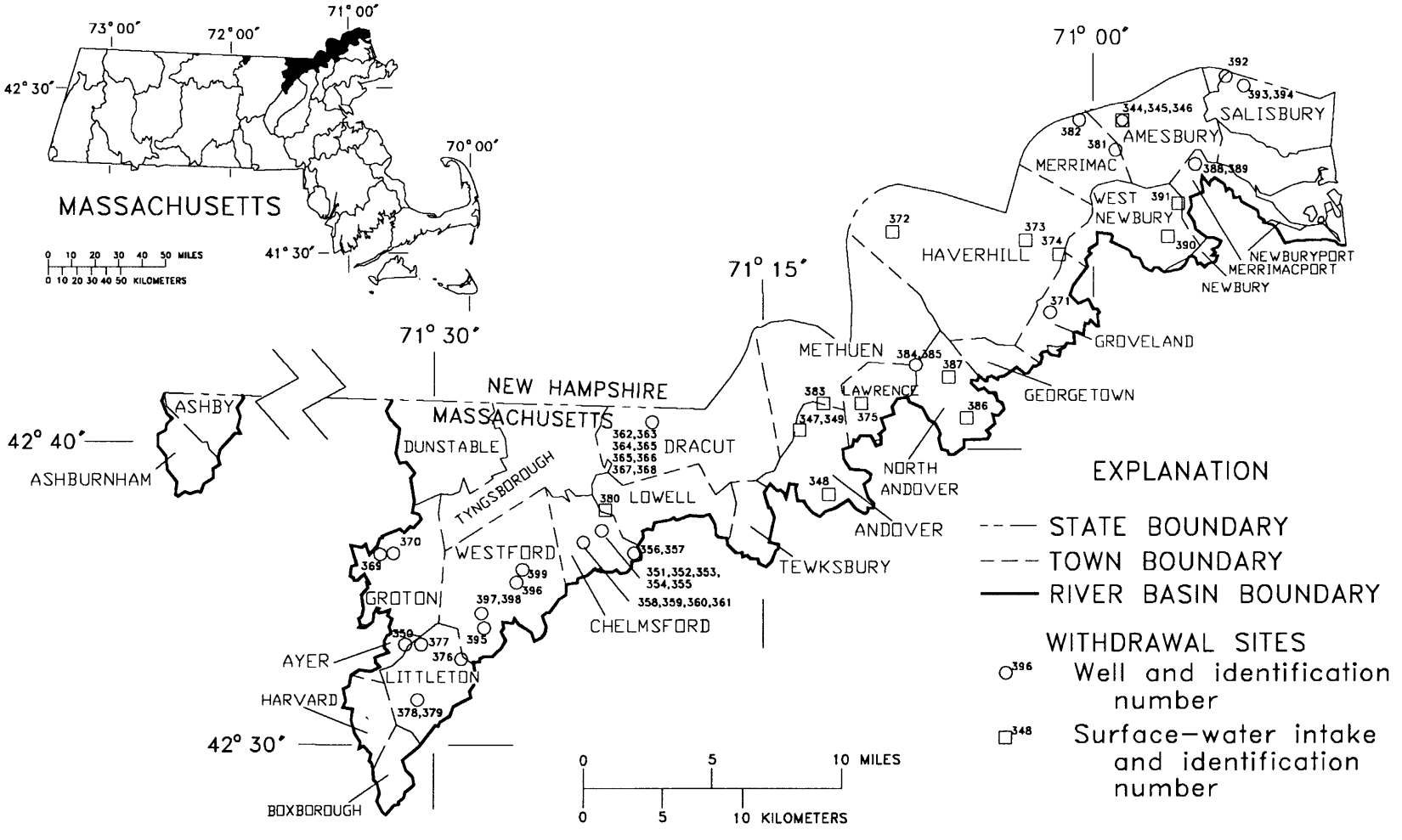

Figure 13.--Location of public water-supply withdrawal sites in the Merrimack River basin.

Table 12.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Merrimack River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 13 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
AMESBURY	AMESBURY WATER DEPARTMENT	344	NEWTON ROAD WELL 1	GW	42 51 38	70 58 41	YES	0.00	M	
		345	NEWTON ROAD WELL 2	GW	42 51 38	70 58 37	YES	.01	M	
		346	POWWOW RIVER	SW	42 51 44	70 59 05	NO	1.54	M	
							Total	1.55		16,000
ANDOVER	ANDOVER WATER DEPARTMENT	347	FISH BROOK	SW	42 41 13	71 13 28	NO	1.63	E	
		348	HAGGARTS POND RESERVOIR	SW	42 38 55	71 12 02	NO	1.63	E	
		349	MERRIMAC RIVER	SW	42 41 13	71 13 30	NO	1.63	E	
							Total	4.89		28,000
AYER[1]	AYER DEPARTMENT OF PUBIC WORKS	350	SPECTACLE POND WELL 3	GW	42 33 41	71 31 27	YES	0.94	M	
							Total	0.94		4,000
CHELMSFORD	CHELMSFORD WATER DISTRICT[2]	351	CROOK SPRINGS ROAD W 1	GW	42 37 24	71 23 07	YES	0.26	E	
		352	CROOK SPRINGS ROAD W 2	GW	42 37 20	71 23 10	YES	.26	E	
		353	JORDAN ROAD WELL	GW	42 37 13	71 23 48	YES	.26	E	
		354	MEADOWBROOK ROAD WELL 1	GW	42 37 18	71 23 42	YES	.26	E	
		355	MEADOWBROOK ROAD WELL 2	GW	42 37 32	71 23 28	YES	.26	E	
		356	STEADMAN STREET WELL 1	GW	42 37 01	71 21 05	YES	.26	E	
		357	STEADMAN STREET WELL 2	GW	42 37 01	71 21 03	YES	.26	E	
							Total	1.82		14,500
	NORTH CHELMSFORD WATER DISTRICT	358	RICHARDSON ROAD WELL 1	GW	42 37 44	71 22 50	YES	0.23	M	
		359	RICHARDSON ROAD WELL 2	GW	42 37 44	71 22 54	YES	.17	M	
		360	RICHARDSON ROAD WELL 3	GW	42 37 47	71 22 57	YES	.26	M	
		361	RICHARDSON ROAD WELL 4	GW	42 37 45	71 22 50	YES	.19	M	
							Total	0.85		10,100
DRACUT	DRACUT WATER SUPPLY DISTRICT	362	WELL 1	GW	42 41 39	71 25 13	YES	0.13	E	
		363	WELL 2	GW	42 41 42	71 25 20	YES	.13	E	
		364	WELL 3	GW	42 41 46	71 25 32	YES	.13	E	
		365	WELL 4	GW	42 41 49	71 25 41	YES	.13	E	
		366	WELL 5	GW	42 41 53	71 25 26	YES	.13	E	
		367	WELL 6	GW	42 41 37	71 20 15	YES	.08	E	
		368	WELL 7	GW	42 41 29	71 20 08	YES	.08	E	
							Total	0.81		20,000

Table 12.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Merrimack River basin*--Continued

Municipality name	Public water supplier	Figure 13 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
GROTON	GROTON WATER DEPARTMENT	369	BADDACOOK WELL	GW	42 36 53	71 31 52	YES	0.19	M	
		370	SHATTUCK WELL	GW	42 36 53	71 32 25	YES	.00	M	
							Total	0.19		2,800
GROVELAND	GROVELAND WATER DEPARTMENT	371	MERRIMACK RIVER WELL	GW	42 44 59	71 02 17	YES	0.41	M	
							Total	0.41		5,300
HAVERHILL	HAVERHILL WATER DEPARTMENT	372	CRYSTAL LAKE	SW	42 47 57	71 08 58	NO	1.30	M	
		373	KENDZA LAKE	SW	42 47 36	71 03 19	NO	5.32	E	
		374	MILLVALE RESERVOIR	SW	42 47 10	71 01 58	NO	.00	M	
							Total	6.62		40,000
LAWRENCE	LAWRENCE WATER WORKS	375	MERRIMACK RIVER	SW	42 41 49	71 10 40	NO	8.64	M	
							Total	8.64		60,000
LITTLETON	LITTLETON WATER DEPARTMENT	376	ROUTE 119 WELL 2	GW	42 33 27	71 28 54	YES	0.00	M	
		377	SPECTACLE POND WELL	GW	42 33 58	71 30 40	YES	.70	M	
		378	WHITCOMB AVENUE WELL 3/4	GW	42 32 02	71 30 46	YES	.06	M	
		379	WHITCOMB AVENUE WELL 1	GW	42 32 02	71 30 46	YES	.02	M	
							Total	0.78		6,000
LOWELL	LOWELL WATER DEPARTMENT	380	MERRIMACK RIVER	SW	42 38 25	71 22 28	NO	16.35	M	
							Total	16.35		94,000
MERRIMAC	MERRIMAC WATER DEPARTMENT	381	EAST MAIN STREET WELL 1	GW	42 50 30	70 59 07	YES	0.09	M	
		382	SARGENTS PIT WELL 2	GW	42 51 43	71 00 41	YES	.30	M	
							Total	0.39		4,500
METHUEN	METHUEN PUBLIC WATER WORKS	383	MERRIMACK RIVER	SW	42 42 00	71 12 08	NO	4.11	M	
							Total	4.11		38,000
NORTH ANDOVER	NORTH ANDOVER PUBLIC WORKS	384	MERRIMACK RIVER WELL 1	GW	42 43 18	71 07 58	YES	0.00	M	
		385	MERRIMACK RIVER WELL 2	GW	42 43 18	71 07 58	YES	.00	M	
		386	LAKE COCHICHEWICK	SW	42 41 27	71 05 54	NO	1.43	E	
		387	LAKE COCHICHEWICK	SW	42 42 52	71 06 44	NO	1.43	E	
							Total	2.86		21,000

Table 12.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Merrimack River basin*--Continued

Municipality name	Public water supplier	Figure 13 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
NEWBURYPORT	NEWBURYPORT WATER DEPARTMENT	388	NEWBURYPORT WELL 1	GW	42 49 53	70 55 07	YES	0.09	M	
		389	NEWBURYPORT WELL 2	GW	42 49 37	70 54 35	YES	.12	M	
		390	INDIAN HILL RESERVOIR	SW	42 47 39	70 56 20	NO	.00	E	
		391	U/L ARTICHOKE RESERVOIR	SW	42 48 50	70 55 55	NO	1.78	M	
							Total	1.99		17,500
SALISBURY	SALISBURY WATER SUPPLY COMPANY	392	BLACK SNAKE ROAD WELL 7	GW	42 53 04	70 53 56	YES	0.33	M	
		393	LENA MAE WAY WELL 5	GW	42 52 36	70 52 56	YES	.41	M	
		394	LENA MAE WAY WELL 6	GW	42 52 32	70 53 01	YES	.44	M	
							Total	1.18		20,000
WESTFORD	WESTFORD WATER DEPARTMENT	395	COUNTRY ROAD WELL	GW	42 34 33	71 28 04	YES	0.44	M	
		396	DEPOT ROAD WELL	GW	42 36 12	71 26 28	YES	.45	M	
		397	FORGE VALLEY ROAD WELL 1	GW	42 34 57	71 28 09	YES	.15	M	
		398	FORGE VALLEY ROAD WELL 2	GW	42 34 55	71 28 13	YES	.14	M	
		399	NUTTING ROAD WELL	GW	42 36 34	71 26 14	YES	.20	M	
							Total	1.38		12,200
						Total for river basin		55.76		413,900

[1] Ayer has two wells in the Nashua River basin.

[2] Chelmsford Water District has eleven wells in the Concord and Sudbury River subbasin.

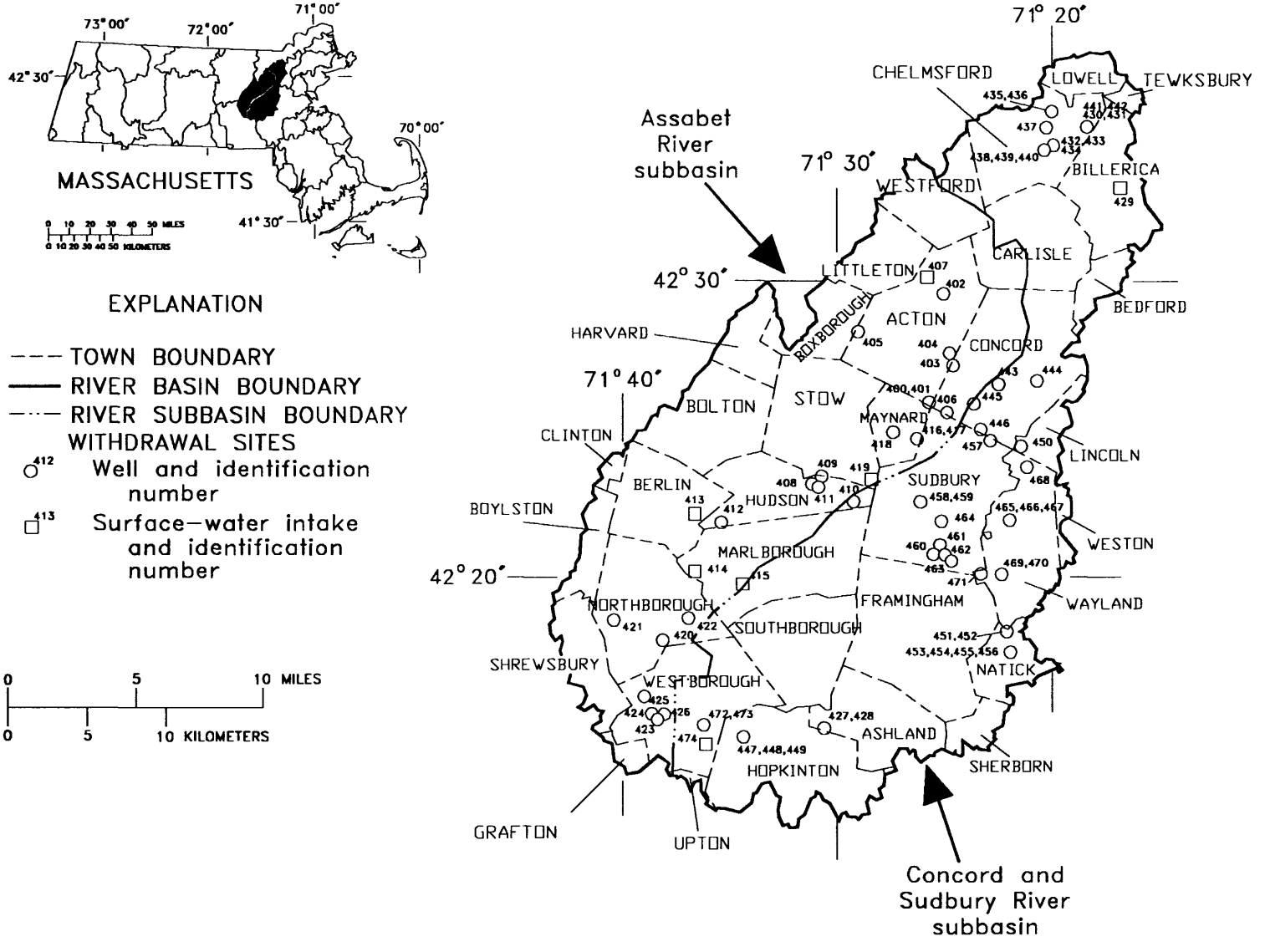

Figure 14.--Location of public water-supply withdrawal sites in the Concord River basin.

Table 13.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Concord River basin (Assabet River subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 14 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ACTON	ACTON WATER DISTRICT	400	ASSABET WELL 1	GW	42 26 36	71 25 49	YES	0.28	E	
		401	ASSABET WELL 2	GW	42 26 36	71 25 47	YES	.28	E	
		402	CONANT WELL	GW	42 29 52	71 25 16	YES	.25	M	
		403	LAWSBROOK WELL FIELD	GW	42 27 41	71 24 52	YES	.00	M	
		404	SCHOOL STREET WELL	GW	42 27 53	71 24 57	YES	.39	M	
		405	WHITCOMB WELL	GW	42 28 44	71 29 11	NO	.08	M	
							Total	1.28		17,500
CONCORD[1]	CONCORD WATER DEPARTMENT	406	SECOND DIVISION WELL	GW	42 26 08	71 24 59	YES	0.39	M	
		407	NAGOG POND	SW	42 30 35	71 26 01	NO	.50	M	
							Total	0.89		7,300
HUDSON	HUDSON DEPARTMENT OF PUBLIC WORKS	408	CHESTNUT WELL 1	GW	42 23 34	71 31 18	YES	0.70	M	
		409	CHESTNUT WELL 2	GW	42 23 48	71 31 06	YES	.00	M	
		410	CRANBERRY WELL	GW	42 23 00	71 29 27	YES	.65	M	
		411	KANE WELL	GW	42 23 24	71 30 59	YES	.26	M	
		412	RIMKUS WELL	GW	42 22 19	71 35 37	YES	.01	M	
		413	GATES POND	SW	42 22 42	71 36 44	NO	.27	M	
							Total	1.89		18,000
MARLBOROUGH	MARLBOROUGH DEPARTMENT OF PUBLIC WORKS	414	LAKE WILLIAMS	SW	42 20 10	71 34 20	NO	0.15	M	
		415	MILLHAM RESERVOIR	SW	42 20 43	71 36 45	NO	1.18	M	
							Total	1.33		34,000
MAYNARD	MAYNARD PUBLIC WORKS	416	MARLBOROUGH ROAD WELL 1	GW	42 25 04	71 26 26	YES	0.19	M	
		417	MARLBOROUGH ROAD WELL 2	GW	42 25 07	71 26 26	YES	.28	M	
		418	ROUTE 117 WELL	GW	42 25 18	71 27 35	YES	.28	M	
		419	WHITE POND RESERVOIR	SW	42 23 38	71 28 41	NO	.40	M	
							Total	1.15		9,900
NORTHBOROUGH	NORTHBOROUGH WATER DEPARTMENT	420	BRIGHAM STREET WELL	GW	42 18 17	71 38 05	YES	0.37	M	
		421	CRAWFORD STREET WELL	GW	42 18 54	71 40 17	YES	.34	M	
		422	LYMAN STREET WELL	GW	42 18 58	71 36 59	YES	.12	M	
							Total	0.83		11,600

Table 13.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Concord River basin (Assabet River subbasin)*--Continued

Municipality name	Public water supplier	Figure 14 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WESTBOROUGH[2]	WESTBOROUGH DEPARTMENT OF PUBLIC WORKS	423	ANDREWS I WELL	GW	42 15 34	71 38 32	YES	0.39	M	
		424	ANDREWS II WELL	GW	42 15 41	71 38 43	YES	.33	M	
		425	OTIS STREET WELL	GW	42 16 28	71 39 22	YES	.42	M	
		426	WILKINSON WELL	GW	42 15 32	71 38 22	YES	.11	M	
							Total	1.25		7,700
						Total for river subbasin		8.62		106,000

1 Concord has four wells in the Concord and Sudbury River subbasin.

2 Westborough has two wells and one reservoir in the Concord and Sudbury River subbasin.

Table 14.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Concord River basin (Concord and Sudbury River subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 14 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ASHLAND	ASHLAND WATER DEPARTMENT	427	HOWE STREET WELL 4	GW	42 15 15	71 30 56	YES	0.55	M	
		428	HOWE STREET WELL 5	GW	42 15 16	71 30 58	YES	.92	M	
							Total	1.47		10,500
BILLERICA	BILLERICA WATER WORKS	429	CONCORD RIVER	SW	42 33 40	71 16 56	NO	4.58	M	
							Total	4.58		36,800
CHELMSFORD	CHELMSFORD WATER DISTRICT[1]	430	CANAL STREET WELL 1	GW	42 35 41	71 18 41	YES	0.26	E	
		431	CANAL STREET WELL 2	GW	42 35 42	71 18 36	YES	.26	E	
		432	MILL ROAD WELL 1	GW	42 34 58	71 20 04	YES	.26	E	
		433	MILL ROAD WELL 2	GW	42 35 03	71 20 28	YES	.26	E	
		434	MILL ROAD WELL 3	GW	42 34 55	71 20 27	YES	.26	E	
		435	RIVERNECK ROAD WELL 1	GW	42 36 14	71 19 59	YES	.26	E	
		436	RIVERNECK ROAD WELL 2	GW	42 36 09	71 20 00	YES	.26	E	
		437	TURNPIKE ROAD WELL	GW	42 35 40	71 20 23	YES	.26	E	
		438	WARREN AVENUE GP WELL 1	GW	42 35 24	71 20 33	YES	.09	E	
		439	WARREN AVENUE GP WELL 2	GW	42 35 24	71 20 33	YES	.09	E	
		440	WARREN AVENUE WELL FIELD	GW	42 35 24	71 20 33	YES	.09	E	
							Total	2.35		18,700
	EAST CHELMSFORD WATER DISTRICT	441	CANAL STREET WELL 1	GW	42 36 01	71 19 08	YES	0.12	E	
		442	CANAL STREET WELL 2	GW	42 36 05	71 19 05	YES	.04	E	
							Total	0.16		1,500
CONCORD[2]	CONCORD WATER DEPARTMENT	443	DEACONESS WELL	GW	42 26 50	71 22 40	YES	0.51	M	
		444	HUGH CARGILL WELL	GW	42 27 03	71 20 39	YES	.00	M	
		445	JENNIE DUGAN WELL	GW	42 26 14	71 23 43	YES	.33	M	
		446	WHITE POND WELL	GW	42 25 25	71 23 20	YES	.23	M	
							Total	1.07		9,000
HOPKINTON	HOPKINTON WATER DEPARTMENT	447	FRUIT STREET WELL 1	GW	42 14 51	71 34 25	YES	0.28	M	
		448	FRUIT STREET WELL 2	GW	42 14 52	71 34 27	YES	.28	M	
		449	FRUIT STREET WELL 3	GW	42 14 53	71 34 30	YES	.00	M	
							Total	0.56		8,000

Table 14.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Concord River basin (Concord and Sudbury River subbasin)*--Continued

Municipality name	Public water supplier	Figure 14 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
LINCOLN[3]	LINCOLN WATER DEPARTMENT	450	FARRAR POND WELL 2	GW	42 24 54	71 21 40	YES	0.00	M	
							Total	0.00		0
NATICK[4]	NATICK WATER DEPARTMENT	451	EVERGREEN WELL 1	GW	42 18 30	71 22 20	YES	0.46	E	
		452	EVERGREEN WELL 2	GW	42 18 31	71 22 19	YES	.46	E	
		453	SPRINGVALE WELL 1 and 2	GW	42 17 54	71 22 07	YES	.46	E	
		454	SPRINGVALE WELL 3	GW	42 17 54	71 22 09	YES	.46	E	
		455	SPRINGVALE WELL 4	GW	42 17 54	71 22 10	YES	.46	E	
		456	SPRINGVALE WELL 5	GW	42 17 54	71 22 11	YES	.46	E	
							Total	2.76		18,900
SUDBURY	SUDBURY WATER DEPARTMENT	457	ROUTE 117 WELL 5	GW	42 25 04	71 23 06	YES	0.31	E	
		458	EAST STREET WELL 3	GW	42 23 02	71 26 17	YES	.31	E	
		459	EAST STREET WELL 8	GW	42 23 02	71 26 10	YES	.31	E	
		460	NOBSCOT ROAD WELL 7	GW	42 21 16	71 25 38	YES	.31	E	
		461	RAYMOND ROAD WELL 2	GW	42 21 28	71 25 24	YES	.31	M	
		462	RAYMOND ROAD WELL 6	GW	42 21 11	71 25 14	YES	.31	E	
		463	WARRAN ROAD WELL 4	GW	42 21 02	71 24 57	YES	.31	E	
		464	WELL 1	GW	42 22 22	71 25 27	YES	.00	E	
							Total	2.17		14,000
WAYLAND	WAYLAND WATER DEPARTMENT	465	BALDWIN POND WELL 1	GW	42 22 29	71 22 21	YES	0.12	E	
		466	BALDWIN POND WELL 2	GW	42 22 29	71 22 18	YES	.12	E	
		467	BALDWIN POND WELL 3	GW	42 22 31	71 22 16	NO	.40	M	
		468	CAMPBELL ROAD WELL	GW	42 24 09	71 21 33	NO	.12	M	
		469	HAPPY HOLLOW WELL 1	GW	42 20 29	71 22 41	NO	.25	M	
		470	HAPPY HOLLOW WELL 2	GW	42 20 29	71 22 37	NO	.57	M	
		471	MEADOWVIEW WELL	GW	42 20 33	71 23 24	NO	.25	M	
							Total	1.83		12,100

Table 14.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Concord River basin (Concord and Sudbury River subbasin)*--Continued

Municipality name	Public water supplier	Figure 14 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WESTBOROUGH[5]	WESTBOROUGH DEPARTMENT OF PUBLIC WORKS	472	HOPKINTON ROAD WELL	GW	42 15 25	71 36 14	YES	0.11	M	
		473	MORSE STREET WELL	GW	42 15 17	71 36 12	YES	.19	M	
		474	SANDRA POND	SW	42 14 39	71 36 16	NO	.70	M	
							Total	1.00		6,300
						Total for subbasin		17.95		135,800
						Total for river basin		26.57		241,800

1 Chelmsford Water District has seven wells in the Merrimack River basin.

2 Concord has one well and one reservoir in the Assabet River subbasin.

3 Lincoln has one well and one reservoir in the Charles River basin.

4 Natick has four wells in the Charles River basin.

5 Westborough has four wells in the Assabet River subbasin.

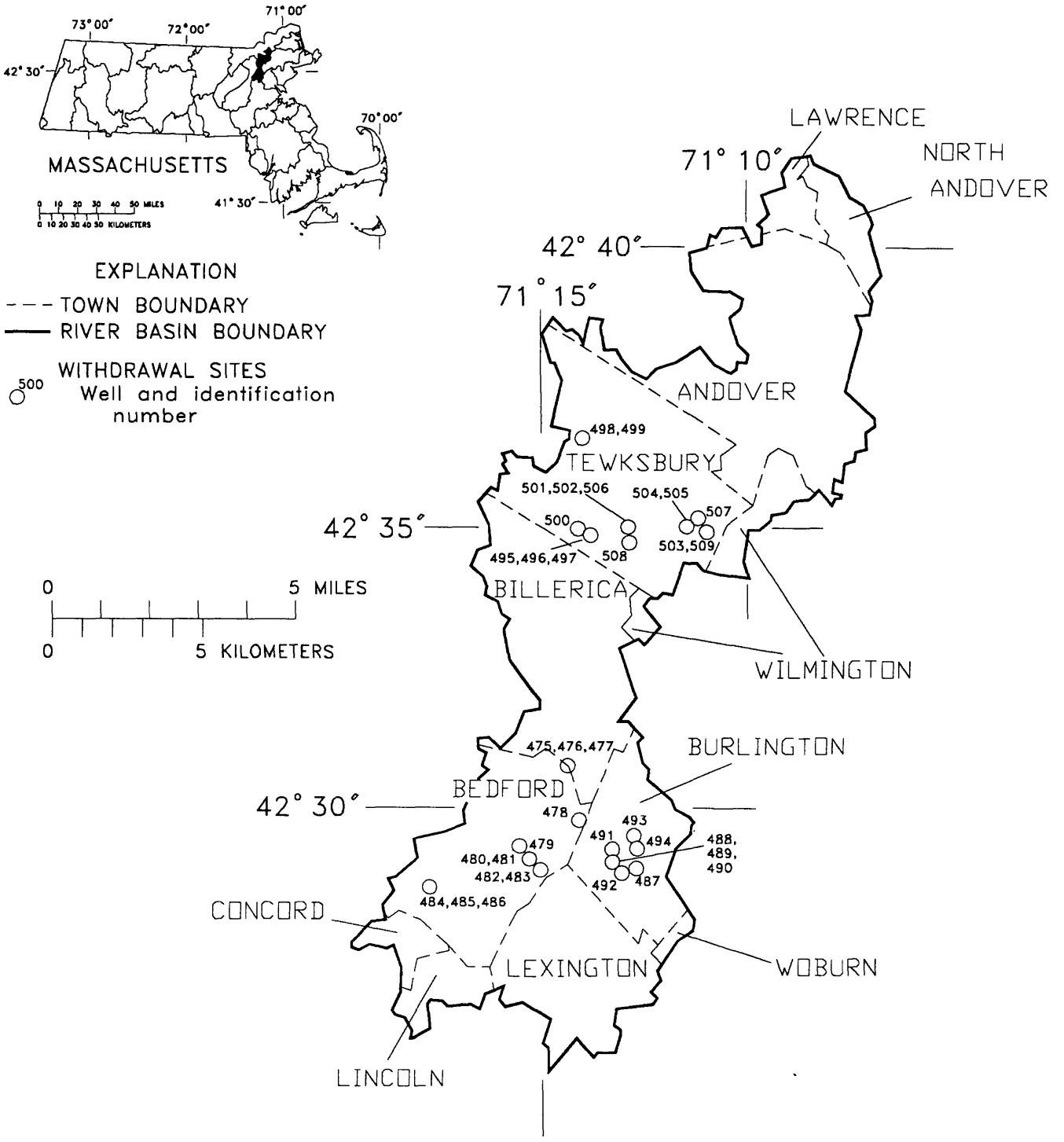

Figure 15.--Location of public water-supply withdrawal sites in the Shawsheen River basin.

Table 15.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Shawsheen River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 15 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BEDFORD	BEDFORD WATER WATER SYSTEM	475	MIDDLESEX TURNPIKE W 7	GW	42 31 07	71 14 34	YES	0.00	M	
		476	MIDDLESEX TURNPIKE W 8	GW	42 31 10	71 14 30	YES	.00	M	
		477	MIDDLESEX TURNPIKE W 9	GW	42 31 04	71 14 35	YES	.00	M	
		478	MITRE WELL 3	GW	42 30 10	71 14 17	YES	.18	M	
		479	PAGE SCHOOL WELL 1	GW	42 29 42	71 15 36	YES	.00	M	
		480	SHAWSHEEN ROAD WELL 2	GW	42 29 33	71 15 25	YES	.07	M	
		481	SHAWSHEEN ROAD WELL 4	GW	42 29 31	71 15 24	YES	.14	M	
		482	SHAWSHEEN ROAD WELL 6	GW	42 29 24	71 15 18	YES	.00	M	
		483	SHAWSHEEN ROAD WELL 5	GW	42 29 29	71 15 24	YES	.09	M	
		484	HARTWELL ROAD WELL 5	GW	42 29 01	71 17 54	NO	.00	M	
		485	HARTWELL ROAD WELL 11	GW	42 28 59	71 17 49	NO	.00	M	
		486	HARTWELL ROAD WELL 12	GW	42 28 59	71 17 47	NO	.00	M	
							Total	0.48		20,000
BURLINGTON[1]	BURLINGTON DEPARTMENT OF PUBLIC WORKS	487	LEXINGTON WELL 7	GW	42 29 16	71 12 58	YES	0.13	M	
		488	MIDDLESEX TURNPIKE W 3	GW	42 29 29	71 13 27	YES	.00	M	
		489	MIDDLESEX TURNPIKE W 4	GW	42 29 34	71 13 25	YES	.00	M	
		490	MIDDLESEX TURNPIKE W 5	GW	42 29 41	71 13 22	YES	.00	M	
		491	SANDY BROOK LANE WELL 6	GW	42 29 46	71 12 54	YES	.00	M	
		492	SANDY BROOK LANE WELL 9	GW	42 29 14	71 13 11	YES	.00	M	
		493	TERRANCE HALL WELL 1	GW	42 29 53	71 12 56	YES	.53	M	
		494	TERRANCE HALL WELL 2	GW	42 29 50	71 12 55	YES	.21	M	
							Total	0.87		6,200
TEWKSBURY	TEWKSBURY DEPARTMENT OF PUBLIC WORKS	495	CHANDLER ROAD WELL 4	GW	42 35 24	71 14 00	YES	0.00	M	
		496	CHANDLER ROAD WELL 5	GW	42 35 19	71 14 02	YES	.15	E	
		497	CHANDLER STREET WELL 3	GW	42 35 24	71 14 02	YES	.15	E	
		498	COUNT STREET WELL 6	GW	42 37 08	71 14 16	YES	.00	M	
		499	COURT STREET WELL 7	GW	42 37 09	71 14 13	YES	.00	M	
		500	THREE WELL ROAD WELL 15	GW	42 35 29	71 14 17	YES	.15	E	
		501	EASEMENT ROAD WELL 1	GW	42 35 25	71 13 04	YES	.00	M	
		502	EASEMENT ROAD WELL 2	GW	42 35 25	71 13 01	YES	.00	M	
		503	POPLAR ROAD WELL 1	GW	42 35 27	71 11 04	YES	.00	M	
		504	POPLAR ROAD WELL 8	GW	42 35 32	71 11 23	YES	.00	M	
		505	POPLAR ROAD WELL 9	GW	42 35 31	71 11 20	YES	.15	E	
		506	RONALD DRIVE WELL 4	GW	42 35 28	71 13 02	YES	.15	E	
		507	SOUTH STREET WELL 12	GW	42 35 37	71 11 16	YES	.00	M	
		508	SOUTH STREET WELL 13	GW	42 35 16	71 13 03	YES	.00	M	
		509	TOWN CENTER WELL 10	GW	42 35 26	71 1109	YES	.00	M	
							Total	0.75		24,300
						Total for river basin		2.10		50,500

[1] Burlington has one reservoir in the Ipswich River basin and one well in the Mystic River subbasin.

Parker River Basin

The Parker River basin (fig. 1) drains 66 mi^2 and includes all or part of nine municipalities. Four municipalities, Georgetown, Ipswich, Byfield, and Rowley, are on public water-supply systems (table 16) with a total of ten wells and one surface-water intake (fig. 16). Ipswich is also served by reservoirs in the Ipswich River basin (fig. 17 and table 17). Ground water provided about 1.21 Mgal/d (84 percent) of the water during 1986 (table 32).

Ipswich River Basin

The Ipswich River basin (fig. 1) drains 155 mi^2 and includes all or part of 22 municipalities. Eleven municipalities are on public-water-supply systems (table 17) in the river basin with a total of 41 wells and 10 surface-water intakes (fig. 17). Burlington also has eight wells in the Shawsheen River basin (fig. 15 and table 15) and one well in the Mystic River subbasin (fig. 19 and table 19). Ipswich is served by two wells and one reservoir in the Parker River basin (fig. 16 and table 16). Lynn has one surface-water intake, Lynnfield Center has three wells and Peabody has one reservoir in the North Coastal River basin (fig. 18 and table 18). In the basin approximately 20.07 Mgal/d (70 percent) of withdrawals came from surface water during 1986 (table 32). The municipalities of Danvers, Lynn, Lynnfield, Peabody and Salem transferred water from the Ipswich River basin to the North Coastal River basin and Reading transferred water to the Mystic River subbasin (U.S. Army Corps of Engineers, 1988).

North Coastal River Basin

The North Coastal River basin (fig. 1) drains 172 mi^2 and includes all or part of 26 municipalities. The basin has 6 on public water-supply systems (table 18) with a total of 8 wells and 12 surface-water intakes (fig. 18). Surface water provided about 14.68 Mgal/d (93 percent) of the water for public water-supply during 1986 (table 32). Lynn Department of Public Works, Lynnfield Center Water District, and Peabody also have wells and surface-water intakes in the Ipswich River basin (fig. 17 and table 17). Lynnfield Center Water District transferred water from the Ipswich River basin to the North Coastal River basin in 1986 (U.S. Army Corps of Engineers, 1988).

Boston Harbor River Basin

The Boston Harbor River basin (fig. 1) drains 266 mi^2 and includes all or part of 45 municipalities. Boston Harbor River basin includes the three subbasins of Mystic River, Neponset River, and the Weymouth and Weir. The basin has 17 municipalities on public water-supply systems (tables 19-21). The river basin has a total of 51 wells and 11 surface-water intakes (fig. 19). About 23.90 Mgal/d (56 percent) of the water for the Boston Harbor River basin came from surface water (tables 32). This withdrawal amount would be substantially higher if the MWRA did import all the water for the Boston area.

The Mystic River subbasin has the municipalities of Burlington, Cambridge, Wakefield, Winchester, and Woburn on public water-supply systems (table 19). The subbasin has a total of eight wells and five surface-water intakes (fig. 19). Burlington also is served by eight wells in the Shawsheen River basin (fig. 15 and table 15) and one reservoir in the Ipswich River basin (fig. 17 and table 17). Cambridge has two reservoirs in the Charles River basin (fig. 20 and table 22). In the Mystic subbasin approximately 17.98 Mgal/d (81 percent) of the water came from surface water (table 32). The municipality of Burlington transferred water from the Mystic River subbasin to the Ipswich and Shawsheen River basins. Wakefield transferred water from the Mystic River subbasin to the North Coastal River basin (U.S. Army Corps of Engineers, 1988).

The Neponset River subbasin has eight municipalities on public water-supply systems (table 20); all the water came from 29 wells (fig. 19). The Dedham-Westwood Water Company, the Dover Water Company, and Medfield have wells in the Charles River basin (fig. 20 and table 22). Foxborough, Sharon, Stoughton, and Taunton are served by wells in the Taunton River basin (fig. 25 and table 28). Ground water supplied approximately 9.39 Mgal/d (100 percent) to public water-supply during 1986 (Table 32). The Dedham-Westwood Water Company and Walpole transferred water from the Neponset River subbasin to the Charles River basin. Stoughton transferred water from the Neponset River subbasin to the Taunton River basin (U.S. Army Corps of Engineers, 1988).

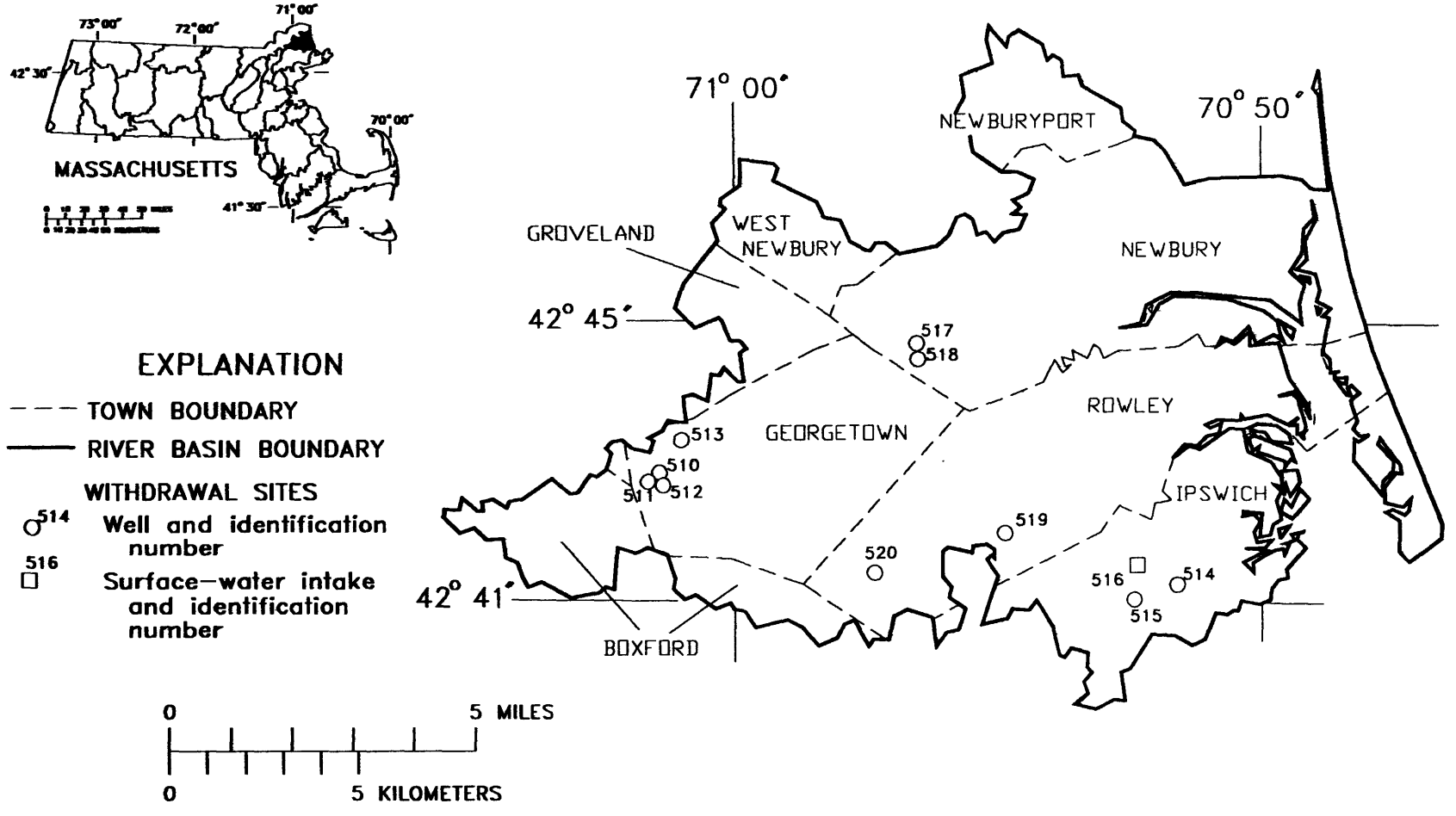

Figure 16.–Location of public water-supply withdrawal sites in the Parker River basin.

Table 16.–*Description of public water-supply withdrawal sites and withdrawal amounts in the Parker River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 16 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
GEORGETOWN	GEORGETOWN WATER DEPARTMENT	510	MARSHALL WELL 2	GW	42 43 17	71 01 26	YES	0.23	M	
		511	METCALF WELL 1	GW	42 43 13	71 01 36	YES	.00	M	
		512	WEST STREET TUBULAR WF	GW	42 43 11	71 01 25	YES	.03	M	
		513	COMMISSIonER WELL 4	GW	42 43 50	71 01 01	NO	.17	M	
							Total	0.43		6,200
IPSWICH[1]	IPSWICH DEPARTMENT OF PUBLIC WORKS	514	MILE LANE WELL	GW	42 41 28	70 52 19	NO	0.05	M	
		515	BROWN'S WELL	GW	42 41 35	70 51 26	NO	.21	M	
		516	DOWS BROOK RESERVOIR	SW	42 41 54	70 52 13	NO	0.23	M	
							Total	0.49		10,000
NEWBURY	BYFIELD WATER DISTRICT	517	LARKIN ROAD WELL 1	GW	42 44 49	70 56 29	NO	0.11	M	
		518	LARKIN ROAD WELL 2	GW	42 45 01	70 56 27	NO	.05	M	
							Total	0.16		2,400
ROWLEY	ROWLEY WATER DEPARTMENT	519	HAVERHILL ROAD WELL	GW	42 42 24	70 54 44	YES	0.14	M	
		520	BOXFORD WELL	GW	42 41 50	70 57 12	NO	.22	M	
							Total	0.36		3,500
							Total for river basin	1.44		22,100

[1] Ipswich has five wells in the Ipswich River basin.

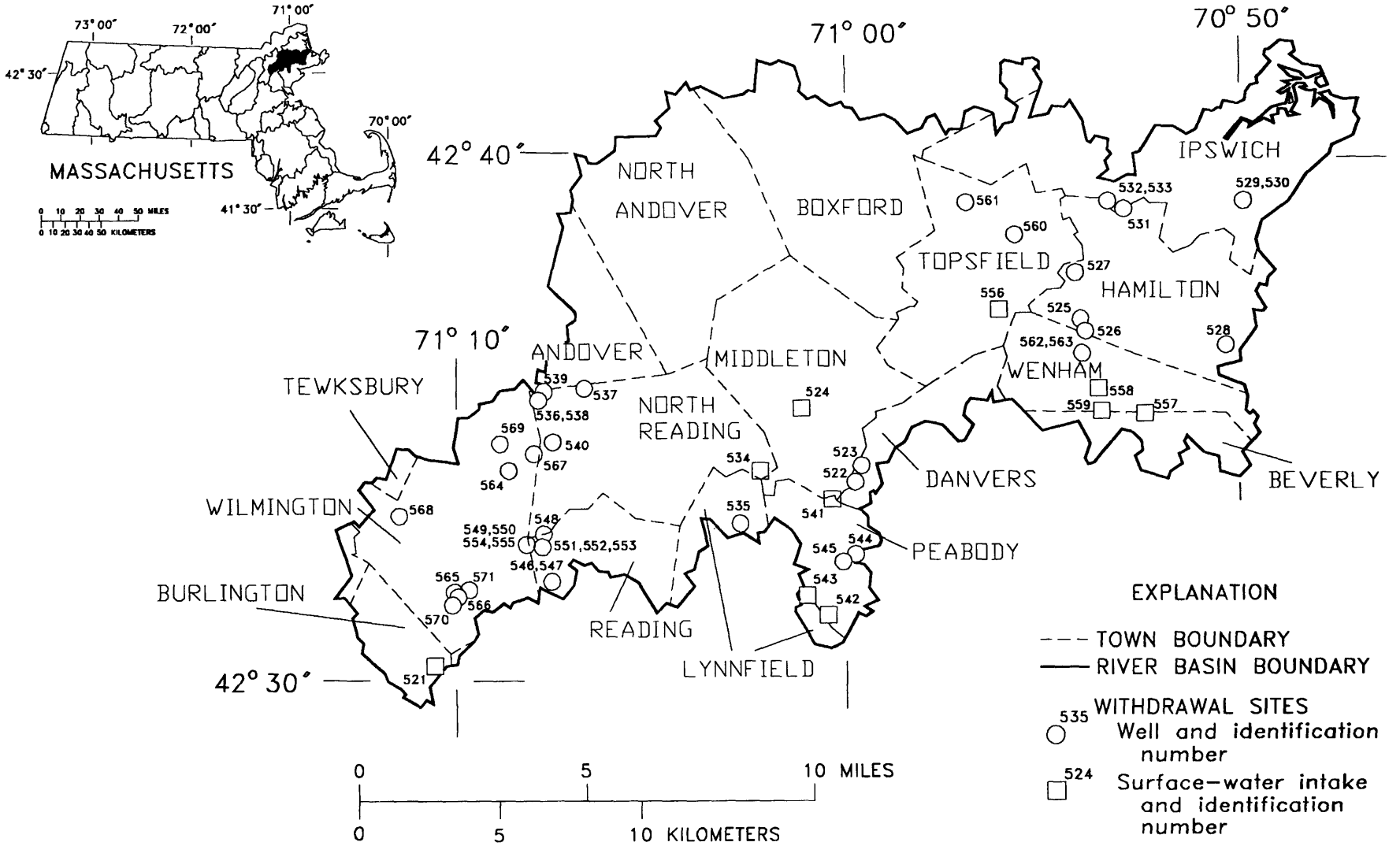

Figure 17.--Location of public water-supply withdrawal sites in the Ipswich River basin.

Table 17.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Ipswich River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 17 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BURLINGTON[1]	BURLINGTON DEPARTMENT OF PUBLIC WORKS	521	MILL POND RESERVOIR	SW	42 30 33	71 10 43	NO	2.29	M	
							Total	2.29		16,600
DANVERS	DANVERS-MIDDLETON OF DEPARTMENT OF PUBLIC WORKS	522	BUXTON ROAD WELL 2	GW	42 34 06	70 59 47	NO	0.00	M	
		523	SOUTH MAIN STREET WELL 1	GW	42 34 27	70 59 39	YES	.21	M	
		524	MIDDLETON POND	SW	42 35 36	71 01 15	NO	3.19	M	
							Total	3.40		29,200
HAMILTON	HAMILTON DEPARTMENT OF PUBLIC WORKS	525	CAISSON WELL	GW	42 37 04	70 53 47	YES	0.47	M	
		526	IDLEWOOD WELL	GW	42 37 10	70 53 50	YES	.40	M	
		527	PATTEN WELL	GW	42 38 01	70 54 04	YES	.10	M	
		528	SCHOOL STREET WELL	GW	42 36 45	70 50 08	YES	.00	M	
							Total	0.97		7,000
IPSWICH[2]	IPSWICH DEPARTMENT OF PUBLIC WORKS	529	ESSEX ROAD WELL	GW	42 39 22	70 49 38	YES	0.06	M	
		530	FELLOWS ROAD WELL	GW	42 39 24	70 49 36	NO	.08	M	
		531	WINTHROP WELL 1	GW	42 39 19	70 52 40	NO	.00	M	
		532	WINTHROP WELL 2	GW	42 39 25	70 53 04	NO	.00	E	
		533	WINTHROP WELL 3	GW	42 39 23	70 53 04	NO	.04	E	
							Total	0.18		4,500
LYNNFIELD	LYNN DEPARTMENT OF PUBLIC WORKS[3]	534	IPSWICH RIVER	SW	42 34 20	71 02 15	NO	2.34	M	
							Total	2.34		17,900
	LYNNFIELD CENTER WATER DISTRICT[4]	535	MAIN STREET WELL	GW	42 33 24	71 02 39	NO	0.23	M	
							Total	0.23		3,500
NORTH READING	NORTH READING DEPARTMENT OF PUBLIC WORKS	536	LAKESIDE WELL 2	GW	42 35 49	71 07 52	YES	0.17	M	
		537	CENTRAL STREET WF	GW	42 35 57	71 06 43	NO	.30	M	
		538	LAKESIDE WELL 3	GW	42 35 44	71 07 52	NO	.17	M	
		539	RAILROAD BED WELL	GW	42 34 58	71 07 36	NO	.27	M	
		540	ROUTE 125 WELL	GW	42 36 02	71 08 00	NO	.09	M	
							Total	1.00		12,200

Table 17.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Ipswich River basin*--Continued

Municipality name	Public water supplier	Figure 17 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
PEABODY[5]	PEABODY WATER DEPARTMENT	544	JOHNSON STREET WELL	GW	42 32 45	70 59 48	NO	0.00	E	
		545	PINE STREET WELL	GW	42 32 39	71 00 03	NO	.00	E	
		541	IPSWICH RIVER	SW	42 33 47	71 00 13	NO	.00	E	
		542	SUNTAUG LAKE	SW	42 31 34	71 0030	NO	.00	E	
		543	WINONA POND	SW	42 32 08	71 00 59	NO	2.47	M	
							Total	2.47		25,000
READING	READING WATER DEPARTMENT	546	REVAY WELL 1	GW	42 32 14	71 07 39	YES	0.00	M	
		547	REVAY WELL 2	GW	42 32 12	71 07 43	YES	.00	M	
		548	TOWN FOREST WELL	GW	42 33 11	71 07 48	YES	.32	E	
		549	TUBULAR WELL FIELD	GW	42 33 02	71 07 58	YES	.00	M	
		550	WELL 13	GW	42 32 59	71 08 10	YES	.32	E	
		551	WELL 15	GW	42 32 56	71 08 09	YES	.32	E	
		552	WELL 2	GW	42 32 58	71 08 01	YES	.32	E	
		553	WELL 3	GW	42 32 55	71 08 00	YES	.32	E	
		554	WELL 66-8	GW	42 33 05	71 08 01	YES	.32	E	
		555	WELL B-LINE	GW	42 33 05	71 07 53	YES	.32	E	
							Total	2.24		21,500
TOPSFIELD	SALEM-BEVERLY WATER BOARD	556	IPSWICH RIVER	SW	42 37 25	70 55 58	NO	2.90	E	
		557	LONGHAM RESERVOIR	SW	42 35 29	70 52 19	NO	.00	E	
		558	PUTMANVILLE RESERVOIR	SW	42 36 09	70 56 25	NO	.00	E	
		559	WENHAM LAKE	SW	42 36 00	70 53 32	NO	6.88	E	
							Total	9.78		80,000
	TOPSFIELD WATER DEPARTMENT	560	PERKINS TUBULAR WF	GW	42 38 51	70 55 37	YES	0.21	E	
		561	NORTH STREET TUBULAR WF	GW	42 39 28	70 56 50	NO	.21	E	
							Total	0.42		6,000
WENHAM	WENHAM WATER DEPARTMENT	562	PLEASANT POND WELL 1	GW	42 36 42	70 53 40	YES	0.14	E	
		563	PLEASANT POND WELL 2	GW	42 36 42	70 53 40	YES	.14	E	
							Total	0.28		4,400

Table 17.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Ipswich River basin*--Continued

Municipality name	Public water supplier	Figure 17 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WILMINGTON	WILMINGTON WATER DEPARTMENT	564	BARROWS WELL FIELD	GW	42 34 23	71 08 37	YES	0.00	M	
		565	BUTTER'S ROW WELL 1	GW	42 32 02	71 10 05	YES	.46	E	
		566	BUTTER'S ROW WELL 2	GW	42 31 57	71 09 58	YES	.46	E	
		567	SALEM STREET WELL	GW	42 34 42	71 08 02	YES	.60	M	
		568	SHAWSEEN AVENUE WELL	GW	42 33 29	71 11 28	YES	.04	M	
		569	BROWNS CROSSING WF	GW	42 34 56	71 08 50	NO	.53	M	
		570	CHESTNUT STREET WELL	GW	42 31 47	71 10 08	NO	.46	E	
		571	TOWN PARK WELL	GW	42 32 03	71 09 42	NO	.46	E	
							Total	3.01		18,000
						Total for river basin		28.61		245,800

1 Burlington has eight wells in the Shawsheen River basin and one well Mystic River subbasin.

2 Ipswich has two wells and a reservoir in the Parker River basin.

3 Lynn Department of Public Works has a surface-water in-take in the North Coastal River basin.

4 Lynnfield Center Water District has three wells in the North Coastal River basin.

5 Peabody has a reservoir in the North Coastal River basin.

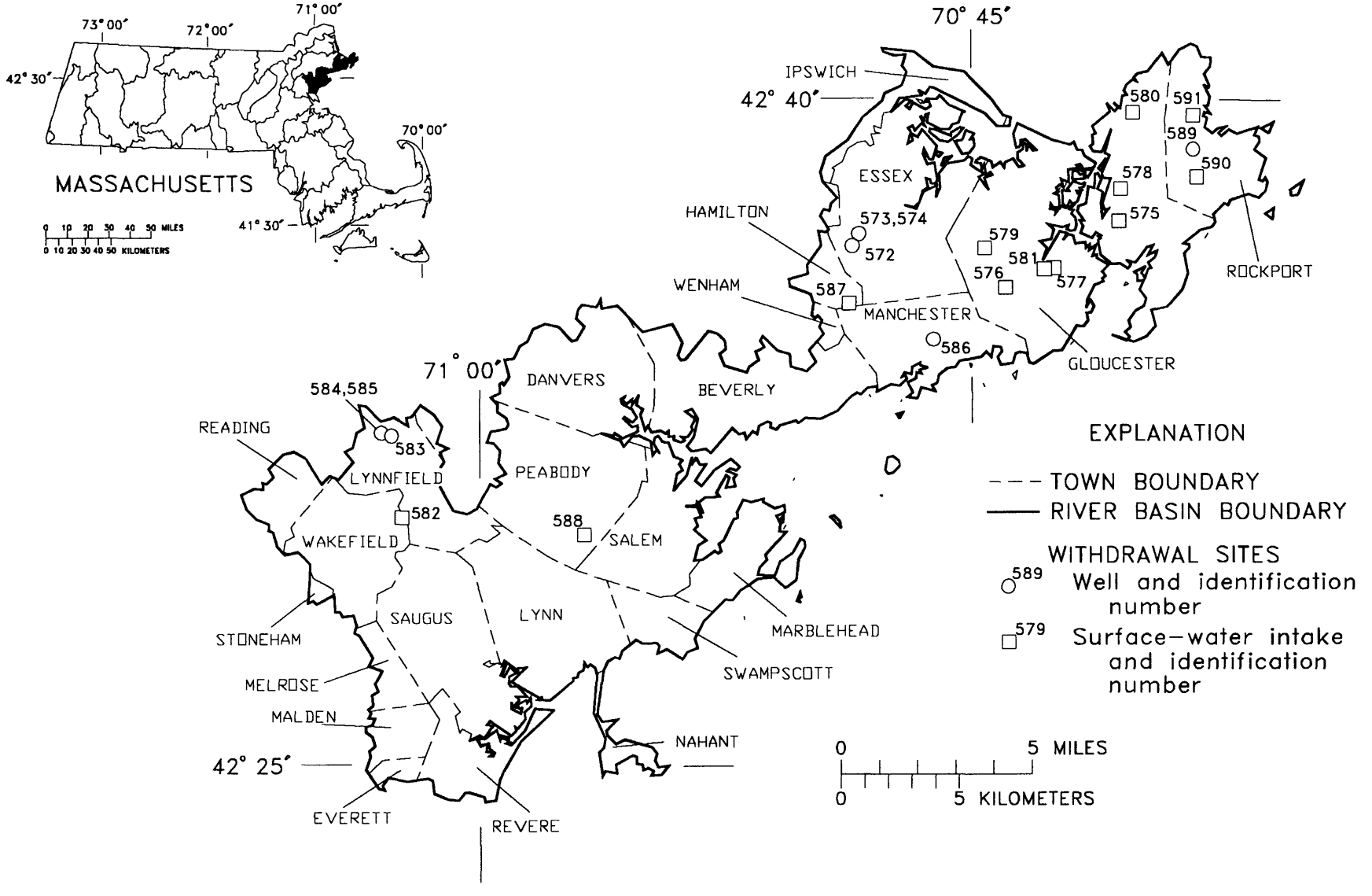

Figure 18.--Location of public water-supply withdrawal sites in the North Coastal River basin.

Table 18.--*Description of public water-supply withdrawal sites and withdrawal amounts in the North Coastal River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 18 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ESSEX	ESSEX WATER DEPARTMENT	572	CHEBACCO WELL 3	GW	42 37 03	70 48 30	YES	0.06	E	
		573	HOMANS DRIVE WELL 1	GW	42 37 13	70 48 13	YES	.06	E	
		574	HOMANS DRIVE WELL 2	GW	42 37 13	70 48 13	YES	.06	E	
							Total	0.18		3,000
GLOUCESTER	GLOUCESTER DEPARTMENT OF PUBLIC WORKS	575	BASON RESERVOIR	SW	42 37 31	70 40 03	NO	2.35	M	
		576	DIKES POND	SW	42 36 10	70 43 30	NO	1.24	M	
		577	FERNWOOD LAKE	SW	42 36 30	70 42 10	NO	.00	E	
		578	GOOSE COVE RESERVOIR	SW	42 38 18	70 39 55	NO	.00	E	
		579	HASKELL RESERVOIR	SW	42 37 00	70 44 16	NO	.00	E	
		580	KLONDIKE RESERVOIR	SW	42 39 56	70 39 42	NO	.00	M	
		581	WALLACE POND	SW	42 36 30	70 42 27	NO	.00	E	
							Total	3.59		37,000
LYNNFIELD	LYNN DEPARTMENT OF PUBLIC WORKS[1]	582	SAUGUS RIVER	SW	42 30 51	71 02 18	NO	7.94	M	
							Total	7.94		60,600
	LYNNFIELD CENTER WATER DISTRICT[2]	583	PHILLIPS ROAD TUBULAR WF	GW	42 32 46	71 02 56	YES	0.35	M	
		584	PHILLIPS ROAD WELL 9	GW	42 32 47	71 03 17	YES	.02	E	
		585	PHILLIPS ROAD WELL 26	GW	42 32 52	71 03 21	YES	.02	E	
							Total	0.39		6,000
MANCHESTER	MANCHESTER WATER DEPARTMENT	586	LINCOLN STREET WELL	GW	42 34 52	70 45 52	YES	0.31	M	
		587	GRAVELLY POND	SW	42 35 46	70 48 35	NO	.38	M	
							Total	0.69		5,800
PEABODY[3]	PEABODY WATER DEPARTMENT	588	SPRING POND	SW	42 30 32	70 56 42	NO	2.12	M	
							Total	2.12		21,500
ROCKPORT	ROCKPORT WATER DEPARTMENT	589	MILLBROOK TUBULAR WF	GW	42 39 08	70 37 49	YES	0.13	M	
		590	CAPE POND	SW	42 38 36	70 37 48	NO	.32	M	
		591	CARLSON QUARRY	SW	42 39 54	70 37 44	NO	.33	M	
								0.78		20,000
						Total for river basin		15.69		153,900

1 Lynn Department of Public Works has a surface-water in-take in the Ipswich River basin.

2 Lynnfield Center Water District has a well in the Ipswich River basin.

3 Peabody has two wells and three reservoirs in the Ipswich River basin.

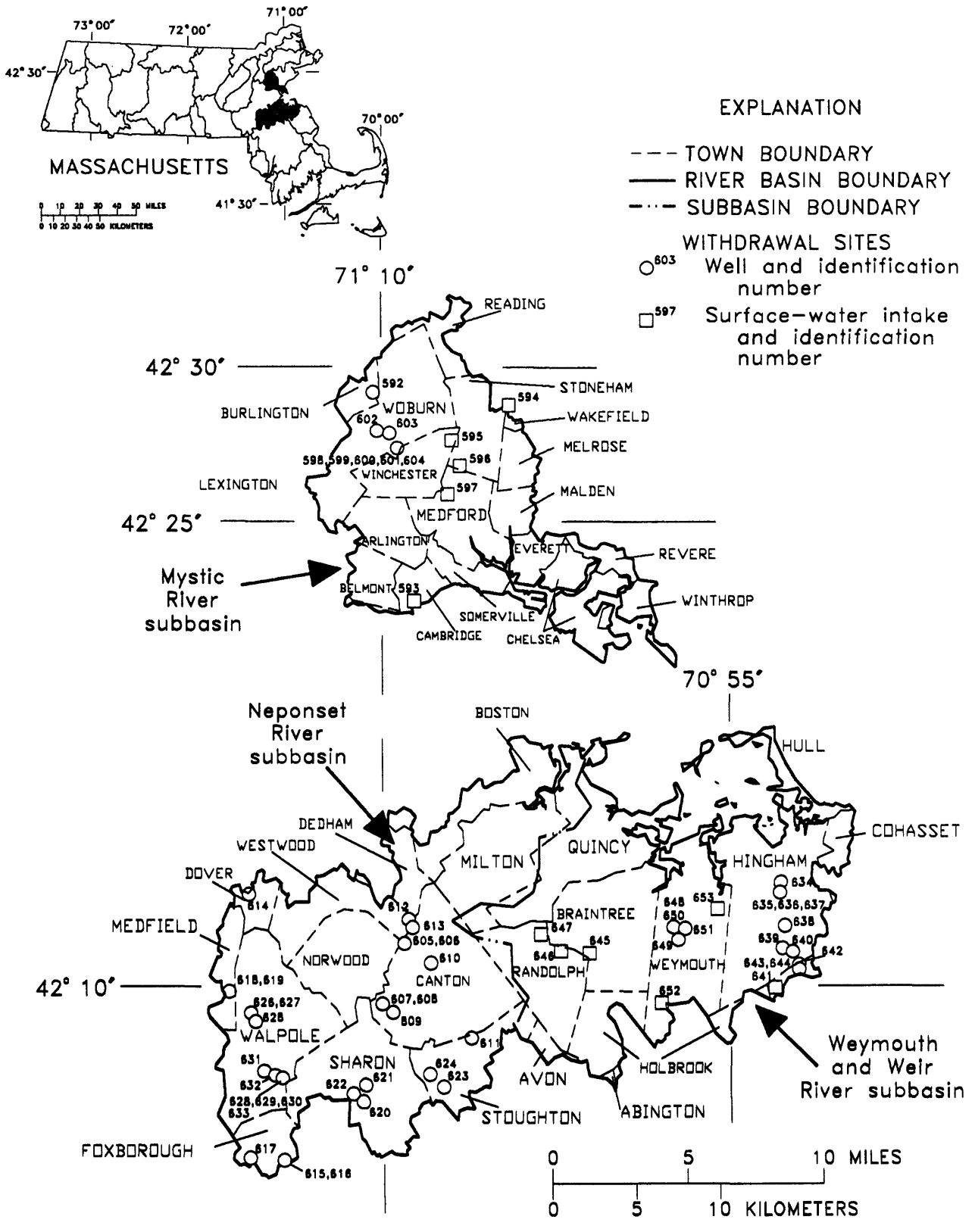

Figure 19.--Location of public water-supply withdrawal sites in the Boston Harbor River basin.

Table 20 .--*Description of public water-supply withdrawal sites and withdrawal amounts in the Boston Harbor River basin (Neponset River subbasin)*--Continued

Municipality name	Public water supplier	Figure 19 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
WALPOLE	WALPOLE WATER AND SEWER DEPARTMENT	625	MINE BROOK WELL 1	GW	42 09 04	71 15 32	YES	0.51	M	
		626	MINE BROOK WELL 2	GW	42 09 31	71 15 57	YES	.00	M	
		627	MINE BROOK WELL 3	GW	42 09 29	71 15 53	YES	.46	M	
		628	WASHINGTON STREET WELL 1	GW	42 07 33	71 14 46	YES	.00	M	
		629	WASHINGTON STREET WELL 2	GW	42 07 30	71 14 50	YES	.32	M	
		630	WASHINGTON STREET WELL 3	GW	42 07 27	71 14 36	YES	.07	M	
		631	WASHINGTON STREET WELL 4	GW	42 07 32	71 15 14	YES	.40	M	
		632	WASHINGTON STREET WELL 6	GW	42 07 27	71 14 28	YES	.87	M	
		633	WASHINGTON STREET WELL 5	GW	42 07 33	71 14 46	NO	.00	M	
								2.63		19,000
WESTWOOD	DEDHAM-WESTWOOD WATER COMPANY[6]	612	WHITE LODGE WELL 1	GW	42 12 24	71 09 06	YES	0.77	M	
		613	WHITE LODGE WELL 2	GW	42 12 13	71 09 04	YES	1.51	M	
							Total	2.28		23,200
					Total for river subbasin			9.39		95,800

[1] The Dover Water Company has two wells in the Charles River basin.

[2] Foxborough has seven wells in the Taunton River basin.

[3] Medfield has two wells in the Charles River basin.

[4] Sharon has two wells in the Taunton River basin.

[5] Stougton has three wells in the Taunton River basin.

[6] The Dedham-Westwood Water Company has six wells in the Charles River basin.

The Weymouth and Weir River subbasin has the municipalities of Hingham, Hull, Norwell, Randolph, and Weymouth on public water-supply systems; Hingham and Hull are served by one system (table 21). The subbasin has a total of 14 ground-water and 6 surface-water intakes in the basin (fig. 19). Norwell also has six wells in the South Coastal River basin (fig. 21 and table 23). Surface water accounted for approximately 5.92 Mgal/d (53 percent) of withdrawals in the subbasin during 1986 (table 32).

Charles River Basin

The Charles River basin (fig. 1) drains 321 mi^2 and includes all or part of 35 municipalities. The basin has 15 municipalities with public water-supply systems; Dover has three systems (table 22) The river basin has a total of 58 wells and 5 surface-water intakes (fig. 20). Bellingham also is served by wells in the Blackstone River basin (fig. 12 and table 11). Cambridge has a reservoir in the Mystic River subbasin (fig. 19 and table 19). The Dover Water Company, Dedham-Westwood Water Company, and Medfield are served by wells in the Neponset River subbasin (fig. 19 and table 20). Lincoln and Natick also have wells in the Concord and Sudbury River subbasin (fig. 14 and table 14). About 15.94 Mgal/d (85 percent) of the public water-supply in the basin came from ground water during 1986 (table 32). Several public water-supply systems transferred water to other river basins: Cambridge (Mystic River subbasin); Natick (Concord River basin); Milford (Blackstone River basin); and the Dedham-Westwood Water Company (Neponset River subbasin) (U.S. Army Corps of Engineers, 1988).

South Coastal River Basin

The South Coastal River basin (fig. 1) drains 240 mi^2 and includes all or part of 22 municipalities. The basin has 11 municipalities (tables 23 and 24) with a total of 60 wells and 8 surface-water intakes (fig. 21). South Coastal River basin is further divided into the North and South River subbasin and the South Coastal Shore subbasin. The municipalities of Brockton, Marshfield, and Pembroke have withdrawal sites in both subbasins even though Brockton is not in the South Coastal River basin. Approximately 17.04 Mgal/d (57 percent) of the water for public water-supply came from surface water during 1986 (table 32). Pembroke transferred water from the South Coastal River basin to the Taunton River basin (U.S. Army Corps of Engineers, 1988).

The North and South River subbasin has 7 municipalities on public water-supply (table 23) with a total of 34 wells and 5 surface-water intakes (fig. 21). About 6.44 Mgal/d (58 percent) of the water came from ground water (table 32). Brockton has one reservoir in the South Coastal Shore subbasin (fig. 21 and table 24) and one reservoir in the Taunton River basin (fig. 25 and table 28). Norwell has also three wells in the Weymouth and Weir River subbasin (fig. 19 and table 21). Marshfield has one well in the South Coastal Shore subbasin (fig. 21 and table 24). Pembroke has two wells in the South Coastal Shore subbasin (fig. 21 and table 24) and the Abington-Rockland Joint Water Works has two wells in the Taunton River basin (fig. 25 and table 28).

The South Coastal Shore subbasin has 7 municipalities on public water-supply systems (table 24) with a total of 26 wells and 3 surface-water intakes (fig. 21). Surface water provided approximately 12.28 Mgal/d (65 percent) of the water for public water-supply during 1986 (table 32). Brockton has one reservoir in the North and South River subbasin (fig. 21 and table 23) and one reservoir in the Taunton River basin (fig. 25 and table 28). Pembroke and Marshfield are served by wells in the North and South River subbasin (fig. 21 and table 23).

Cape Cod River Basin

The Cape Cod River basin (fig. 1) drains 392 mi^2 and includes 14 municipalities and part of the municipality of Bourne. The basin has 12 municipalities on public water-supply systems; the largest municipality, Barnstable, has four public water-supply systems. Bourne has two public water-supply systems (table 25). Cape Cod has a total of 126 wells and 1 surface-water intake in Falmouth (fig. 22). Approximately 19.15 Mgal/d (88 percent) of the water on Cape Cod came from ground water during 1986 (table 32). The numbers for population in table 25 are for the summer since the winter and summer populations on Cape Cod vary greatly.

Table 19.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Boston Harbor River basin (Mytic River subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 19 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BURLINGTON[1]	BURLINGTON DEPARTMENT OF PUBLIC WORKS	592	WYMAN STREET WELL 8	GW	42 29 29	71 10 16	YES	0.02	M	
							Total	0.02		300
CAMBRIDGE[2]	CAMBRIDGE WATER DEPARTMENT	593	FRESH POND RESERVOIR	SW	42 23 01	71 08 39	NO	15.80	M	
							Total	15.80		94,000
WAKEFIELD	WAKEFIELD DEPARTMENT OF PUBLIC WORKS	594	CRYSTAL LAKE	SW	42 29 28	71 04 26	NO	0.32	M	
							Total	0.32		24,200
WINCHESTER	WINCHESTER WATER DEPARTMENT	595	MIDDLE RESERVOIR	SW	42 27 04	71 06 59	NO	0.00	E	
		596	NORTH RESERVOIR	SW	42 27 56	71 07 05	NO	.93	E	
		597	SOUTH RESERVOIR	SW	42 26 26	71 07 13	NO	.93	E	
							Total	1.86		21,000
WOBURN	WOBURN DEPARTMENT OF PUBLIC WORKS	598	WELL A2	GW	42 27 50	71 09 13	YES	1.16	M	
		599	WELL B	GW	42 27 48	71 09 17	YES	.18	M	
		600	WELL C2	GW	42 27 50	71 09 17	YES	.79	M	
		601	WELL D	GW	42 27 54	71 09 31	YES	.38	M	
		602	WELL E	GW	42 28 20	71 10 14	YES	.57	M	
		603	WELL F	GW	42 28 16	71 10 01	YES	.25	M	
		604	WELL I	GW	42 27 57	71 09 22	YES	.91	M	
							Total	4.24		35,000
					Total for river subbasin			22.24		174,500

[1] Burlington has eight wells in the Shawsheen River basin and one reservoir in the Ipswich River basin.

[2] Cambridge has two reservoirs in the Charles River basin.

Table 20 .--*Description of public water-supply withdrawal sites and withdrawal amounts in the Boston Harbor River basin (Neponset River subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 19 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
CANTON	CANTON WATER DEPARTMENT	605	DEDHAM STREET WELL 2	GW	42 11 41	71 09 13	YES	0.00	M	
		606	DEDHAM STREET WELL 3	GW	42 11 39	71 09 13	YES	.00	M	
		607	FOREST ROAD WELL 5	GW	42 09 39	71 10 11	YES	.37	M	
		608	FOREST STREET WELL 6	GW	42 09 40	71 10 17	YES	.00	M	
		609	NEPONSET STREET WELL 7	GW	42 09 32	71 09 48	YES	.00	M	
		610	PECUNIT STREET WELL 4	GW	42 10 57	71 08 12	YES	.81	M	
		611	WASHINGTON STREET WELL 1	GW	42 08 34	71 06 07	YES	.00	M	
							Total	1.18		17,400
DOVER[1]	DOVER WATER COMPANY	614	WALPOLE STREET WF	GW	42 13 17	71 16 10	YES	0.06	M	
							Total	0.06		800
FOXBOROUGH[2]	FOXBOROUGH WATER DEPARTMENT	615	WELL 1	GW	42 04 42	71 14 18	YES	0.36	E	
		616	WELL 2A	GW	42 04 40	71 14 19	YES	.36	E	
		617	WELL 12	GW	42 04 45	71 15 33	YES	.31	M	
							Total	1.03		5,800
MEDFIELD[3]	MEDFIELD WATER DEPARTMENT	618	ELM STREET WELL 3	GW	42 10 14	71 17 00	YES	0.28	E	
		619	ELM STREET WELL 4	GW	42 10 10	71 16 56	YES	.28	E	
							Total	0.56		5,000
SHARON[4]	SHARON WATER DEPARTMENT	620	FARMHAM ROAD WELL 3	GW	42 06 52	71 11 12	YES	0.20	M	
		621	TREE LANE WELL 4	GW	42 07 35	71 11 04	YES	.39	M	
		622	MOOSE HILL WELL 2	GW	42 07 09	71 11 33	YES	.16	M	
							Total	0.75		9,300
STOUGHTON[5]	STOUGHTON DEPARTMENT OF PUBLIC WORKS	623	MUDDY POND WELL 1	GW	42 06 49	71 07 56	YES	0.45	M	
		624	HARRIS POND WELL 2	GW	42 07 40	71 08 17	YES	.45	M	
							Total	0.90		15,300

Table 21.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Boston Harbor River basin (Weymouth and Weir subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 19 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
HINGHAM	MASSACHUSETTS AMERICAN WATER COMPANY	634	DOWNING STREET WELL	GW	42 13 29	70 52 48	YES	0.01	M	
		635	FREE STREET WELL 2	GW	42 13 05	70 52 46	YES	1.26	M	
		636	FREE STREET WELL 3	GW	42 13 04	70 52 52	YES	.10	M	
		637	FREE STREET WELL 4	GW	42 13 10	70 52 58	YES	.00	E	
		638	FULL MILL POND WELL	GW	42 12 10	70 52 34	YES	1.06	M	
		639	PROSPECT STREET WELL	GW	42 11 31	70 52 42	YES	.01	M	
		640	SCOTLAND STREET WELL	GW	42 11 20	70 52 24	YES	.52	M	
		641	ACCORD POND	SW	42 10 17	70 53 29	NO	.28	M	
							Total	3.24		37,200
NORWELL[1]	NORWELL WATER DEPARTMENT	642	GROVE STREET WELL 2	GW	42 10 56	70 52 10	YES	0.03	M	
		643	GROVE STREET WELL 3	GW	42 10 41	70 52 13	YES	.00	M	
		644	GROVE STREET WELL 5	GW	42 10 41	70 52 11	YES	.28	M	
							Total	0.31		2,400
RANDOLPH	HOLBROOK-RANDOLPH JOINT WATER BOARD	645	GREAT POND	SW	42 11 46	71 02 31	NO	3.62	M	
		646	RICHARDI RESERVOIR	SW	42 11 26	71 01 23	NO	.00	E	
		647	UPPER RESERVOIR	SW	42 11 56	71 03 03	NO	.00	E	
							Total	3.62		29,100
WEYMOUTH	WEYMOUTH DEPARTMENT OF PUBLIC WORKS	648	CIRCUIT AVENUE WELL	GW	42 11 53	70 57 17	YES	0.51	E	
		649	MAIN STREET WELL	GW	42 11 43	70 57 19	YES	.51	E	
		650	WINTER STREET WELL 1	GW	42 11 58	70 56 59	YES	.51	E	
		651	WINTER STREET WELL 2	GW	42 12 05	70 57 03	YES	.51	E	
		652	WEYMOUTH GREAT POND	SW	42 09 54	70 58 02	NO	1.01	E	
		653	WHITMANS POND	SW	42 12 46	70 55 41	NO	1.01	E	
							Total	4.06		54,000
					Total for river subbasin			11.23		122,700
					Total for river basin			42.86		393,000

[1] Norwell has six wells in the North and South Rivers subbasin.

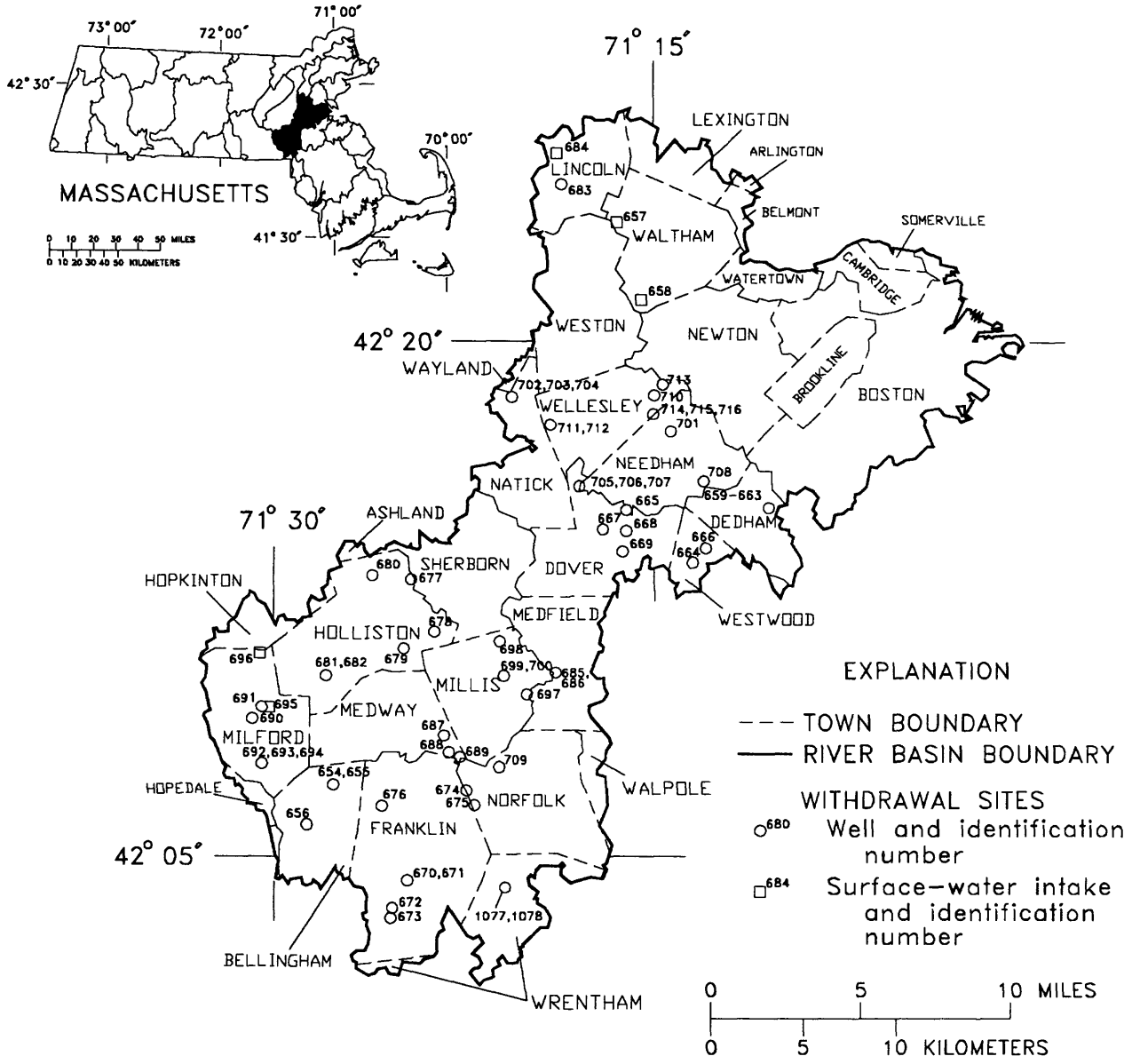

Figure 20.--Location of public water-supply withdrawal sites in the Charles River basin.

Table 22.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Charles River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 20 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BELLINGHAM[1]	BELLINGHAM WATER DEPARTMENT	654	HARTFORD AVENUE WELL 7	GW	42 07 24	71 27 58	YES	0.00	M	
		655	HARTFORD AVENUE WELL 8	GW	42 07 26	71 27 48	YES	.13	M	
		656	TAUNTON STREET WELL 5	GW	42 06 09	71 29 04	YES	.15	M	
							Total	0.28		3,000
CAMBRIDGE[2]	CAMBRIDGE WATER DEPARTMENT	657	HOBBS RESERVOIR	SW	42 23 55	71 16 25	NO	0.00	E	
		658	STONY BROOK RESERVOIR	SW	42 21 19	71 15 55	NO	.00	E	
							Total	0.00		0
DEDHAM	DEDHAM-WESTWOOD WATER COMPANY[3]	659	BRIDGE STREET WELL A1	GW	42 15 12	71 10 57	YES	0.25	E	
		660	BRIDGE STREET WELL B1	GW	42 15 13	71 10 56	YES	.25	E	
		661	BRIDGE STREET WELL D1	GW	42 15 12	71 10 53	YES	.25	E	
		662	BRIDGE STREET WELL E1	GW	42 15 13	71 10 53	YES	.28	M	
		663	BRIDGE STREET WELL F1	GW	42 15 13	71 10 58	YES	.25	E	
		664	ROCK MEADOW WELL 11	GW	42 13 50	71 13 35	YES	.37	E	
							Total	1.65		16,800
DOVER	DOVER WATER COMPANY[4]	665	CHICKERING DRIVE WELL	GW	42 15 27	71 16 10	YES	0.01	M	
		666	KNOLLWOOD DRIVE WELL	GW	42 14 20	71 13 03	YES	.01	M	
							Total	0.02		300
	DOVER WATER DEPARTMENT	667	CHURCH STREET WELL FIELD	GW	42 14 54	71 17 12	YES	0.01	M	
		668	CARYL PARK WELL FIELD	GW	42 14 53	71 16 13	NO	.00	M	
							Total	0.01		300
	DOVER WATER WORKS	669	PICARDY LANE WELL	GW	42 14 13	71 16 29	YES	0.00	E	
							Total	0.00		50
FRANKLIN	FRANKLIN DEPARTMENT OF PUBLIC WORKS	670	BEAVER POND WELL 1	GW	42 04 37	71 24 59	YES	0.12	E	
		671	BEAVER POND WELL 2	GW	42 04 40	71 25 02	YES	.12	E	
		672	GROVE STREET WELL 6	GW	42 03 49	71 25 28	YES	.44	M	
		673	GROVE STREET WELL 3	GW	42 03 36	71 25 39	YES	.22	M	
		674	MILLER STREET WELL 6	GW	42 07 05	71 22 32	YES	.62	M	
		675	MILLER STREET WELL 5	GW	42 06 46	71 22 20	YES	.22	M	
		676	POND STREET WELL 7	GW	42 06 48	71 26 06	YES	.27	M	
							Total	2.01		20,000

Table 22.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Charles River basin*--Continued

Municipality name	Public water supplier	Figure 20 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
HOLLISTON	HOLLISTON WATER DEPARTMENT	677	BROOK STREET WELL 6	GW	42 13 26	71 24 54	YES	0.45	M	
		678	CENTRAL STREET WELL 5	GW	42 11 50	71 23 45	YES	.44	M	
		679	LAKE WINTHROP WELL 1	GW	42 11 18	71 25 12	YES	.11	E	
		680	MAPLE STREET WELL 2	GW	42 13 36	71 26 25	YES	.08	E	
		681	WASHINGTON STREET WELL 3	GW	42 10 32	71 28 11	YES	.00	M	
		682	WASHINGTON STREET WELL 4	GW	42 10 36	71 28 12	YES	.00	M	
							Total	1.08		13,000
LINCOLN[5]	LINCOLN WATER DEPARTMENT	683	TOWER POND WELL 1	GW	42 24 50	71 18 53	YES	0.06	M	
		684	SANDY POND RESERVOIR	SW	42 25 47	71 18 53	NO	.31	M	
							Total	0.37		5,000
MEDFIELD[6]	MEDFIELD WATER DEPARTMENT	685	CHARLES RIVER WELL 1	GW	42 10 56	71 19 17	YES	0.28	E	
		686	CHARLES RIVER WELL 2	GW	42 10 54	71 19 22	YES	.28	E	
							Total	0.56		5,000
MEDWAY	MEDWAY WATER DEPARTMENT	687	OAKLAND WELL 2	GW	42 08 51	71 23 27	YES	0.06	M	
		688	PopulatiC WELL 1	GW	42 08 18	71 23 15	YES	.27	M	
		689	VILLAGE STREET WELL 3	GW	42 08 08	71 23 01	YES	.37	M	
							Total	0.70		9,000
MILFORD	MILFORD WATER COMPANY	690	CLARKS ISLAND TUBULAR WF	GW	42 09 14	71 30 56	YES	0.44	E	
		691	DELLA STREET TUBULAR WF	GW	42 09 39	71 30 48	YES	.00	M	
		692	GODFREY WELL 1	GW	42 08 04	71 30 42	YES	.15	E	
		693	GODFREY WELL 2	GW	42 07 58	71 30 37	YES	.15	E	
		694	GODFREY WELL 3	GW	42 07 50	71 30 35	YES	.15	E	
		695	CHARLES RIVER	SW	42 09 43	71 30 33	NO	.52	M	
		696	ECHO LAKE	SW	42 11 33	71 30 30	NO	1.94	M	
							Total	3.35		26,000
MILLIS	MILLIS DEPARTMENT OF PUBLIC WORKS	697	BIRCH STREET WELL 3	GW	42 10 02	71 20 22	YES	0.49	M	
		698	SOUTH END POND WELL 4	GW	42 11 36	71 21 07	YES	.20	M	
		699	WATER STREET WELL 1	GW	42 10 36	71 21 08	YES	.00	M	
		700	WATER STREET WELL 2	GW	42 10 35	71 21 06	YES	.00	M	
							Total	0.69		7,000
NATICK[7]	NATICK WATER DEPARTMENT	701	MORSE POND WELL	GW	42 17 46	71 14 32	YES	0.46	E	
		702	PINE OAKS WELL 1	GW	42 18 42	71 20 40	YES	.46	E	
		703	PINE OAKS WELL 2	GW	42 18 38	71 20 41	YES	.46	E	
		704	PINE OAKS WELL 3	GW	42 18 35	71 20 37	YES	.46	E	
							Total	1.84		12,600

Table 22.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Charles River basin*--Continued

Municipality name	Public water supplier	Figure 20 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
NEEDHAM	NEEDHAM DEPARTMENT OF PUBLIC WORKS	705	CHARLES RIVER WELL 2	GW	42 16 08	71 17 51	YES	1.57	E	
		706	CHARLES RIVER WELL 3	GW	42 16 05	71 17 51	YES	.00	E	
		707	CHARLES RIVER WELL 5	GW	42 16 06	71 17 49	YES	1.57	E	
		708	DEDHAM AVENUE DUG WELL	GW	42 16 18	71 13 14	YES	.00	E	
							Total	3.14		27,900
NORFOLK	NORFOLK WATER DEPARTMENT	709	GOLD STREET WELL 1	GW	42 07 44	71 21 18	YES	0.25	M	
							Total	0.25		4,200
WELLESLEY	WELLESLEY DEPARTMENT OF PUBLIC WORKS	710	LONGFELLOW WELL	GW	42 18 48	71 15 15	YES	0.24	M	
		711	MORSE POND WELL 1	GW	42 17 52	71 19 00	YES	.53	E	
		712	MORSE POND WELL 2	GW	42 17 52	71 19 00	YES	.53	E	
		713	ROSEMARY BROOK WELL	GW	42 18 56	71 15 04	YES	.34	M	
		714	TF COUGHLIN WELL	GW	42 18 12	71 15 08	YES	.42	M	
		715	WELLESLEY AVENUE WELL 1	GW	42 18 09	71 15 15	YES	.35	E	
		716	WELLESLEY AVENUE WELL 2	GW	42 18 11	71 15 11	YES	.35	E	
							Total	2.76		26,600
						Total for river basin		18.71		176,750

1 Bellingham has four wells in the Blackstone River basin.

2 Cambridge has one reservoir in the Mystic River subbasin.

3 Dedham-Westwood Water Company has two wells in the Neponset River subbasin.

4 Dover Water Company has one well in the Neponset River subbasin.

5 Lincoln has one well in the Concord and Sudbury River subbasin.

6 Medfield has two wells in the Neponset River subbasin.

7 Natick has seven wells in the Concord and Sudbury River subbasin.

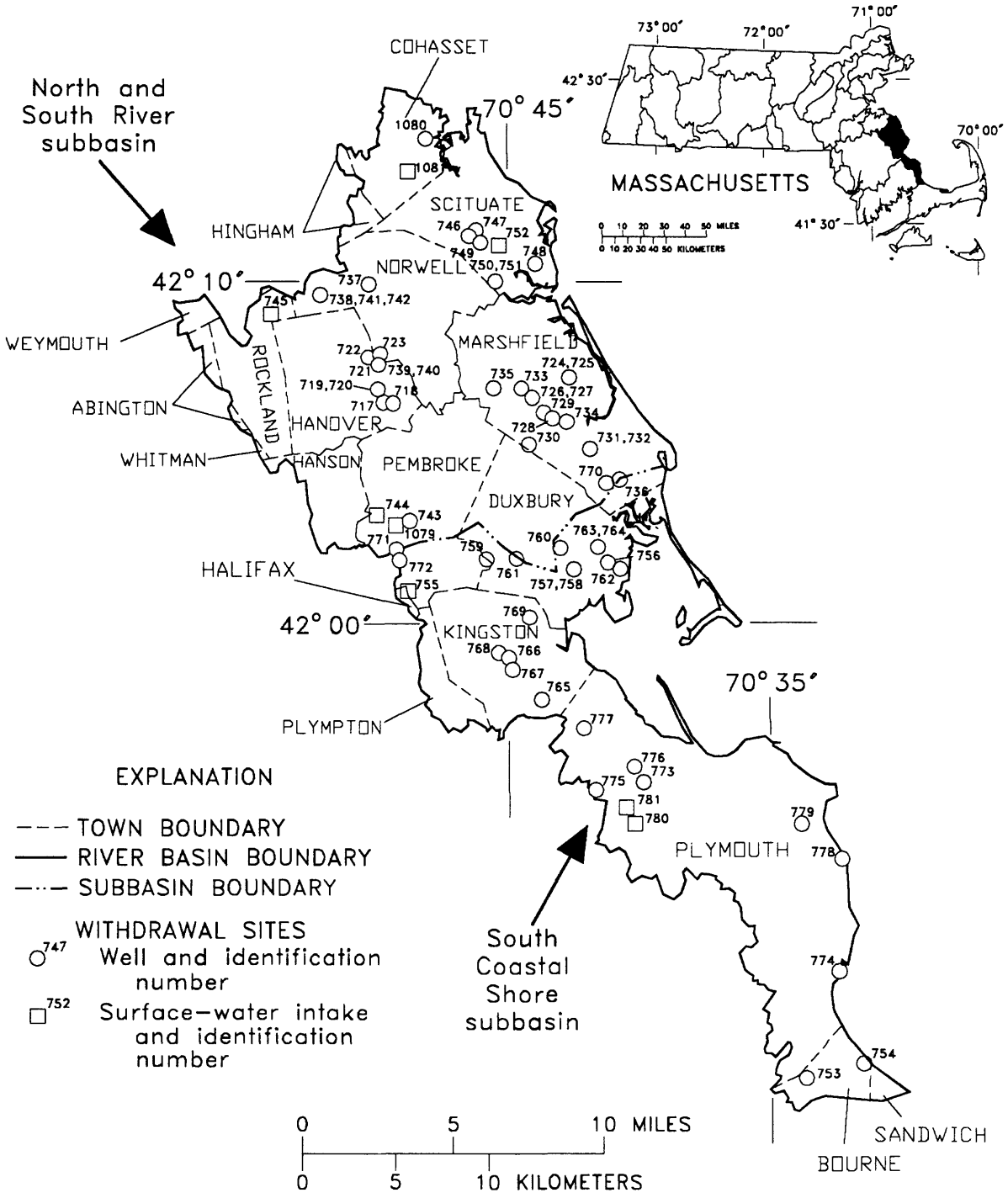

Figure 21.--Location of public water-supply withdrawal sites in South Coastal River basin.

Table 23.--*Description of public water-supply withdrawal sites and withdrawal amounts in the South Coastal River basin (North and South Rivers subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 21 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
COHASSET	COHASSET WATER DEPARTMENT	1080	ELMS MEADOW WELL FIELD	GW	42 14 19	70 48 14	YES	0.02	M	
		1081	AARON RIVER/LILY POND	SW	42 13 34	70 48 50	NO	.58	M	
							Total	0.60		8,100
HANOVER	HANOVER DEPARTMENT OF PUBLIC WORKS	717	BROADWAY WELL 1	GW	42 06 35	70 49 41	YES	0.13	M	
		718	BROADWAY WELL 2	GW	42 06 35	70 49 27	YES	.03	M	
		719	HANOVER STREET WELL 1	GW	42 07 02	70 49 53	YES	.13	M	
		720	HANOVER STREET WELL 2	GW	42 07 05	70 49 50	YES	.02	M	
		721	POND STREET WELL 1	GW	42 07 58	70 50 01	YES	.24	M	
		722	POND STREET WELL 2	GW	42 08 06	70 50 03	YES	.24	M	
		723	POND STREET WELL 3	GW	42 07 54	70 49 59	YES	.24	M	
							Total	1.03		11,900
MARSHFIELD[1]	MARSHFIELD WATER DEPARTMENT	724	CHURCH STREET WELL	GW	42 07 23	70 42 31	YES	0.48	M	
		725	FERRY STREET WELL	GW	42 07 18	70 42 42	YES	.20	M	
		726	FURNACE BROOK WELL 1	GW	42 06 23	70 43 39	YES	.26	M	
		727	FURNACE BROOK WELL 2	GW	42 06 50	70 44 04	YES	.26	M	
		728	FURNACE BROOK WELL 3	GW	42 06 14	70 43 18	YES	.07	M	
		729	FURNACE BROOK WELL 4	GW	42 06 52	70 44 16	YES	.93	M	
		730	MOUNT SKIRGO TUBULAR WF	GW	42 05 31	70 44 04	YES	.32	M	
		731	PARSONAGE STREET WELL 1	GW	42 05 23	70 41 52	YES	.00	M	
		732	PARSONAGE STREET WELL 2	GW	42 05 21	70 41 51	YES	.00	M	
		733	SCHOOL STREET WELL	GW	42 07 08	70 44 35	YES	.09	M	
		734	SOUTH RIVER WELL	GW	42 06 06	70 42 47	YES	.04	M	
		735	UNION STREET WELL	GW	42 07 13	70 45 39	YES	.45	M	
		736	WEBSTER 2 TUBULAR WF	GW	42 04 30	70 40 36	YES	.01	M	
							Total	3.11		34,500
NORWELL[2]	NORWELL WATER DEPARTMENT	737	BOWKER STREET WELL 9	GW	42 10 11	70 49 45	YES	0.06	M	
		738	RIDGE HILL ROAD WELL 4	GW	42 09 46	70 52 16	YES	.20	M	
		739	SOUTH STREET WELL 1	GW	42 08 06	70 50 04	YES	.30	M	
		740	SOUTH STREET WELL 6	GW	42 08 07	70 49 48	YES	.22	M	
		741	WASHINGTON STREET WELL 7	GW	42 09 49	70 52 12	YES	.13	M	
		742	WASHINGTON STREET WELL 8	GW	42 09 49	70 52 12	YES	.03	M	
							Total	0.94		7,300
PEMBROKE	BROCKTON WATER DEPARTMENT[3]	1079	FURNACE POND	SW	42 03 12	70 49 15	NO	1.74	M	
							Total	1.74		14,900

Table 23.--*Description of public water-supply withdrawal sites and withdrawal amounts in the South Coastal River basin (North and South Rivers subbasin)*--Continued

Municipality name	Public water supplier	Figure 21 identification number	Site name	Site type	Latitude ° ′ ″	Longitude ° ′ ″	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
PEMBROKE (Continued)	PEMBROKE WATER DEPARTMENT[4]	743	CENTER STREET WELL 1	GW	42 03 15	70 48 42	YES	0.19	M	
							Total	0.19		2,100
ROCKLAND	ABINGTON-ROCKLAND JOINT WATER WORKS[5]	744	GREAT SANDY BOTTOM POND	SW	42 03 25	70 50 04	NO	1.36	M	
		745	HINGHAM STREET RESERVOIR	SW	42 09 24	70 54 04	NO	.85	M	
							Total	2.21		23,000
SCITUATE	SCITUATE DEPARTMENT OF PUBLIC WORKS	746	BARNES MEADOW WELL 22	GW	42 11 30	70 46 20	YES	0.33	M	
		747	EDISON WELL 19	GW	42 11 42	70 46 11	YES	.37	M	
		748	SAND & GRAVEL WELL 18A	GW	42 10 39	70 43 56	YES	.14	M	
		749	STEARNS MEADOW WELL 17	GW	42 11 15	70 46 09	YES	.05	M	
		750	WEBSTER MEADOW WELL 11	GW	42 10 18	70 45 25	YES	.09	M	
		751	WEBSTER POND WELL 10	GW	42 10 14	70 45 21	YES	.17	M	
		752	FIRST HERRING RESERVOIR	SW	42 11 13	70 45 15	NO	.23	M	
							Total	1.38		29,300
					Total for river subbasin			11.20		131,100

1 Marshfield has one well in South Coastal Shore River subbasin.

2 Norwell has three wells in the Weymouth and Weir River subbasin.

3 Brockton Water Department has reservoirs in the South Coastal Shore river subbasin and the Taunton River basin.

4 The Pembroke Water Department has two wells in the South Coastal Shore subbasin.

5 The Abington-Rockland Joint Water Works has two wells in the Taunton River subbasin.

Table 24.--*Description of public water-supply withdrawal sites and withdrawal amounts in the South Coastal River basin (South Coastal Shore subbasin)*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 21 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BOURNE	NORTH SAGAMORE WATER DISTRICT	753	BLACK POND ROAD WELL 2	GW	41 47 10	70 33 37	YES	0.19	M	
		754	PILGRIM ROAD WELL 1	GW	41 47 35	70 31 28	YES	.03	M	
							Total	0.22		4,000
DUXBURY	DUXBURY WATER DEPARTMENT	756	DEPOT STREET WELL	GW	42 02 02	70 41 20	YES	0.08	M	
		757	EVERGREEN WELL 1	GW	42 01 49	70 42 16	YES	.01	M	
		758	EVERGREEN WELL 2	GW	42 01 49	70 42 12	YES	.00	M	
		759	LAKESHORE DRIVE WELL	GW	42 02 10	70 45 36	YES	.22	M	
		760	MAYFLOWER WELL	GW	42 02 22	70 42 54	YES	.37	M	
		761	MILLBROOK WELL 2	GW	42 02 08	70 44 28	YES	.27	M	
		762	PARTRIDGE ROAD WELL	GW	42 01 48	70 40 47	YES	.08	M	
		763	TREMONT WELL 1	GW	42 02 28	70 41 30	YES	.21	M	
		764	TREMONT WELL 2	GW	42 02 26	70 41 35	YES	.04	M	
							Total	1.28		18,700
KINGSTON	KINGSTON WATER DEPARTMENT	765	GRASSY HOLE WELL 5	GW	41 58 11	70 43 44	YES	0.32	M	
		766	MILLGATE WELL 4	GW	41 59 10	70 44 57	YES	.17	M	
		767	SOULES POND WELL 1	GW	41 58 58	70 44 50	YES	.16	M	
		768	SOUTH STREET WELL 2	GW	41 59 20	70 45 13	YES	.29	M	
		769	WINTHROP STREET WELL 3	GW	42 00 29	70 44 07	YES	.12	M	
							Total	1.06		11,000
MARSHFIELD[1]	MARSHFIELD WATER DEPARTMENT	770	WEBSTER WELL 1	GW	42 04 23	70 41 11	YES	0.10	M	
							Total	0.10		500
PEMBROKE	BROCKTON WATER DEPARTMENT[2]	755	SILVER LAKE	SW	42 01 26	70 48 56	NO	10.54	M	
							Total	10.54		93,200
	PEMBROKE WATER DEPARTMENT[3]	771	CENTER STREET WELL 2	GW	42 02 33	70 49 08	YES	0.78	M	
		772	SCHOOL STREET WELL 3	GW	42 02 17	70 49 03	YES	.32	M	
							Total	1.10		11,900

Table 24.--*Description of public water-supply withdrawal sites and withdrawal amounts in the South Coastal River basin (South Coastal Shore subbasin)*--Continued

Municipality name	Public water supplier	Figure 21 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
PLYMOUTH	PLYMOUTH PUBLIC WORKS	773	BRADFORD WELL	GW	41 55 38	70 39 46	YES	0.56	M	
		774	ELLISVILLE WELL	GW	41 50 19	70 32 18	YES	.30	M	
		775	FEDERAL FURNACE WELL	GW	41 54 53	70 42 16	YES	.33	M	
		776	LOUTS POND WELL	GW	41 56 12	70 40 10	YES	.28	M	
		777	NORTH PLYMOUTH WELL	GW	41 57 16	70 42 16	YES	.99	M	
		778	SHIP POND WELL	GW	41 53 25	70 32 12	YES	.22	M	
		779	WANNOS POND WELL	GW	41 54 29	70 33 34	YES	.23	M	
		780	GREAT SOUTH POND	SW	41 54 42	70 40 17	NO	.87	E	
		781	LITTLE SOUTH POND	SW	41 55 04	70 40 36	NO	.87	E	
							Total	4.65		42,000
						Total for river subbasin		18.95		181,300
						Total for river basin		30.15		312,400

[1] Marshfield has thirteen wells in the North and South Rivers subbasin.

[2] Brockton Water Department has one reservoir in the North and South Rivers subbasin and the Taunton River basin.

[3] Pembroke Water Department has one well in the North and South Rivers subbasin.

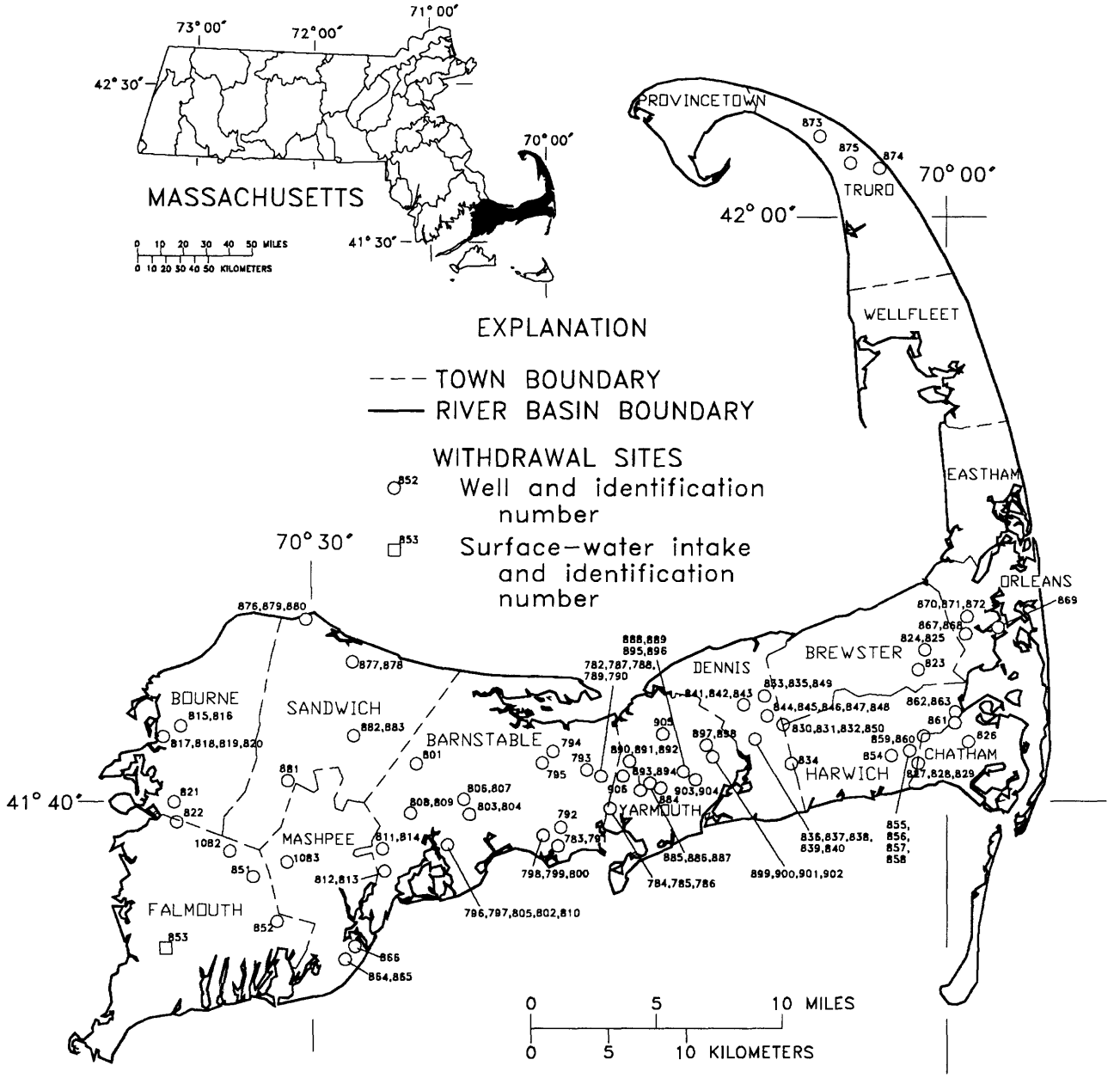

Figure 22.--Location of public water-supply withdrawal sites in Cape Cod River basin.

Table 25.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Cape Cod River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; ---, no data; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 22 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served[1]
BARNSTABLE	BARNSTABLE WATER COMPANY	782	AIRPORT WELL 1	GW	41 40 16	70 16 43	YES	0.37	M	
		783	HYANNISPORT WELL	GW	41 38 21	70 18 31	YES	.30	M	
		784	MAHER WELL 1	GW	41 39 40	70 16 25	YES	.85	M	
		785	MAHER WELL 2	GW	41 39 38	70 16 17	YES	.02	E	
		786	MAHER WELL 3	GW	41 39 39	70 16 21	YES	.02	E	
		787	MARY DUNN WELL 1	GW	41 40 31	70 16 52	YES	.02	M	
		788	MARY DUNN WELL 2	GW	41 40 33	70 16 46	YES	.12	M	
		789	MARY DUNN WELL 3	GW	41 40 40	70 16 54	YES	.01	M	
		790	MARY DUNN WELL 4	GW	41 40 46	70 16 53	YES	.29	M	
		791	SIMMONS POND WELL	GW	41 38 27	70 18 28	YES	.71	M	
		792	STRAIGHTWAY POND WELL	GW	41 38 42	70 18 35	YES	.00	M	
							Total	2.71		45,000
	BARNSTABLE FIRE DISTRICT	793	OLD BARNSTABLE ROAD W 2	GW	41 40 47	70 17 25	YES	0.15	M	
		794	PHINNEYS LANE WELL 1	GW	41 41 28	70 18 26	YES	.09	M	
		795	ROUTE 132 WELL 3	GW	41 41 02	70 19 08	YES	.15	M	
							Total	0.39		4,000
BARNSTABLE	CENTERVILLE-OSTERVILLE FIRE DISTRICT	796	ARENA WELL 3	GW	41 38 25	70 23 25	YES	0.01	M	
		797	ARENA WELL 4	GW	41 38 25	70 23 21	YES	.01	M	
		798	CRAIGVILLE WELL 11	GW	41 38 42	70 19 23	YES	.03	M	
		799	CRAIGVILLE WELL 7	GW	41 38 39	70 19 20	YES	.08	M	
		800	CRAIGVILLE WELL 8	GW	41 38 48	70 19 23	YES	.05	M	
		801	CROOKED CARTWAY WELL 16	GW	41 41 19	70 25 15	YES	.45	M	
		802	DAVIS WELL 10	GW	41 38 20	70 23 38	YES	.11	M	
		803	LUMBERT MILL WELL 5	GW	41 39 13	70 22 15	YES	.04	M	
		804	LUMBERT MILL WELL 9	GW	41 39 15	70 22 20	YES	.28	M	
		805	MCSHANE WELL 1	GW	41 38 08	70 23 27	YES	.06	M	
		806	MURRAY WELL 12	GW	41 40 00	70 22 58	YES	.26	M	
		807	MURRAY WELL 13	GW	41 39 59	70 22 52	YES	.19	M	
		808	HAYDEN WELL 14	GW	41 39 16	70 25 24	NO	.47	M	
		809	HAYDEN WELL 15	GW	41 39 16	70 25 24	NO	.09	M	
		810	MCSHANE WELL 2	GW	41 38 08	70 23 27	NO	.00	M	
							Total	2.13		47,000
	COTUIT FIRE DISTRICT	811	ELECTRIC STATION WELL 1	GW	41 38 04	70 26 24	YES	0.09	M	
		812	ELECTRIC STATION WELL 2	GW	41 37 57	70 26 27	YES	.08	M	
		813	ELECTRIC STATION WELL 3	GW	41 37 20	70 26 18	YES	.08	M	
		814	ELECTRIC STATION WELL 4	GW	41 38 10	70 26 22	NO	.08	M	
							Total	0.33		4,000

Table 25.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Cape Cod River basin*--Continued

Municipality name	Public water supplier	Figure 22 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served[1]
BOURNE	BOURNE WATER DISTRICT	815	BOURNE FOREST WELL 3	GW	41 42 21	70 35 48	YES	0.12	M	
		816	BOURNE FOREST WELL 4	GW	41 42 32	70 35 54	YES	.13	M	
		817	COUNTY ROAD WELL 1	GW	41 42 16	70 36 29	YES	.06	E	
		818	COUNTY ROAD WELL 2	GW	41 42 18	70 36 25	YES	.06	E	
		819	COUNTY ROAD WELL 3	GW	41 42 17	70 36 22	YES	.06	E	
		820	COUNTY ROAD WELL 4	GW	41 42 19	70 36 23	YES	.06	E	
		821	ROUTE 28A WELL 2	GW	41 39 48	70 36 16	YES	.10	M	
		822	ROUTE 28A WELL 5	GW	41 39 11	70 36 20	YES	.16	M	
							Total	0.75		6,000
	SOUTH SAGAMORE WATER DISTRICT	876	ROUTE 6A TUBULAR WF	GW	41 46 15	70 31 34	YES	0.09	M	
							Total	0.09		40,000
BREWSTER	BREWSTER WATER DEPARTMENT	823	FREEMAN'S WAY WELL 1	GW	41 44 12	70 01 49	YES	0.23	M	
		824	FREEMAN'S WAY WELL 2	GW	41 44 05	70 01 41	YES	.34	M	
		825	FREEMAN'S WAY WELL 3	GW	41 44 38	70 01 11	YES	.28	M	
							Total	0.85		25,000
CHATHAM	CHATHAM WATER COMPANY	826	INDIAN HILL WELL 1	GW	41 41 30	69 59 41	YES	0.32	M	
		827	SOUTH CHATHAM WELL 1	GW	41 40 48	70 01 51	YES	.11	E	
		828	SOUTH CHATHAM WELL 2	GW	41 40 48	70 01 52	YES	.11	E	
		829	SOUTH CHATHAM WELL 3	GW	41 40 50	70 01 50	YES	.11	E	
							Total	0.65		21,000

Table 25.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Cape Cod River basin*--Continued

Municipality name	Public water supplier	Figure 22 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served[1]
DENNIS	DENNIS WATER DISTRICT	830	AIRLINE ROAD WELL 10	GW	41 42 42	70 08 24	YES	0.17	M	
		831	AIRLINE ROAD WELL 7	GW	41 42 46	70 08 40	YES	.12	M	
		832	AIRLINE ROAD WELL 8	GW	41 42 50	70 08 36	YES	.05	M	
		833	BAKERS POND WELL 14	GW	41 43 15	70 09 01	YES	.13	M	
		834	CENTER STREET WELL 13	GW	41 41 08	70 08 03	YES	.20	M	
		835	GRASSY POND WELL 9	GW	41 43 02	70 09 34	YES	.23	M	
		836	MAIN GP WELL 1	GW	41 41 45	70 00 94	YES	.05	E	
		837	MAIN GP WELL 2	GW	41 41 46	70 09 39	YES	.05	E	
		838	MAIN GP WELL 3	GW	41 41 48	70 09 38	YES	.05	E	
		839	MAIN GP WELL 4	GW	41 41 49	70 09 36	YES	.05	E	
		840	MAIN GP WELL 5	GW	41 41 51	70 09 34	YES	.05	E	
		841	OLD BASS ROAD WELL 4	GW	41 43 03	70 10 07	YES	.07	M	
		842	OLD BASS ROAD WELL 6	GW	41 43 05	70 10 11	YES	.01	M	
		843	OLD BASS RIVER ROAD W 11	GW	41 42 54	70 10 05	YES	.18	M	
		844	OLD CHATHAM ROAD WELL 1	GW	41 42 29	70 08 59	YES	.09	M	
		845	OLD CHATHAM ROAD WELL 2	GW	41 42 30	70 08 57	YES	.04	M	
		846	OLD CHATHAM ROAD WELL 3	GW	41 42 31	70 08 57	YES	.07	M	
		847	OLD CHATHAM ROAD WELL 12	GW	41 42 21	70 08 16	YES	.23	M	
		848	ROUTE 134 WELL 5	GW	41 42 07	70 08 20	YES	.14	M	
		849	BAKERS POND ROAD WELL 15	GW	41 43 17	70 09 04	NO	.19	M	
		850	TIMBER LANE WELL 16	GW	41 42 53	70 08 57	NO	.13	M	
							Total	2.30		66,000
FALMOUTH	FALMOUTH DEPARTMENT OF PUBLIC WORKS	851	ASHUMET WELL	GW	41 37 03	70 33 00	YES	0.00	E	
		852	FRESH POND WELL	GW	41 35 48	70 32 08	YES	.64	M	
		853	LONG POND	SW	41 34 45	70 36 54	NO	2.39	M	
							Total	3.03		66,000
	OTIS AIR FORCE BASE	1082	WELL G	GW	41 39 33	70 34 22	YES	----		
		1083	WELL J	GW	41 39 58	70 31 51	YES	----		
							Total	----		
HARWICH	HARWICH WATER DEPARTMENT	854	MAIN STATION	GW	41 40 53	70 03 07	YES	0.07	M	
		855	PUMP STATION 1	GW	41 41 14	70 03 05	YES	.19	M	
		856	PUMP STATION 2	GW	41 41 14	70 03 07	YES	.09	M	
		857	PUMP STATION 3	GW	41 41 09	70 03 03	YES	.16	M	
		858	PUMP STATION 4	GW	41 41 03	70 03 03	YES	.08	M	
		859	PUMP STATION 5	GW	41 41 07	70 02 08	YES	.11	M	
		860	PUMP STATION 6	GW	41 41 09	70 02 06	YES	.12	M	
		861	PUMP STATION 7	GW	41 41 05	70 01 58	YES	.14	M	
		862	PUMP STATION 8	GW	41 42 36	70 00 29	YES	.15	M	
		863	PUMP STATION 9	GW	41 42 36	70 00 24	YES	.14	M	
							Total	1.25		25,000

Table 25.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Cape Cod River basin*--Continued

Municipality name	Public water supplier	Figure 22 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served[1]
MASHPEE	HIGH WOOD WATER COMPANY, INC.	864	ROCKLAND ROAD WELL 2	GW	41 34 30	70 28 34	YES	0.06	M	
		865	ROCKLAND ROAD WELL 3	GW	41 34 35	70 28 35	YES	.12	M	
		866	WADING POND WELL 1	GW	41 34 48	70 28 07	YES	.00	M	
							Total	0.18		1,400
ORLEANS	ORLEANS WATER DEPARTMENT	867	CLIFF POND WELL 4	GW	41 45 27	69 59 42	YES	0.21	M	
		868	CLIFF POND WELL 5	GW	41 45 23	69 59 36	YES	.12	M	
		869	CLIFF POND WELL 6	GW	41 45 41	69 57 57	YES	.18	M	
		870	GOULD POND WELL 1	GW	41 45 52	69 59 20	YES	.16	M	
		871	GOULD POND WELL 2	GW	41 45 58	69 59 29	YES	.11	M	
		872	GOULD POND WELL 3	GW	41 45 58	69 59 25	YES	.10	M	
							Total	0.88		19,000
SANDWICH	SANDWICH WATER DISTRICT	877	BOILING SPRINGS WELL 2	GW	41 44 42	70 28 16	YES	0.50	E	
		878	BOILING SPRINGS WELL 3	GW	41 44 42	70 28 15	YES	.50	E	
		879	BOILING SPRINGS WELL 1-1	GW	41 45 57	70 30 18	YES	.00	M	
		880	BOILING SPRINGS WELL 1-2	GW	41 45 59	70 30 17	YES	.00	M	
		881	COUNTRY FARM WELL 5	GW	41 40 41	70 31 32	YES	.50	E	
		882	PINKHAM ROAD WELL 4	GW	41 42 11	70 28 01	YES	.50	E	
		883	PINKHAM ROAD WELL 6	GW	41 42 09	70 27 59	YES	.00	M	
							Total	2.00		13,000
TRURO	PROVINCETOWN WATER DEPARTMENT	873	KNOWLES CROSS WELL	GW	42 02 43	70 06 07	YES	0.09	M	
		874	NORTH TRURO AFB WELL	GW	42 01 41	70 03 09	YES	.13	M	
		875	SOUTH HOLLOW WELL FIELD	GW	42 01 46	70 04 31	YES	.59	M	
							Total	0.81		5,800

Table 25.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Cape Cod River basin*--Continued

Municipality name	Public water supplier	Figure 22 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
YARMOUTH	YARMOUTH WATER DEPARTMENT	884	BASSETT POND WELL 12	GW	41 40 10	70 13 53	YES	0.00	M	
		885	CHICKADE LANE WELL 13	GW	41 40 22	70 14 19	YES	.17	M	
		886	CHICKADE LANE WELL 18	GW	41 40 10	70 14 18	YES	.15	M	
		887	CHICKADE LANE WELL 19	GW	41 40 12	70 14 11	YES	.16	M	
		888	FOREST ROAD WELL 10	GW	41 40 41	70 13 05	YES	.11	M	
		889	FOREST ROAD WELL 11	GW	41 40 32	70 13 11	YES	.10	M	
		890	HIGGINS CROW WELL 1	GW	41 41 00	70 15 19	YES	.09	M	
		891	HIGGINS CROW WELL 2	GW	41 41 04	70 15 12	YES	.13	M	
		892	HIGGINS CROW WELL 3	GW	41 41 09	70 15 10	YES	.15	M	
		893	HIGGNS CROW WELL 14	GW	41 40 00	70 14 55	YES	.13	M	
		894	HORSE POND WELL 17	GW	41 39 59	70 14 39	YES	.19	M	
		895	LONG POND WELL 4	GW	41 40 16	70 12 16	YES	.12	M	
		896	LONG POND WELL 5	GW	41 40 16	70 12 14	YES	.12	M	
		897	NORTH DENNIS ROAD W 15	GW	41 41 44	70 11 36	YES	.16	M	
		898	NORTH DENNIS ROAD W 16	GW	41 41 40	70 11 39	YES	.18	M	
		899	NORTH MAIN STREET W 6	GW	41 41 08	70 11 01	YES	.09	M	
		900	NORTH MAIN STREET W 7	GW	41 41 08	70 10 59	YES	.09	M	
		901	NORTH MAIN STREET W 8	GW	41 41 09	70 11 01	YES	.09	M	
		902	NORTH MAIN STREET W 9	GW	41 41 16	70 11 02	YES	.18	M	
		903	SETUCKET ROAD WELL 21	GW	41 30 05	70 11 36	YES	.15	M	
		904	SETUCKET ROAD WELL 22	GW	41 30 10	70 11 47	YES	.19	M	
		905	UNION STREET WELL FIELD	GW	41 42 03	70 13 32	YES	.32	M	
		906	HIGGIN CROW WELL 20	GW	41 40 45	70 15 21	NO	.12	M	
							Total	3.19		47,000
						Total for river basin		21.54		435,200

[1] Population figures based on summer populations.

Islands River Basin

The Islands include Martha's Vineyard, Nantucket, and the Elizabeth Islands (fig. 1). The Islands have 5 municipalities on public water-supply (table 26) with a total of 16 wells (fig. 23) and ground water supplied approximately 2.44 Mgal/d (100 percent) during 1986 (table 32).

Martha's Vineyard covers 106 mi^2 and includes six municipalities. The municipalities of Edgartown, Tisbury and Oak Bluffs are on public water-supply systems with a total of eight wells. About 1.69 Mgal/d (69 percent) of the 1986 withdrawals for the Islands came from these wells.

Nantucket Island covers 49.5 mi^2 and has one municipality, Nantucket. The island has two public water-supply systems (table 26) with a total of seven wells (fig. 23). These wells accounted for about 0.73 Mgal/d (30 percent of the total withdrawals in the Islands (table 26).

The Elizabeth Islands are a chain of islands covering 15 mi^2. The one municipality, Gosnold, uses one well (fig. 23 and table 26) and withdrew about 0.02 Mgal/d (1 percent) of the water during 1986 (table 26).

Buzzards Bay River Basin

Buzzards Bay River basin (fig. 1) drains 374 mi^2 and contains all or part of 17 municipalities. The basin has seven municipalities on public water-supply systems; Wareham has two systems (table 27). The river basin has a total of 26 wells and 2 surface-water intakes (fig. 24). Surface water comprised about 7.29 Mgal/d (57 percent) of public water-supply in the basin during 1986 (table 32); the municipality of Fall River used approximately 7.00 Mgal/d (96 percent) of the surface water. Fall River also is served by a reservoir in the Taunton River basin. New Bedford transferred all its water into Buzzards Bay River basin because all its withdrawal sites are in the Taunton River basin. Fall River diverted water out of the basin to the Taunton River basin (U.S. Army Corps of Engineers, 1988).

Taunton River Basin

The Taunton River basin (fig. 1) drains 530 mi^2 and contains all or part of 43 municipalities. The basin has 22 municipalities on public water-supply systems (table 28) with a total of 73 wells and 9 surface-water intakes (fig. 25). Approximately 34.44 Mgal/d (65 percent) of the withdrawals were from surface water during 1986 (table 32). The municipalities of New Bedford (17.09 Mgal/d) and Taunton (11.80 Mgal/d) used approximately 28.89 Mgal/d (84 percent) of the surface water in the basin (table 28).

Brockton has one reservoir in the North and South River subbasin (fig. 21 and table 23) and the South Coastal Shore subbasin (fig. 21 and table 24). The Abington-Rockland Water Works is served by two reservoirs in the South Coastal River basin (fig. 21 and table 24). Attleboro, Mansfield, and Plainville also have wells in the Tenmile River basin (fig. 27 and table 30). Foxborough, Sharon and Stoughton have wells in the Neponset River subbasin (fig. 19 and table 20).

Five public water-supply systems transferred water into the Taunton River basin from other basins: the Abington-Rockland Joint Water Works (South Coastal); Brockton (South Coastal); Stoughton (Neponset); Sharon (Neponset); and Mansfield (Tenmile). Four municipalities transferred water from the Taunton River basin to other basins: New Bedford (Buzzards Bay); Plainville (Tenmile); Stoughton (Neponset); and Sharon (Neponset) (U.S. Army Corps of Engineers, 1988).

Narragansett Bay and Mount Hope Bay Shore River Basin

The Narragansett Bay and Mount Hope Bay Shore River basin (fig. 1) drains 112 mi^2 and includes all or part of six municipalities. The basin has three municipalities, Dighton, Fall River and Swansea on public water-supply systems (table 29) with a total of 14 wells and 1 surface-water intake (fig. 26). Surface water accounted for approximately 7.00 Mgal/d (83 percent) of the water for public supply in the basin (table 32); all of the water came from the reservoir serving Fall River (table 29).

Fall River also has one reservoir in the Buzzard Bay River basin (fig. 24 and table 27) transferred water to the Narragansett Bay River basin (U.S. Army Corps of Engineers, 1988).

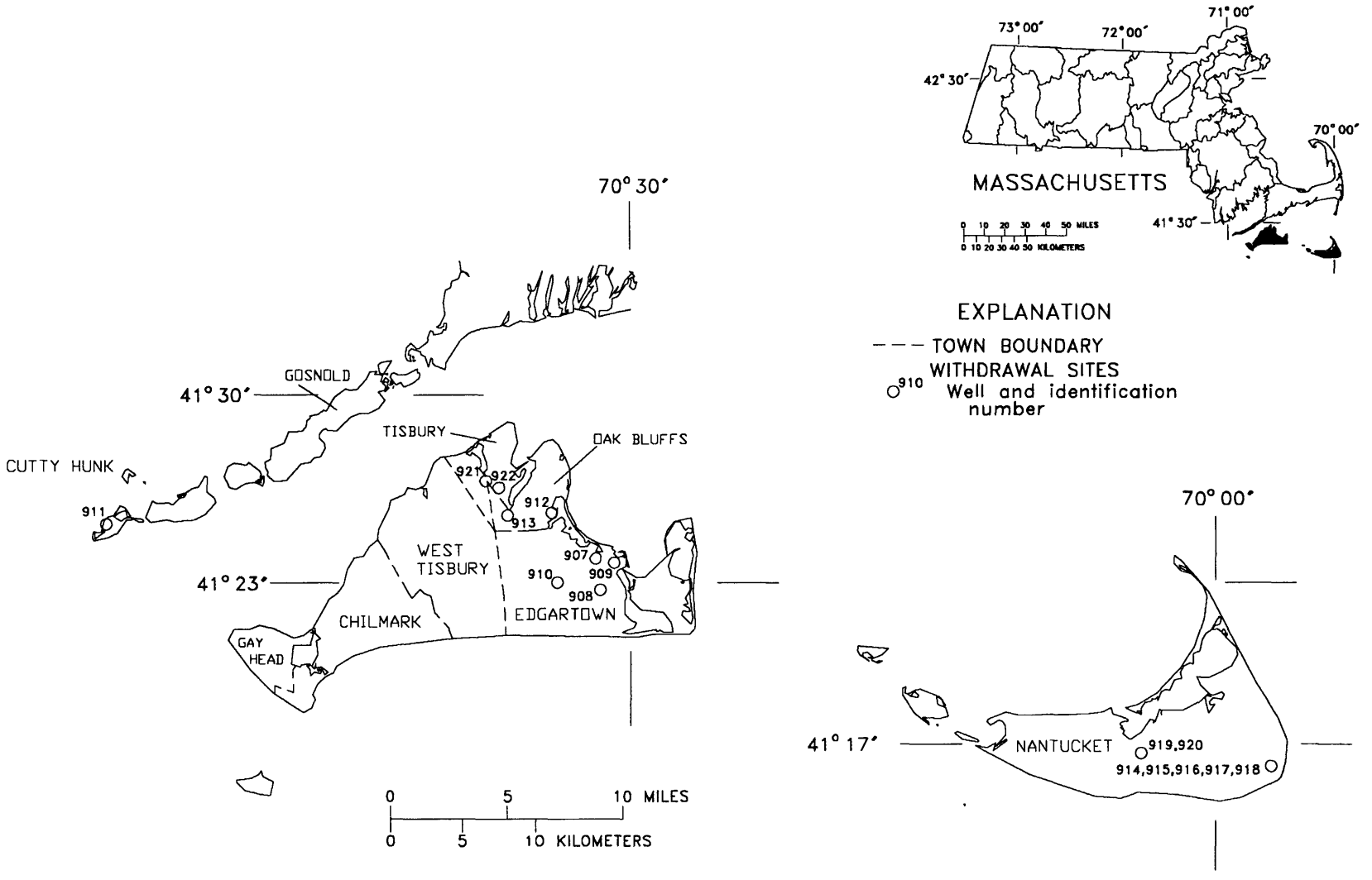

Figure 23.--Location of public water-supply withdrawal sites in the Islands River basin.

Table 26.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Islands River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 23 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served[1]
EDGARTOWN	EDGARTOWN WATER COMPANY	907	LILY POND WELL	GW	41 23 50	70 32 05	YES	0.23	E	
		908	MACHACKET ROAD WELL	GW	41 22 40	70 31 52	YES	.23	E	
		909	PLANTINGFIELD WAY WELL	GW	41 23 42	70 31 05	YES	.23	E	
		910	WINTUCKET STATION	GW	41 22 58	70 33 50	YES	.00	M	
							Total	0.69		15,000
GOSNOLD	GOSNOLD WATER DEPARTMENT	911	CUTTYHUNK ISLAND TWF	GW	41 25 00	70 56 26	NO	0.02	M	
							Total	0.02		1,000
OAK BLUFFS	OAK BLUFFS WATER DEPARTMENT	912	FARM NECK WELL 2	GW	41 25 40	70 34 11	YES	0.20	E	
		913	LAGOON ROAD WF	GW	41 25 38	70 36 11	YES	.20	E	
							Total	0.40		39,000
NANTUCKET	SIASCONSET WATER DEPARTMENT	914	MILESTONE ROAD WELL 1	GW	41 15 42	69 58 30	YES	0.01	E	
		915	MILESTONE ROAD WELL 2	GW	41 15 41	69 58 30	YES	.01	E	
		916	MILESTONE ROAD WELL 3	GW	41 15 41	69 58 28	YES	.01	E	
		917	MILESTONE ROAD WELL 4	GW	41 15 40	69 58 29	YES	.01	E	
		918	MILESTONE ROAD WELL 5	GW	41 15 40	69 58 27	YES	.06	M	
							Total	0.10		4,000
	WANNACOMET WATER COMPANY	919	WYERS VALLEY WELL 1	GW	41 16 10	70 05 01	YES	0.33	M	
		920	WYERS VALLY TWF	GW	41 16 10	70 05 08	YES	.30	M	
							Total	0.63		4,000
TISBURY	TISBURY WATER DEPARTMENT	921	SANBORN ROAD WELL 1	GW	41 26 33	70 36 45	YES	0.30	E	
		922	WEST SPRING WELL 2	GW	41 26 48	70 37 12	YES	.30	E	
							Total	0.60		3,000
						Total for river basin		2.44		66,000

[1] Population figures based on summer populations.

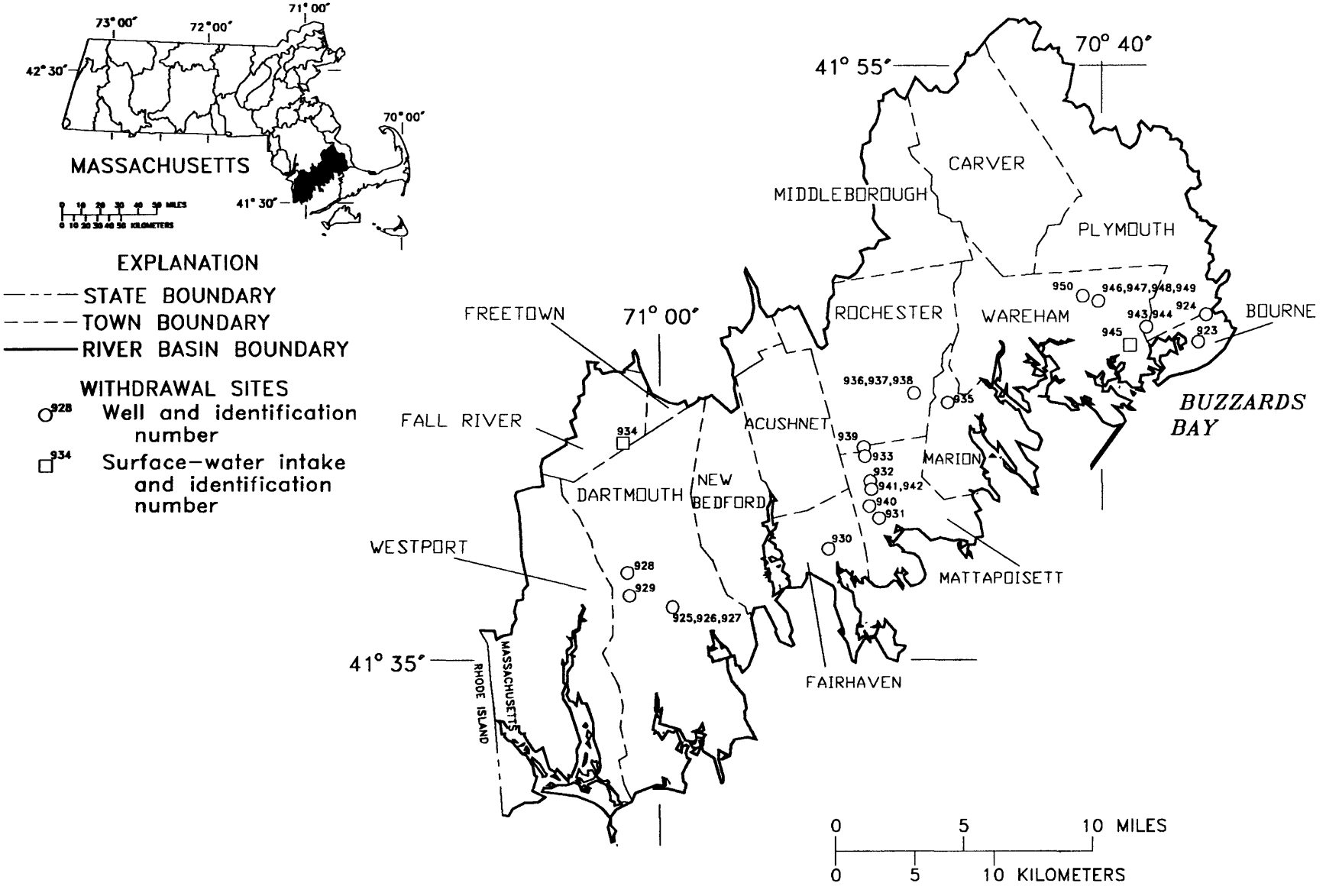

Figure 24.--Location of public water-supply withdrawal sites in the Buzzards Bay River basin.

Table 27.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Buzzards Bay River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 24 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
BOURNE	BUZZARD BAY WATER DISTRICT	923	BAY ROAD STATION 2	GW	41 45 33	70 35 51	YES	0.14	M	
		924	BOURNEDALE ROAD WELL 2	GW	41 46 24	70 35 25	YES	.22	M	
							Total	0.36		9,000
DARTMOUTH	DARTMOUTH DEPARTMENT OF PUBLIC WORKS	925	CHASE ROAD WELL A	GW	41 36 43	70 59 42	YES	0.25	M	
		926	CHASE ROAD WELL B	GW	41 36 55	70 59 42	YES	.24	E	
		927	CHASE ROAD WELL C	GW	41 36 53	70 59 40	YES	.24	E	
		928	ROUTE 6 WELL	GW	41 38 06	71 01 45	YES	.00	M	
		929	VIOLETTE WELL	GW	41 37 22	71 01 46	YES	.42	M	
							Total	1.15		23,000
FAIRHAVEN	FAIRHAVEN BOARD OF PUBLIC HEALTH	930	MILL ROAD WELL FIELD	GW	41 38 48	70 52 30	YES	0.26	M	
		931	RIVER ROAD WELL FIELD	GW	41 39 37	70 50 15	YES	.26	M	
		932	TINKHAM LANE WELL	GW	41 41 07	70 50 35	YES	.00	M	
		933	WOLF ISLAND WELL	GW	41 41 49	70 50 49	YES	.89	M	
							Total	1.41		17,000
FALL RIVER[1]	FALL RIVER WATER DEPARTMENT	934	COPICUT RESERVOIR	SW	41 42 31	71 02 12	NO	7.00	E	
							Total	7.00		46,000
MARION	MARION WATER DEPARTMENT	935	MAIN WATER STATION	GW	41 43 45	70 47 13	YES	0.03	M	
		936	MARY'S POND STATION	GW	41 44 16	70 48 52	YES	.12	M	
		937	ROCHESTER EAST WELL	GW	41 44 06	70 48 46	YES	.03	M	
		938	ROCHESTER WEST WELL	GW	41 44 05	70 48 50	YES	.04	M	
		939	WOLF ISLAND WELLS	GW	41 42 13	70 50 52	YES	.36	M	
							Total	0.58		7,300
MATTAPOISETT	MATTAPOISETT WATER DEPARTMENT	940	ACHUSNET ROAD TWF 2	GW	41 40 10	70 50 37	YES	0.01	M	
		941	HEREFORD HILL WELL 3	GW	41 40 50	70 50 34	YES	.15	M	
		942	TINKHAM LANE WELL 4	GW	41 40 58	70 50 33	YES	.32	M	
							Total	0.48		6,700
WAREHAM	ONSET FIRE DISTRICT	943	REDBROOK ROAD WELL 3	GW	41 46 04	70 38 14	YES	0.13	M	
		944	REDBROOK ROAD WELL 4	GW	41 46 04	70 38 14	YES	.10	M	
		945	SAND POND	SW	41 45 32	70 38 51	NO	.29	M	
							Total	0.52		9,000

Table 27.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Buzzards Bay River basin*--Continued

Municipality name	Public water supplier	Figure 24 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
	WAREHAM FIRE DISTRICT	946	MAPLE SPRINGS WELL 1	GW	41 47 06	70 40 16	YES	0.16	M	
		947	MAPLE SPRINGS WELL 2	GW	41 47 01	70 40 16	YES	.45	M	
		948	MAPLE SPRINGS WELL 3	GW	41 46 58	70 40 14	YES	.15	M	
		949	MAPLE SPRINGS WELL 4	GW	41 47 04	70 40 10	YES	.15	M	
		950	SEAWOOD SPRING WELL 6	GW	41 47 16	70 40 50	YES	.50	M	
							Total	1.41		46,000
						Total for river basin		12.91		164,000

[1] Fall River has a reservoir in the Narragansett Bay and Mt. Hope Bay Shore River basin.

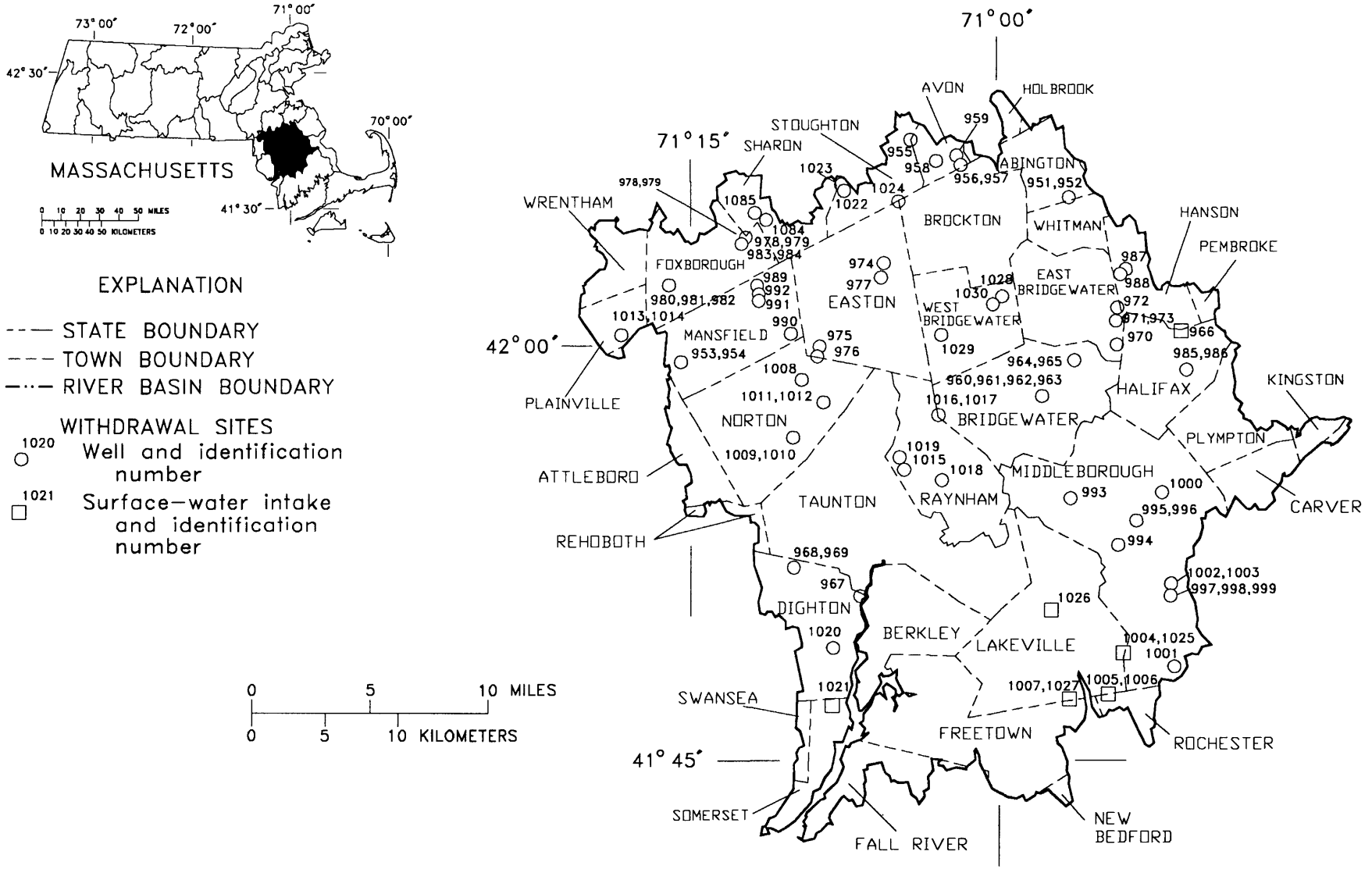

Figure 25.--Location of public water-supply withdrawal sites in the Taunton River basin.

Table 28.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Taunton River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 25 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ABINGTON	ABINGTON-ROCKLAND JOINT WATER WORKS[1]	951	MYERS AVENUE WELL 1	GW	42 05 54	70 56 27	YES	0.31	M	
		952	MYERS AVENUE WELL 2	GW	42 05 54	70 56 25	YES	.31	M	
							Total	0.62		6,000
ATTLEBORO[2]	ATTLEBORO PUBLIC WORKS	953	NEW BASIN WELL	GW	42 00 03	71 15 35	NO	0.78	E	
		954	OLD BASIN WELL	GW	42 00 03	71 15 38	NO	.78	E	
							Total	1.56		9,900
AVON	AVON WATER DEPARTMENT	955	CONNALLY 4 TUBULAR WF	GW	42 07 39	71 04 08	YES	0.06	M	
		956	MEMORIAL DRIVE WELL 1	GW	42 07 01	71 01 43	YES	.23	M	
		957	MEMORIAL DRIVE WELL 2	GW	42 07 02	71 01 37	YES	.02	M	
		958	PORTER ROAD WELL 5	GW	42 07 19	71 02 39	YES	.09	M	
		959	THEATER WELL 3	GW	42 07 14	71 01 47	YES	.08	M	
							Total	0.48		4,800
BRIDGEWATER	BRIDGEWATER WATER DEPARTMENT	960	CARVER POND WELL 1	GW	41 58 31	70 58 05	YES	0.00	M	
		961	CARVER POND WELL 2	GW	41 58 30	70 58 07	YES	.73	M	
		962	CARVER POND WELL 4	GW	41 58 28	70 58 15	YES	.32	M	
		963	CARVER POND WELL 5	GW	41 58 31	70 58 15	YES	.16	M	
		964	HIGH STREET WELL 3	GW	41 59 55	70 56 18	YES	.31	E	
		965	HIGH STREET WELL 6	GW	41 59 55	70 56 18	YES	.31	E	
							Total	1.83		19,300
BROCKTON[3]	BROCKTON WATER DEPARTMENT	966	MONPONSETT POND	SW	42 00 56	70 51 01	NO	2.97	M	
							Total	2.97		27,000
DIGHTON	DIGHTON WATER DISTRICT	967	SOMERSET WELL FIELD	GW	41 51 08	71 06 53	YES	0.00	M	
		968	WALKER STREET WELL 1	GW	41 52 10	71 10 17	YES	.09	M	
		969	WALKER STREET WELL 2	GW	41 52 16	71 10 16	YES	.15	M	
							Total	0.24		1,400
EAST BRIDGEWATER	EAST BRIDGEWATER WATER DEPARTMENT	970	POND STREET WELL 1	GW	42 00 36	70 54 09	YES	0.17	M	
		971	CRESENT STREET WELL 2	GW	42 01 42	70 54 18	NO	.20	M	
		972	HUDSON STREET WELL 4	GW	42 01 44	70 54 06	NO	.33	M	
		973	WASHINGTON STREET WELL 3	GW	42 01 22	70 54 14	NO	.19	M	
							Total	0.89		9,700

Table 28.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Taunton River basin*--Continued

Municipality name	Public water supplier	Figure 25 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
EASTON	EASTON	974	GARY LANE WELL 1	GW	42 03 26	71 05 35	NO	0.07	M	
	DEPARTMENT OF	975	RED MILL ROAD WELL 3	GW	42 00 33	71 09 08	NO	.46	M	
	PUBLIC WORKS	976	RED MILL ROAD WELL 5	GW	42 00 20	71 09 07	NO	.35	M	
		977	WASHINGTON STREET WELL 2	GW	42 03 02	71 05 37	NO	.86	M	
							Total	1.74		19,100
FOXBOROUGH[4]	FOXBOROUGH WATER	978	OAK STREET WELL 8	GW	42 04 33	71 12 42	YES	0.22	E	
	DEPARTMENT	979	OAK STREET WELL 7	GW	42 04 34	71 12 44	YES	.22	E	
		980	SPRAGUE ROAD WELL 4	GW	42 02 41	71 16 07	YES	.07	E	
		981	SPRAGUE ROAD WELL 5	GW	42 02 39	71 16 09	YES	.07	E	
		982	SPRAGUE ROAD WELL 6	GW	42 02 36	71 16 07	YES	.07	E	
		983	LANSON ROAD WELL 10	GW	42 04 09	71 12 43	NO	.68	M	
		984	OAK STREET WELL 9	GW	42 04 26	71 12 31	NO	.22	E	
							Total	1.55		8,700
HALIFAX	HALIFAX WATER	985	RICHMOND PARK WELL 1	GW	41 59 40	70 50 12	YES	0.22	M	
	DEPARTMENT	986	RICHMOND PARK WELL 2	GW	41 59 35	70 50 16	YES	.21	M	
							Total	0.43		6,400
HANSON	HANSON WATER	987	CRYSTAL SPRING TWF	GW	42 02 50	70 53 46	YES	0.29	E	
	DEPARTMENT	988	CRYSTAL SPRING WELL	GW	42 02 39	70 54 00	YES	.29	E	
							Total	0.58		9,200
LAKEVILLE	NEW BEDFORD	1004	ASSAWOMPSET POND	SW	41 48 52	70 53 55	NO	0.00	E	
	WATER	1005	G QUITTACUS POND	SW	41 47 31	70 54 28	NO	.00	E	
	DEPARTMENT	1006	L QUITTACUS POND	SW	41 47 12	70 55 00	NO	17.09	M	
		1007	LONG POND	SW	41 46 59	70 55 46	NO	.00	E	
							Total	17.09		101,000
MANSFIELD[5]	MANSFIELD WATER	989	CATE SPRING WELL 1	GW	42 02 36	71 11 56	YES	0.39	E	
	DEPARTMENT	990	DUSTIN WELL 7	GW	42 00 56	71 10 16	NO	.39	E	
		991	PRESCOTT WELL 8	GW	42 02 19	71 11 51	NO	.39	E	
		992	PRESCOTT WELL 9	GW	42 02 07	71 11 48	NO	.39	E	
							Total	1.56		12,700

Table 28.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Taunton River basin*--Continued

Municipality name	Public water supplier	Figure 25 identification number	Site name	Site type	Latitude ° ′ ″	Longitude ° ′ ″	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
MIDDLEBOROUGH	MIDDLEBOROUGH WATER DEPARTMENT	993	CROSS STREET WELL 10	GW	41 54 40	70 56 16	YES	0.29	M	
		994	EAST GROVE STREET WELL	GW	41 52 56	70 54 35	YES	.11	M	
		995	EAST MAIN STREET WELL 1	GW	41 53 59	70 53 49	YES	.17	M	
		996	ROCK WELL 1	GW	41 50 46	70 51 32	YES	.20	M	
		997	ROCK WELL 2	GW	41 50 48	70 51 31	YES	.22	M	
		998	EAST MAIN STREET WELL 2	GW	41 53 59	70 53 49	NO	.07	M	
		999	MILLER STREET WELL	GW	41 50 51	70 51 33	NO	.42	M	
		1000	PLYMPTON ROAD 1	GW	41 54 47	70 52 54	NO	.10	M	
		1001	SPRUCE STREET	GW	41 47 59	70 51 25	NO	.00	M	
		1002	TISPAQUIN WELL 2	GW	41 52 26	70 51 31	NO	.00	M	
		1003	TISPAQUIN WELL	GW	41 51 28	70 51 29	NO	.16	M	
							Total	1.74		12,000
NORTON	NORTON WATER DEPARTMENT	1008	NEWLAND STREET WELL 3	GW	41 59 37	71 09 36	YES	0.11	M	
		1009	PINE STREET WELL 1	GW	41 57 18	71 09 43	YES	.15	M	
		1010	PINE STREET WELL 2	GW	41 57 16	71 09 35	YES	.00	M	
		1011	PLAIN STREET WELL 4	GW	41 58 27	71 08 39	YES	.19	M	
		1012	PLAIN STREET WELL 5	GW	41 58 34	71 08 32	YES	.77	M	
							Total	1.22		13,500
PLAINVILLE[6]	PLAINVILLE WATER DEPARTMENT	1013	ROUTE 106 WELL 1	GW	42 00 37	71 18 47	YES	0.12	M	
		1014	ROUTE 106 WELL 2	GW	42 00 37	71 18 47	YES	.24	M	
							Total	0.36		4,200
RAYNHAM	RAYNHAM CENTER WATER DISTRICT	1015	JOHNSON POND WELL	GW	41 55 41	71 03 02	YES	0.00	M	
		1016	NIPPENICKET WELL 1	GW	42 57 40	71 02 46	NO	.32	M	
		1017	NIPPENICKET WELL 2	GW	42 57 41	71 02 49	NO	.25	M	
							Total	0.57		7,000
	NORTH RAYNHAM WATER DISTRICT	1018	FIRST STREET STATION	GW	41 55 57	71 04 46	YES	0.20	E	
		1019	KING PHILLIP STATION	GW	41 56 20	71 05 09	YES	.20	E	
							Total	0.40		4,000
SHARON[7]	SHARON WATER DEPARTMENT	1084	HOLLY LANE WELL 5	GW	42 05 10	71 12 32	NO	0.23	M	
		1085	EAST FOXBOROUGH WELL 6	GW	42 05 15	71 11 39	YES	0.24	M	
							Total	0.47		6,200
SOMERSET	SOMERSET WATER DEPARTMENT	1020	BROOK STREET WELL 2	GW	41 49 27	71 08 07	YES	0.43	M	
		1021	SOMERSET RESERVOIR	SW	41 47 20	71 08 32	YES	2.58	M	
							Total	3.01		18,000

Table 28.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Taunton River basin*--Continued

Municipality name	Public water supplier	Figure 25 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
STOUGHTON[8]	STOUGHTON DEPARTMENT OF PUBLIC WORKS	1022	FENNEL WELL 3	GW	42 06 01	71 07 29	YES	0.55	M	
		1023	GURNEY STREET WELL 5	GW	42 06 21	71 07 24	YES	.21	M	
		1024	MCNARMARA WELL 4	GW	42 05 48	71 07 28	YES	.37	M	
							Total	1.13		9,100
TAUNTON	TAUNTON WATER DEPARTMENT	1025	ASSOWOMPSETT POND	SW	41 48 52	70 53 55	NO	5.90	E	
		1026	ELDERS POND	SW	41 50 48	70 57 51	NO	5.90	M	
		1027	LONG POND	SW	41 46 59	70 55 46	NO	.00	E	
							Total	11.80		41,000
WEST BRIDGEWATER	WEST BRIDGEWATER WATER DEPARTMENT	1028	CYR STREET WELL 1	GW	42 02 12	70 59 50	YES	0.31	M	
		1029	MANLEY STREET WELL 3	GW	42 01 00	71 02 59	YES	.23	M	
		1030	NORMAN AVENUE WELL 2	GW	42 02 02	71 00 08	YES	.21	M	
							Total	0.75		6,700
						Total for river basin		52.99		356,900

1 The Abington-Rockland Joint Water Works has two reservoirs in the North and South Rivers subbasin.

2 Attleboro has 11 wells in the Tenmile River basin.

3 Brockton has a reservoir in the North and South Rivers subbasin and the South Coastal Shore subbasin.

4 Foxborough has three wells in the Neponset River subbasin.

5 Mansfield has five wells in the Tenmile River basin.

6 Plainville has 1 well in the Tenmile River basin.

7 Sharon has three wells in the Neponset River subbasin.

8 Stoughton has two wells in the Neponset River subbasin.

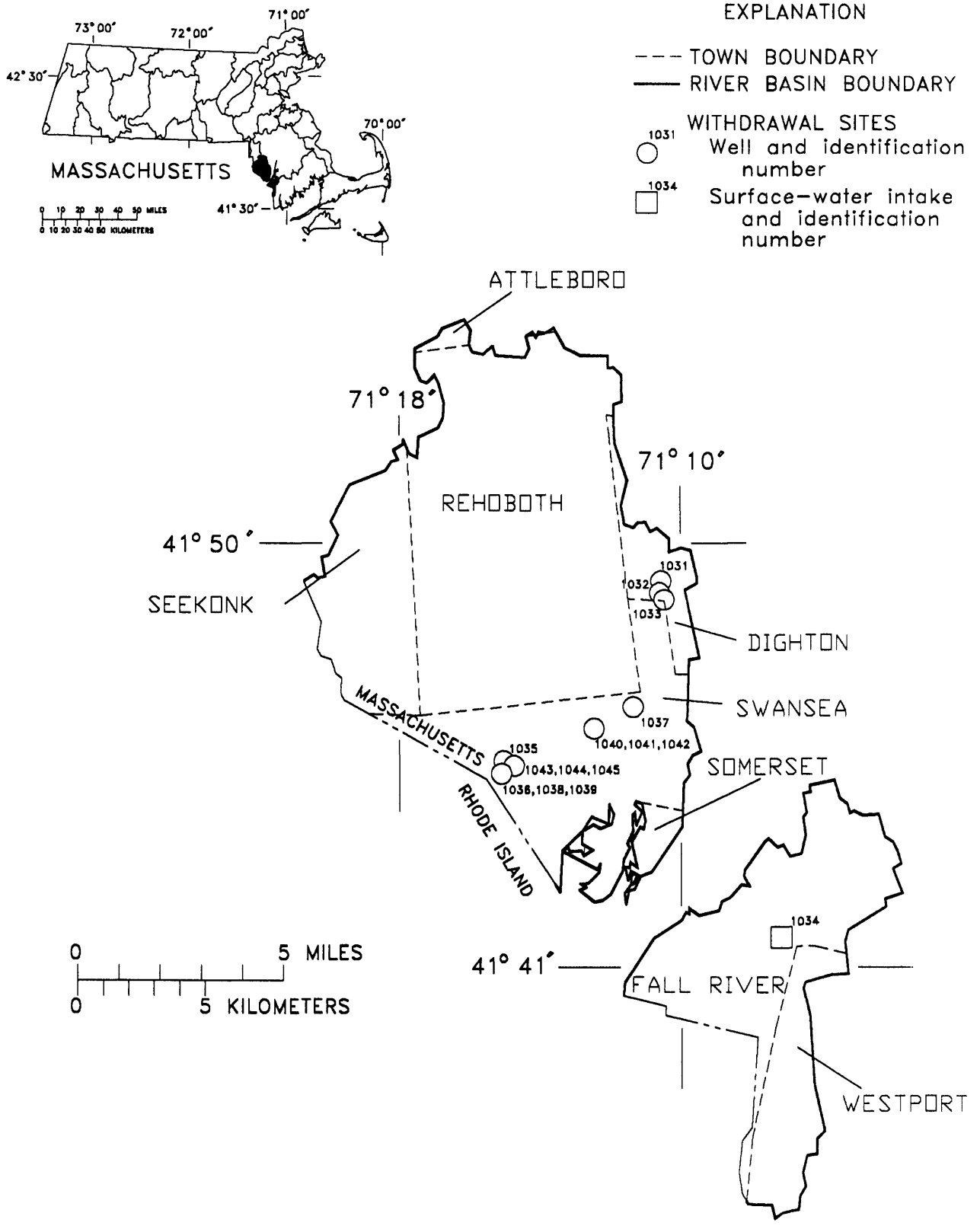

Figure 26.--Location of public water-supply withdrawal sites in the Narragansett Bay and Mount Hope Bay Shore River basin.

Table 29.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Narragansett Bay and Mount Hope Bay Shore River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 26 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
DIGHTON	DIGHTON WATER DISTRICT	1031	CEDAR STREET WELL 1	GW	41 49 21	71 10 48	YES	0.06	M	
		1032	CEDAR STREET WELL 2	GW	41 49 10	71 10 51	YES	.09	M	
		1033	CEDAR STREET WELL 3	GW	41 48 59	71 10 45	YES	.20	M	
							Total	0.35		2,100
FALL RIVER[1]	FALL RIVER WATER DEPARTMENT	1034	NORTH WATUPPA POND	SW	41 41 44	71 07 19	NO	7.00	E	
							Total	7.00		46,000
SWANSEA	SWANSEA WATER DISTRICT	1035	BORGE FIELD WELL 11	GW	41 45 19	71 14 49	YES	0.19	E	
		1036	BORGE FIELD WELL 7	GW	41 45 25	71 15 08	YES	.19	E	
		1037	HORNBINE ROAD WELL 8	GW	41 46 42	71 11 30	YES	.12	M	
		1038	MAKER FIELD WELL 4	GW	41 45 13	71 15 11	YES	.00	M	
		1039	MAKER FIELD WELL 5	GW	41 45 10	71 15 15	YES	.07	M	
		1040	MIDWOOD FIELD WELL 1	GW	41 46 04	71 12 43	YES	.06	E	
		1041	MIDWOOD FIELD WELL 2	GW	41 46 07	71 12 46	YES	.00	M	
		1042	MIDWOOD FIELD WELL 3	GW	41 46 09	71 12 45	YES	.00	M	
		1043	VINNICUM FIELD WELL 10	GW	41 46 25	71 14 44	YES	.15	E	
		1044	VINNICUM FIELD WELL 9	GW	41 46 25	71 14 44	YES	.15	E	
		1045	VINNICUM FIELD WELL 6	GW	41 46 25	71 14 44	YES	.15	E	
							Total	1.08		15,000
					Total for river basin			8.43		63,100

[1] Fall River has a reservoir in the Buzzards Bay River basin.

Tenmile River Basin

The Tenmile River basin (fig. 1) drains 49 mi^2 and includes all or part of 10 municipalities. The basin has five municipalities, Attleboro, Mansfield, Plainville, North Attleboro, and Seekonk on public water-supply systems (table 30) with a total of 29 wells (fig. 27). Ground water provided 7.33 Mgal/d (100 percent) of the withdrawals during 1986 (table 32). Attleboro, Mansfield, and Plainville, also have wells in the Taunton River basin (fig. 25 and table 28) and North Attleboro has wells in the Blackstone River basin (fig. 12 and table 11).

Attleboro and Plainville transferred into the Tenmile River basin from the Taunton River basin and Mansfield transferred to the Taunton River basin (U.S. Army Corps of Engineers, 1988).

MUNICIPALITIES WITH WITHDRAWAL SITES IN MORE THAN ONE RIVER BASIN

In Massachusetts, about 35 municipalities (10 percent) with public-water-supply systems have withdrawal sites in more than one river basin. Two cities, Brockton and Burlington, have withdrawal sites in three river basins. Table 31 summarizes this information. Multi-basin sites can be a good indicator of possible interbasin transfers.

OVERVIEW OF WITHDRAWAL DATA

Withdrawal data for each river basin for 1986 is summarized in table 32. Combined with Tables 1 to 30, several observations on water use are possible.

The five river basins with the largest surface-water withdrawals are the Chicopee (204.21 Mgal/d), the Nashua (135.00 Mgal/d), the Westfield (51.40 Mgal/d), the Merrimack (46.79 Mgal/d), and the Taunton (34.44 Mgal/d). These river basins are in eastern and southeastern Massachusetts (fig. 1). The surface water is withdrawn primarily by large metropolitan areas: Boston and communities in the MWRA system from the Chicopee and Nashua River basins (tables 7 and 10); Springfield from the Westfield River basin (table 4); Lowell from the Merrimack River basin (table 12); and New Bedford from the Taunton River basin (table 28). The volume of surface-water withdrawals for the MWRA system far exceeds that of any other public water-supply system in the State. Most of the Chicopee, Nashua, and Taunton River basin withdrawals are transferred out of the basins because communities in the MWRA and New Bedford are not in the respective basins. The Shawsheen, the Islands, the Narragansett Bay, and the Tenmile river basins had no surface-water withdrawals.

The five river basins with the largest ground-water withdrawals are the Cape Cod (19.15 Mgal/d), the Boston Harbor (18.96 Mgal/d), the Concord (18.79 Mgal/d), the Taunton (18.55 Mgal/d), and the Charles (15.94 Mgal/d). These river basins are in the eastern third of the State (fig. 1). Unlike the five river basins with the largest surface-water withdrawals, no city dominates. In contrast, the areas served by these public water-supply systems are suburban areas and withdrawals are dispersed evenly in the Cape Cod (table 25), the Boston Harbor (tables 19 - 21), the Concord (tables 13 and 14), the Taunton (table 28), and the Charles (table 22) River basins. For example, the Boston Harbor River basin has significant ground-water withdrawals in the suburban areas surrounding Boston, particularly the Neponset River subbasin (table 20), in spite of the fact that the MWRA system, totally dependent on surface water, serves metropolitan Boston.

The five river basins with the largest total water withdrawals are the Chicopee (208.16 Mgal/d), the Nashua (141.53 Mgal/d), the Westfield (56.52 Mgal/d), the Merrimack (55.76 Mgal/d), and the Taunton (52.99 Mgal/d) River basins. This is the same order as in the basins with the largest surface-water withdrawal because a surface-water withdrawal by an individual metropolitan area is much larger than cumulative ground-water withdrawals.

Approximate withdrawal amounts were 185.41 Mgal/d (23 percent) for ground water, 626.85 Mgal/d (77 percent) for surface water, and 812.26 Mgal/d for total water (table 32).

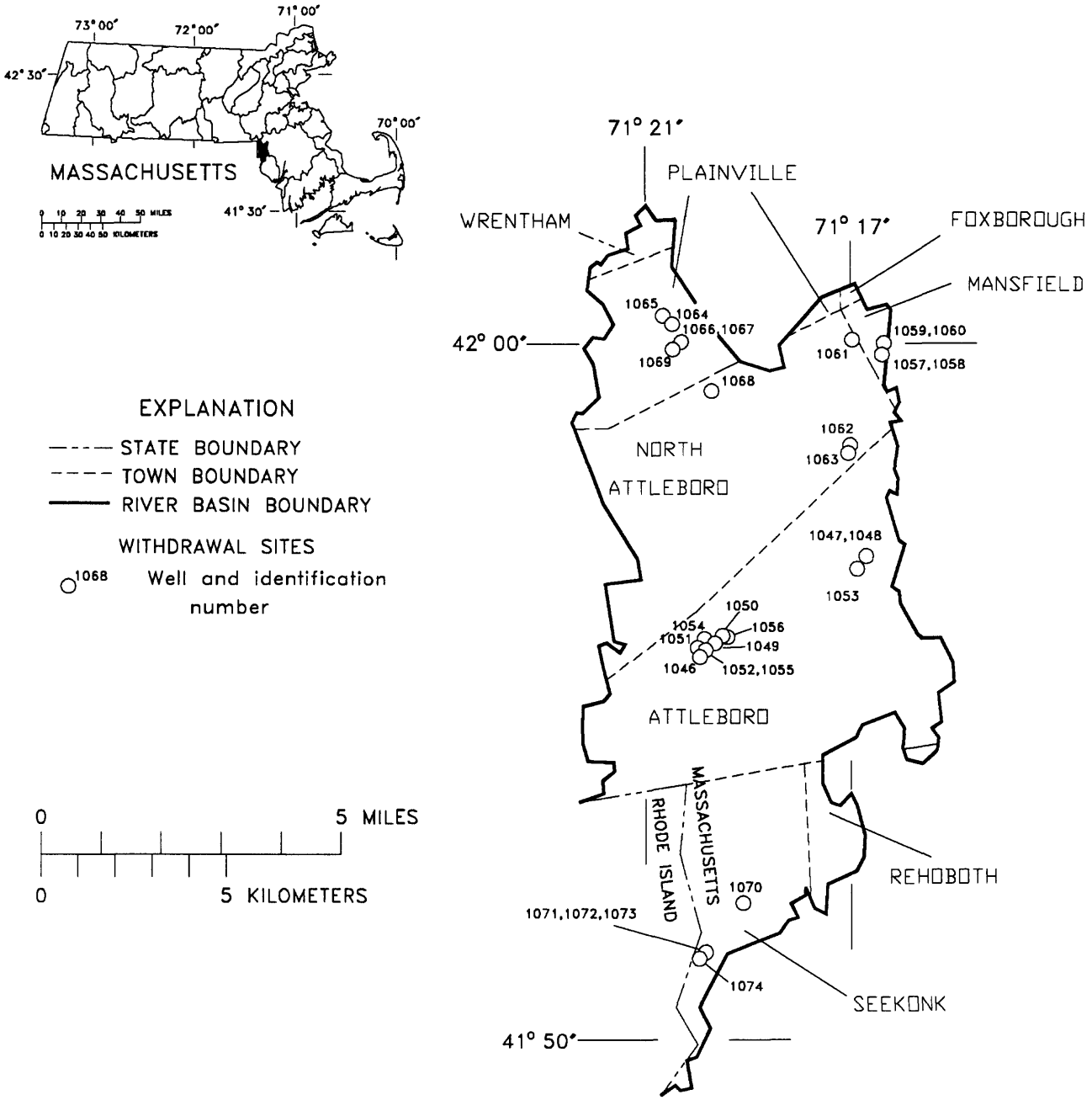

Figure 27.--Location of public water-supply withdrawal sites in the Tenmile River basin.

Table 30.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Tenmile River basin*

[Mgal/d, million gallons per day; M, metered; E, estimated; GW, ground water; SW, surface water; RES, reservoir; °, degrees; ', minutes, ", seconds. Data from files of Massachusetts Department of Environmental Protection, Division of Water Supply, U.S. Environmental Protection Agency, and U.S. Geological Survey]

Municipality name	Public water supplier	Figure 27 identification number	Site name	Site type	Latitude ° ' "	Longitude ° ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
ATTLEBORO[1]	ATTLEBORO PUBLIC WORKS	1046	(WEST STREET 7) TWF	GW	41 55 41	71 20 09	YES	0.00	M	
		1047	HOLDEN STREET WELL 1	GW	41 57 16	71 16 50	YES	.00	M	
		1048	HOLDEN STREET WELL 2	GW	41 57 16	71 16 50	YES	.00	M	
		1049	WEST STREET WELL 4	GW	41 55 51	71 19 48	YES	.51	E	
		1050	WEST STREET WELL 5	GW	41 55 55	71 19 44	YES	.51	E	
		1051	WEST STREET DUG W 1/2	GW	41 55 48	71 20 12	YES	.51	E	
		1052	(WEST STREET 8) TWF	GW	41 55 48	71 20 00	NO	.51	E	
		1053	BANK STREET WELL	GW	41 57 05	71 17 04	NO	.00	M	
		1054	WEST STREET WELL 2	GW	41 55 55	71 20 02	NO	.51	E	
		1055	WEST STREET WELL 3	GW	41 55 48	71 20 05	NO	.51	E	
		1056	WEST STREET WELL 6	GW	41 55 55	71 19 37	NO	.51	E	
							Total	3.57		23,000
MANSFIELD[2]	MANSFIELD WATER DEPARTMENT	1057	ALBERTINI WELL 2	GW	42 00 15	71 16 30	NO	0.13	E	
		1058	ALBERTINI WELL 3	GW	42 00 15	71 16 26	NO	.13	E	
		1059	ALBERTINI WELL 4	GW	42 00 20	71 16 29	NO	.13	E	
		1060	ALBERTINI WELL 5	GW	42 00 22	71 16 26	NO	.00	M	
		1061	WITCH POND WELL 6	GW	42 00 24	71 17 07	NO	.13	E	
							Total	0.52		4,200
NORTH ATTLEBORO[3]	NORTH ATTLEBORO WATER DEPARTMENT	1062	KELLEY BOULEVARD WELL 1	GW	41 58 44	71 17 16	YES	0.54	M	
		1063	KELLEY BOULEVARD WELL 2	GW	41 58 53	71 17 15	YES	.40	M	
		1064	PLAINVILLE WELL 2	GW	42 00 32	71 20 34	YES	.18	M	
		1065	PLAINVILLE WELL 3	GW	42 00 43	71 20 44	YES	.18	E	
		1066	PLAINVILLE WELL 4	GW	42 00 21	71 20 24	YES	.18	E	
		1067	PLAINVILLE WELL 1	GW	42 00 23	71 20 23	YES	.00	M	
		1068	WHITING STREET WELL	GW	41 59 40	71 19 58	YES	.36	M	
							Total	1.84		16,000
PLAINVILLE[4]	PLAINVILLE WATER DEPARTMENT	1069	W BACON STREET WELL 3	GW	42 00 15	71 20 31	YES	0.17	M	
							Total	0.17		1,800

Table 30.--*Description of public water-supply withdrawal sites and withdrawal amounts in the Tenmile River basin*--Continued

Municipality name	Public water supplier	Figure 27 identification number	Site name	Site type	Latitude o ' "	Longitude o ' "	Field verified	1986 withdrawals (Mgal/d)	Metered or estimated	Population served
SEEKONK	SEEKONK WATER DISTRICT	1070	BROWN AVENUE WELL FIELD	GW	41 52 07	71 19 26	YES	0.28	M	
		1071	NEWMAN AVENUE WELL 1	GW	41 51 25	71 20 09	YES	.32	M	
		1072	NEWMAN AVENUE WELL 2	GW	41 51 23	71 20 10	YES	.00	M	
		1073	NEWMAN AVENUE WELL 3	GW	41 51 23	71 20 09	YES	.55	M	
		1074	NEWMAN AVENUE WELL 4	GW	41 51 28	71 20 01	YES	.08	M	
							Total	1.23		13,000
						Total for river basin		7.33		58,000

1 Attleboro has two wells in the Taunton River basin.

2 Mansfield has four wells in the Taunton River basin.

3 North Attleboro has two wells in the Blackstone River basin.

4 Plainville has two wells in the Taunton River basin.

Table 31.--*Municipalities with withdrawal sites in more than one river basin*

[Mgal/d, million gallons per day]

Municipality name	1986 Ground-water withdrawals (Mgal/d)	1986 Surface-water withdrawals (Mgal/d)	River basin or subbasin	1986 Total withdrawals (Mgal/d)
Abington-Rockland Water Works[1]	0.00	2.21	North and South Rivers[2]	2.21
	.62	.00	Taunton	.62
	----	---		-----
Total	0.62	2.21		2.83
Attleboro	1.56	0.00	Taunton	1.56
	3.57	0.00	Tenmile	3.57
	----	----		----
Total	5.13	0.00		5.13
Ayer	0.54	0.00	Nashua	0.54
	.94	.00	Merrimack	.94
	----	----		----
Total	1.48	0.00		1.48
Bellingham	0.99	0.00	Blackstone	0.99
	.28	.00	Charles	.28
	----	----		----
Total	1.27	0.00		1.27
Brockton	0.00	1.74	North and South Rivers[2]	1.74
	.00	10.54	South Coastal Shore[2]	10.54
	.00	2.97	Taunton	2.97
	----	----		----
Total	0.00	15.25		15.25
Burlington	0.87	0.00	Shawsheen	0.87
	.00	2.29	Ipswich	2.29
	.02	.00	Mystic[3]	.02
	-----	----		----
Total	0.89	2.29		3.18
Cambridge	0.00	0.00	Charles	0.00
	.00	15.80	Mystic[3]	15.80
	----	-----		-----
Total	0.00	15.80		15.80
Chelmsford	1.82	0.00	Merrimack	1.82
	2.35	.00	Concord and Sudbury[4]	2.35
	----	----		----
Total	4.17	0.00		4.17
Concord	0.39	0.50	Assabet[4]	0.89
	1.07	.00	Concord and Sudbury[4]	1.07
	-----	----		-----
Total	1.46	0.50		1.96
Dedham-Westwood[1]	2.28	0.00	Neponset[3]	2.28
	1.65	.00	Charles	1.65
	----	----		----
Total	3.93	0.00		3.93
Deerfield	0.08	0.00	Deerfield	0.08
	.01	.00	Connecicut	.01
	----	----		----
Total	0.09	0.00		0.09
Dover Water Company	0.06	0.00	Neponset[3]	0.06
	.02	.00	Charles	.02
	----	----		----
Total	0.08	0.00		0.08

Table 31.--*Municipalities with withdrawal sites in more than one river basin*--Continued

Municipality name	1986 Ground-water withdrawals (Mgal/d)	1986 Surface-water withdrawals (Mgal/d)	River basin or subbasin	1986 Total withdrawals (Mgal/d)
Fall River	0.00	7.00	Buzzard Bay	7.00
	.00	7.00	Narragansett	7.00
Total	0.00	14.00		14.00
Fitchburg	0.00	0.00	Chicopee	0.00
	.00	6.20	Nashua	6.20
	0.00	6.20		6.20
Foxborough	1.03	0.00	Neponset[3]	1.03
	1.55	.00	Taunton	1.55
Total	2.58	0.00		2.58
Holyoke	0.03	7.73	Westfield	7.76
	.00	1.11	Connecticut	1.11
Total	0.03	8.84		8.87
Ipswich	0.26	0.23	Parker	0.49
	.18	.00	Ipswich	.18
Total	0.44	0.23		0.67
Leicester	0.06	0.00	French	0.06
	.16	.00	Blackstone	.16
Total	0.22	0.00		0.22
Lincoln	0.00	0.00	Concord and Sudbury[4]	0.00
	.06	.31	Charles	.37
Total	0.06	0.31		0.37
Lynn	0.00	2.34	Ipswich	2.34
	.00	7.94	North Coastal	7.94
Total	0.00	10.28		10.28
Lynnfield Center	0.23	0.00	Ipswich	0.23
	.39	.00	North Coastal	.39
Total	0.62	0.00		0.62
Mansfield	1.56	0.00	Taunton	1.56
	.52	.00	Tenmile	.52
Total	2.08	0.00		2.08
Marshfield	3.11	0.00	North and South Rivers[2]	3.11
	.10	.00	South Coastal Shore[2]	.10
Total	3.21	0.00		3.21
Medfield	0.56	0.00	Neponset[3]	0.56
	.56	.00	Charles	.56
Total	1.12	0.00		1.12
Natick	2.76	0.00	Concord and Sudbury[4]	2.76
	1.84	.00	Charles	1.84
Total	4.60	0.00		4.60

Table 31.--*Municipalities with withdrawal sites in more than one river basin*--Continued

Municipality name	1986 Ground-water withdrawals (Mgal/d)	1986 Surface-water withdrawals (Mgal/d)	River basin or subbasin	1986 Total withdrawals (Mgal/d)
North Attleboro	0.46	0.00	Blackstone	0.46
	1.84	.00	Tenmile	1.84
Total	2.30	0.00		2.30
Norwell	0.31	0.00	Weymouth and Weir[3]	0.31
	.94	.00	North and South Rivers[2]	.94
Total	1.25	0.00		1.25
Pembroke	0.19	0.00	North and South Rivers[2]	0.19
	1.10	.00	South Coastal Shore[2]	1.10
Total	1.29	0.00		1.29
Peabody	0.00	2.47	Ipswich	2.47
	.00	2.12	North Coastal	2.12
Total	0.00	4.59		4.59
Plainville	0.36	0.00	Taunton	0.56
	.17	.00	Tenmile	.17
Total	0.63	0.00		0.63
Sharon	0.75	0.00	Neponset[3]	0.75
	.47	.00	Taunton	.47
Total	1.22	0.00		1.22
Springfield	0.00	39.50	Westfield	39.50
	.00	2.06	Chicopee	2.06
	0.00	41.56		41.56
Stoughton	0.90	0.00	Neponset[3]	0.90
	1.13	.00	Taunton	1.13
Total	2.03	0.00		2.03
Westborough	1.25	0.00	Assabet[4]	1.25
	.30	.70	Concord and Sudbury[4]	1.00
Total	1.55	0.70		2.25
Worcester	0.00	9.52	Nashua	9.52
	.00	17.23	Blackstone	17.23
Total	0.00	26.75		26.75

1 Two municipality public water-supply system.

2 Subbasin in the South Coastal River basin.

3 Subbasin in the Boston Harbor River basin.

4 Subbasin in the Concord River basin.

Table 32.--*Withdrawals for each river basin*

[Mgal/d, million gallons per day]

River basin or subbasin name	1986 Ground-water withdrawals (Mgal/d)	1986 Surface-water withdrawals (Mgal/d)	1986 Total-water withdrawals (Mgal/d)
Hudson	1.06	4.77	5.83
Hoosic	1.06	4.77	5.83
Kinderhook	.00	.00	.00
Bish Bash	.00	.00	.00
Housatonic	.54	16.25	16.79
Deerfield	.28	.25	.53
Westfield	5.12	51.40	56.52
Connecticut	9.14	7.25	16.39
Millers	1.62	3.97	5.59
Chicopee	3.95	204.21	208.16
Quinebaug	.68	1.89	2.57
French	3.29	.25	3.54
Nashua	6.53	135.00	141.53
Blackstone	9.99	17.23	27.22
Merrimack	8.97	46.79	55.76
Concord	18.79	7.78	26.57
Assabet	6.12	2.50	8.62
Concord and Sudbury	12.67	5.28	17.95
Shawsheen	2.10	.00	2.10
Parker	1.21	.23	1.44
Ipswich	8.54	20.07	28.61
North Coastal	1.01	14.68	15.69
Boston Harbor	18.96	23.90	42.86
Mystic	4.26	17.98	22.24
Neponset	9.39	.00	9.39
Weymouth and Weir	5.31	5.92	11.23
Charles	15.94	2.77	18.71
South Coastal	13.11	17.04	30.15
North and South River	6.44	4.76	11.20
South Coastal Shore	6.67	12.28	18.95
Cape Cod	19.15	2.39	21.54
Islands	2.44	.00	2.44
Buzzards Bay	5.62	7.29	12.91
Taunton	18.55	34.44	52.99
Narragansett Bay	1.43	7.00	8.43
Tenmile	7.33	.00	7.33
Total for Massachusetts	185.41	626.85	812.26

ESTIMATED POPULATIONS SERVED BY PUBLIC WATER-SUPPLY

The estimated population served by public water supply in the 26 river basins is shown in table 33. Population numbers were provided to the DWS by public water suppliers along with the withdrawal data for their systems. These same numbers are shown in table 33 when the public water-supply systems had either all ground-water or all surface-water withdrawal sites and if the all the withdrawal sites are in the same basin. When the system served more than one basin, the population in each basin was calculated as follows:

$$\text{basin A population} = \text{population served}^{\text{total}} \times \frac{\text{basin A withdrawal amounts}}{\text{total withdrawal amounts}}$$

and

$$\text{basin B population} = \text{population served}^{\text{total}} \times \frac{\text{basin B withdrawal amounts}}{\text{total withdrawal amounts}}$$

Within a basin, the withdrawal amounts for a population served by surface water and ground water were determined as follows:

$$\text{population served} = \text{population served}^{\text{total}} \times \frac{\text{surface-water withdrawal amounts}}{\text{total withdrawal amounts}}$$

and

$$\text{population served} = \text{population served}^{\text{total}} \times \frac{\text{ground-water withdrawal amounts}}{\text{total withdrawal amounts}}$$

Since the reliability of the population numbers varied, all numbers were rounded off to hundreds.

The five river basins with the largest population served by surface water are the Nashua (2,106,800), the Chicopee (2,021,900), the Merrimack (347,700), the Westfield (308,500), and the Blackstone (213,800). These river basins contain large metropolitan areas: Boston (Chicopee and Nashua); Lowell (Merrimack); Springfield (Westfield); and Worcester (Blackstone). All these cites have over 90,000 people on public water-supply.

The five river basins with the largest populations using ground water are the Cape Cod (383,200), Boston Harbor (186,700), the Charles (150,250), the South Coastal (139,500), and the Taunton (119,000). These populations are in suburban areas.

The five river basins with the largest populations served by public water-supply are the Nashua (2,217,700), Chicopee (2,060,300), Cape Cod, (435,200), Merrimack (413,900), and Taunton (356,900) River basins. Four of the five river basins have large metropolitan areas withdrawing from them: metropolitan Boston (Chicopee and Nashua); Lowell (Merrimack); New Bedford (Taunton).

SUMMARY

Increased demands are being placed on limited water resources in Massachusetts. Water resources within the State are vital to its economy and growth. As mandated by legislative action, an informed and workable management strategy for water resources is needed.

Location of withdrawal sites, 1986 withdrawal amounts, interbasin transfers, and populations served by public water-supply systems were collected from State agencies and public water suppliers for 26 river basins. These data were entered into the U.S. Geological Survey Site-Specific Water-Use data base System (SSWUDS) in cooperation with the Massachusetts Departments of Environmental Management and Environmental Protection. Maps were generated by a geographic-information system to plot withdrawal-site locations in each river basins. Tables were organized by a data-base-management software package for each basin and withdrawal data and population served were totalled for the public water-supply systems and river basins.

Massachusetts has 351 municipalities with approximately 280 public water-supply systems with 900 wells and 200 surface-water intakes in SSWUDS. The systems withdrew approximately 812.26 Mgal/d during 1986; about 185.41 Mgal/d came from ground water and 626.85 Mgal/d came from surface water. Many municipalities have two or three public water-supply systems within their boundaries and a couple service two municipalities. Thirty-three municipalities have withdrawal sites in two river basins with two municipalities having sites in three river basins. No appreciable surface-water withdrawals are made in four river basins for public water-supply but ground-water withdrawals are made in all river basins.

Withdrawals were calculated for each river basin and broken down further to ground-water and surface-water withdrawals. The five river basins out of 26 basins with systems withdrawing the most surface water were the Chicopee (204.21 Mgal/d), the Nashua (135.00 Mgal/d), the Westfield (51.40 Mgal/d), the

Table 33.--*Estimated population served by public water-supply*

River basin and subbasin name	Population served by ground water	Population served by surface water	Population served by river basin
Hudson	29,600	6,400	36,000
Hoosic	29,600	6,400	36,000
Kinderhook	0	0	0
Bish Bash	0	0	0
Housatonic	2,300	77,900	80,200
Deerfield	2,900	2,500	5,400
Westfield	21,600	308,500	330,100
Connecticut	64,100	50,500	114,600
Millers	14,600	35,700	50,300
Chicopee	38,400	2,021,900	2,060,300
Quinebaug	12,000	17,000	29,000
French	35,500	2,700	38,200
Nashua	110,900	2,106,800	2,217,700
Blackstone	75,100	213,800	288,900
Merrimack	66,200	347,700	413,900
Concord	171,700	70,100	241,800
Assabet	75,300	30,700	106,000
Concord and Sudbury	96,400	39,400	135,800
Shawsheen	50,500	0	50,500
Parker	18,500	3,600	22,100
Ipswich	73,800	172,000	245,800
North Coastal	10,800	143,100	153,900
Boston Harbor	186,700	206,300	393,000
Mystic	33,200	141,300	174,500
Neponset	95,800	0	95,800
Weymouth and Weir	57,700	65,000	122,700
Charles	150,250	26,500	176,750
South Coastal	139,500	172,900	312,400
North and South River	76,000	55,100	131,100
South Coastal Shore	63,500	117,800	181,300
Cape Cod[1]	383,200	52,000	435,200
Islands	66,000	0	66,000
Buzzards Bay	70,500	93,500	164,000
Taunton	119,000	237,900	356,900
Narragansett Bay and Mount Hope	17,100	46,000	63,100
Tenmile	58,000	0	58,000

[1] Based on summer population figures.

Merrimack (46.79 Mgal/d), and the Taunton (34.44 Mgal/d). The basins are distributed throughout the State. Metropolitan areas accounted for the large surface-water withdrawals: Boston (Chicopee and the Nashua River basins); Springfield (Westfield River basin); Lowell (Merrimack River basin); and New Bedford (Taunton River basin). The withdrawals of the MWRA system far exceeded that of any other public water-supply system in the State. Most of the surface-water withdrawals from the Chicopee, Nashua and Taunton River basins were transferred out of the basin.

The five river basins with systems withdrawing the most ground water were the Cape Cod (19.15 Mgal/d), the Boston Harbor (18.96 Mgal/d), the Concord (18.79 Mgal/d), the Taunton (18.55 Mgal/d) and the Charles (15.94 Mgal/d). These basins are in eastern Massachusetts. Unlike surface water, large ground-water withdrawals were in suburban areas such as Cape Cod. Ground-water withdrawals from Boston Harbor River basin were significant despite the fact that the MWRA, serving most of metropolitan Boston, used large amounts of surface water, but imported the water from outside the basin.

The five river basins with public water-supply systems withdrawing the most water were the Chicopee (208.16 Mgal/d), the Nashua (135.00 Mgal/d), the Westfield (56.52 Mgal/d), the Merrimack (55.76 Mgal/d) and the Taunton (52.99 Mgal/d). Metropolitan areas accounted for the large withdrawals.

The populations dependent on public water-supply were calculated for each river basin and broken down further to populations served by ground water and surface water. The five river basins with the largest population served by surface water are the Chicopee (2,021,900), the Nashua (2,106,800), the Merrimack (347,700), the Westfield (308,500), and the Blackstone (213,800) River basins. These river basins include Boston (Chicopee and Nashua), Lowell (Merrimack), Springfield (Westfield), and Worcester (Blackstone). The five river basins with the largest populations using ground water are the Cape Cod (383,200), Boston Harbor (186,700), the Charles (150,250), the South Coastal (139,500), and the Taunton (119,000) River basins. These populations are in suburban areas. The five river basins with the largest populations served by public water-supply are the Nashua (2,217,700), the Chicopee (2,060,300), the Cape Cod, (435,200), the Merrimack (413,900), and the Taunton (356,900) River basins. These basins have the large metropolitan areas of Boston (Chicopee and Nashua), Lowell (Merrimack), and New Bedford (Taunton). Cape Cod has a large summer population.

Although the work required to establish reliable location and withdrawal data in the U.S. Geological Survey's Site-Specific Water-Use data Base, updates for the locations of new wells, or corrections of unverified-verified location is minimal. If annual withdrawal data were to be routinely computerized, added to SSWUDS, and used with GIS, as indicated in a preliminary step in this report, planners and regulators would have access to reliable and current public supply withdrawal data for water resource management and regulation decisions.

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