SOURCES OF GEOLOGIC AND HYDROLOGIC INFORMATION PERTINENT TO GROUND-WATER RESOURCES IN RHODE ISLAND

by Elaine C. Todd Trench

U.S. GEOLOGICAL SURVEY
Open-File Report 93-464

Prepared in cooperation with the
RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

Providence, Rhode Island
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U.S. DEPARTMENT OF THE INTERIOR
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CONVERSION FACTORS AND VERTICAL DATUM

[Units of measure marked by an asterisk (*) are no longer in current usage, but are used in many of the older publications referenced in this report]

Multiply	By	To Obtain
	Length	
inch (in.)	25.4	millimeter
foot (ft)	0.3048	meter
mile (mi)	1.609	kilometer
	Area	
square foot (ft^2)	0.09290	square meter
square mile (mi^2)	2.590	square kilometer
	Volume	
gallon (gal)	3.785	liter
gallon (gal)	0.003785	cubic meter
million gallons (Mgal)	3,785	cubic meter
cubic foot (ft^3)	0.02832	cubic meter
	Flow	
foot per second (ft/s)	30.48	centimeter per second
foot per second (ft/s)	0.3048	meter per second
foot per day (ft/d)	0.3048	meter per day
gallon per minute (gal/min)	0.06309	liter per second
gallon per day (gal/d)	0.003785	cubic meter per day
million gallons per day (Mgal/d)	0.04381	cubic meter per second
	Hydraulic Conductivity	
foot per day (ft/d)	0.3048	meter per day
*gallon per day per square foot ($gal/d/ft^2$)	0.04075	meter per day
	Transmissivity	
foot squared per day (ft^2/d)	0.09290	meter squared per day
*gallon per day per foot (gal/d/ft)	0.01242	meter squared per day per foot
	Specific Capacity	
gallon per minute per foot (gal/min/ft)	0.2070	liter per second per meter
	Temperature	

For temperature conversions between degrees Celsius (°C) and degrees Fahrenheit (°F), the following formulas may be used:

$°C = 5/9 \times (°F - 32)$,

$°F = (1.8 \times °C) + 32$.

Abbreviated water-quality units used in this report:

mg/L	milligram per liter
µg/L	microgram per liter

Chemical concentration is given in milligrams per liter (mg/L) or micrograms per liter (µg/L). Milligrams and micrograms per liter are units expressing the weight of the solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. Micrograms per liter is approximately equivalent to "parts per billion."

Sea Level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

SOURCES OF GEOLOGIC AND HYDROLOGIC INFORMATION PERTINENT TO GROUND-WATER RESOURCES IN RHODE ISLAND

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Abstract

This report summarizes sources of geologic and hydrologic information useful to water managers and others involved in the investigation, appraisal, development, and protection of ground-water resources in Rhode Island. The geographic scope of the report includes Rhode Island and small adjoining areas of Massachusetts and Connecticut, where drainage basins are shared with these States. The information summarized is found in maps and reports prepared by the U.S. Geological Survey and published by either the U.S. Geological Survey or by the State of Rhode Island. Information sources are presented in maps and tables.

Reference maps show drainage divides, town lines, and the 7.5-minute grid of latitude and longitude for the State. Maps show availability of surficial geologic maps, bedrock geologic maps, and ground-water studies by 7.5-minute quadrangle, and show availability of ground-water studies by drainage basin, subbasin, and special study area.

Sources of geologic and hydrologic information for the thirty-seven 7.5-minute quadrangles covering Rhode Island have been compiled based on the following information categories: surficial geology, bedrock geology, subsurface materials, altitude of bedrock surface, water-table altitudes, water-table contours, saturated thickness, hydraulic conductivity, transmissivity, drainage divides, recharge areas, ground-water reservoirs, induced infiltration, and ground-water quality. A table for each of the 37 quadrangles lists the major categories of information available for that quadrangle, provides references to the publications in which the information can be found, and indicates the format, scale, and other pertinent attributes of the information. A table organized by report series gives full citations for publications prepared by the U.S. Geological Survey pertaining to the geology and hydrology of Rhode Island. To facilitate location of information for particular municipalities, a table lists cities and towns in the State and the quadrangles that cover each municipality.

INTRODUCTION

Ground water is an abundant resource in Rhode Island. In 1990, ground water supplied approximately 19 percent of the freshwater used for all purposes in the State, including domestic, industrial, and agricultural uses (Solley and others, 1993, p. 11, 25, 29). Ground water provided drinking water for 19 percent of the State's residents in 1990. Public and private wells withdrew ground water from all the hydrogeologic settings of the State during the 1980's, in at least 35 of the State's 39 towns and cities. Ground water was the only source of drinking water for several towns.

Ground water in Rhode Island is generally suitable for human consumption and other uses that require high-quality water. However, ground-water contamination in Rhode Island and nationwide has increased public awareness of the risks to drinking-water supplies. Contaminants from a variety of sources have affected private and public ground-water supplies in Rhode Island. Most of the ground-water contamination in Rhode Island has been caused by human activities at or near the land surface.

Citizens understandably want drinking water resources to be protected from contamination. A technically sound ground-water protection program requires geologic and hydrologic information. Geologic and hydrologic information can be used to obtain understanding of hydrologic systems, identify significant aquifers, determine directions of ground-water flow, and identify land areas that provide recharge to aquifers or wells. In the area of ground-water quality, information can be used to define near-natural water-quality conditions, define existing problems, determine directions of contaminant movement, determine effects of land use, determine compliance with water-quality criteria and pollution control programs, and detect trends (S.M. Hindall, U.S. Geological Survey, written commun., 1985). The better the understanding of the ground-water system, the greater the likelihood that effective plans can be developed to protect ground water from contamination.

The Rhode Island Department of Environmental Management is the regulatory agency responsible for developing a ground-water protection program for the State. The mission of the U.S. Geological Survey is to collect, interpret, and disseminate geologic and hydrologic information that contributes to the wise management of the Nation's natural resources and promotes the well-being of its people (U.S. Geological Survey, 1986, p. 2). The complementary responsibilities of the Rhode Island Department of Environmental Management and the U.S. Geological Survey led to the cooperative project that has produced this report.

Purpose and Scope

The purpose of this report is to summarize available sources of geologic and hydrologic information useful to water managers and others involved in the investigation, appraisal, development, and protection of ground-water resources in Rhode Island. The geographic scope of the report includes Rhode Island and small adjoining areas of Massachusetts and Connecticut, where drainage basins are shared with these States. The information summarized is found in maps and reports prepared by the U.S. Geological Survey and published by either the U.S. Geological Survey or by the State of Rhode Island. Information sources are presented in maps and tables.

Information on the geology and hydrology of Rhode Island may be contained in studies of adjacent areas of Massachusetts or Connecticut. Reports dealing primarily with Massachusetts or Connecticut are not tabulated here. Interested readers may consult publication lists of U.S. Geological Survey offices or State water-resource agencies in those States.

Previous Studies

Principles of ground-water hydrology are described by Meinzer (1923, 1942), Baldwin and McGuinness (1963), Freeze and Cherry (1979), Todd (1980), Heath (1983), and Morrissey (1989). Hydrologic definitions are provided by Langbein and Iseri (1960) and Lohman and others (1972). Factors affecting ground-water quality are discussed by Johnston and Barlow (1988). The use of natural resources data in water-resources and land-use planning is discussed by Leopold and others (1971), Hill and Thomas (1972), Pessl and others (1972), and Harrison and Dickinson (1984).

Statewide appraisals of ground-water availability in Rhode Island include reports by Allen (1953) and Lang (1961). A lay reader report on the ground-water resources of Rhode Island provides information on the occurrence, source, and movement of ground water in Rhode Island's hydrogeologic setting, and on major ground-water contamination problems in the State (Trench, 1991). Numerous statewide reports and reports for specific study areas in the State were consulted in the preparation of this report. These reports range in date from 1945 to 1993. In addition to the published studies inventoried in this report, unpublished data for some locations are available in the files of the Rhode Island Subdistrict Office, U.S. Geological Survey.

Under the ground-water protection program of the Rhode Island Department of Environmental Management, some of the geologic and hydrologic information summarized in the tables and maps of this report has been entered into the Rhode Island Geographic Information System, a computerized cartographic data base. Interested readers may contact the Rhode Island Department of Environmental Management to determine whether specific information is available through the Rhode Island Geographic Information System.

Acknowledgments

Margaret G. Dein Bradley and Ernest C. Panciera of the Rhode Island Department of Environmental Management Groundwater Section reviewed the report and provided information on agency responsibilities related to ground water.

Assistance in map compilation was provided by the Environmental Data Center in the Department of Natural Resources Science at the University of Rhode Island. The Environmental Data Center, under contract to the Rhode Island Department of Environmental Management, compiled information for the maps in the report through the Rhode Island Geographic Information System. Carol Pringle Baker, Groundwater Coordinator for the Rhode Island Geographic Information System at the Environmental Data Center, was most helpful and resourceful in developing these illutrations.

Special thanks are extended to Lisa J. Sosa, Brown University, and Scott Graham, University of Rhode Island, who made an important contribution in compiling information for the tables in this report during their student internships in the Rhode Island Office of the U.S. Geological Survey.

RHODE ISLAND'S PHYSICAL AND HYDROGEOLOGIC SETTING

Rhode Island (fig. 1) is in southeastern New England and has a land area of 1,045 square miles. The State lies within two major physiographic sections of the New England province described by Fenneman (1938). The northwestern part of the State is in the hilly New England Upland section. Southern and eastern parts of the State are in the Seaboard Lowland section, an area of flat or gently rolling land that includes coastal areas, Narragansett Bay, and the Bay islands (fig. 1). Altitudes in the State range from sea level along the coast to a maximum of 812 feet at Jerimoth Hill in the northwestern part of the State (fig. 1).

The climate of Rhode Island is humid and temperate. Most parts of the State usually receive at least 40 inches of rain annually. For the period 1954 to 1983, the average annual precipitation across the State ranged from 41 to 53 inches (R.W. Bell, U.S. Geological Survey, written commun., 1987). Hilly areas in the northwestern part of the State receive larger amounts of precipitation than coastal areas.

Surface water and ground water are both plentiful resources in Rhode Island. The boundaries of Rhode Island's major drainage basins show the regional framework of Rhode Island's water resources (fig. 2). In some areas, surface water and ground water from neighboring areas of Massachusetts and Connecticut flow into Rhode Island. In other areas, surface water and ground water from Rhode Island flow into Massachusetts and Connecticut.

Ground water is present below the land surface everywhere in Rhode Island, although the quantity available for use differs considerably from place to place. Ground-water flow in Rhode Island is part of

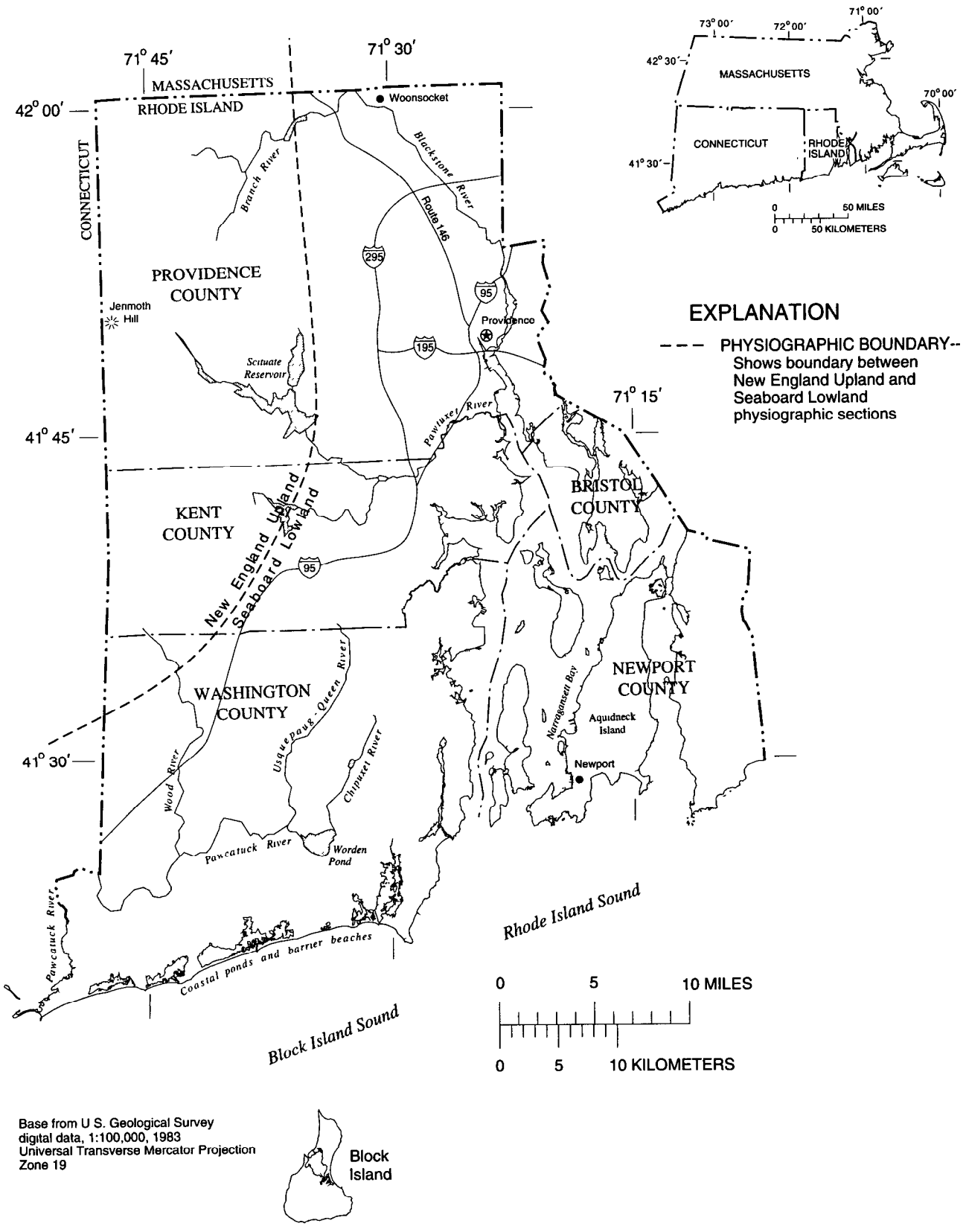

Figure 1. Major physical and cultural features of Rhode Island. (Source: Boundary between New England Upland and Seaboard Lowland from Fenneman, 1938, pl. 1.)

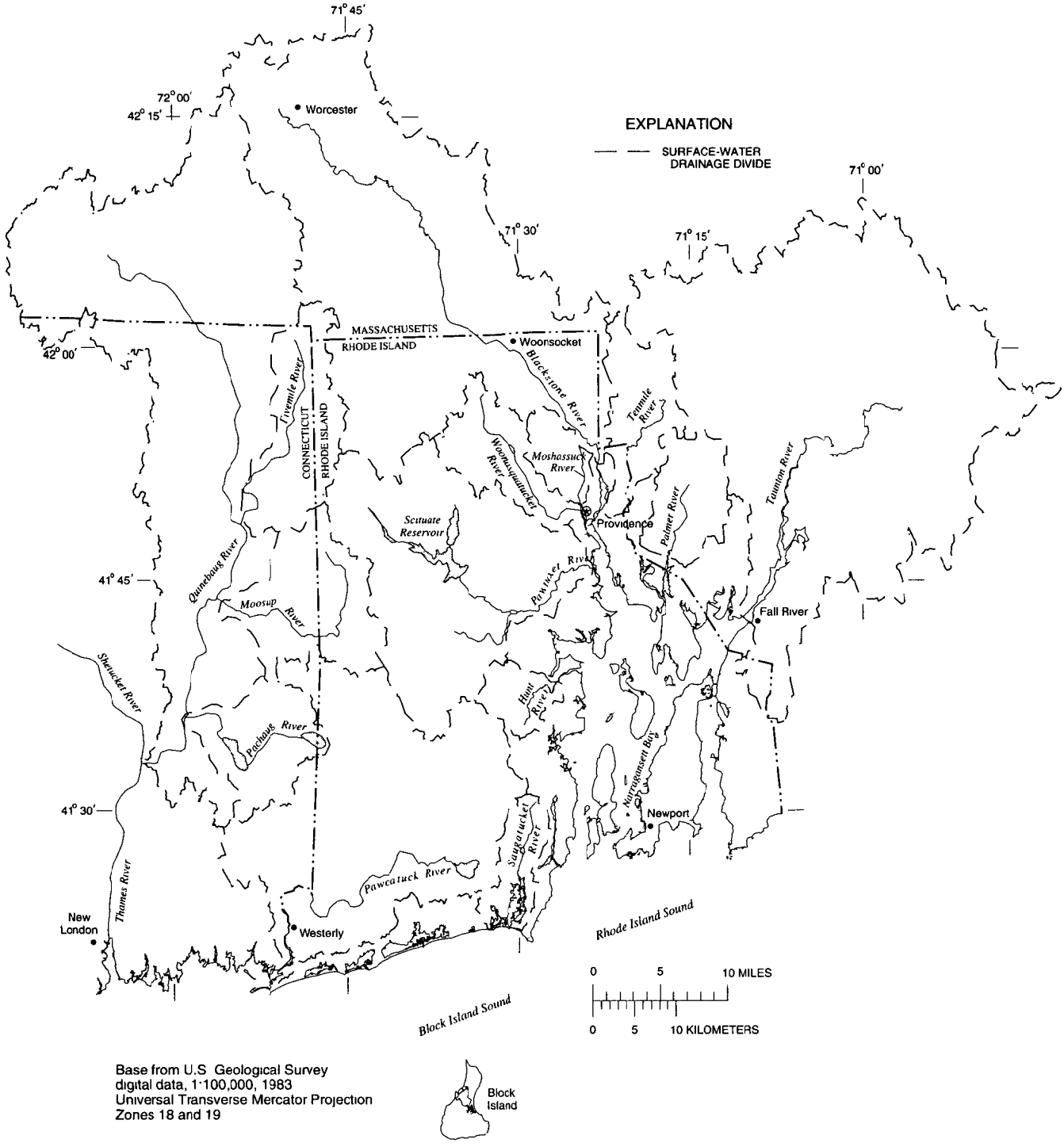

Figure 2. Rhode Island's major drainage basins, including basins shared with adjacent States.

the planetary circulation of water known as the hydrologic cycle (fig. 3). Ground water flows slowly through the small pore spaces in unconsolidated materials and the joints and fractures in bedrock. The general direction of ground-water flow is from highlands toward nearby stream valleys or toward the coast (figs. 3, 4). Rhode Island's surface water and ground water are interconnected bodies of freshwater.

All of Rhode Island, with the exception of Block Island (fig. 1), is part of the Northeast and Superior Uplands ground-water region, which includes most of New England and parts of other northeastern States (Heath, 1984, p. 48). In this region, unconsolidated glacial deposits overlie fractured bedrock (fig. 4). Ground water is found in both the glacial deposits and the underlying bedrock, which form an interconnected aquifer system.

Block Island is part of the Atlantic and Gulf Coastal Plain ground-water region (Heath, 1984, p. 52). Glacial sediments on Block Island were deposited on thick layers of older unconsolidated and semiconsolidated coastal plain sediments. These sediments in turn overlie the bedrock, which is about 1,000 feet below sea level near Block Island (Hansen and Schiner, 1964, p. 7).

Glacial deposits in Rhode Island include till, stratified drift, and mixed deposits of till and stratified drift. Till is the most extensive glacial deposit in Rhode Island, as in the rest of the glaciated northeastern United States. The thickness of the till ranges from a few inches to as much as 100 feet, and averages about 20 feet. Stratified-drift deposits fill most major stream valleys and many tributary stream valleys (fig. 4), and form extensive sandy lowlands in some coastal areas. Stratified-drift deposits cover about

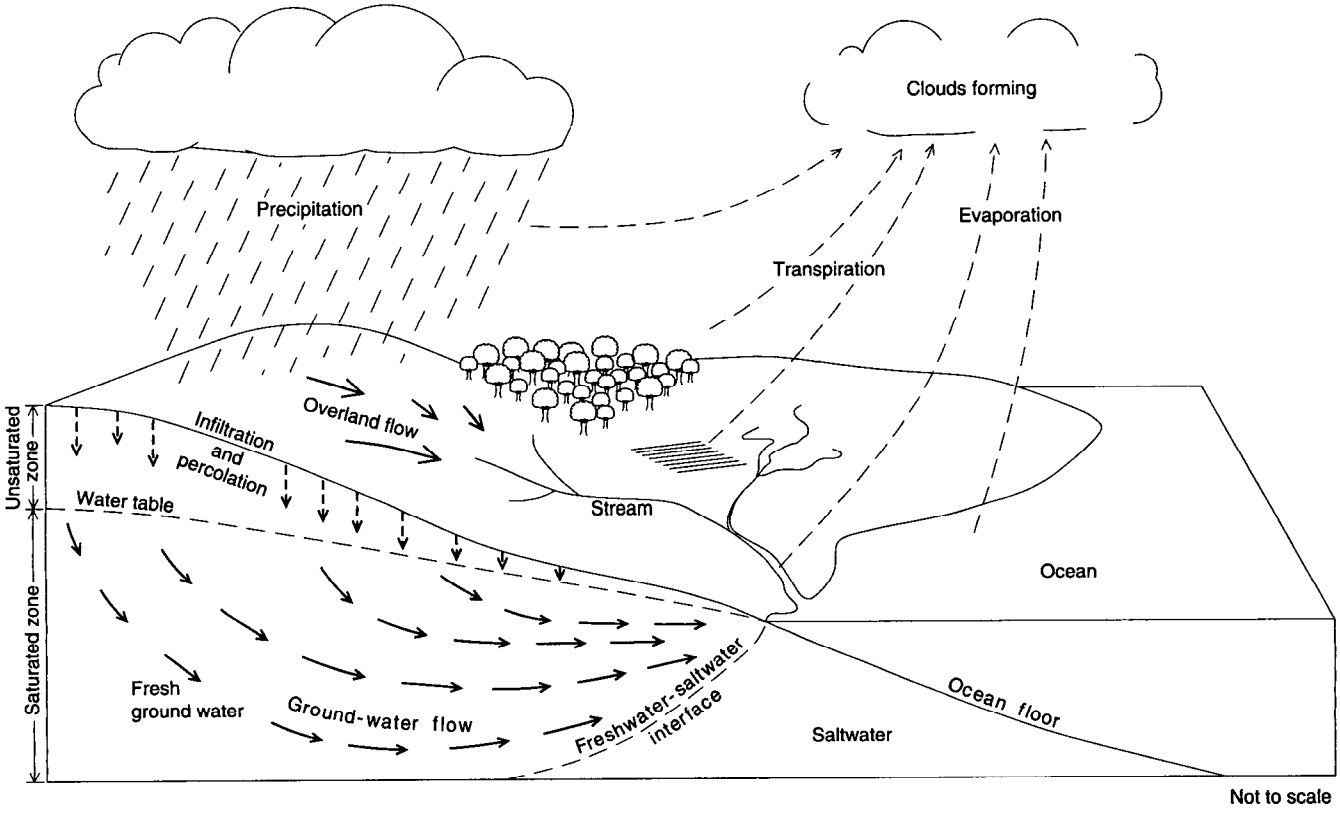

Figure 3. Generalized hydrologic cycle. Arrows show movement of water and water vapor. (Modified from Heath, 1983, p. 5.)

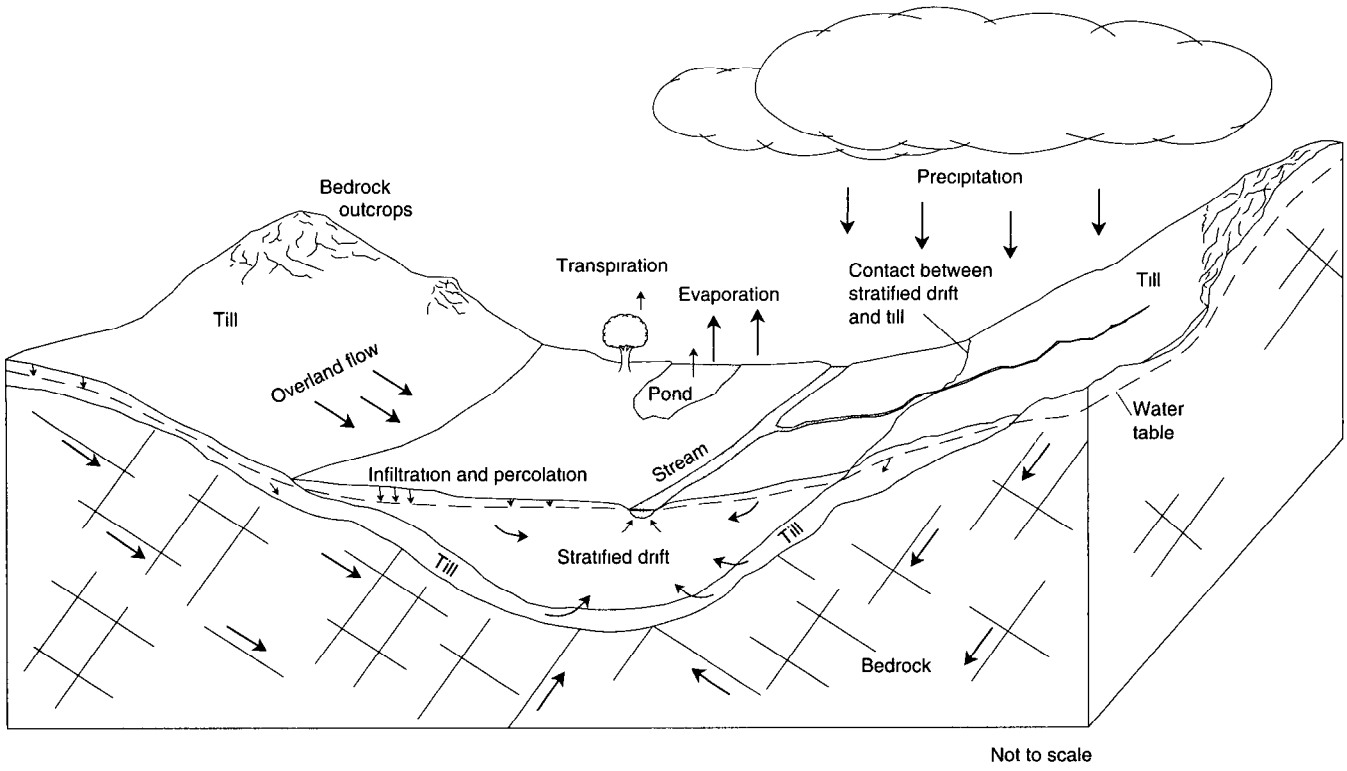

Figure 4. Typical hydrogeologic setting in glaciated terrain. Unconsolidated glacial deposits overlie fractured bedrock. Till blankets the bedrock surface and is exposed at the land surface in upland areas. Till generally underlies the stratified drift that fills bedrock valleys. Arrows indicate directions of flow or movement of water and water vapor. (Modified from Trench and Morrissey, 1985, p. 4, fig. 1.)

one-third of the State's land surface. Thick deposits of coarse-grained stratified drift form the State's most important aquifers.

The term "ground-water reservoir" is often used to refer to stratified-drift aquifers with the greatest potential for development. The Rhode Island Water Resources Board has identified 21 stratified-drift aquifers that have the best potential of all aquifers in the State for yielding large amounts of water (fig. 5). These high-yield aquifers are termed "ground-water reservoirs" by the State.

Major public-supply wells tap many of the ground-water reservoirs. Some ground-water reservoirs have been investigated more intensively than others, and the acquisition of new data could alter the boundaries of ground-water reservoirs shown in figure 5. The ground-water reservoirs represent only a small part of the total area underlain by stratified drift.

Till, although widespread geographically, is not used for public water supplies and is used for few private supply wells because of its generally low permeability and limited saturated thickness. Bedrock is the most extensive aquifer in the State, and the most common source of water in rural areas not served by public water supplies. At least small quantities of ground water are available virtually everywhere in the State, and ground water is withdrawn from all the major geologic units.

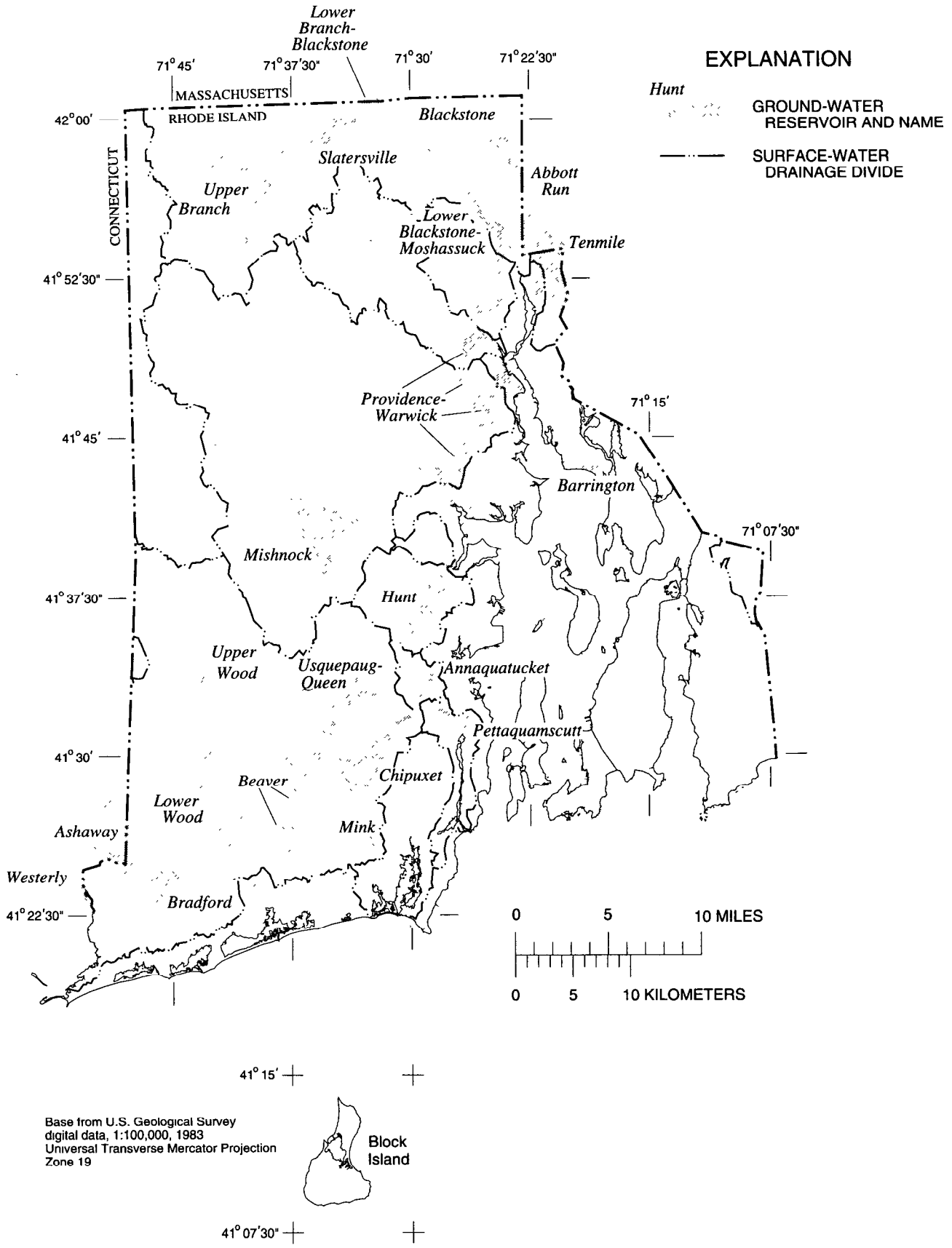

Figure 5. Distribution of ground-water reservoirs in Rhode Island. (Source for boundaries of ground-water reservoirs: W.B. Allen, Rhode Island Water Resources Board, written commun., 1978; modified by Rhode Island Department of Environmental Management, 1988.)

SOURCES OF GEOLOGIC AND HYDROLOGIC INFORMATION

Sources of geologic and hydrologic information for Rhode Island have been summarized in maps and tables for this report. Information has been compiled primarily by 7.5-minute quadrangle or by drainage basin, because these have been the most commonly used study area boundaries for geologic and hydrologic investigations. Some studies using political or other arbitrary boundaries are also included in this inventory.

Several report series on the geology and hydrology of Rhode Island are based on the boundaries of the U.S. Geological Survey's 7.5-minute topographic quadrangle map series. An alphabetical list of the 37 topographic quadrangles that cover Rhode Island is shown in table 1. To facilitate location of information for particular municipalities, table 2 includes an alphabetical list of cities and towns in Rhode Island and a list of the quadrangles that cover each municipality.

Sources of Information Presented in Maps

Maps in this report are intended to provide a quick pictorial summary of information available for different parts of the State. Boundaries shown on maps include drainage divides for major drainage basins or subbasins, the 7.5-minute grid of latitude and longitude covering the State (also referred to as USGS quadrangle boundaries) and (or) town lines. Town lines are shown to help local decisionmakers locate information for specific cities and towns. On maps where the complete quadrangle grid is not shown, latitude and longitude tick marks are shown at 7.5-minute intervals along the borders so that readers can locate USGS quadrangle maps of interest.

Drainage divides and town lines are shown in figure 6, the quadrangle grid and town lines are shown in figure 7, and drainage divides and the quadrangle grid are shown in figure 8. These three maps provide the geographic reference material for other maps and tables showing the availability of publications for different quadrangles or drainage basins. Note in figures 7 and 8 that the coastal Kingston, Narragansett Pier, and Westport quadrangles extend beyond the standard 7.5 minutes of latitude.

Table 1. List of 7.5-minute topographic quadrangles covering Rhode Island, showing date of publication

[Scale 1:24,000. Quadrangles marked with an asterisk (*) are also available at 1:25,000. Source: U.S. Geological Survey, 1987, p. 11-12]

Quadrangle	Date
Ashaway, Conn.-R.I.	1975
Attleboro, Mass.-R.I.*	1979
Blackstone, Mass.-R.I.*	1979
Block Island, R.I.	1970
Bristol, R.I.-Mass.*	1975
Carolina, R.I.	1970
Chepachet, R.I.	1975
Clayville, R.I.	1970
Coventry Center, R.I.	1970
Crompton, R.I.	1970
East Greenwich, R.I.	1975
East Killingly, Conn.-R.I.	1974
East Providence, R.I.-Mass.*	1979
Fall River, Mass.-R.I.*	1979
Franklin, Mass.-R.I.*	1979
Georgiaville, R.I.	1975
Hope Valley, R.I.	1970
Kingston, R.I.	1975
Mystic, Conn.-N.Y.-R.I.	1984
Narragansett Pier, R.I.	1975
Newport, R.I.	1970
North Scituate, R.I.	1975
Oneco, Conn.-R.I.	1970
Oxford, Mass.-Conn.-R.I.*	1979
Pawtucket, R.I.-Mass.	1975
Providence, R.I.	1975
Prudence Island, R.I.	1975
Quonochontaug, R.I.	1970
Sakonnet Point, R.I.	1970
Slocum, R.I.	1970
Thompson, Conn.-R.I.	1970
Tiverton, R.I.-Mass.	1975
Uxbridge, Mass.-R.I.*	1969
Voluntown, Conn.-R.I.	1975
Watch Hill, R.I.-Conn.	1984
Westport, Mass.-R.I.*	1977
Wickford, R.I.	1975

Table 2. List of Rhode Island cities and towns showing 7.5-minute quadrangles covering each municipality

Municipality	Quadrangle
Barrington	Bristol East Providence
Bristol	Bristol Fall River
Burrillville	Blackstone Chepachet Georgiaville Oxford Thompson Uxbridge
Central Falls	Pawtucket
Charlestown	Carolina Kingston Quonochontaug
Coventry	Coventry Center Crompton Oneco
Cranston	Crompton East Greenwich North Scituate Providence
Cumberland	Franklin Pawtucket
East Greenwich	Crompton East Greenwich Slocum Wickford
East Providence	Bristol East Providence Providence
Exeter	Hope Valley Slocum Voluntown
Foster	Clayville Coventry Center East Killingly Oneco
Glocester	Chepachet Clayville East Killingly Georgiaville North Scituate Thompson
Hopkinton	Ashaway Carolina Hope Valley Voluntown
Jamestown	Narragansett Pier Newport Prudence Island Wickford
Johnston	North Scituate Providence
Lincoln	Pawtucket Providence
Little Compton	Sakonnet Point Tiverton Westport
Middletown	Newport Prudence Island Sakonnet Point Tiverton
Narragansett	Kingston Narragansett Pier Wickford
New Shoreham	Block Island
Newport	Newport Prudence Island
North Kingstown	East Greenwich Kingston Narragansett Pier Slocum Wickford
North Providence	Pawtucket Providence
North Smithfield	Blackstone Georgiaville Pawtucket
Pawtucket	Attleboro East Providence Pawtucket Providence
Portsmouth	Bristol Fall River Prudence Island Tiverton

Table 2. List of Rhode Island cities and towns showing 7.5-minute quadrangles covering each municipality--*Continued*

Municipality	Quadrangle
Providence	Providence
Richmond	Carolina
	Hope Valley
	Kingston
	Slocum
Scituate	Clayville
	Coventry Center
	Crompton
	North Scituate
Smithfield	Georgiaville
	North Scituate
	Pawtucket
	Providence
South Kingstown	Kingston
	Narragansett Pier
	Slocum
Tiverton	Fall River
	Tiverton
Warren	Bristol
	East Providence
	Fall River
Warwick	Bristol
	Crompton
	East Greenwich
	Providence
West Greenwich	Coventry Center
	Crompton
	Hope Valley
	Oneco
	Slocum
	Voluntown
West Warwick	Crompton
	East Greenwich
Westerly	Ashaway
	Carolina
	Mystic
	Quonochontaug
	Watch Hill
Woonsocket	Blackstone
	Franklin
	Georgiaville
	Pawtucket

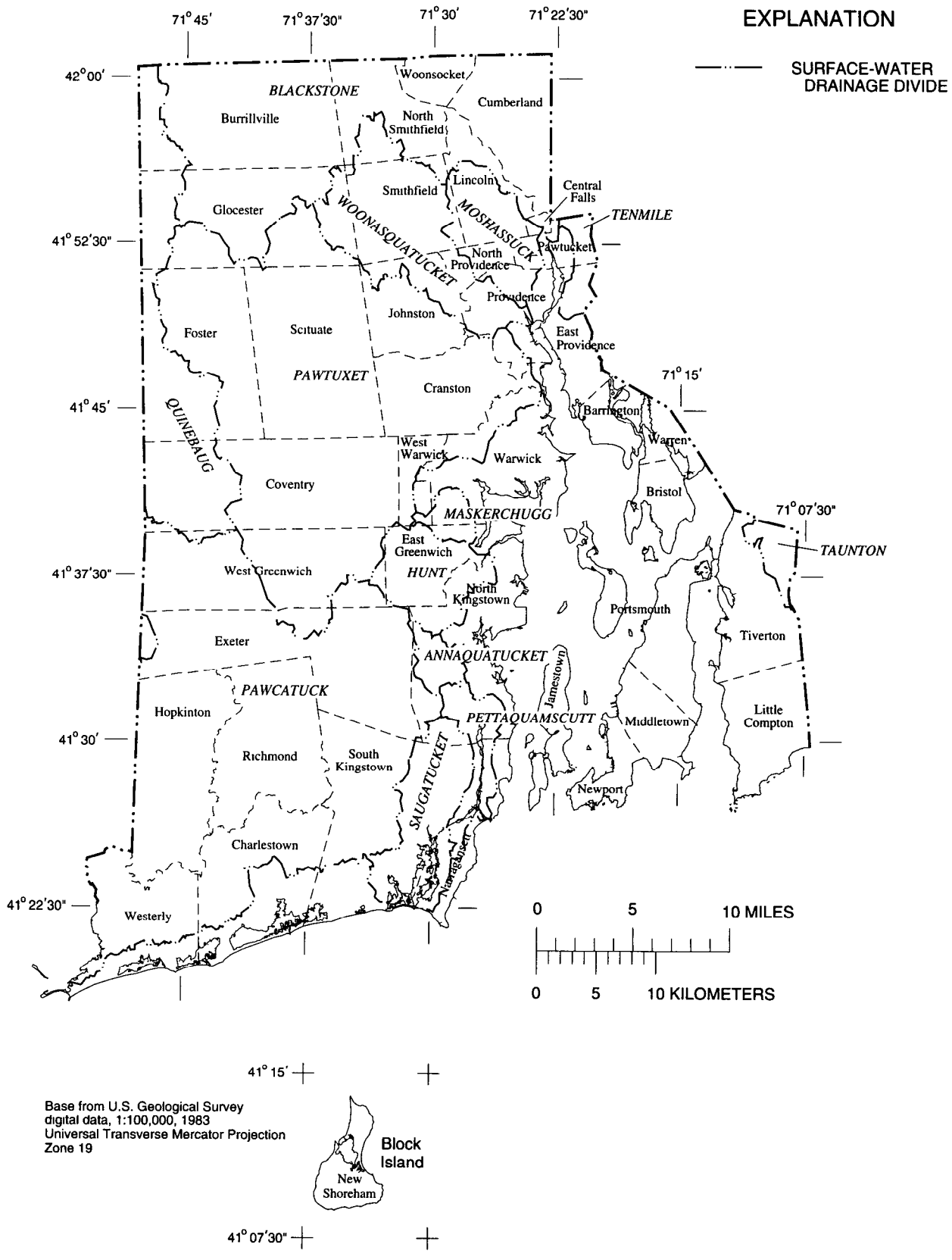

Figure 6. Major drainage basin boundaries and town lines in Rhode Island.

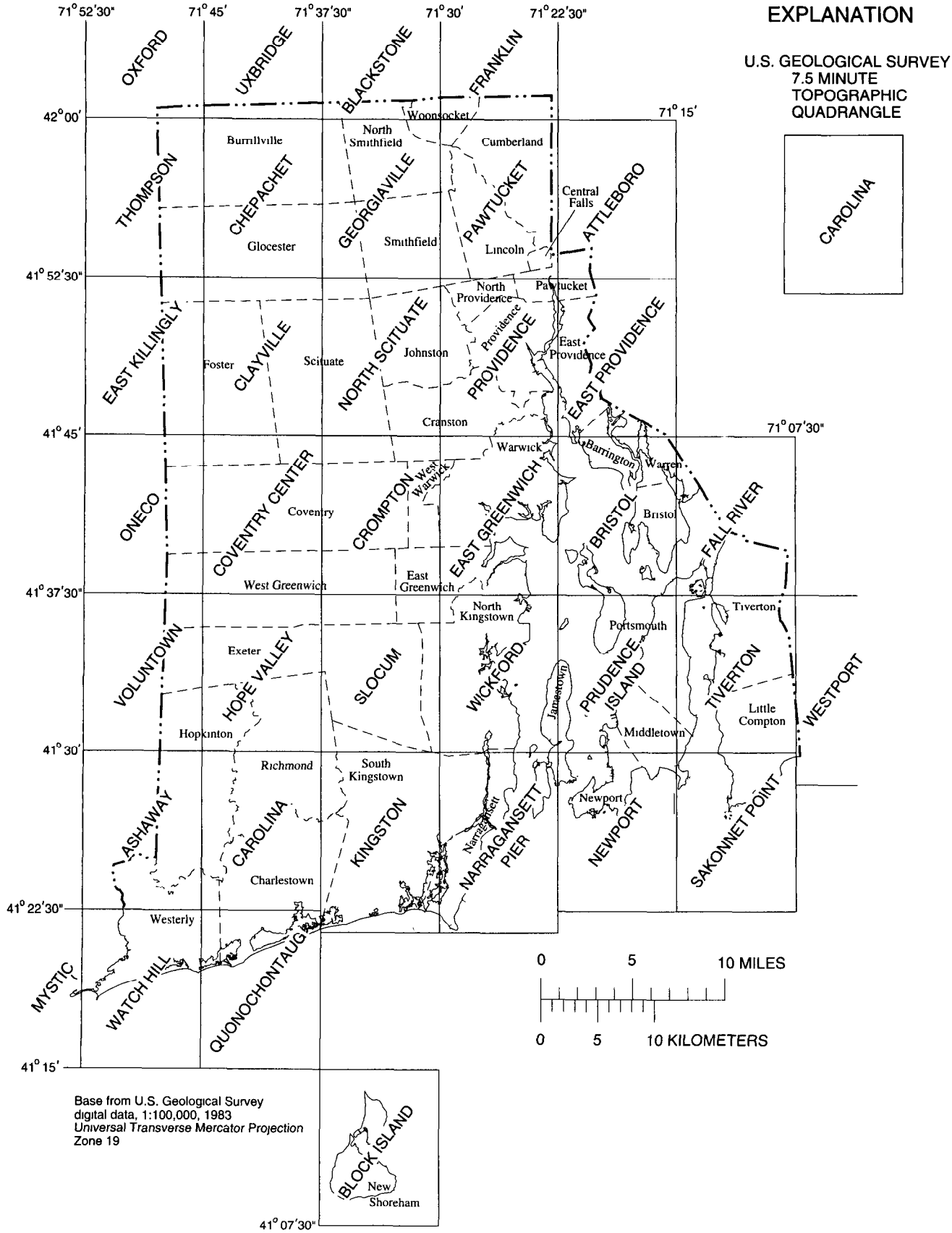

Figure 7. Town lines and 7.5-minute quadrangle boundaries in Rhode Island. Dates for topographic quadrangle maps shown in table 1.

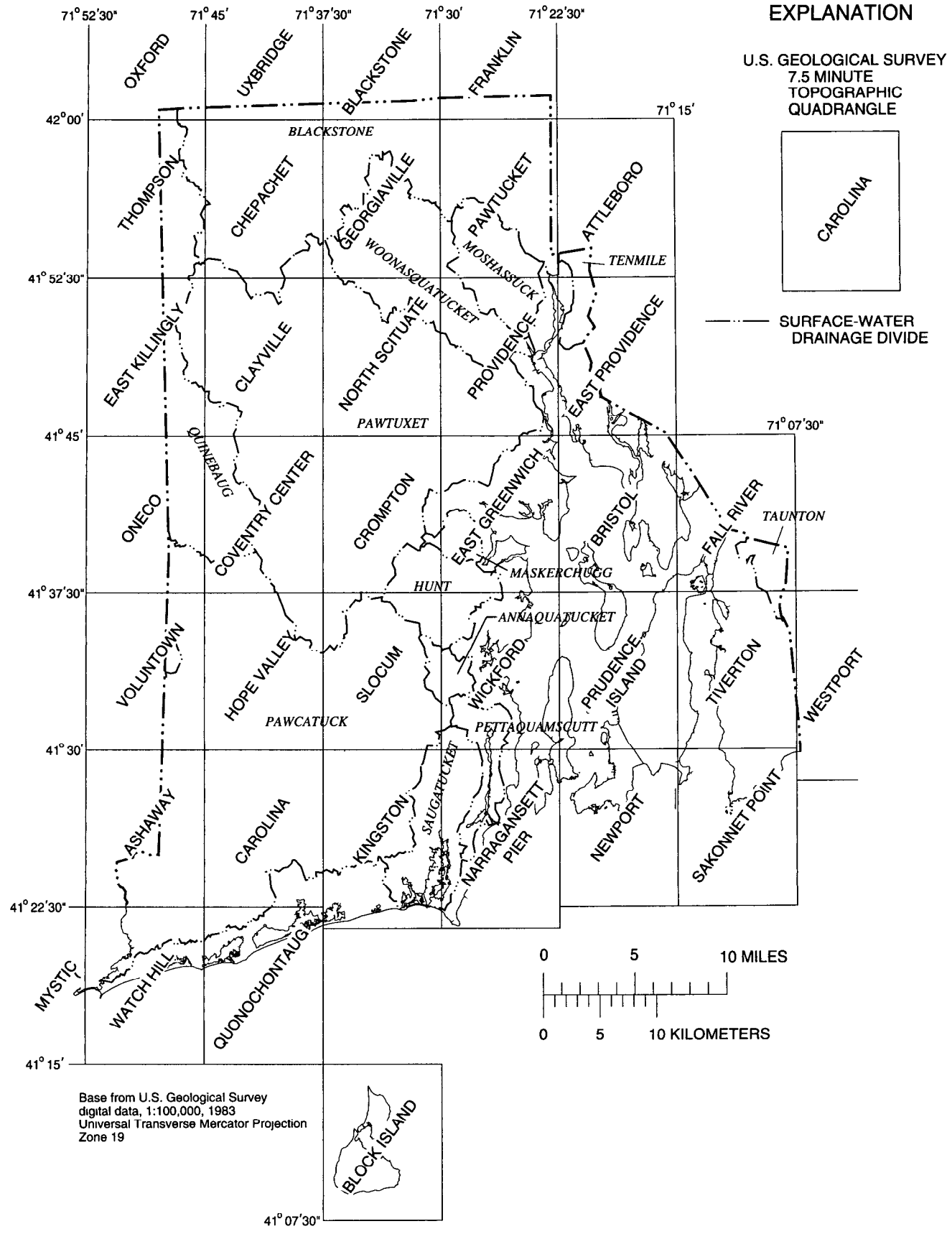

Figure 8. Major drainage basin boundaries and 7.5-minute quadrangle boundaries in Rhode Island. Dates for topographic quadrangle maps shown in table 1.

Availability of surficial and bedrock geologic maps by quadrangle is shown in figure 9. Geologic maps have been published by the U.S. Geological Survey in the Bulletin series (B), the Geologic Quadrangle series (GQ), or the Open-File Report series (OFR). The Bulletin series is published in a book format along with map plates, whereas the Geologic Quadrangle series is published in map format. All three series have used the quadrangle grid for geologic map boundaries in Rhode Island.

The Hope Valley quadrangle and the town of West Greenwich provide an example of the use of figure 9, in conjunction with figures 7 and 8. Figure 9 shows that both a surficial and a bedrock geologic map are available for the Hope Valley quadrangle. Figure 7 shows that geologic maps for the Hope Valley quadrangle provide information for parts of the towns of West Greenwich, Exeter, Hopkinton, and Richmond. Figure 8 shows that the geologic maps encompass a large part of the Pawcatuck River Basin and a small corner of the southern part of the Pawtuxet River Basin. If information on surficial geology is required for the town of West Greenwich, figure 7 shows that maps for six quadrangles are needed: Oneco, Coventry Center, Crompton, Voluntown, Hope Valley, and Slocum. Figure 9 shows that surficial maps are available for each of these quadrangles except Coventry Center.

Availability of ground-water studies by quadrangle is shown in figure 10. The State of Rhode Island published ground-water studies by quadrangle in the Geologic Bulletin series (GB) and the Ground-Water Map series (GWM) from 1945 to 1964. The two series, which do not overlap geographically, are general areal reconnaissance studies. The older Geologic Bulletin series includes text in a book format as well as map plates, whereas the Ground-Water Map series is in map format only. The maps show the contact between till and stratified drift, water-table and bedrock-surface altitudes at selected wells, and generalized water-table contours and bedrock contours in some areas. Again using the town of West Greenwich (fig. 7) as an example, figure 10 shows that ground-water maps are available for the six quadrangles—Oneco, Coventry Center, Crompton, Voluntown, Hope Valley, and Slocum—covering that town.

Figure 11 shows availability of ground-water studies for drainage basins, subbasins, and special study areas in Rhode Island. Information on studies within the Pawcatuck River Basin, where there have been numerous investigations, is shown in more detail in figure 12. Most of the study areas shown in figures 11 and 12 are bounded by drainage divides. Some study area boundaries also include political or arbitrary boundaries.

An approximate indication of towns covered by basin studies can be obtained by use of figure 11 in conjunction with figure 6. For example, figure 6 shows that the town of Cumberland is within the Blackstone River Basin. Reports listed for the Blackstone River area in figure 11 cover an area of northeastern Rhode Island that includes the town of Cumberland.

Report series shown in figures 11 and 12 include series published by the U.S. Geological Survey and the State of Rhode Island over a period of several decades. The series are varied in content, including geohydrologic data reports, general areal appraisals, and detailed aquifer investigations.

Complete citations for all the publications referenced in figures 9, 10, 11, and 12 are listed by report series in table 41 (at back of report).

Sources of Information Presented in Tables

Sources of geologic and hydrologic information for the 37 quadrangles covering Rhode Island have been compiled based on information categories listed in table 3. The 14 categories listed in table 3 cover the general subjects of geology, ground-water occurrence, ground-water movement, and ground-water quality. Technical terms used in these information categories are defined in the Glossary.

Sources of information for each of the 37 quadrangles covering Rhode Island are tabulated in tables 4-40 (at back of report). A headnote preceding table 4 lists abbreviations used in tables 4-40. Tables 4-40 are arranged alphabetically by quadrangle name (see table 1 for list). Each table lists the major categories of geologic and hydrologic information available for that quadrangle, provides references to the publications in which the information can be found, and indicates the format and scale of the information. If the information from a particular source does not cover the whole quadrangle, this is noted in the remarks.

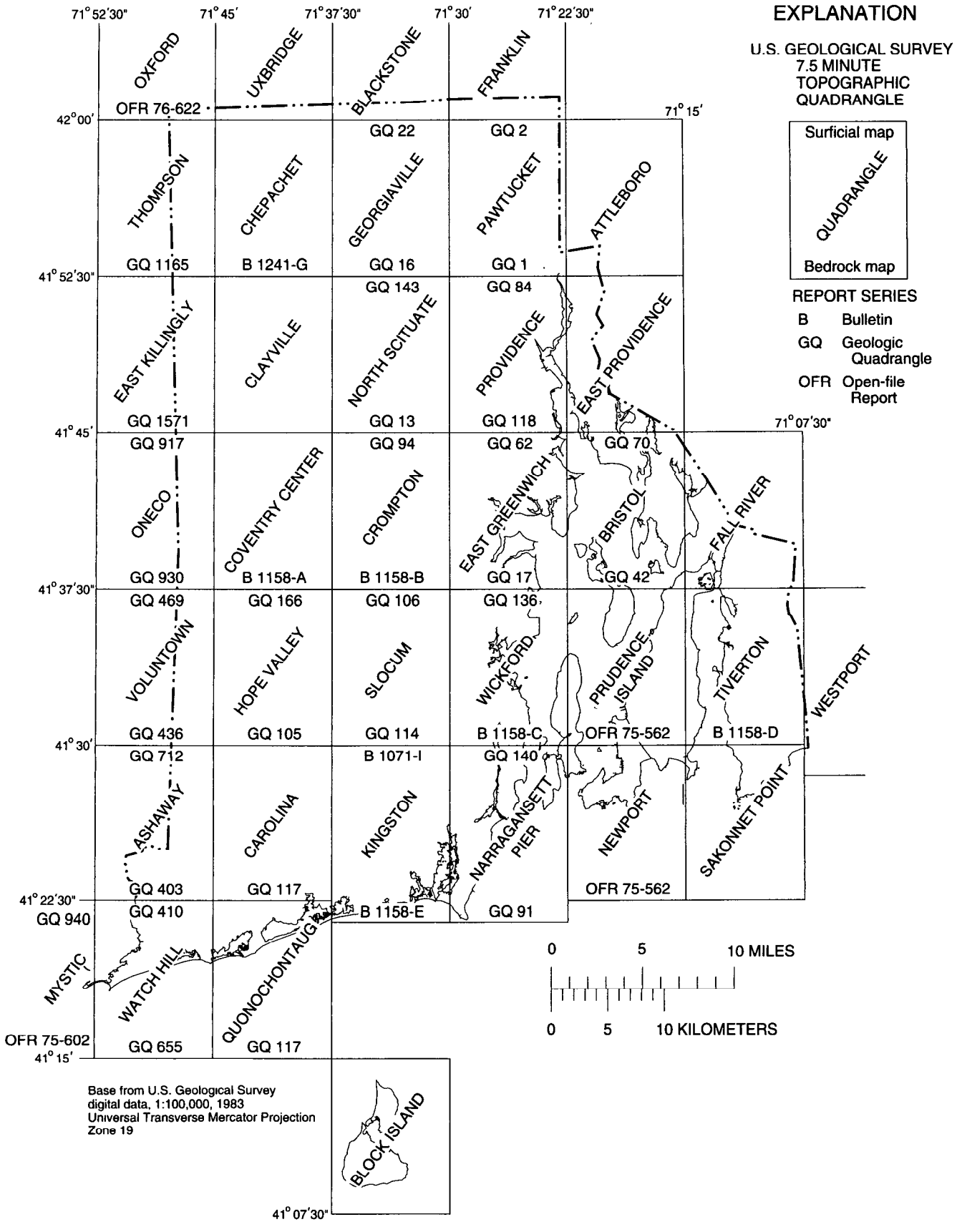

Figure 9. Availability of surficial and bedrock geologic maps by quadrangle in Rhode Island. Full citations for publications are listed by report series in table 41. All report series shown are U.S. Geological Survey publications.

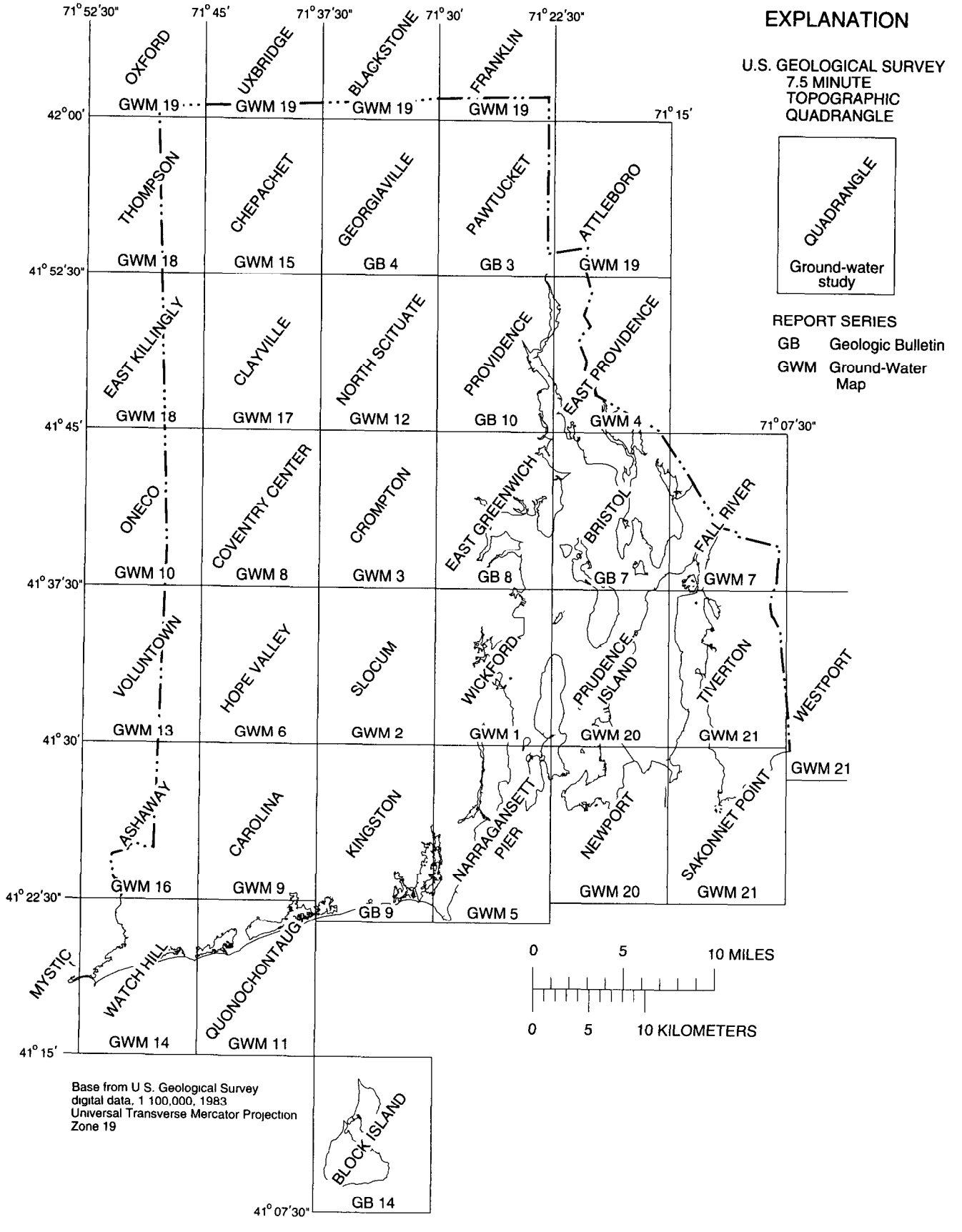

Figure 10. Availability of ground-water studies for quadrangles in Rhode Island. Full citations for publications are listed by report series in table 41. Both report series shown are published by the State of Rhode Island.

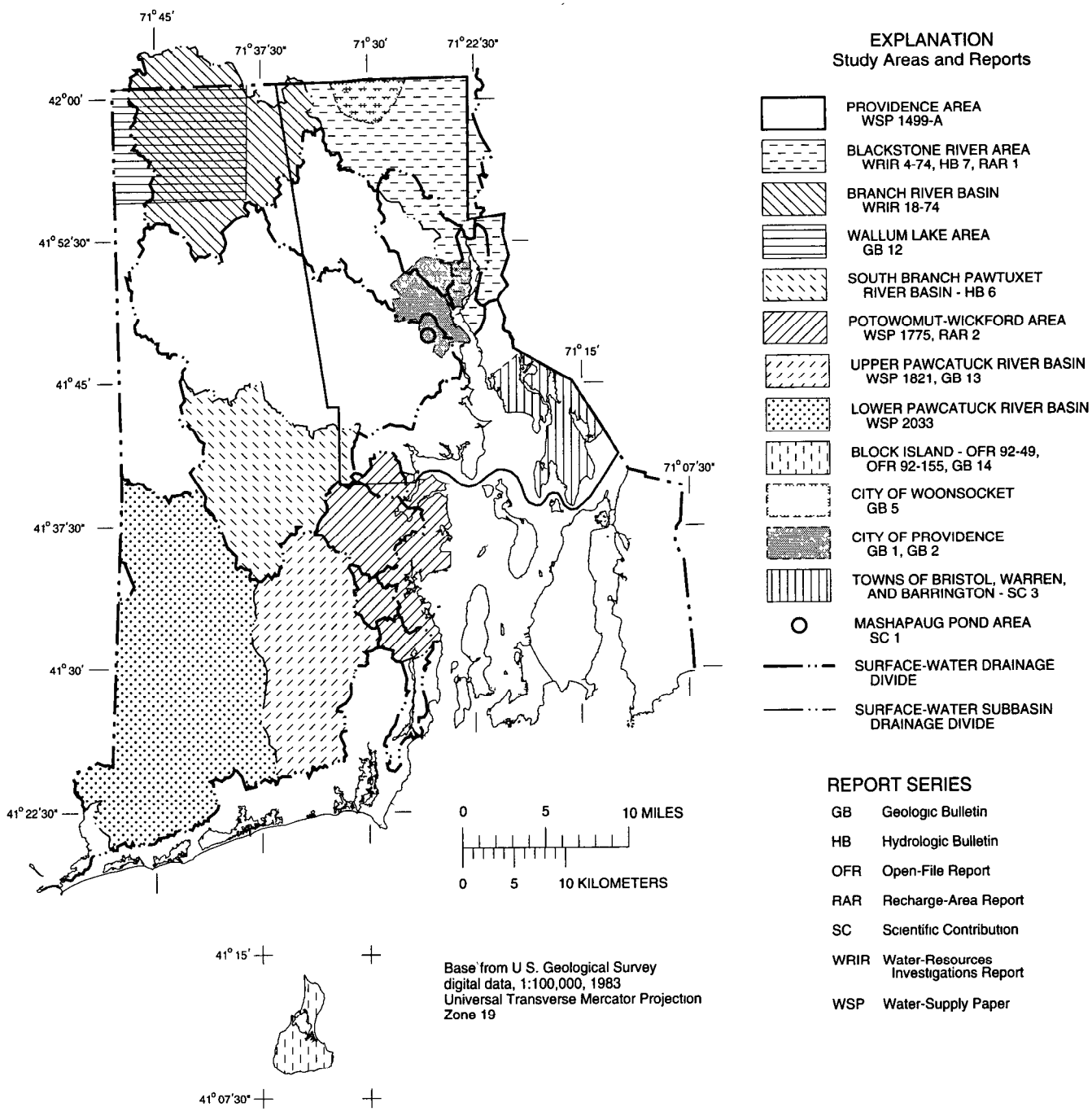

Figure 11. Availability of ground-water studies for drainage basins, subbasins, and special study areas in Rhode Island. Study-area boundaries are formed by surface-water drainage divides unless otherwise indicated. Full citations for publications are listed by report series in table 41. Report series shown include U.S. Geological Survey and State of Rhode Island publications. Studies for subbasins of the Pawcatuck River basin are shown in figure 12.

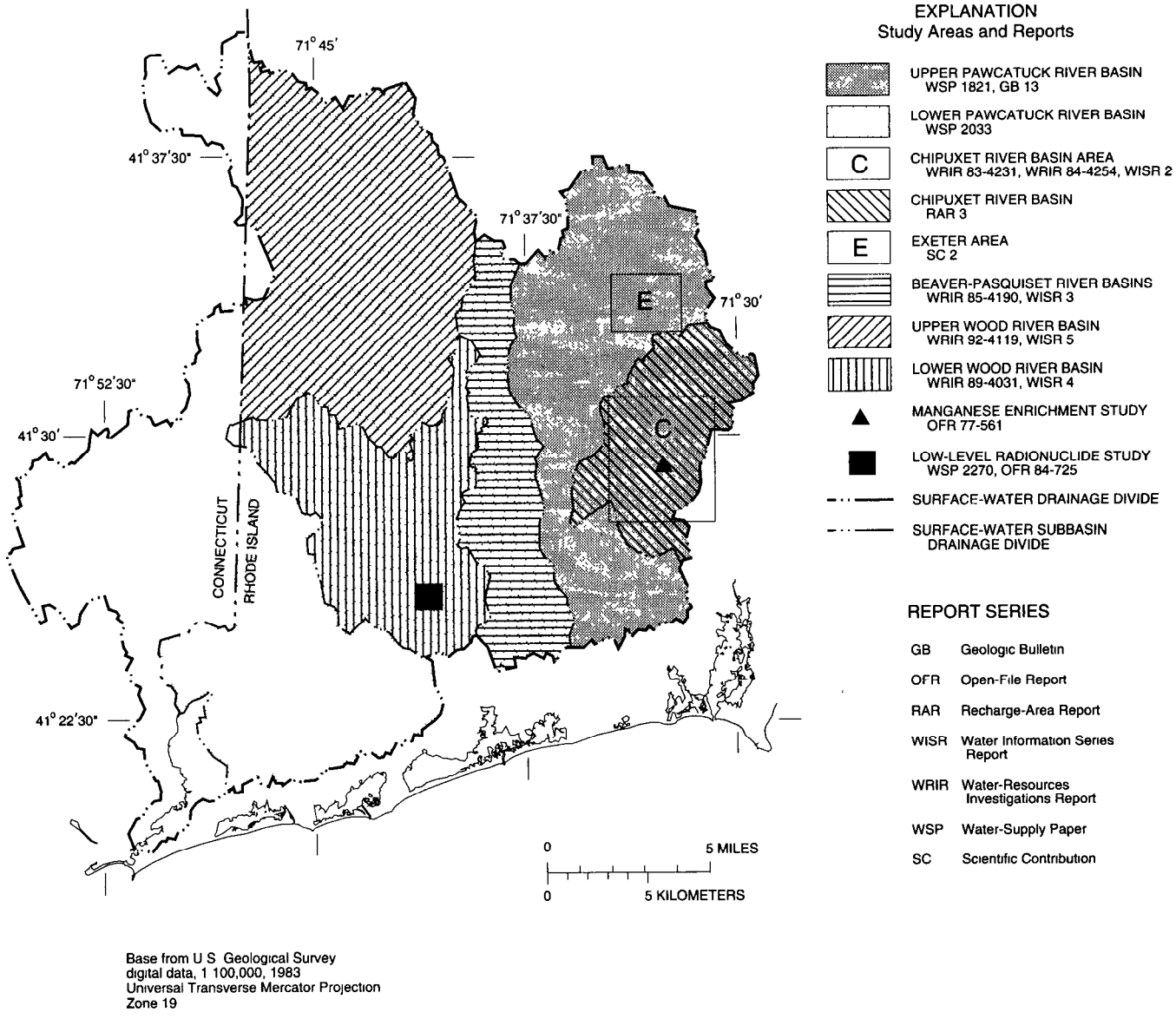

Figure 12. Availability of ground-water studies for subbasins and special study areas in the Pawcatuck River Basin. Study-area boundaries are formed by surface-water drainage divides unless otherwise indicated. Full citations for publications are listed by report series in table 41. Report series shown include U.S. Geological Survey and State of Rhode Island publications. Note: Patterns for Upper Pawcatuck and Lower Pawcatuck River basins overlap with several subbasin patterns.

Table 3. Types of geologic and hydrologic information for which sources are summarized in tables 4-40 for quadrangles in Rhode Island

Information category
Surficial geology
Bedrock geology
Subsurface materials
Altitude of bedrock surface
Water-table altitudes
Water-table contours
Saturated thickness
Hydraulic conductivity
Transmissivity
Drainage divides
Recharge areas
Ground-water reservoirs
Induced infiltration
Ground-water quality

Publications in tables 4-40 are referenced by a publication series abbreviation and number. Series abbreviations are explained in the headnote to tables 4-40. The series abbreviations refer to the report series listed in table 41. Table 41 lists, by report series, full citations for publications prepared by the U.S. Geological Survey pertaining to the geology and hydrology of Rhode Island. Report series published by the U.S. Geological Survey are listed first, followed by report series published by several State agencies.

Publications are cited under an information category in tables 4-40 only if the information is directly available or can be quickly calculated by the reader. In many instances, data or interpretive material in a publication can be used by the reader, with more extensive effort, to make additional estimates or interpretations regarding the ground-water resource. Thus, even where an information category is not listed in a quadrangle table, it may be possible to derive information on this subject from the published literature.

A brief discussion of each information category (table 3) used in tables 4-40 is included here. Technical terms used in these information categories are defined in the Glossary.

Surficial Geology.—Information on surficial geology refers to the unconsolidated sediments that overlie bedrock in most of Rhode Island. Surficial geologic maps in the Geologic Quadrangle and Bulletin series typically describe in detail the deposits visible at the Earth's surface. Publications in other series may only show the general distribution of till and stratified drift.

Bedrock Geology.—Detailed information on the types of bedrock underlying different parts of the State can be found in the bedrock maps of the Geologic Quadrangle, Bulletin, and Open-File Report series. More generalized maps showing major bedrock features are included in some publications.

Subsurface Materials.—Where unconsolidated deposits are moderately thick, surficial geologic maps may only describe the deposits closest to the Earth's surface. Well records, lithologic logs, geologic sections, and interpretive maps may provide information on subsurface materials not shown in surficial geologic maps, and in some cases information on bedrock as well. Publications vary considerably in the amount of detail provided on subsurface materials and in the format of the information.

Altitude of Bedrock Surface.—Maps in several publication series may show bedrock outcrops, bedrock altitudes at well locations, or contours providing an approximate description of the bedrock surface. Where tables of well records provide land-surface altitude and depth to bedrock, the bedrock altitude can be calculated. Conversely, where land-surface altitude and bedrock altitude are given, the depth to bedrock (that is, the thickness of unconsolidated material) can be determined. Bedrock altitudes are generally determined from wells and test borings. In some publications, the altitude of the bedrock surface has been determined from seismic refraction data.

Water-Table Altitudes.—Maps or tables of well records may show water-table altitudes at well locations. Where well records give land-surface altitude and depth to water, the water-table altitude can be calculated. Conversely, where land-surface altitude and water-table altitude are given, depth to water can be calculated. Water-table altitudes vary seasonally and from year to year. Individual publications provide information on the dates of water-level data collection. Some publications show extreme values (maximum and minimum water levels for the period of record) for selected wells.

Water-Table Contours.—Maps may show contours providing an approximate description of the water-table surface. Where water-table contours are shown, actual water-table altitudes at selected wells may also be shown. Individual publications give information on dates of data collection, and may also reference data reports containing detailed information on water levels.

Saturated Thickness.—This term is usually used in reference to stratified-drift aquifers. Saturated thickness is usually calculated as the difference between the water-table altitude (the top of the aquifer) and the altitude of the bedrock surface (the bottom of the aquifer), where the till layer between the stratified drift and the bedrock is thin or absent. Maps may show lines of equal saturated thickness, an interpretation based on water-table altitude and bedrock-surface altitude. Saturated thickness can be calculated from well data on water-table altitude and bedrock altitude, or determined approximately from maps that present water-table contours and bedrock contours.

Hydraulic Conductivity.—Hydraulic conductivity values may be estimated from lithologic logs, computed from laboratory analyses of sediment samples, or computed from aquifer tests or specific capacity data. Individual publications give information on the data and methods used to determine aquifer hydraulic properties. Hydraulic conductivity is a property that varies with direction in an aquifer. The horizontal hydraulic conductivity in a stratified-drift aquifer is typically much greater than the vertical hydraulic conductivity. Publications may present information on horizontal or vertical hydraulic conductivity or both. Hydraulic conductivity values are usually presented in tables. Where lines of equal transmissivity and equal saturated thickness are available on maps, approximate values for hydraulic conductivity can be calculated.

Transmissivity.—Transmissivity values may be estimated from lithologic logs or computed from specific capacity data or from aquifer tests. Individual publications give information on the data and methods used to determine transmissivity. Data reports such as the Water Information Series Reports give detailed descriptions of aquifer test sites and extensive tabulated data. Interpretive reports such as some of those in the Water-Resources Investigations Reports or Water-Supply Paper series may summarize aquifer test data in tables and show lines of equal transmissivity on maps. Some older publications may use the term "transmissibility" for this aquifer property rather than transmissivity.

Drainage Divides.—Information on drainage divides in tables 4-40 refers to surface-water drainage divides unless otherwise noted in the remarks. A few publications contain information on ground-water drainage divides that do not coincide with surface-water drainage divides. In the till-covered bedrock uplands throughout much of Rhode Island, ground-water drainage divides coincide approximately with surface-water drainage divides.

Recharge Areas.—Most of Rhode Island is a recharge area, that is, an area in which water infiltrates the land surface, percolates downward, and reaches the zone of saturation. As used in tables 4-40, the term "recharge area" refers to a land area that contributes ground-water recharge to a specific location of interest, such as a well field or an entire aquifer. Recharge areas for aquifers or wells have only been delineated in a few areas of Rhode Island, and are shown on maps in a small number of reports. The absence of this information category in a quadrangle table means that recharge areas have not been delineated within the quadrangle; it does not mean that no recharge areas are present.

Ground-Water Reservoirs.—The term "ground-water reservoir" has had various meanings and definitions historically and among different water-resource agencies. The Rhode Island Water Resources Board has defined "ground-water reservoir" to mean a stratified-drift deposit with transmissivity equal to or greater than 4,000 feet squared per day and saturated thickness equal to or greater than 40 feet (W.B. Allen, Rhode Island Water Resources Board, written commun., 1978). The Rhode Island Water Resources Board has identified 21 ground-water reservoirs (fig. 5) based on this definition, which is used widely by State water-resource agencies in Rhode Island. Historically, the U.S. Geological Survey in Rhode Island has used the term in a broader sense to indicate a stratified-drift aquifer with good potential for development. In a number of recent U.S. Geological Survey publications, the perimeter of the ground-water reservoir is defined primarily by the contact between till and stratified drift, rather than by the 40-foot saturated thickness contour in stratified drift. Thus the term as used in U.S. Geological Survey publications typically encompasses a larger area of aquifer than that defined by the Rhode Island Water

Resources Board. Individual publications referenced in tables 4-40 use various definitions for ground-water reservoirs.

Aquifer-test information for sites in some ground-water reservoirs is tabulated in the Water Information Series Reports. Interpretive reports such as the Water-Resources Investigations Reports and the Water-Supply Papers may include tabled estimates of potential well yields in ground-water reservoirs, based on aquifer tests, mathematical models, or computer simulation models. Most interpretive reports, rather than showing an agency-defined boundary for a ground-water reservoir, show the defining geologic and hydraulic characteristics--the contact between stratified drift and till, lines of equal saturated thickness, and lines of equal transmissivity. The Recharge-Area Report series shows the ground-water reservoir boundaries as defined by the Rhode Island Water Resources Board and modified by the Rhode Island Department of Environmental Management. The absence of this information category in a quadrangle table may mean either that there is no portion of an identified ground-water reservoir within the quadrangle, or that detailed information is not available for ground-water reservoirs within the quadrangle. However, publications covering the quadrangle may contain information that can be used to estimate, at least roughly, the ground-water development potential of an aquifer.

Induced Infiltration.—Estimates of streambed infiltration rates or estimates of the potential amount of infiltration that hypothetical wells may induce into an aquifer from nearby streams may be presented in tables or discussed in the text of some report series. Individual reports indicate the data and methods used to estimate induced infiltration.

Ground-Water Quality.—Most publications present ground-water quality data in tables. A few publications show selected ground-water-quality data in maps or hydrogeologic sections.

Sources of information on surface-water quality have not been compiled in tables 4-40. Information on surface-water quality may be pertinent to ground-water quality in areas where wells induce water into aquifers from nearby streams. Several report series listed in table 41 contain surface-water-quality data, in particular the Water-Data Reports, Water-Resources Investigations Reports, and Water-Supply Papers published by the U.S. Geological Survey, and the Water Information Series Reports published by the Rhode Island Water Resources Board.

The following example illustrates the use of tables 4-40. A previous example noted that surficial geologic maps are available for all the quadrangles covering the town of West Greenwich except for the Coventry Center quadrangle. Information for the Coventry Center quadrangle is summarized in table 12. This table shows that, although a detailed surficial map is not available, four other reports show till and stratified-drift deposits for all or part of the quadrangle. Thus, some generalized information on surficial geology is available for the part of West Greenwich covered by the Coventry Center quadrangle. Table 12 lists several other sources of hydrogeologic information that may be useful in understanding the ground-water resources of the West Greenwich area.

Review of the information for quadrangles in tables 4-40 shows substantial variation in the availability of geologic and hydrologic information throughout the State. In general, the northern, northeastern, and southwestern parts of the State have been investigated more intensively than the central, western, and southeastern parts of the State, as shown in figures 11 and 12. Information is particularly abundant in parts of the Pawcatuck River Basin, as shown in tables for the Carolina, Hope Valley, and Kingston quadrangles (tables 9, 20, and 21). Comparison of these three tables with tables for Clayville, East Killingly, and Tiverton (tables 11, 15, and 35) shows that there are substantial variations in quantity and variety of data, and also in how recently different areas of the State have been investigated.

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GLOSSARY

Aquifer: A geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Aquifer test: A test to determine the water-yielding capacity of an aquifer. The test involves withdrawing a measured quantity of water from a well and measuring the resulting changes in water level in observation wells surrounding the pumped well. Potential yield of the well is estimated by analysis of the distance, time, and drawdown data.

Bacteria: Microscopic one-celled organisms, often aggregated into colonies. Some bacteria perform an essential role in nature in the recycling of materials, such as by decomposing organic matter into a form available for reuse by plants; others cause disease. *See also* Coliform bacteria.

Bedrock: Solid rock, commonly called "ledge" in Rhode Island, which forms the Earth's crust. It is locally exposed at the surface but more commonly is buried beneath a few inches to more than 300 feet of unconsolidated deposits.

Coliform bacteria: A particular group of bacteria, some of which inhabit the intestinal tracts of vertebrates. Although generally considered to be nonpathogenic, their presence in a water sample is regarded as evidence of possible pollution by sewage.

Color unit: A standard of color in water measured by the platinum-cobalt method. The color produced by 1 milligram per liter of platinum in water equals one color unit.

Computer simulation model: A computer program to solve a set of equations which simulate a given system. In the studies tabulated for this report, the equations simulate the ground-water-flow system.

Concentration: The amount of a solute, such as a mineral, dissolved in a specified amount of a solvent, such as water.

Cone of depression: A depression produced in the water table or other potentiometric surface by the withdrawal of water from an aquifer. It is shaped like an inverted cone with its apex at the pumped well.

Confined aquifer: An aquifer bounded above and below by impermeable beds or by beds of distinctly lower permeability than that of the aquifer itself. Also called an artesian aquifer. *See also* Unconfined aquifer.

Confined ground water: Water in an aquifer that is bounded by beds of low or negligible permeability (confining beds). The ground water is under pressure that is significantly greater than that of the atmosphere.

Contact: A plane or irregular interface between two types or ages of rock or sediment. Also refers to the interface between two fluids, such as gasoline and water.

Contamination: The degradation of water quality as a result of human activity.

Contour line: A line on a map connecting points of equal value. A water-table contour line connects points of equal water-table altitude.

Crystalline bedrock: A general term including several igneous and metamorphic rocks. The most common types in Rhode Island are granite, gneiss, and schist.

Discharge: In hydraulics, the rate of flow; a volume of fluid passing a point per unit time, commonly expressed as cubic feet per second, million gallons per day, or gallons per minute.

Dissolved solids: The residue from a clear sample of water after evaporation and drying for one hour at 180° Celsius. Dissolved solids consist primarily of dissolved mineral constituents, but may also contain organic matter and water of crystallization.

Drainage area: The land area, as measured on a map, that contributes water to a particular stream channel, lake, reservoir, or other body of water.

Drainage basin: A part of the surface of the Earth that is occupied by a drainage system, consisting of a stream or body of impounded surface water and all its tributary streams and bodies of surface water. Also referred to as river basin or watershed.

Drainage divide: The boundary between one drainage basin and another. The rim of a drainage basin. Unless otherwise specified, usually refers to a surface-water drainage divide.

Drawdown: The lowering of the ground-water level or potentiometric surface by pumping. It is equal to the difference between the static (nonpumping) level and the pumping level.

Formation: A part of the Earth's crust that is more or less distinct from other parts, either because of its origin, its mineral composition and arrangement, or its structure.

Fracture: A structural break or opening in bedrock along which water is able to move. A crack, joint, or fault.

Freshwater: Water that contains less than 1,000 milligrams per liter of dissolved solids. Generally, more than 500 milligrams per liter of dissolved solids is undesirable for drinking and many industrial uses.

Geologic section: A diagram drawn to scale representing successive rock units and geologic structures of the Earth's crust, as they would appear if cut through by an intersecting plane. Geologic sections referred to in this report are vertical sections.

Geophysical log: A continuous record, obtained during drilling a well, of a geophysical characteristic of the rock units or well fluids penetrated, such as electrical properties, radiation, or temperature.

Glacier: A large mass of ice, formed on land by the compaction and recrystallization of snow, which moves slowly by creep downslope or outward in all directions because of the stress of its own weight, and which survives from year to year. Included are small mountain glaciers as well as ice sheets continental in size and ice shelves that float on the ocean but are fed in part by ice formed on land.

Gravel: Unconsolidated rock debris composed principally of particles larger than 0.08 inch in diameter.

Gravel-packed well: A type of well, commonly used for public-supply wells in stratified drift, in which gravel is placed in the space around the well screen to increase the effective diameter of the well and to prevent fine-grained sediments from entering the well.

Ground water: Water in the saturated zone.

Ground-water discharge: The release of water from the saturated zone by (1) natural processes such as discharge to streams and springs, or evaporation and transpiration from the saturated zone, and (2) withdrawal from wells.

Ground-water drainage divide: A ridge or hill in the irregular surface of the saturated zone. The water table slopes downward in a direction away from the divide on both sides of the divide. A ground-water drainage divide is analogous to, but not always coincident with, a topographic drainage divide on the land surface between two surface-water drainage basins.

Ground-water recharge: (1) The amount of water that is added to the saturated zone. (2) The process by which water is added to the saturated zone.

Ground-water reservoir: Generally, a stratified-drift aquifer with good potential for yielding large amounts of water. As defined by the Rhode Island Water Resources Board, a ground-water reservoir is an area underlain by stratified drift with transmissivity equal to or greater than 4,000 feet squared per day and a saturated thickness equal to or greater than 40 feet. In reports of the U.S. Geological Survey, ground-water reservoirs are generally bounded by the contact between stratified drift and till rather than by the 40-foot saturated thickness contour.

Hardness (water): A property of water causing formation of an insoluble residue when the water is used with soap, and forming a scale in containers in which water has been allowed to evaporate. It is caused primarily by the presence of ions of calcium and magnesium. Generally expressed as milligrams per liter (mg/L) as calcium carbonate ($CaCO_3$). A general hardness scale is: soft, 0-60 mg/L; moderately hard, 61-120 mg/L; hard, 121-180 mg/L; very hard, more than 180 mg/L (U.S. Geological Survey, 1985b, p. 461).

Hazardous waste: Any substance that is toxic, or otherwise is a threat to life, that is discharged through human activity to the land, water, or atmosphere. Synthetic organic chemicals and trace metals are some of the more significant contaminants associated with hazardous waste.

Head (static): The height above a standard datum of the surface of a column of water that can be supported by the static pressure at a given point. The static head, which is the sum of the elevation head and the pressure head, is the height to which water will rise in a tightly cased well. Ground water is in motion, and head is a measure of the mechanical energy of the ground water at a given point in space and time.

Hydraulic conductivity: The volume of water at the existing kinematic viscosity that will move in unit time under a unit hydraulic gradient through a unit area measured at right angles to the direction of flow in an isotropic porous medium. More simply, hydraulic conductivity is a measure of the ease with which a fluid will pass through a porous earth material, such as stratified drift or till. Hydraulic conductivity is determined by the size and shape of the pore spaces in the material, and their degree of interconnection, as well as by the viscosity of the fluid. In this report, hydraulic conductivity is given in units of feet per day, which is a simplified form of cubic feet of water per day per square foot cross-section of earth material. Many of the older publications referenced in this report show hydraulic conductivity values in gallons per day per square foot; this unit of measure is no longer used.

Hydraulic gradient: In an aquifer, the change in static head per unit of distance in a given direction. If not specified, the direction is generally understood to be that of the maximum rate of decrease in head.

Hydrocarbons: A large and diverse group of natural and synthetic organic compounds, composed primarily of hydrogen and carbon, with varying amounts of other elements.

Hydrogeology: The science that deals with subsurface waters and with related geologic aspects of surface waters.

Hydrology: The science that relates to the water of the Earth.

Induced infiltration: The process by which water in a stream or lake moves into an aquifer when a hydraulic gradient from the surface-water body toward the aquifer has been established because of the withdrawal of water from a pumped well or wells.

Induced recharge: The amount of water entering an aquifer from an adjacent surface-water body by the process of induced infiltration.

Infiltration: The passage of a gas or liquid into or through soil or rock by way of pores or small openings in the earth material.

Inorganic constituents: Chemical compounds that do not contain carbon as the principal element (excepting carbonates, cyanides, and cyanates). Major inorganic constituents in Rhode Island ground water include: silica, iron, manganese, calcium, magnesium, sodium, potassium, hydrogen ion (pH), carbonate, bicarbonate, sulfate, chloride, fluoride, nitrate, dissolved oxygen. Chemical properties that are closely related to the major inorganic constituents include dissolved solids, hardness, and alkalinity.

Ion: An atom or group of atoms that carries an electric charge as a result of having lost or gained electrons.

Isotropic: Having properties that are uniform in all directions. Earth materials are seldom isotropic.

Kinematic: Pertaining to the motions of materials.

Lacustrine: Pertaining to, produced by, or formed in a lake or lakes, such as lacustrine sediments formed on a lake bottom. Many fine-grained lacustrine sediments in Rhode Island were formed in glacial lakes.

Lithologic log: A log, or continuous record, depicting the sequence of lithologic characteristics of the soil, sediments, and rocks penetrated in drilling a well. The descriptive information is related to the depth of origin of the materials. Lithologic logs referred to in this report may be narrative in format or may be graphic and plotted to scale.

Lithology: The physical character of a sediment or rock, including such characteristics as color, mineralogic composition, and grain size.

Low-level radioactive waste: Nuclear wastes resulting from a variety of activities, including university research programs, medical treatment, and electrical power generation. The radioactivity of low-level wastes is considerably less than that of high-level nuclear wastes associated with nuclear fuel.

Mathematical model: A model commonly used to determine aquifer characteristics from aquifer tests and to predict drawdowns that will occur in the vicinity of a pumped well. The use of the model requires simplification of the aquifer geometry and hydraulic properties. Some typical simplifying assumptions are that aquifer properties are homogeneous and isotropic and that the aquifer is confined (Morrissey, 1989, p. 9, 11). Mathematical models, sometimes referred to as analytical models, have been used to estimate aquifer yields in many of the older interpretive studies referenced in this report.

Methylene blue active substance (MBAS): A measure of apparent detergents, as indicated by the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

Micrograms per liter (µg/L): A unit for expressing the concentration of chemical constituents in solution. Micrograms per liter represents the weight of solute per unit volume of water; 1,000 micrograms equal 1 milligram. One microgram equals 1×10^{-6} gram. Micrograms per liter and parts per billion (ppb) are approximately equivalent, with 1 µg/L equal to 1 ppb. However, micrograms per liter is the standard unit for reporting dissolved constituents.

Milligrams per liter (mg/L): A unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the weight of solute per unit volume of water; 1 milligram equals 1,000 micrograms. One milligram equals 1×10^{-3} gram. At the low concentrations of dissolved solids typically found in fresh ground water, milligrams per liter and parts per million (ppm) are approximately equivalent, with 1 mg/L equal to 1 ppm. However, milligrams per liter is the standard unit for reporting dissolved constituents.

Nutrients: Compounds of nitrogen, phosphorous, and other elements essential for plant growth.

Organochlorine compounds: A group of synthetic organic compounds that are toxic and persistent in the environment. They include aldrin, chlordane, DDT, lindane, and toxaphene.

Outcrop: A place where a geologic formation is visible at the Earth's surface.

Overland flow: The flow of rainwater or snowmelt over the land surface toward stream channels. After it enters a stream, it becomes runoff.

Perched ground water: A thin, local, unconfined saturated zone separated from an underlying main body of ground water by an unsaturated zone. The perched ground water is supported by material of low permeability that prevents downward percolation of water.

Percolation: Streamline flow of water, usually downward, by the force of gravity or under hydrostatic pressure, through small openings within a porous material such as rock or sediment.

Permeability: A qualitative term used to describe the ease with which water will pass through a porous earth material. *See also* Hydraulic conductivity, the quantitative term used by the U.S. Geological Survey to define this property.

Pesticides: Chemical compounds used to control undesirable plants and animals. The major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH: The hydrogen-ion activity of a solution. A pH value is a number, on a scale of 1 to 14, that is equal to the negative logarithm of the hydrogen-ion concentration. This value is used by chemists to measure the reactive

characteristics of water. A pH value of 7 is neutral. Values less than 7 indicate acidic solutions that are corrosive and tend to dissolve metals and other substances. Values greater than 7 indicate alkaline or basic solutions that tend to form scale when heated. The difference between each unit on the scale represents one order of magnitude. For example, a pH of 5 is 10 times more acidic than a pH of 6, and a pH of 5 is 100 times more acidic than a pH of 7.

Physical properties: Characteristics of water that describe the nature of the water as a whole, as contrasted to chemical characteristics that describe specific constituents dissolved within the water. Physical properties of ground water include: temperature, color, taste, odor, turbidity, and specific electrical conductance.

Physiographic province: A region in which all parts have a similar geologic structure and climate, and in which all parts have had a similar development of the present landforms. A region where the pattern of surface features or landforms differs substantially from that of adjacent regions.

Physiography: A description of the surface features of the Earth.

Pollution: The presence in or addition to water of any substance that is or could become injurious to the public health, safety, or welfare; or that is or could become injurious to domestic, commercial, industrial, agricultural, or other uses being made of the water.

Potentiometric surface: A surface that represents the total head in an aquifer, that is, the level to which water will rise in tightly cased wells that penetrate the aquifer. The water table is a particular potentiometric surface.

Precipitation: (1) The discharge of water from the atmosphere in the forms of rain, sleet, snow, or hail; the opposite process is evaporation. (2) The process by which ions dissolved in a solution join together to form solid particles that settle out of the solution by gravity or adhere to nearby solid surfaces; the opposite process is solution, or the process of becoming dissolved.

Radionuclide: A species of atom that emits alpha, beta, or gamma rays for a measurable length of time.

Recharge: (1) Water that infiltrates to and supplies the saturated zone; recharge may be natural or artificial depending upon the source of the water. (2) The process that allows water to infiltrate to an aquifer.

Recharge area: As used in this report, a land area that contributes ground-water recharge to a location of interest, such as a well field or an entire aquifer. More generally, an area in which infiltrating water reaches the zone of saturation.

Saltwater: Water containing about 35,000 milligrams per liter of dissolved solids, including about 19,000 milligrams per liter of chloride (Cl).

Saturated thickness: The thickness of an aquifer below the water table.

Saturated zone: The subsurface zone in which all open spaces are filled with water. The water table is the upper limit of this zone. Below the water table, water in the saturated zone is under pressure greater than that of the atmosphere.

Screened interval: The intake section of a well through which water is obtained from an unconsolidated aquifer, such as stratified drift. Ground water enters the well only along the screened interval; the rest of the well is cased to prevent entry of water.

Seismic refraction: A geophysical method of determining the depth to the water table or depth to a major change in earth material, such as the bedrock surface. A seismograph is used to determine the time it takes sound energy created by a small explosion to reach a series of sensors. Because sound travels at different velocities in different rock materials and is refracted (bent) at the boundary between these materials, it is possible to determine depths to different types of material or to the water table.

Seismic survey: The use of seismic refraction techniques in a study area to determine depth to the water table or depth to different types of earth material.

Specific capacity (of a well): The rate of discharge of water from a well divided by the drawdown of water level within the well, commonly expressed in gallons per minute per foot.

Specific conductance (of water): A measure of the ability of water to conduct an electric current, expressed in microsiemens per centimeter at 25 degrees Celsius. It is related to the concentration of dissolved solids, for which it serves as an approximate, indirect measure.

Stratified drift: Predominantly sorted sediments laid down in layers, by or in meltwater from a glacier. Includes gravel, sand, silt, or clay deposited in layers of similar grain size. The term "drift" is a historical remnant from the early 19th century, when scientists believed that glacial materials had been deposited when debris-filled icebergs melted as they drifted across prehistoric oceans (Flint, 1957, p. 4).

Stream-aquifer system: Consists of a stream that is hydraulically connected to the aquifer across which it flows. Ground water generally discharges from the aquifer to the stream. Surface water may infiltrate the aquifer naturally under some conditions, or may be induced into the aquifer where ground water is withdrawn from wells near the stream.

Subsurface materials: Unconsolidated and consolidated rock materials lying beneath the Earth's surface.

Surficial sediments (deposits): Unconsolidated deposits lying on top of bedrock.

Till: Predominantly unsorted, unstratified sediments deposited directly by a glacier and composed of boulders, gravel, sand, silt, and clay mixed in various proportions. Sometimes called unsorted drift. Colloquially, it is sometimes referred to as "hardpan."

Trace constituent: A substance that always or nearly always occurs in concentrations of less than 1.0 milligram per liter in natural water (Hem, 1985, p. 129).

Transmissivity: The rate at which water of the prevailing kinematic viscosity is transmitted through a unit width of the aquifer under a unit hydraulic gradient. More simply, transmissivity is a measure of the ability of an aquifer to transmit water. An aquifer's transmissivity is equal to its average horizontal hydraulic conductivity multiplied by its saturated thickness. Reported in units of feet squared per day, which is a simplified form of cubic feet of water per day per vertical prism of aquifer 1 foot wide. Many of the older publications referenced in this report show transmissivity values in gallons per day per foot; this unit of measure is no longer used. Older publications may also use the term "transmissibility" rather than "transmissivity."

Transpiration: The process whereby plants release water vapor to the atmosphere.

Unconfined aquifer: An aquifer in which the upper surface of the saturated zone, the water table, is at atmospheric pressure and is free to rise and fall. Also called a water-table aquifer.

Unconsolidated: A term used to describe earth materials in which the particles are loose, not firmly cemented or interlocked. For example, sand is unconsolidated and sandstone is consolidated.

Unsaturated zone: The subsurface zone between the land surface and the water table, containing air, gases, and variable amounts of water.

Viscosity: The property of a fluid that allows the fluid to resist motion and deformation under an applied force. The greater the viscosity of a fluid, the more slowly it flows. Viscosity in liquids is caused by the cohesiveness of the molecules, and is affected by temperature and pressure.

Volatile organic compounds (VOC's): Synthetic organic compounds that include hydrocarbon or halogenated hydrocarbon molecules. Halogenated hydrocarbons include the element chlorine or related elements. Many VOC's are industrial solvents and degreasers.

Water table: The upper surface of the saturated zone in an unconfined aquifer. It is defined by the levels at which water stands in wells that penetrate just deep enough to contain standing water. In wells that penetrate to greater depths, the water level will stand above the water table if an upward component of ground-water flow exists, or below the water table if a downward component of ground-water flow exists.

Water year: A continuous, 12-month period, selected to present data relative to hydrologic or meteorologic phenomena, during which a complete annual hydrologic cycle normally occurs. The water year used by the U.S. Geological Survey is October 1 through September 30. For example, October 1, 1984 through September 30, 1985 is the 1985 water year.

Watershed: (1) Drainage basin; (2) the divide separating one drainage basin from another. The first meaning is the more current usage, whereas the second meaning was common in the past. The terms "drainage basin" and "drainage divide" are preferred, because the meaning of the term "watershed" may be ambiguous.

Well screen: The intake section of a well, specially designed for obtaining water from unconsolidated materials, such as sand. The screen allows water to flow freely into the well and prevents sand from entering with the water.

Yield (of an aquifer): The amount of water that can be withdrawn continuously from an aquifer.

TABLES 4-41

Tables 4-40. Geologic and hydrologic information for Rhode Island quadrangles

Many publications have multiple maps or plates, which may be at different scales. Consequently, more than one scale may be shown for the same publication in tables 4-40. The following abbreviations refer to publication series. Complete citations for these publications are listed by series in table 41.

Published by the U.S. Geological Survey:

B	Bulletin
GQ	Geologic Quadrangle
OFR	Open-File Report
PP	Professional Paper
WRIR	Water-Resources Investigations Report
WSP	Water-Supply Paper

Published by the State of Rhode Island:

GB	Geologic Bulletin
GWM	Ground-Water Map
HB	Hydrologic Bulletin
RAR	Recharge Area Report
SC	Scientific Contribution
WISR	Water Information Series Report

Other abbreviations:

NA	not applicable
U	unpublished
>	greater than
≥	greater than or equal to
<	less than
d	day
cm/s	centimeter per second
ft	foot or feet
ft/d	foot per day
ft^2/d	foot squared per day
gal/d	gallon per day
gal/d/ft	gallon per day per foot
$gal/d/ft^2$	gallon per day per square foot
Mgal/d	million gallons per day
mg/L	milligram per liter
µg/L	microgram per liter

Table 4. Geologic and hydrologic information for the Ashaway Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GWM 16	1:24,000	Till and stratified-drift deposits.
	1968	GQ 712	1:24,000	Detailed surficial map. Geology mapped in 1961, 1963, and 1965.
Bedrock geology	1965	GQ 403	1:24,000	Detailed bedrock map. Geology mapped 1958-61.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	GB 11	1:61,400	Shows stratified-drift deposits 0-50 ft thick. For Rhode Island part of quadrangle. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1961	GWM 16	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1961	GWM 16	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.
Water-table contours	1961	GWM 16	1:24,000	Approximate water-table contours in stratified drift, 10 and 20 ft intervals. Data on wells collected chiefly in 1961.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1974	WSP 2033	1:48,000	Computed from specific-capacity data and aquifer tests for 5 sites, shown in ft^2/d and gal/d/ft. Lines of equal transmissivity, intervals of 2,500 and 3,000 ft^2/d. For Lower Pawcatuck Basin.
Drainage divides	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
Ground-water reservoirs	1974	WSP 2033	1:48,000	Yields estimated from mathematical models for Ashaway and Bradford ground-water reservoirs.
Induced infiltration	1974	WSP 2033	1:48,000	Vertical hydraulic conductivity of streambed sediments used to estimate potential recharge by induced infiltration. For Ashaway and Bradford ground-water reservoirs.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 3 wells. Not on topographic base.
	1974	WSP 2033	1:48,000	Major inorganic constituents, physical properties. For 3 wells. For Lower Pawcatuck Basin.

Table 5. Geologic and hydrologic information for the Attleboro Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1962	GWM 19	1:24,000	Shows stratified drift. For Rhode Island part of quadrangle.
	1974	HB 7	1:24,000	Shows stratified-drift deposits. For Tenmile Basin and coastal areas.
Bedrock geology	1961	WSP 1499-A	1:362,100	Generalized bedrock map. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1977	OFR 77-816	1:31,250	Handwritten information on a topographic base. Plates on file at U.S. Geological Survey National Center Library, Reston, Va.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic log for 1 well. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. For Rhode Island part of quadrangle. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 19 wells. Lithologic logs for 21 wells. For Tenmile Basin and coastal areas.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1962	GWM 19	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 9 wells. For Tenmile Basin and coastal areas.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 17 wells. For Tenmile Basin and coastal areas.
Water-table contours	1962	GWM 19	1:24,000	Contours in stratified drift, 10 ft interval. Data on wells collected chiefly in 1961.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Abbott Run, Blackstone, and Tenmile Basins and coastal areas.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer tests on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer tests on 1 well. Shown in gal/d/ft.

Table 5. Geologic and hydrologic information for the Attleboro Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Transmissivity--*Continued*.....	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Abbott Run, Blackstone, and Tenmile Basins and coastal areas.
Drainage divides.....	1974	WRIR 4-74	1:24,000	For Abbott Run, Blackstone, and Tenmile Basins.
	1990	WRIR 89-4164	1:125,000	For Abbott Run and Tenmile Basins. Not on topographic base.
Ground-water reservoirs.....	1974	WRIR 4-74	1:24,000	Yields estimated from mathematical models for Abbott Run and Tenmile ground-water reservoirs.
Induced infiltration	1974	WRIR 4-74	NA	Discussed for Abbott Run.
Ground-water quality	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 1 well.
	1974	WRIR 4-74	various	Major inorganic constituents. For 1 well.
	1974	HB 7	1:24,000	Major inorganic constituents. For 1 well.

Table 6. Geologic and hydrologic information for the Blackstone Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	GB 5	1:15,700	Till and stratified-drift deposits. For the city of Woonsocket.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1962	GWM 19	1:24,000	Till and stratified-drift deposits. For Rhode Island part of quadrangle.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Blackstone Basin.
	1985	RAR 1	1:24,000	Till and stratified-drift deposits. For Blackstone Basin.
Bedrock geology	1950	GB 5	1:15,700	Detailed bedrock map. For the city of Woonsocket.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/ pre-Pennsylvanian contact. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1950	GB 5	1:15,700	Well records show materials penetrated for approximately 20 wells.
			1:12,600	Lithologic logs for 34 wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50 and 50-100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows stratified-drift deposits in ranges of 0-50 and 50-100 ft thick. For Rhode Island part of quadrangle. Not on topographic base.
	1974	WRIR 18-74	1:24,000	Shows areas of till ≥40 ft thick.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 17 wells. Lithologic logs for 46 wells. For Blackstone Basin.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of the saturated zone is composed of silt and clay.
Altitude of bedrock surface	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to bedrock for approximately 20 wells. Bedrock outcrops shown. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1962	GWM 19	1:24,000	Approximate bedrock contours in stratified drift, 50 and 100 ft intervals. Altitude of bedrock surface shown at well locations. Seismic survey lines shown. Bedrock outcrops in stratified drift shown.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 32 wells. For Blackstone Basin.
Water-table altitudes	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to water for approximately 20 wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1962	GWM 19	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.

Table 6. Geologic and hydrologic information for the Blackstone Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Water-table altitudes-- *Continued*	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 51 wells. For Blackstone Basin.
Water-table contours	1962	GWM 19	1:24,000	Approximate contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1961.
	1985	RAR 1	1:24,000	Water-table contours, 10 ft interval. For Blackstone Basin.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Blackstone Basin.
	1974	WRIR 18-74	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Branch Basin.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs. Shown in intervals of 2,500 and 3,000 ft^2/d. For Branch Basin.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Blackstone Basin.
Drainage divides	1974	WRIR 18-74	1:24,000	For Branch Basin.
	1974	HB 7	1:24,000	For Branch Basin.
	1974	WRIR 4-74	1:24,000	For Branch Basin.
	1990	WRIR 89-4164	1:125,000	For Blackstone and Branch Basins. Not on topographic base.
Recharge areas	1985	RAR 1	1:24,000	For Blackstone ground-water reservoir.
Ground-water reservoirs	1974	WRIR 4-74	1:24,000	Yields estimated from analytical models for Lower Branch-Blackstone and Blackstone ground-water reservoirs.
	1985	RAR 1	1:24,000	Shows Blackstone ground-water reservoir.
Ground-water quality	1950	GB 5	1:15,700	Major inorganic constituents, physical properties; for 1 well. Hardness for several wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 3 wells. Not on topographic base.
	1974	HB 7	1:24,000	Major inorganic constituents, physical properties. For 6 wells. For Blackstone Basin.
	1974	WRIR 4-74	1:156,000	Dissolved solids, iron, and manganese trends for 1 well. For Blackstone Basin.
	1974	WRIR 18-74	1:133,300	Major inorganic constituents, physical properties. For 1 well. For Branch Basin.

Table 7. Geologic and hydrologic information for the Block Island Quadrangle

Information	Date	Publication	Scale	Remarks
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island. Shows exposures of unconsolidated Cretaceous rocks on Block Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	PP 424-C	NA	Subsurface profile showing thickness of weathered, unconsolidated, and semi-consolidated zones, and depth to crystalline zone. From seismic surveys.
	1964	GB 14	1:15,000 1:8,000	Records of selected wells show aquifer material. Lithologic logs for 29 wells and test holes. Generalized geologic sections. Well locations not on topographic base.
	1993	OFR 92-155	1:12,000	Lithologic logs for 375 wells and test borings.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1964	GB 14	1:15,000 1:8,000	Well records give land-surface altitude and depth to water.
	1993	OFR 92-155	1:12,000	Water-level measurements for 159 wells.
Water-table contours	1964	GB 14	1:56,320	Contours in lower perched zone, 25 ft interval. Contours in main zone of saturation, 3 ft interval, September 1962. Not on topographic base.
	1994	OFR 92-49	1:12,000	Generalized water-table contours in glacial deposits, 20 ft interval. Water-table altitudes shown at locations for 117 shallow wells (less than 35 ft deep). Data collected 1962, 1988-90.
Hydraulic conductivity	1964	GB 14	1:15,000 1:8,000	Computed from aquifer tests on 13 wells. Shown in $gal/d/ft^2$.
Transmissivity	1964	GB 14	1:15,000 1:8,000	Computed from aquifer tests on 13 wells. Shown in gal/d/ft.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.
	1964	GB 14	1:15,000 1:8,000 1:56,320	Major inorganic constituents, physical properties, for 47 wells. Maps in text show chloride concentrations. Temperature and chloride values for additional wells.
	1993	OFR 92-155	1:12,000	Data for 150 samples. Specific conductance for 52 wells. Data for public-supply wells, 1976-91.

Table 8. Geologic and hydrologic information for the Bristol Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	SC 3	1:33,500	Till and stratified-drift deposits. For towns of Barrington, Warren, and Bristol.
	1954	GB 7	1:31,680	Till and stratified-drift deposits.
	1955	GQ 70	1:31,680	Detailed surficial map. Geology mapped in 1950.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
Bedrock geology	1954	GQ 42	1:31,680	Detailed bedrock map. Geology mapped 1952.
	1954	GB 7	1:31,680	Approximate contact between Carboniferous and pre-Carboniferous bedrock.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/ pre-Pennsylvanian contact. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1979	WSP 2062	NA	Information on bedrock from geophysical logs. For 3 wells.
Subsurface materials	1950	SC 3	1:33,500	Well records show materials penetrated. For 157 wells. For towns of Barrington, Warren, and Bristol.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 7 wells. Not on topographic base.
	1954	GB 7	1:31,680	Records of wells and test borings show principal aquifer for approximately 180 wells and test borings. Lithologic logs for 17 wells. Generalized geologic sections.
	1960	HB 3	1:148,000	Lithologic logs for 2 wells.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
Altitude of bedrock surface	1950	SC 3	1:33,500	Well records give approximate altitude of bedrock surface. For 51 wells. For towns of Barrington, Warren, and Bristol.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface alitude and depth to bedrock. Not on topographic base.
	1954	GB 7	1:31,680	Approximate bedrock contours in stratified drift, 50 ft interval. Bedrock altitude at well locations. Bedrock outcrops in stratified drift shown.
Water-table altitudes	1950	SC 3	1:33,500	Well records give approximate land-surface altitude and depth to water. For 48 wells. For towns of Barrington, Warren, and Bristol.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1954	GB 7	1:31,680	Well records give land-surface altitude and depth to water. For approximately 100 wells.
Saturated thickness	1954	GB 7	1:31,680	Can be estimated from depth to bedrock and depth to water at some well locations.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer tests on 2 wells. Shown in gal/d/ft^2.
Transmissivity	1954	GB 7	1:31,680	Computed from aquifer tests on 2 wells. Shown in gal/d/ft.

Table 8. Geologic and hydrologic information for the Bristol Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Transmissivity--*Continued*.....	1960	HB 3	1:148,000	Computed from aquifer tests on 2 wells. Shown in gal/d/ft.
	1979	WSP 2062	NA	Specific-capacity data from aquifer tests on 2 wells.
Ground-water quality	1950	SC 3	1:33,500	Major inorganic constituents for 7 wells. Saltwater intrusion discussed. For towns of Barrington, Warren, and Bristol.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 5 wells. Not on topographic base.
	1954	GB 7	1:31,680	Major inorganic constituents, physical properties. For 16 wells.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 4 wells.
	1979	WSP 2062	NA	Temperature and specific conductance for 3 wells. Discussion of saltwater intrusion.

Table 9. Geologic and hydrologic information for the Carolina Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 9	1:24,000	Till, stratified drift, and mixed deposits.
	1977	WISR 3	1:12,000	Till, stratified drift, and mixed deposits. For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	Till and stratified-drift, deposits. For Lower Wood Basin.
	1985	WRIR 85-4190	1:36,200	Till, stratified drift, and mixed deposits. For Beaver-Pasquiset Basin.
	1989	WISR 5	1:24,000	Till and stratified-drift deposits. For Upper Wood Basin.
	1990	WRIR 89-4031	1:44,100	Till and stratified-drift deposits. For Lower Wood Basin.
	1993	WRIR 92-4119	1:68,700	Till and stratified-drift deposits. For Upper Wood Basin.
Bedrock geology	1959	GQ 117	1:31,680	Detailed bedrock map. Geology mapped in 1953, 1954, and 1956.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:61,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1974	WSP 2033	1:48,000	Map shows areas where silt or clay layers are reported to separate water-bearing sand and gravel layers.
	1977	WISR 3	1:12,000	Records of wells and test holes show water-bearing materials for approximately 120 wells. Lithologic logs for approximately 90 wells. For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	Records of wells and test holes show water-bearing materials for approximately 300 wells. Lithologic logs for approximately 190 wells. For Lower Wood Basin.
	1985	OFR 84-725	1:2,400	Detailed lithologic logs for approximately 165 wells and test holes. For area near Wood River Junction. Not on topographic base.
	1985	WRIR 85-4190	various	Generalized geologic sections. Lithologic logs for several wells. For Beaver-Pasquiset Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes show principal water-bearing material. For 2 wells. For Upper Wood Basin.
	1990	WRIR 89-4031	NA	Generalized geologic sections. For Lower Wood Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 9	1:24,000	Approximate bedrock contours in stratified drift and mixed deposits, 50 ft interval. Altitude of bedrock surface shown at well locations. Some bedrock altitudes determined by seismic survey. Bedrock outcrops in stratified drift and mixed deposits shown.
	1963	GB 13	1:24,000	From seismic data.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	Records of wells and test holes give land-surface altitude and depth to bedrock surface. For several wells. For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	Well records give land-surface altitude and depth to bedrock. For 40 wells. For Lower Wood Basin.
	1985	OFR 84-725	1:27,000	From seismic refraction data. For area near Wood River Junction.

Table 9. Geologic and hydrologic information for the Carolina Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Altitude of bedrock surface--*Continued*	1985	WRIR 85-4190	various	Generalized geologic sections show depth to bedrock. For Beaver-Pasquiset Basin.
	1990	WRIR 89-4031	NA	Shown in generalized geologic sections. For Lower Wood Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 9	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1955.
	1977	WISR 3	1:12,000	Records of wells and test holes give land-surface altitude and depth to water. For approximately 100 wells. For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	Records of wells and test holes give land-surface altitude and depth to water. For approximately 360 wells. For Lower Wood Basin.
	1985	OFR 84-725	1:2,400	Tables show land-surface altitude and depth to water. Monthly or intermittent water levels from December 1978 to December 1983. For 137 wells. For area near Wood River Junction. Not on topographic base.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to water. For 2 wells. For Upper Wood Basin.
Water-table contours	1960	GWM 9	1:24,000	Approximate water-table contours in stratified drift and mixed deposits, 10 and 20 ft intervals. Data on wells collected chiefly in 1955.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
	1985	WSP 2270	various	For area near Wood River Junction, 2 ft interval. July 1982 to June 1983. Not on topographic base
	1985	WRIR 85-4190	1:36,200	Water-table contours in stratified drift, 5 to 10 ft intervals. August-November, 1975. For Beaver-Pasquiset Basin.
	1990	WRIR 89-4031	1:44,100	Water-table contours in stratified drift, 5 and 10 ft intervals. For Lower Wood Basin.
	1993	WRIR 92-4119	1:54,100	Water-table contours in stratified drift, 10 ft interval. For Upper Wood Basin. Not on topographic base.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
	1985	WRIR 85-4190	1:36,200	Lines of equal saturated thickness, 20 ft interval. For Beaver-Pasquiset Basin. Not on topographic base.
	1990	WRIR 89-4031	1:44,100	Lines of equal saturated thickness, 20 ft interval. For Lower Wood Basin. Not on topographic base.
	1993	WRIR 92-4119	1:54,100	Lines of equal saturated thickness, 20 ft interval. For Upper Wood Basin. Not on topographic base.
Hydraulic conductivity	1990	WRIR 89-4031	NA	Estimated from lithologic log for 1 well. Range of values for horizontal and vertical hydraulic conductivity estimated from aquifer test data for 11 wells. Shown in ft/d. For Lower Wood Basin.
Transmissivity	1974	WSP 2033	1:48,000[1]	Map shows lines of equal transmissivity, intervals of 2,500 and 3,000 ft^2/d. For Lower Pawcatuck Basin.
	1985	WRIR 85-4190	1:36,200	Lines of equal transmissivity, interval of 3,000 ft^2/d. For Beaver-Pasquiset Basin. Not on topographic base. Estimated from lithologic logs and aquifer test data.

Table 9. Geologic and hydrologic information for the Carolina Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Transmissivity--				
Continued	1990	WRIR 89-4031	1:44,100	Estimated from lithologic logs for 12 wells. Table shows range of values estimated from aquifer test data for each of 11 wells. Shown in ft^2/d. Map shows lines of equal transmissivity, interval of 2,000 ft^2/d. For Lower Wood Basin. Not on topographic base.
	1993	WRIR 92-4119	1:54,100	Lines of equal transmissivity, interval of 2,000 ft^2/d. For Upper Wood Basin. Not on topographic base.
Drainage divides	1966	WSP 1821	1:24,000	For small area of Upper Pawcatuck Basin.
	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	For Lower Wood Basin.
	1985	WRIR 85-4190	1:36,200	For Beaver-Pasquiset Basin. Ground-water divide shown where not coincident with surface-water divide.
	1989	WISR 5	1:24,000	For Upper Wood Basin.
	1990	WRIR 89-4031	1:44,100	For Lower Wood Basin.
	1993	WRIR 92-4119	1:68,700	For Upper Wood Basin.
Ground-water reservoirs	1974	WSP 2033	1:48,000	Yields estimated from mathematical models for Beaver-Pasquiset, Lower Wood, and Bradford ground-water reservoirs.
	1977	WISR 3	1:12,000	Well efficiency tests or aquifer tests for 7 sites. For Beaver-Pasquiset ground-water reservoir.
	1980	WISR 4	1:12,000	Well efficiency tests or aquifer tests for 12 sites. Lower Wood ground-water reservoir.
	1985	WRIR 85-4190	various	Aquifer-test data for 9 sites. Estimated potential well yields for 7 sites, under various ground-water-development alternatives, using computer simulation model. For Beaver-Pasquiset ground-water reservoir.
	1990	WRIR 89-4031	NA	Aquifer-test data for 12 sites. Estimated potential well yields at 11 sites, under various ground-water-development alternatives, using computer simulation model. For Lower Wood ground-water reservoir.
Induced infiltration	1974	WSP 2033	1:48,000	Vertical hydraulic conductivity of streambed sediments used to estimate potential recharge by induced infiltration. For Beaver-Pasquiset, Lower Wood, and Bradford ground-water reservoirs.
	1985	WRIR 85-4190	NA	Estimates of amount of induced infiltration under various ground-water-development alternatives. For Beaver-Pasquiset ground-water reservoir.
	1990	WRIR 89-4031	NA	Estimates of amount of induced infiltration under various ground-water development alternatives. For Lower Wood ground-water reservoir.
Ground-water quality	1974	WSP 2033	1:48,000	Major inorganic constituents, physical properties. For 4 wells. For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	Major inorganic constituents, physical properties, detergents, nutrients, total organic carbon. For several wells. For Beaver-Pasquiset Basin.
	1980	WISR 4	1:12,000	Major inorganic constituents, physical properties, detergents, nutrients. For approximately 200 wells. For Lower Wood Basin.

Table 9. Geologic and hydrologic information for the Carolina Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Ground-water quality--*Continued*	1985	OFR 84-725	1:2,400	Major inorganic constituents, trace metals, physical properties, detergents, nutrients, radiochemical constituents, other minor elements. Data collected chiefly April 1981-June 1983. For approximately 120 wells. For area near Wood River Junction. Not on topographic base.
	1985	WSP 2270	various	Maps and cross-sections showing concentrations of strontium-90 and nitrate and values of specific conductance.
	1990	WRIR 89-4031	NA	Summary of major inorganic constituents, physical properties. Iron, manganese, dissolved oxygen, and specific conductance data for 4 wells, 1976-77. Pesticide data for 11 wells, 1984-85. Lines of equal concentration of total aldicarb residues, 1984-85, shown in hydrologic sections; interval 25 µg/L. Selected data for low-level radionuclide contamination site, 1981-82. For Lower Wood Basin.

[1] Computed from specific capacity data for 4 sites, shown in ft^2/d and gal/d/ft.

Table 10. Geologic and hydrologic information for the Chepachet Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GWM 15	1:24,000	Till and stratified-drift deposits.
	1961	GB 12	1:24,800	Till and stratified-drift deposits. Not on topographic base. For Wallum Lake study area.
Bedrock geology	1967	B 1241-G	1:24,000	Detailed bedrock map. Geology mapped in 1956-57 and 1962-64.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 3 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	GB 11	1:38,300	Shows stratified-drift deposits 0-50 ft thick. Not on topographic base.
	1961	GB 12	1:24,800	Well records show water-bearing material for approximately 90 wells. Lithologic logs for 17 wells. For Wallum Lake study area. Not on topographic base. Generalized geologic sections.
	1974	WRIR 18-74	1:24,000	Shows areas of till ≥40 ft thick and areas where till ≥ 40 ft thick is reportedly underlain by stratified sand and gravel.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1961	GWM 15	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown.
	1961	GB 12	1:24,800	Approximate bedrock contours in stratified drift, 50 ft interval. Not on topographic base. For Wallum Lake study area. Well records give land-surface altitude and depth to bedrock.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1961	GWM 15	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1960-61.
Water-table contours	1961	GWM 15	1:24,000	Approximate water-table contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1960-61.
	1961	GB 12	1:24,800	Approximate water-table contours in stratified drift, 40 ft interval. Not on topographic base. For Wallum Lake study area.
Saturated thickness	1974	WRIR 18-74	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Branch Basin.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs and specific capacity data. Shown in ft/d. For 3 wells. For Branch Basin.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs and specific capacity data. Shown in intervals of 2,500 and 3,000 ft^2/d. For Branch Basin.
Drainage divides	1961	GB 12	1:24,800	For subbasin of Quinebaug Basin. Not on topographic base.
	1974	WRIR 18-74	1:24,000	For Branch Basin and subbasins.

Table 10. Geologic and hydrologic information for the Chepachet Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Drainage divides--*Continued*.....	1990	WRIR 89-4164	1:125,000	For Branch and North Branch Pawtuxet Basins. Not on topographic base.
Ground-water reservoirs.....	1974	WRIR 18-74	1:24,000	Yields estimated for the Chepachet, Harrisville, and Oakland areas of the Upper Branch ground-water reservoir, using mathematical models.
Induced infiltration.....	1974	WRIR 18-74	NA	Rates estimated for Branch Basin.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 5 wells. Not on topographic base.
	1961	GB 12	1:24,800	Major inorganic constituents, physical properties. For 5 wells. For Wallum Lake study area.
	1974	WRIR 18-74	1:133,300 1:24,000	Major inorganic constituents, physical properties. For 7 wells. For Branch Basin.

Table 11. Geologic and hydrologic information for the Clayville Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1962	GWM 17	1:24,000	Till and stratified-drift deposits.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:38,300 1:55,500	Shows stratified-drift deposits 0-50 ft thick for part of the quadrangle. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1962	GWM 17	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1962	GWM 17	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.
Water-table contours	1962	GWM 17	1:24,000	Approximate water-table contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1961.
Saturated thickness	1974	WRIR 18-74	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Branch Basin.
Transmissivity	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs. Shown in intervals of 2,500 ft^2/d. For Branch Basin.
Drainage divides	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1974	WRIR 18-74	1:24,000	For Branch Basin.
	1990	WRIR 89-4164	1:125,000	For Branch and North Branch Pawtuxet Basins. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.

Table 12. Geologic and hydrologic information for the Coventry Center Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 8	1:24,000	Till and stratified-drift deposits.
	1966	HB 6	1:24,000	Till and stratified-drift deposits. For South Branch Pawtuxet Basin.
	1989	WISR 5	1:24,000	Till and stratified-drift deposits. For Upper Wood Basin.
	1993	WRIR 92-4119	1:68,700	Till and stratified-drift deposits. For Upper Wood Basin.
Bedrock geology	1963	B 1158-A	1:24,000	Detailed bedrock map. Geology mapped 1956-57.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:55,500 1:61,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1966	HB 6	1:24,000	Records of wells and test borings show water-bearing materials for many wells. For South Branch Pawtuxet Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes show principal water-bearing material. For approximately 30 wells. For Upper Wood Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 8	1:24,000	Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1966	HB 6	1:24,000	Records of wells and test borings give land-surface altitude and depth to bedrock. For many wells. For South Branch Pawtuxet Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 10 wells. For Upper Wood Basin.
	1993	WRIR 92-4119	1:54,100	Bedrock contours, 40 ft interval. For Upper Wood Basin. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 8	1:24,000	Water-table altitudes shown at well locations.
	1966	HB 6	1:24,000	Well records give land-surface altitude and depth to water. For many wells. For South Branch Pawtuxet Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to water. For approximately 20 wells. For Upper Wood Basin.
Water-table contours	1960	GWM 8	1:24,000	Approximate contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1953.
	1993	WRIR 92-4119	1:54,100	Water-table contours in stratified drift, 10 ft interval. For Upper Wood Basin. Not on topographic base.
Saturated thickness	1966	HB 6	1:24,000	Can be estimated from water-table altitude and bedrock altitude at well locations. For South Branch Pawtuxet Basin.
	1993	WRIR 92-4119	1:54,100	Lines of equal saturated thickness, 20 ft interval. For Upper Wood Basin. Not on topographic base.
Hydraulic conductivity	1992	OFR 91-481	NA	Values for till in cm/s for 1 site.
Drainage divides	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.

Table 12. Geologic and hydrologic information for the Coventry Center Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Drainage divides--*Continued*	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1989	WISR 5	1:24,000	For Upper Wood Basin.
	1990	WRIR 89-4164	1:125,000	For North Branch and South Branch Pawtuxet Basins. Not on topographic base.
	1993	WRIR 92-4119	1:68,700	For Upper Wood Basin.
Ground-water quality	1966	HB 6	1:24,000	Major inorganic constituents, physical properties. For 4 wells. For South Branch Pawtuxet Basin.

Table 13. Geologic and hydrologic information for the Crompton Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1956	GQ 94	1:31,680	Detailed surficial map. Geology mapped 1951-52.
	1959	GWM 3	1:24,000	Till and stratified-drift deposits.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1966	HB 6	1:24,000	Till and stratified-drift deposits. For South Branch Pawtuxet Basin.
	1966	WSP 1821	1:24,000	Till and stratified-drift deposits. For small area of Upper Pawcatuck Basin.
	U	RAR 2	1:24,000	Till and stratified-drift deposits. For Hunt Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Bedrock geology	1963	B 1158-B	1:24,000	Detailed bedrock map. Geology mapped 1953-60.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 5 wells. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Shows stratified-drift deposits <50 ft thick. For northeastern Rhode Island.
	1961	GB 11	1:55,500 1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1966	HB 6	1:24,000	Records of wells and test borings show water-bearing materials for many wells. Lithologic logs for many wells. For South Branch Pawtuxet Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 3	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1966	HB 6	1:24,000	Records of wells and test borings give land-surface altitude and depth to bedrock. For many wells. For South Branch Pawtuxet Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 3	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1953.
	1966	HB 6	1:24,000	Well records give land-surface altitude and depth to water. For many wells. For South Branch Pawtuxet Basin.
Water-table contours	1959	GWM 3	1:24,000	Approximate water-table contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1953.
Saturated thickness	1966	HB 6	1:24,000	Can be estimated from water-table altitude and bedrock altitude at well locations. For South Branch Pawtuxet Basin.
Hydraulic conductivity	1966	WSP 1821	1:24,000	Shows stratified drift with average range of 20-100 gal/d/ft^2. For small area of Upper Pawcatuck Basin.
Drainage divides	1963	GB 13	1:24,000	For small part of Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1966	WSP 1821	1:24,000	For small part of Upper Pawcatuck Basin.
	1968	WSP 1775	1:24,000	For Hunt and Maskerchugg Basins.

Table 13. Geologic and hydrologic information for the Crompton Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Drainage divides--*Continued*.....	U	RAR 2	1:24,000	For Hunt and Maskerchugg basins.Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	1990	WRIR 89-4164	1:125,000	For North Branch Pawtuxet, South Branch Pawtuxet, Pawtuxet, Hunt, and Maskerchugg Basins. Not on topographic base.
Recharge areas.....	U	RAR 2	1:24,000	For Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 1 well.
	1966	HB 6	1:24,000	Major inorganic constituents, physical properties. For 12 wells. For South Branch Pawtuxet Basin.

Table 14. Geologic and hydrologic information for the East Greenwich Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1955	GQ 62	1:31,680	Detailed surficial map. Geology mapped 1949.
	1956	GB 8	1:31,680	Till and stratified-drift deposits.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1966	HB 6	1:24,000	Till and stratified-drift deposits. For South Branch Pawtuxet Basin.
	U	RAR 2	1:24,000	Till and stratified-drift deposits. For Hunt and Maskerchugg Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Bedrock geology	1952	GQ 17	1:31,680	Detailed bedrock map. Geology mapped 1948-49.
	1956	GB 8	1:31,680	Approximate contact between Pennsylvanian and pre-Pennsylvanian bedrock shown.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 4 wells. Not on topographic base.
	1956	GB 8	1:31,680	Records of wells and test borings show water-bearing materials for approximately 300 wells. Lithologic logs for 64 wells and test borings. Three generalized geologic sections.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:55,500 1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1966	HB 6	1:24,000	Records of wells and test borings show water-bearing materials. For 10 wells. For South Branch Pawtuxet Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1956	GB 8	1:31,680	Approximate bedrock contours in stratified drift, 50 ft interval. Bedrock altitudes shown at well locations.
	1966	HB 6	1:24,000	Records of wells and test borings give land-surface altitude and depth to bedrock. For 9 wells. For South Branch Pawtuxet Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1956	GB 8	1:31,680	Records of wells and test borings give land-surface altitude and depth to water. For approximately 200 wells and test borings.
	1966	HB 6	1:24,000	Well records give land-surface altitude and depth to water. For 7 wells. For South Branch Pawtuxet Basin.
Water-table contours	1956	GB 8	1:79,000	For area north of Greenwich Bay. Not on topographic base.
	1968	WSP 1775	1:24,000	Water-table contours, 10 and 20 ft intervals. For Hunt and Maskerchugg Basins and coastal areas.
	U	RAR 2	1:24,000	Water-table contours, 10 ft interval. For Hunt and Maskerchugg Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey
Saturated thickness	1956	GB 8	1:31,680	Can be estimated from depth to bedrock and depth to water at well locations.

Table 14. Geologic and hydrologic information for the East Greenwich Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Saturated thickness--*Continued*...	1966	HB 6	1:24,000	Can be estimated from water-table altitude and bedrock altitude at well locations. For South Branch Pawtuxet Basin.
	1968	WSP 1775	1:24,000	Lines of equal saturated thickness, 20 ft interval. For the Hunt and Maskerchugg Basins and coastal areas.
Transmissivity	1968	WSP 1775	1:24,000	Lines of equal transmissivity, 20,000 and 100,000 gal/d/ft intervals. For the Hunt and Maskerchugg Basins and coastal areas.
Drainage divides	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1968	WSP 1775	1:24,000	For Maskerchugg Basin.
	U	RAR 2	1:24,000	For Hunt and Maskerchugg Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	1990	WRIR 89-4164	1:125,000	For Pawtuxet, Buckeye, Maskerchugg, and Hunt Basins. Not on topographic base.
Recharge areas	U	RAR 2	1:24,000	For Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Ground-water reservoirs	1968	WSP 1775	1:24,000	Mathematical model used to evaluate yield for Hunt ground-water reservoir.
	U	RAR 2	1:24,000	Shows Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Induced infiltration	1968	WSP 1775	NA	Potential streambed infiltration rates estimated for the Hunt River.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 6 wells. Not on topographic base.
	1956	GB 8	1:31,680	Major inorganic constituents, physical properties. For 17 wells.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 3 wells.

Table 15. Geologic and hydrologic information for the East Killingly Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1962	GWM 18	1:24,000	Till and stratified-drift deposits. For Rhode Island part of quadrangle.
Bedrock geology	1983	GQ 1571	1:24,000	Detailed bedrock map. Geology mapped 1965-67.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1962	GWM 18	1:24,000	Approximate contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1962	GWM 18	1:24,000	Water-table altitude shown at well locations. Data on wells collected chiefly in 1961.
Water-table contours	1962	GWM 18	1:24,000	Approximate contours in stratified drift, 40 ft interval. Data on wells collected chiefly in 1961.
Drainage divides	1990	WRIR 89-4164	1:125,000	For North Branch Pawtuxet Basin. Not on topographic base.

Table 16. Geologic and hydrologic information for the East Providence Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	SC 3	1:33,500	Till and stratified-drift deposits. For towns of Barrington and Warren.
	1959	GWM 4	1:24,000	Till and stratified-drift deposits.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Tenmile Basin and coastal areas.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1977	OFR 77-816	1:31,250	Handwritten information on a topographic base. Plates on file at U.S. Geological Survey National Center Library, Reston, Va.
Subsurface materials	1950	SC 3	1:33,500	Well records show materials penetrated. For 17 wells. For towns of Barrington and Warren.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 13 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. For Rhode Island part of quadrangle. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 50 wells. Lithologic logs for 109 wells.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay.
Altitude of bedrock surface	1950	SC 3	1:33,500	Well records give approximate altitude of bedrock surface. For 3 wells. For town of Barrington.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 4	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 39 wells. For Tenmile Basin and coastal areas.
Water-table altitudes	1950	SC 3	1:33,500	Well records give approximate land-surface altitude and depth to water. For 2 wells. For towns of Barrington and Warren.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 4	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1952.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 81 wells. For Tenmile Basin and coastal areas.
Water-table contours	1959	GWM 4	1:24,000	Approximate water-table contours in stratified drift, 10 and 20 ft intervals. Data on wells collected chiefly in 1952.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Tenmile Basin and coastal areas.

Table 16. Geologic and hydrologic information for the East Providence Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Tenmile Basin and coastal areas.
Drainage divides	1974	WRIR 4-74	1:24,000	For Tenmile Basin.
	1990	WRIR 89-4164	1:125,000	For Tenmile and Runnins Basins. Not on topographic base.
Ground-water reservoirs	1974	WRIR 4-74	1:24,000	Yield estimated from mathematical model for Tenmile ground-water reservoir.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 5 wells. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 1 well.
	1974	WRIR 4-74	various	Major inorganic constituents for 1 well. Dissolved solids, iron, and manganese trends for 1 well. For Tenmile Basin.
	1974	HB 7	1:24,000	Major inorganic constituents, physical properties. For 14 wells. For Tenmile Basin and coastal areas.

Table 17. Geologic and hydrologic information for the Fall River Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	SC 3	1:33,500	Till and stratified-drift deposits. For towns of Warren and Bristol.
	1955	GQ 70	1:31,680	Detailed surficial map for small area of quadrangle. Geology mapped in 1950.
	1960	GWM 7	1:24,000	Till and stratified-drift deposits.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
Bedrock geology	1954	GQ 42	1:31,680	Detailed bedrock map for small area of quadrangle. Geology mapped in 1952.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1977	OFR 77-816	1:31,250	Handwritten information on a topographic base. Plates on file at U.S. Geological Survey National Center Library, Reston, Va.
Subsurface materials	1950	SC 3	1:33,500	Well records show materials penetrated. For 19 wells. For towns of Warren and Bristol.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 2 wells. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Shows stratified-drift deposits <50 ft thick. For northeastern Rhode Island.
Altitude of bedrock surface	1950	SC 3	1:33,500	Well records give approximate altitude of bedrock surface. For 3 wells. For towns of Warren and Bristol.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 7	1:24,000	Approximate bedrock contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
Water-table altitudes	1950	SC 3	1:33,500	Well records give approximate land-surface altitude and depth to water. For 6 wells. For towns of Warren and Bristol.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 7	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1948 and 1952.
Water-table contours	1960	GWM 7	1:24,000	Approximate water-table contours in stratified drift, 10 ft interval. Data on wells collected chiefly in 1948 and 1952.
Drainage divides	1990	WRIR 89-4164	1:125,000	For Quequechan and Adamsville Basins. Not on topographic base.

Table 18. Geologic and hydrologic information for the Franklin Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	GB 5	1:15,700	Till and stratified-drift deposits. For the city of Woonsocket.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1962	GWM 19	1:24,000	Till and stratified-drift deposits. For Rhode Island part of quadrangle.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Blackstone and Abbott Run Basins.
	1985	RAR 1	1:24,000	Till and stratified-drift deposits. For Blackstone Basin.
Bedrock geology	1950	GB 5	1:15,700	Detailed bedrock map. For the city of Woonsocket.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1977	OFR 77-816	1:31,250	Handwritten information on a topographic base. Plates on file at U.S. Geological Survey National Center Library, Reston, Va.
Subsurface materials	1950	GB 5	1:15,700	Well records show materials penetrated for approximately 20 wells. Lithologic log for 1 well. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50 and 50-100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50 and 50-100 ft. For Rhode Island part of quadrangle. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 11 wells. Lithologic logs for 10 wells. For Blackstone and Abbott Run Basins.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay.
Altitude of bedrock surface	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to bedrock for approximately 20 wells. Bedrock outcrops shown. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1962	GWM 19	1:24,000	Approximate bedrock contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 11 wells. For Blackstone and Abbott Run Basins.
Water-table altitudes	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to water for approximately 20 wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.

Table 18. Geologic and hydrologic information for the Franklin Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Water-table altitudes--				
Continued	1962	GWM 19	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 20 wells. For Blackstone and Abbott Run Basins.
Water-table contours	1962	GWM 19	1:24,000	Contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1961.
	1985	RAR 1	1:24,000	Contour interval 10 ft. For Blackstone Basin.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Blackstone and Abbott Run Basins.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Blackstone and Abbott Run Basins.
Drainage divides	1974	WRIR 4-74	1:24,000	For Blackstone and Abbott Run Basins.
	1985	RAR 1	1:24,000	For Blackstone Basin.
	1990	WRIR 89-4164	1:125,000	For Blackstone and Abbott Run Basins. Not on topographic base.
Recharge areas	1985	RAR 1	1:24,000	For Blackstone ground-water reservoir.
Ground-water reservoirs	1974	WRIR 4-74	1:24,000	Yield estimated from analytical models for Blackstone ground-water reservoir.
	1985	RAR 1	1:24,000	Shows Blackstone ground-water reservoir.
Ground-water quality	1950	GB 5	1:15,700	Major inorganic constituents, physical properties; for 1 well. Hardness for several wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.
	1974	HB 7	1:24,000	Major inorganic constituents, physical properties. For 4 wells. For Blackstone Basin.

Table 19. Geologic and hydrologic information for the Georgiaville Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1950	GB 5	1:15,700	Till and stratified-drift deposits. For the city of Woonsocket.
	1951	GB 4	1:31,680	Detailed surficial map. Geology mapped 1946. Till and stratified-drift deposits on plate with well locations.
	1953	GQ 22	1:31,680	Detailed surficial map. Geology mapped 1946.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Blackstone Basin.
	1985	RAR 1	1:24,000	Till and stratified-drift deposits. For Blackstone Basin.
Bedrock geology	1950	GB 5	1:15,700	Detailed bedrock map. For the city of Woonsocket.
	1951	GB 4	1:31,680	Detailed bedrock map. Geology mapped 1946.
	1952	GQ 16	1:31,680	Detailed bedrock map. Geology mapped 1946.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1950	GB 5	1:15,700	Well records show materials penetrated for 15 wells. For the city of Woonsocket.
	1951	GB 4	1:31,680	Records of wells give materials penetrated for approximately 300 wells. Lithologic logs for 4 wells.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 10 wells. Lithologic logs for 18 wells. For Blackstone Basin.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay. For Blackstone Basin.
Altitude of bedrock surface	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to bedrock for 6 wells. Bedrock outcrops shown. For the city of Woonsocket.
	1951	GB 4	1:31,680	Well records give land-surface altitude and depth to bedrock. Altitude of bedrock surface shown at well locations.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 22 wells. For Blackstone Basin.
Water-table altitudes	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to water for approximately 10 wells. For the city of Woonsocket.
	1951	GB 4	1:31,680	Well records give land-surface altitude and depth to water. For approximately 260 wells.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 33 wells. For Blackstone Basin.

Table 19. Geologic and hydrologic information for the Georgiaville Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Saturated thickness	1974	WRIR 18-74	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Branch Basin.
	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Blackstone Basin.
Hydraulic conductivity	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs and specific capacity data. Shown in ft/d. For 2 wells. For Branch Basin.
	1992	OFR 91-481	NA	Values for till in cm/s for 1 site.
Transmissivity	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs and specific capacity data. Shown in intervals of 2,500 and 3,000 ft^2/d. For Branch Basin.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Blackstone Basin.
Drainage divides	1974	WRIR 18-74	1:24,000	For Branch Basin.
	1974	HB 7	1,24,000	For Blackstone and Branch Basins.
	1974	WRIR 4-74	1:24,000	For Blackstone and Branch Basins.
	1985	RAR 1	1:24,000	For Blackstone Basin.
	1990	WRIR 89-4164	1:125,000	For Branch, Woonasquatucket, Blackstone, and North Branch Pawtuxet Basins. Not on topographic base.
Recharge areas	1985	RAR 1	1:24,000	For Blackstone ground-water reservoir.
Ground-water reservoirs	1974	WRIR 4-74	1:24,000	Yield estimated from mathematical model for Lower Branch-Blackstone ground-water reservoir.
	1974	WRIR 18-74	1:24,000	Yield estimated for part of the Slatersville ground-water reservoir, using a mathematical model.
Induced infiltration	1974	WRIR 18-74	NA	Rates estimated for Branch Basin.
Ground-water quality	1950	GB 5	1:15,700	Hardness for a few wells. For the city of Woonsocket.
	1951	GB 4	1:31,680	Major inorganic constituents, physical properties; for 12 wells. Temperature for 18 wells. Hardness for 16 wells.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 12 wells. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 5 wells.
	1974	HB 7	1:24,000	Major inorganic constituents, physical properties. For 4 wells. For Blackstone Basin.
	1974	WRIR 18-74	1:133,300 1:24,000	Major inorganic constituents, physical properties. For 4 wells. For Branch Basin.
	1974	WRIR 4-74	various	Major inorganic constituents. For 1 well. For Blackstone Basin.

Table 20. Geologic and hydrologic information for the Hope Valley Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1959	GWM 6	1:24,000	Till and stratified-drift deposits.
	1962	GQ 166	1:24,000	Detailed surficial map. Geology mapped 1956-57.
	1966	WSP 1821	1:24,000	Till deposits. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	Till and stratified-drift deposits. For South Branch Pawtuxet Basin.
	1977	WISR 3	1:12,000	Till and stratified-drift deposits. For Beaver Basin.
	1980	WISR 4	1:12,000	Till and stratified-drift deposits. For Lower Wood Basin.
	1989	WISR 5	1:24,000	Till and stratified-drift deposits. For Upper Wood Basin.
	1990	WRIR 89-4031	1:44,100	Till and stratified-drift deposits. For Lower Wood Basin.
	1993	WRIR 92-4119	1:68,700	Till and stratified-drift deposits. For Upper Wood Basin.
Bedrock geology	1958	GQ 105	1:31,680	Detailed bedrock map. Geology mapped 1952-53.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:61,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1963	GB 13	1:24,000	Records of wells show water-bearing materials. For 1 well.
	1966	HB 6	1:24,000	Records of wells and test borings show water-bearing materials. For 30 wells. For South Branch Pawtuxet Basin.
	1974	WSP 2033	1:48,000	Map shows areas where silt or clay layers are reported to separate water-bearing sand and gravel layers.
	1977	WISR 3	1:12,000	Records of wells and test holes show water-bearing materials. For 5 wells. Lithologic log for 1 well. For Beaver Basin.
	1980	WISR 4	1:12,000	Records of wells and test holes show water-bearing materials. For 12 wells. For Lower Wood Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes show principal water-bearing material. For approximately 500 wells. Lithologic logs for approximately 300 wells. Analyses of particle-size distribution for 146 lithologic samples from 11 wells. For Upper Wood Basin.
	1993	WRIR 92-4119	NA	Generalized geologic sections. For Upper Wood Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 6	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1963	GB 13	1:24,000	Records of wells give land-surface altitude and depth to bedrock. For 1 well.
	1966	HB 6	1:24,000	Records of wells and test borings give land-surface altitude and depth to bedrock. For South Branch Pawtuxet Basin.

Table 20. Geologic and hydrologic information for the Hope Valley Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Altitude of bedrock surface--				
Continued	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
	1980	WISR 4	1:12,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 3 wells. For Lower Wood Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For approximately 100 wells. Bedrock altitudes for 36 locations from seismic surveys at 4 sites in stratified-drift aquifer. For Upper Wood Basin.
	1993	WRIR 92-4119	1:54,100	Shown on map, with 20, 40, and 50 ft contour intervals, and in generalized geologic sections. For Upper Wood Basin. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 6	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1955.
	1963	GB 13	1:24,000	Well records give land-surface altitude and depth to water. For 1 well.
	1966	HB 6	1:24,000	Well records give land-surface altitude and depth to water. For South Branch Pawtuxet Basin.
	1977	WISR 3	1:12,000	Well records give land-surface altitude and depth to water. For 3 wells. For Beaver Basin.
	1980	WISR 4	1:12,000	Records of wells and test holes give land-surface altitude and depth to water. For 15 wells. For Lower Wood Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to water. For approximately 400 wells. Water-level records for 40 observation wells; data collected primarily 1981-86. For Upper Wood Basin.
Water-table contours	1959	GWM 6	1:24,000	Approximate contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1955.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
	1993	WRIR 92-4119	1:54,100	Water-table contours in stratified drift, 10 ft interval. For Upper Wood Basin. Not on topographic base.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
	1993	WRIR 92-4119	1:54,100	Lines of equal saturated thickness, 20 and 40 ft intervals. For Upper Wood Basin. Not on topographic base.
Hydraulic conductivity	1993	WRIR 92-4119	NA	Range of values for horizontal and vertical hydraulic conductivity estimated from aquifer-test data for 11 sites. Shown in ft/d. For Upper Wood Basin.
Transmissivity	1974	WSP 2033	1:48,000	Lines of equal transmissivity, intervals of 2,500 and 3,000 ft^2/d. For Lower Pawcatuck Basin.

Table 20. Geologic and hydrologic information for the Hope Valley Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Transmissivity--*Continued*	1993	WRIR 92-4119	1:54,100	Table shows range of values estimated from aquifer test data for each of 11 sites. Shown in ft^2/d. Map shows lines of equal transmissivity with variable interval in ft^2/d. For Upper Wood Basin. Not on topographic base.
Drainage divides	1963	GB 13	1:24,000	For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	For Upper Pawcatuck Basin and subbasin.
	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	For Beaver Basin.
	1980	WISR 4	1:12,000	For Lower Wood Basin.
	1989	WISR 5	1:24,000	For Upper Wood Basin.
	1990	WRIR 89-4031	1:44,100	For Lower Wood Basin.
	1990	WRIR 89-4164	1:125,000	For South Branch Pawtuxet Basin. Not on topographic base.
	1993	WRIR 92-4119	1:68,700	For Upper Wood Basin.
Recharge areas	1993	WRIR 92-4119	variable	Maps show estimated areas in stratified drift contributing water to pumped wells under various ground-water-development alternatives, using computer simulation model. For Upper Wood ground-water reservoir. Not on topographic base.
Ground-water reservoirs	1974	WSP 2033	1:48,000	Yield estimated from mathematical model for Upper Wood ground-water reservoir.
	1989	WISR 5	1:24,000	Aquifer-test data for 11 sites, 1980-86. For Upper Wood ground-water reservoir.
	1993	WRIR 92-4119	NA	Aquifer-test data for 11 sites. Estimated potential yields at 11 sites, under various ground-water-development alternatives, using computer simulation model. For Upper Wood ground-water reservoir.
Induced infiltration	1974	WSP 2033	1:48,000	Vertical hydraulic conductivity of streambed sediments used to estimate potential recharge by induced infiltration. For Upper Wood ground-water reservoir.
	1993	WRIR 92-4119	NA	Estimates of amount of induced infiltration under various ground-water-development alternatives. For Upper Wood ground-water reservoir.
Ground-water quality	1966	HB 6	1:24,000	Major inorganic constituents, physical properties. For 1 well. For South Branch Pawtuxet Basin.
	1974	WSP 2033	1:48,000	Major inorganic constituents, physical properties. For 3 wells. For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	Major inorganic constituents, physical properties. For 1 well. For Beaver Basin.
	1989	WISR 5	1:24,000	Major inorganic constituents, physical properties, nutrients. For approximately 50 wells. Trace metals, other trace constituents, and pesticides for 4 wells. For Upper Wood Basin.
	1993	WRIR 92-4119	NA	Summary of major inorganic constituents, physical properties. Selected trace elements and synthetic organic compounds, for 5 wells. For Upper Wood Basin.

Table 21. Geologic and hydrologic information for the Kingston Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1956	GB 9	1:31,680	Till, stratified drift, and mixed deposits.
	1960	B 1071-I	1:24,000	Detailed surficial map. Geology mapped 1954, 1958.
	1966	WSP 1821	1:24,000	Till, stratified drift, and mixed deposits. Lacustrine deposits differentiated. For Upper Pawcatuck Basin.
	1976	WISR 2	1:12,000	Till and stratified-drift deposits. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Till, stratified drift, and mixed deposits. For Beaver-Pasquiset Basin.
	1985	WRIR 85-4190	1:36,200	Till, stratified drift, and mixed deposits. For Beaver-Pasquiset Basin.
	U	RAR 3	1:24,000	Till and stratified-drift deposits. For Chipuxet Basin. Unpublished report available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Bedrock geology	1964	B 1158-E	1:24,000	Detailed bedrock map. Geology mapped 1957-58.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 13 wells. Not on topographic base.
	1956	GB 9	1:31,680	Records of wells and test borings show water-bearing materials for approximately 500 wells. Lithologic logs available for 36 wells.
	1960	HB 3	1:148,000	Lithologic logs for 2 wells.
	1961	GB 11	1:61,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1963	GB 13	1:24,000	Well records show water-bearing materials. Lithologic logs for some wells.
	1966	WSP 1821	1:24,000	Shows approximate area of buried lens of coarse sand and gravel.
	1976	WISR 2	1:12,000	Records of wells and test holes show water-bearing material for 124 wells. Detailed lithologic logs for 94 wells. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Records of wells and test holes show water-bearing materials for approximately 40 wells. Detailed lithologic logs for several wells. For Beaver-Pasquiset Basin.
	1977	OFR 77-561	NA	Generalized geologic section near University of Rhode Island supply wells. Lithologic logs for 16 wells. For Chipuxet Basin.
	1984	WRIR 83-4231	NA	Generalized geologic sections. Lithologic logs for some wells. For Chipuxet Basin.
	1985	WRIR 84-4254	NA	Generalized geologic sections. For Chipuxet Basin.
	1985	WRIR 85-4190	NA	Generalized geologic sections. For Beaver-Pasquiset Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1956	GB 9	1:31,680	Approximate bedrock contours in stratified drift and mixed deposits, 50 ft interval. Altitude of bedrock at well locations.
	1963	GB 13	1:24,000	Altitude of bedrock determined from seismic data and well records.

Table 21. Geologic and hydrologic information for the Kingston Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Altitude of bedrock surface--*Continued*	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
	1976	WISR 2	1:12,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 2 wells. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 10 wells. For Beaver-Pasquiset Basin.
	1985	WRIR 84-4254	1:24,000	Bedrock contours, 25 and 50 ft intervals. For Chipuxet Basin.
	1985	WRIR 85-4190	NA	Generalized geologic sections show depth to bedrock. For Beaver-Pasquiset Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1956	GB 9	1:31,680	Records give land-surface altitude and depth to water for more than 400 wells.
	1963	GB 13	1:24,000	Well records give land-surface altitude and depth to water. Table of extreme values for some wells.
	1976	WISR 2	1:12,000	Records of wells and test holes give land-surface altitude and depth to water. For 138 wells. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Records of wells and test holes give land-surface altitude and depth to water. For 40 wells. For Beaver-Pasquiset Basin.
Water-table contours	1956	GB 9	1:31,680	Approximate contours, 10 and 20 ft intervals. Not on topographic base.
	1966	WSP 1821	1:24,000	Contours in stratified drift, 5 ft interval. Water-table altitude shown at well locations. For Upper Pawcatuck Basin.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
	1985	WRIR 84-4254	1:24,000	Water-table contours in stratified drift, August 1959; 1, 2, and 5 ft intervals. For Chipuxet Basin.
	1985	WRIR 85-4190	1:36,200	Water-table contours in stratified drift, 5 and 10 ft intervals. August-November 1975. For Beaver-Pasquiset Basin.
	U	RAR 3	1:24,000	Water-table contours; 1, 2, and 5 ft intervals. For Chipuxet Basin. Unpublished report available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Saturated thickness	1966	WSP 1821	1:24,000	Lines of equal saturated thickness, 25 and 50 ft intervals. For Upper Pawcatuck Basin.
	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
	1985	WRIR 85-4190	1:36,200	Lines of equal saturated thickness, 20 ft interval. For Beaver-Pasquiset Basin. Not on topographic base.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
	1963	GB 13	1:24,000	Computed from laboratory analysis of sediment samples. Shown in gal/d/ft^2.

Table 21. Geologic and hydrologic information for the Kingston Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Hydraulic conductivity--				
Continued	1966	WSP 1821	1:24,000	Computed from aquifer tests, laboratory tests, and specific capacity data. Shown in ranges of <1-20, 20-100, 100-1,000, and >1,000 gal/d/ft^2. Well locations shown. For Upper Pawcatuck Basin.
	1984	WRIR 83-4231	various	Estimated from lithologic logs and from aquifer-test data. Shown in ft/d. For 14 sites. For Chipuxet Basin.
	1985	WRIR 84-4254	1:24,000	Estimated from lithologic logs and aquifer-test data. Shown in ranges of 5-50, 50-100, and >100 ft/d. For Chipuxet Basin. Maps in text show ranges for 4 layers within aquifer.
	1992	OFR 91-481	NA	Values for till in cm/s for 4 sites.
Transmissivity	1956	GB 9	1:31,680	Computed from specific capacity data from aquifer tests on 5 wells. Shown in gal/d/ft.
	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1966	WSP 1821	1:24,000	Estimated from aquifer tests and specific capacity data. Shown in gal/d/ft. For Upper Pawcatuck Basin.
	1974	WSP 2033	1:48,000	Lines of equal transmissivity, intervals of 2,500 and 3,000 ft^2/d. For Lower Pawcatuck Basin.
	1977	OFR 77-561	NA	Computed from aquifer test on 1 well. Shown in ft^2/d. For Chipuxet Basin.
	1984	WRIR 83-4231	NA	Estimated from lithologic logs, specific capacity data, and aquifer-test data. Shown in ft^2/d. For 16 sites. For Chipuxet Basin.
	1985	WRIR 84-4254	NA	Estimated from lithologic logs, specific capacity data, and aquifer-test data. For 16 sites. For Chipuxet Basin.
	1985	WRIR 85-4190	1:36,200	Lines of equal transmissivity, interval of 3,000 ft^2/d. For Beaver-Pasquiset Basin. Not on topographic base. Estimated from lithologic logs and aquifer-test data.
Drainage divides	1963	GB 13	1:24,000	Ground-water and surface-water divides. For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Ground-water and surface-water divides. For Upper Pawcatuck Basin and subbasins.
	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	For Beaver-Pasquiset Basin.
	1985	WRIR 85-4190	1:36,200	For Beaver-Pasquiset Basin. Ground-water divide shown where not coincident with surface-water divide.
	U	RAR 3	1:24,000	For Chipuxet Basin. Unpublished report available at Rhode Island Subdistrict Office, U.S. Geological Survey
Recharge areas	U	RAR 3	1:24,000	For Chipuxet ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Ground-water reservoirs	1966	WSP 1821	NA	Yields estimated for Chipuxet and Usquepaug-Queen ground-water reservoirs.
	1974	WSP 2033	1:48,000	Yield estimated from mathematical model for Beaver-Pasquiset ground-water reservoir.

Table 21. Geologic and hydrologic information for the Kingston Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Ground-water reservoirs--*Continued*	1976	WISR 2	various	Aquifer tests for 13 sites. For Chipuxet ground-water reservoir.
	1977	WISR 3	1:12,000	Well efficiency tests and aquifer test for 1 site. For Beaver-Pasquiset ground-water reservoir.
	1985	WRIR 85-4190	various	Aquifer-test data for 1 site. Estimated potential well yields for 1 site, under various ground-water-development alternatives, using computer simulation model. For Beaver-Pasquiset ground-water reservoir.
	1985	WRIR 84-4254	various	Aquifer-test data for 16 sites. Estimated potential well yields for 8 sites, under various ground-water-development alternatives, using computer simulation model. For Chipuxet ground-water reservoir.
	U	RAR 3	1:24,000	Shows Chipuxet ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Induced infiltration	1974	WSP 2033	1:48,000	Vertical hydraulic conductivity of streambed sediments used to estimate potential recharge by induced infiltration. For Beaver-Pasquiset ground-water reservoir.
	1977	OFR 77-561	NA	Discussed for public-supply wells near pond on Chipuxet River.
	1985	WRIR 85-4190	NA	Estimates of amount of induced infiltration under various ground-water-development alternatives. For Beaver-Pasquiset ground-water reservoir.
	1985	WRIR 84-4254	NA	Effects of various ground-water-development alternatives discussed. For Chipuxet ground-water reservoir.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 6 wells. Not on topographic base.
	1956	GB 9	1:31,680	Major inorganic constituents, physical properties. For 13 wells.
	1963	GB 13	1:24,000	Major inorganic constituents, physical properties. For approximately 20 wells. For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Major inorganic constituents, physical properties. For 17 wells. For Upper Pawcatuck Basin.
	1976	WISR 2	1:12,000	Major inorganic constituents, physical properties. For 60 wells. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Major inorganic constituents, physical properties, nutrients. For a few wells. For Beaver-Pasquiset Basin.
	1977	OFR 77-561	NA	Major inorganic constituents and physical properties for 15 wells; data collected 1973-75. Manganese data for 3 public-supply wells, 1960-75. Iron and manganese content of sediment samples from aquifer; from 4 wells; data collected 1974. For Chipuxet Basin.
	1985	WRIR 84-4254	NA	Summary of major inorganic constituents, physical properties, detergents. Values for nitrate at 1 aquifer-test site. For Chipuxet Basin.

Table 22. Geologic and hydrologic information for the Mystic Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1971	GQ 940	1:24,000	Detailed surficial map.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1975	OFR 75-602	1:24,000	Preliminary bedrock map. Handwritten information on topographic base. No bedrock information for Rhode Island part of quadrangle.
Subsurface materials	1953	GB 6	1:122,000	Lithologic log for 1 well. Not on topographic base.

Table 23. Geologic and hydrologic information for the Narragansett Pier Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1959	GWM 5	1:24,000	Till, stratified drift, and mixed deposits.
	1961	GQ 140	1:24,000	Detailed surficial map. Geology mapped in 1955-56.
Bedrock geology	1956	GQ 91	1:31,680	Detailed bedrock map. Geology mapped in 1953.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 15 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 5	1:24,000	Approximate bedrock contours in stratified drift and mixed deposits, 50 ft interval. Altitude of bedrock surface shown at well locations.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 5	1:24,000	Water-table altitudes shown at wells locations.
Water-table contours	1959	GWM 5	1:24,000	Approximate water-table contours in stratified drift and mixed deposits, 10 and 20 ft intervals. Data on wells collected chiefly in 1955.
Hydraulic conductivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
Drainage divides	1990	WRIR 89-4164	1:125,000	For small coastal basins. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.

Table 24. Geologic and hydrologic information for the Newport Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1964	GWM 20	1:24,000	Till and stratified-drift deposits. Not on topographic base.
Bedrock geology	1964	GWM 20	1:24,000	Approximate contact between Pennsylvanian and pre-Pennsylvanian bedrock shown. Not on topographic base.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1975	OFR 75-562	1:24,000	Preliminary bedrock map. Handwritten information on topographic base.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1964	GWM 20	1:24,000	Bedrock outcrops shown. Depth to bedrock shown at well locations. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land surface-altitude and depth to water. Not on topographic base.
	1964	GWM 20	1:24,000	Depth to water shown at well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Saturated thickness	1964	GWM 20	1:24,000	Can be estimated from depth to bedrock and depth to water at some well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Drainage divides	1990	WRIR 89-4164	1:125,000	For small coastal basins. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 2 wells. Not on topographic base.
	1964	GWM 20	1:24,000	Shows wells that yield salty water or water with high iron content. Not on topographic base.

Table 25. Geologic and hydrologic information for the North Scituate Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 12	1:24,000	Till and stratified-drift deposits.
	1961	GQ 143	1:24,000	Detailed surficial map. Geology mapped in 1958.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
Bedrock geology	1951	GQ 13	1:31,680	Detailed bedrock map. Geology mapped in 1946-47.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic log for 1 well. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows stratified-drift deposits 0-50 ft thick. Not on topgraphic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 12	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown in stratified drift.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 12	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1958.
Water-table contours	1960	GWM 12	1:24,000	Approximate water-table contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1958.
Drainage divides	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1990	WRIR 89-4164	1:125,000	For Woonasquatucket, Pocasset, and North Branch Pawtuxet Basins. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.

Table 26. Geologic and hydrologic information for the Oneco Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 10	1:24,000	Till and stratified-drift deposits.
	1971	GQ 917	1:24,000	Detailed surficial map. Geology mapped in 1963 and 1968.
	1989	WISR 5	1:24,000	Till and stratified-drift deposits. For Upper Wood Basin.
	1993	WRIR 92-4119	1:68,700	Till and stratified-drift deposits. For Upper Wood Basin.
Bedrock geology	1971	GQ 930	1:24,000	Detailed bedrock map. Geology mapped in 1962-63 and 1967-68.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:61,400	Shows stratified-drift deposits 0-50 ft thick for part of quadrangle. Not on topographic base.
	1989	WISR 5	1:24,000	Records of wells and test holes show principal water-bearing material for approximately 20 wells. Lithologic logs for 2 wells. For Upper Wood Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 10	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 3 wells. For Upper Wood Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 10	1:24,000	Water-table altitudes shown at well locations. Data on wells and test borings collected chiefly in 1960.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to water. For 10 wells. Water-level records for 1 observation well; data collected 1969-88. For Upper Wood Basin.
Water-table contours	1960	GWM 10	1:24,000	Approximate water-table contours in stratified drift, 20 ft interval. Data on wells and test borings collected chiefly in 1960.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
Transmissivity	1974	WSP 2033	1:48,000	Lines of equal transmissivity, interval of 2,500 ft^2/d. For Lower Pawcatuck Basin.
Drainage divides	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1989	WISR 5	1:24,000	For Upper Wood Basin.
	1993	WRIR 92-4119	1:68,700	For Upper Wood Basin.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.
	1974	WSP 2033	1:48,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.

Table 27. Geologic and hydrologic information for the Oxford Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GB 12	1:24,800	Till areas. For Wallum Lake study area. Not on topographic base.
	1962	GWM 19	1:24,000	Till and bedrock areas. For Rhode Island part of quadrangle.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1976	OFR 76-622	1:24,000	Preliminary bedrock map. Handwritten information on topographic base.
Altitude of bedrock surface	1962	GWM 19	1:24,000	Altitude of bedrock shown for 2 wells.
Water-table altitudes	1962	GWM 19	1:24,000	Water-table altitudes shown for 2 wells. Data on wells collected chiefly in 1961.
Drainage divides	1961	GB 12	1:24,800	For subbasin of Quinebaug Basin. Not on topographic base.
	1974	WRIR 18-74	1:24,000	For Branch Basin and subbasins.
	1990	WRIR 89-4164	1:125,000	For Blackstone Basin. Not on topographic base.

Table 28. Geologic and hydrologic information for the Pawtucket Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1948	GB 3	1:31,680	Detailed surficial map. Geology mapped 1945-46. Till and stratified-drift deposits on plate with well locations.
	1949	GQ 2	1:31,680	Detailed surficial map. Geology mapped 1945-46.
	1950	GB 5	1:15,700	Till and stratified-drift deposits. For the city of Woonsocket.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits. For northeastern Rhode Island.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Blackstone, Moshassuck, and Abbott Run Basins.
	1985	RAR 1	1:24,000	Till and stratified-drift deposits. For Blackstone and Moshassuck Basins.
Bedrock geology	1948	GB 3	1:31,680	Detailed bedrock map. Geology mapped 1945-46.
	1949	GQ 1	1:31,680	Detailed bedrock map. Geology mapped 1945-46.
	1950	GB 5	1:15,700	Detailed bedrock map. For the city of Woonsocket.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact. For northeastern Rhode Island.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1948	GB 3	1:31,680	Records of wells show materials penetrated for approximately 300 wells. Lithologic logs for 23 wells.
	1950	GB 5	1:15,700	Records of wells give materials penetrated for 4 wells. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 6 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic logs for 3 wells.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft. For northeastern Rhode Island.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 210 wells. Lithologic logs for 173 wells. For Blackstone, Moshassuck, and Abbott Run Basins.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay.
Altitude of bedrock surface	1948	GB 3	1:31,680	Approximate bedrock contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown on surficial map.
	1950	GB 5	1:15,700	Bedrock altitude given for 3 wells. Bedrock outcrops shown. For the city of Woonsocket.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 89 wells. For Blackstone, Moshassuck, and Abbott Run Basins.
Water-table altitudes	1948	GB 3	1:31,680	Well records give land-surface altitude and depth to water for approximately 275 wells.
	1950	GB 5	1:15,700	Well records give land-surface altitude and depth to water for 3 wells. For the city of Woonsocket.

Table 28. Geologic and hydrologic information for the Pawtucket Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Water-table altitudes--				
Continued	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 212 wells. For Blackstone, Moshassuck, and Abbott Run Basins.
Water-table contours	1985	RAR 1	1:24,000	Water-table contours, 10 and 20 ft intervals. For Blackstone and Moshassuck Basins.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Blackstone, Moshassuck, and Abbott Run Basins and coastal areas.
Hydraulic conductivity	1948	GB 3	1:31,680	Computed from aquifer test on 1 well. Shown in gal/d/ft2.
	1960	HB 3	1:148,000	Computed from aquifer tests on 3 wells. Shown in gal/d/ft2.
Transmissivity	1948	GB 3	1:31,680	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1960	HB 3	1:148,000	Computed from aquifer tests on 3 wells. Shown in gal/d/ft.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Blackstone, Moshassuck, and Abbott Run Basins and coastal areas.
Drainage divides	1974	HB 7	1:24,000	For Blackstone and Moshassuck Basins.
	1974	WRIR 4-74	1:24,000	For Blackstone, Moshassuck, and Abbott Run Basins.
	1985	RAR 1	1:24,000	For Blackstone and Moshassuck Basins.
	1990	WRIR 89-4164	1:125,000	For Blackstone, Abbott Run, Woonasquatucket, and Moshassuck Basins. Not on topographic base.
Recharge areas	1985	RAR 1	1:24,000	For Blackstone and Lower Blackstone-Moshassuck ground-water reservoirs.
Ground-water reservoirs	1974	WRIR 4-74	1:24,000	Yields estimated from mathematical models for Blackstone, Lower Blackstone-Moshassuck, and Abbott Run ground-water reservoirs.
	1985	RAR 1	1:24,000	Shows Blackstone and Lower Blackstone-Moshassuck ground-water reservoirs.
Induced infiltration	1974	WRIR 4-74	NA	Streambed infiltration rates estimated for 2 sites on Blackstone River.
Ground-water quality	1948	GB 3	1:31,680	Major inorganic constituents, physical properties. For 15 wells. Hardness for approximately 50 wells.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 21 wells. Not on topographic base.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 8 wells.
	1974	HB 7	1:24,000	Major inorganic constituents, physical properties. For 51 wells. For Blackstone, Moshassuck, and Abbott Run Basins.
	1974	WRIR 4-74	various	Major inorganic constituents for 4 wells. Dissolved solids, iron, and manganese trends for 4 wells. Manganese, iron, pH, temperature, and specific conductance for several wells. For Blackstone and Abbott Run Basins.

Table 29. Geologic and hydrologic information for the Providence Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1956	GQ 84	1:31,680	Detailed surficial map. Geology mapped 1948 and 1952.
	1959	GB 10	1:31,680	Till and stratified-drift deposits.
	1961	WSP 1499-A	1:125,000	Till and stratified-drift deposits.
	1974	HB 7	1:24,000	Till and stratified-drift deposits. For Moshassuck Basin and coastal areas.
	1985	RAR 1	1:24,000	Till and stratified-drift deposits. For Moshassuck and Lower Blackstone Basins.
Bedrock geology	1959	GB 10	1:31,680	Approximate Pennsylvanian/pre-Pennsylvanian contact shown.
	1959	GQ 118	1:24,000	Detailed bedrock map. Geology mapped 1952-57.
	1961	WSP 1499-A	1:362,100	Generalized bedrock map shows Pennsylvanian/pre-Pennsylvanian contact.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1945	GB 1	1:31,680 1:14,400	Lithologic logs for 67 wells and test borings.
	1945	GB 2	1:31,680 1:14,400	Records of wells show geologic materials for approximately 200 wells. Lithologic logs for approximately 150 wells.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 13 wells. Not on topographic base.
	1959	GB 10	1:31,680	Records of wells and test borings show water-bearing materials. Lithologic logs for approximately 130 wells. Generalized geologic sections.
	1960	HB 3	1:148,000	Lithologic logs for 5 wells.
	1961	WSP 1499-A	1:125,000	Shows thickness of stratified-drift deposits in ranges of <50, 50-100, and >100 ft.
	1961	GB 11	1:62,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1974	HB 7	1:24,000	Records of wells and test holes show water-bearing materials for 25 wells. Lithologic logs for 84 wells. For Moshassuck Basin and coastal areas.
	1974	WRIR 4-74	1:24,000	Shows areas where substantial part of saturated zone is composed of silt and clay.
Altitude of bedrock surface	1945	GB 1	1:31,680 1:14,400	Approximate bedrock contours, 100 ft interval. Altitude of bedrock surface shown at well locations. Seismic survey lines shown. Bedrock altitudes for approximately 160 sites.
	1945	GB 2	1:31,680	Approximate bedrock contours, 100 ft interval. Altitude of bedrock surface shown at well locations. Seismic survey lines shown.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GB 10	1:31,680	Approximate bedrock contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations. Seismic sites shown.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock for 62 wells. For Moshassuck Basin and coastal areas.

Table 29. Geologic and hydrologic information for the Providence Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Water-table altitudes	1945	GB 2	1:31,680 1:14,400	Well records give depth to water for about 75 wells. Land-surface altitudes for most sites given in well logs or in GB 1.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GB 10	1:31,680	Well records give land-surface altitude and depth to water.
	1974	HB 7	1:24,000	Records of wells and test holes give land-surface altitude and depth to water for 61 wells. For Moshassuck Basin and coastal areas.
Water-table contours	1959	GB 10	1:31,680	Water-table contours in stratified drift, 10 ft interval. Data collected in 1956. Not on topographic base.
	1985	RAR 1	1:24,000	Water-table contours, 10 and 20 ft intervals. For Moshassuck and Lower Blackstone Basins and coastal areas.
Saturated thickness	1974	WRIR 4-74	1:24,000	Lines of equal saturated thickness; 10, 30, and 40 ft intervals. For Moshassuck Basin and coastal areas.
Hydraulic conductivity	1959	GB 10	1:31,680	Computed from aquifer tests on 5 wells. Shown in $gal/d/ft^2$.
	1960	HB 3	1:148,000	Computed from aquifer tests on 5 wells. Shown in $gal/d/ft^2$.
Transmissivity	1947	SC 1	NA	Computed from aquifer-test data for 1 site. Shown in gal/d/ft.
	1959	GB 10	1:31,680	Computed from aquifer tests on 5 wells. Shown in gal/d/ft.
	1960	HB 3	1:148,000	Computed from aquifer tests on 5 wells. Shown in gal/d/ft.
	1974	WRIR 4-74	1:24,000	Estimated from lithologic logs, aquifer tests, or specific capacity data. Shown in intervals of 4,000 ft^2/d (30,000 gal/d/ft). For Moshassuck Basin and coastal areas.
Drainage divides	1974	WRIR 4-74	1:24,000	For Moshassuck Basin.
	1985	RAR 1	1:24,000	For Moshassuck and Lower Blackstone Basins.
	1990	WRIR 89-4164	1:125,000	For Moshassuck, Woonasquatucket, Pocasset, and Pawtuxet Basins. Not on topographic base.
Recharge areas	1985	RAR 1	1:24,000	For Lower Blackstone-Moshassuck ground-water reservoir.
Ground-water reservoirs	1947	SC 1	NA	Aquifer-test data for 1 site. For Providence-Warwick ground-water reservoir.
	1974	WRIR 4-74	1:24,000	Yield estimated from mathematical models for Lower Blackstone-Moshassuck ground-water reservoir.
	1985	RAR 1	1:24,000	Shows Lower Blackstone-Moshassuck ground-water reservoir.
Induced infiltration	1959	GB 10	NA	Discussed for Woonasquatucket and Pawtuxet Rivers.
	1974	WRIR 4-74	NA	Streambed infiltration rate estimated for Moshassuck River.
Ground-water quality	1945	GB 1	1:31,680 1:14,400	Major inorganic constituents, physical properties. For 5 wells.
	1945	GB 2	1:31,680 1:14,400	Well records give hardness for about 30 wells.

Table 29. Geologic and hydrologic information for the Providence Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Ground-water quality--*Continued*	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 13 wells. Not on topographic base.
	1959	GB 10	1:31,680	Major inorganic constituents, physical properties. For 27 wells. Chloride concentrations for several additional wells. Chloride fluctuations for 3 wells.
	1961	WSP 1499-A	1:125,000	Major inorganic constituents, physical properties. For 7 wells.
	1974	HB 7	1:24,000	Major inorganic constituents. For 9 wells. For Moshassuck Basin and coastal areas.

Table 30. Geologic and hydrologic information for the Prudence Island Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1964	GWM 20	1:24,000	Till and stratified-drift deposits. Not on topographic base.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1975	OFR 75-562	1:24,000	Preliminary bedrock map. Handwritten information on topographic base.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1964	GWM 20	1:24,000	Shows areas of till greater than 50 ft thick. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1964	GWM 20	1:24,000	Bedrock outcrops shown. Depth to bedrock shown at well locations. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1964	GWM 20	1:24,000	Depth to water shown at well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Saturated thickness	1964	GWM 20	1:24,000	Can be estimated from depth to bedrock and depth to water at some well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Drainage divides	1990	WRIR 89-4164	1:125,000	For small coastal basins. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 2 wells. Not on topographic base.
	1964	GWM 20	1:24,000	Shows wells that yield water with high iron content and wells that yield salty water. Not on topographic base.

Table 31. Geologic and hydrologic information for the Quonochontaug Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 11	1:24,000	Till, stratified drift, and mixed deposits.
Bedrock geology	1959	GQ 117	1:31,680	Detailed bedrock map. Geology mapped in 1953, 1954, and 1956.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 7 wells. Not on topographic base.
	1961	GB 11	1:61,400	Shows stratified-drift deposits 0-50 ft thick. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 11	1:24,000	Approximate bedrock contours, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 11	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1955.
Water-table contours	1960	GWM 11	1:24,000	Approximate water-table contours, 10 and 20 ft intervals. Data on wells collected chiefly in 1955.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
Drainage divides	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.

Table 32. Geologic and hydrologic information for the Sakonnet Point Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1964	GWM 21	1:24,000	Till and stratified-drift deposits. Not on topographic base.
Bedrock geology	1964	GWM 21	1:24,000	Approximate contact between Pennsylvanian and pre-Pennsylvanian bedrock. Not on topographic base.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1975	OFR 75-562	1:24,000	Preliminary bedrock map for northwest corner of quadrangle. Handwritten information on topographic base.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1964	GWM 21	1:24,000	Shows area of till greater than 50 ft thick. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1964	GWM 21	1:24,000	Bedrock outcrops shown. Depth to bedrock shown at well locations. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1964	GWM 21	1:24,000	Depth to water shown at well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Saturated thickness	1964	GWM 21	1:24,000	Can be estimated from depth to bedrock and depth to water at some well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Drainage divides	1990	WRIR 89-4164	1:125,000	For coastal areas. Not on topographic base.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 2 wells. Not on topographic base.
	1964	GWM 21	1:24,000	Shows wells that yield water with high iron content and wells that yield salty water.

Table 33. Geologic and hydrologic information for the Slocum Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1948	SC 2	1:53,400	Till and stratified-drift deposits. For area near Exeter. Not on topographic base.
	1957	GQ 106	1:31,680	Detailed surficial map. Geology mapped 1953-54.
	1959	GWM 2	1:24,000	Till, stratified drift, and mixed deposits.
	1966	HB 6	1:24,000	Till and stratified-drift deposits. For the South Branch Pawtuxet Basin.
	1966	WSP 1821	1:24,000	Till, stratified drift, and mixed deposits. For Upper Pawcatuck Basin.
	1976	WISR 2	1:12,000	Till and stratified-drift deposits. For Chipuxet Basin.
	1977	WISR 3	1:12,000	Till areas. For Beaver Basin.
	U	RAR 2	1:24,000	Till and stratified-drift deposits. For Hunt and Annaquatucket Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	Till and stratified-drift deposits. For Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Bedrock geology	1959	GQ 114	1:31,680	Detailed bedrock map. Geology mapped 1953-54.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1948	SC 2	1:53,400	Generalized geologic sections. Records of wells show materials penetrated for 32 wells. Lithologic logs for 7 wells. Analyses of particle-size distribution for 42 lithologic samples from 5 wells. For area near Exeter. Not on topographic base.
	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 4 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	GB 11	1:61,400	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and ≥100 ft. Not on topographic base.
	1963	GB 13	1:24,000	Well records show water-bearing material. Lithologic logs for 17 wells.
	1966	HB 6	1:24,000	Records of wells and test borings show water-bearing materials for 13 wells. For South Branch Pawtuxet Basin.
	1976	WISR 2	1:12,000	Records of wells and test holes show water-bearing materials for 12 wells. Lithologic logs for 5 wells. For Chipuxet Basin.
	1984	WRIR 83-4231	various	Generalized geologic sections. For Chipuxet Basin.
	1985	WRIR 84-4254	various	Generalized geologic sections. For Chipuxet Basin.
Altitude of bedrock surface	1948	SC 2	1:53,400	Well records give approximate land-surface altitude and depth to bedrock for 4 wells. Generalized geologic sections show approximate altitude of bedrock. For area near Exeter. Not on topographic base.
	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 2	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift shown.

Table 33. Geologic and hydrologic information for the Slocum Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Altitude of bedrock surface--*Continued*	1963	GB 13	1:24,000	From seismic data and well records. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	Records of wells and test borings give land-surface altitude and depth to bedrock. For several wells. For South Branch Pawtuxet Basin.
	1976	WISR 2	1:12,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 1 well. For Chipuxet Basin.
	1985	WRIR 84-4254	1:24,000	Bedrock contours, 25 and 50 ft intervals. For Chipuxet Basin.
Water-table altitudes	1948	SC 2	1:53,400	Well records give approximate land-surface altitude and depth to water for 15 wells. For area near Exeter. Not on topographic base.
	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 2	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1954.
	1963	GB 13	1:24,000	Well records give land-surface altitude and depth to water. Table of extreme values for some wells. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	Well records give land-surface altitude and depth to water. For several wells. For South Branch Pawtuxet Basin.
	1976	WISR 2	1:12,000	Descriptions of wells and test holes give land-surface altitude and depth to water. For 13 wells. For Chipuxet Basin.
Water-table contours	1959	GWM 2	1:24,000	Approximate water-table contours in stratified drift and mixed deposits, 20 ft interval. Data on wells collected chiefly in 1954.
	1966	WSP 1821	1:24,000	Water-table contours, 5 ft interval. Based on measurements made August 23, 1959. Water-table altitudes shown at well locations. For Upper Pawcatuck Basin.
	1968	WSP 1775	1:24,000	Approximate contours, 20 ft interval. For Hunt and Annaquatucket Basins.
	1985	WRIR 84-4254	1:24,000	Water-table contours, 1, 2, and 5 ft intervals. For Chipuxet Basin.
	U	RAR 2	1:24,000	Water-table contours, 20 ft interval. For Hunt, Annaquatucket, and Queen Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	Water-table contours, 2 and 5 ft intervals. For Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Saturated thickness	1966	WSP 1821	1:24,000	Lines of equal saturated thickness, 25 and 50 ft intervals. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	Can be estimated from water-table altitude and bedrock altitude at well locations. For South Branch Pawtuxet Basin.
	1968	WSP 1775	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Hunt and Annaquatucket Basins.

Table 33. Geologic and hydrologic information for the Slocum Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Hydraulic conductivity	1948	SC 2	NA	Estimated from aquifer-test data for 1 site. Shown in gal/d/ft^2. For area near Exeter.
	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
	1963	GB 13	1:24,000	From laboratory analysis of sediment samples. Shown in gal/d/ft^2. For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Computed from aquifer tests, laboratory tests, and specific capacity data. Shown in ranges of <1-20, 20-100, 100-1,000, and >1,000 gal/d/ft^2. Well locations shown. For Upper Pawcatuck Basin.
	1984	WRIR 83-4231	NA	Estimated from lithologic logs and aquifer test data. Shown in ft/d. For 2 sites. For Chipuxet Basin.
	1985	WRIR 84-4254	1:24,000	Estimated from lithologic logs and aquifer-test data. Shown in ranges of 5-50, 50-100, and >100 ft/d. For Chipuxet Basin. Maps in text show ranges for 4 layers within aquifer.
	1992	OFR 91-481	NA	Values for till in cm/s for 1 site.
Transmissivity	1948	SC 2	NA	Estimated from aquifer-test data for 1 site. Shown in gal/d/ft. For area near Exeter.
	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1966	WSP 1821	NA	Estimated from aquifer tests and specific capacity data, Shown in gal/d/ft. For Upper Pawcatuck Basin.
	1968	WSP 1775	1:24,000	Lines of equal transmissivity, interval of 20,000 gal/d/ft. For Hunt and Annaquatucket Basins.
	1984	WRIR 83-4231	NA	Estimated from lithologic logs, specific capacity data, and aquifer-test data. Shown in ft^2/d. For 2 sites. For Chipuxet Basin.
	1985	WRIR 84-4254	NA	Estimated from lithologic logs, specific capacity data, and aquifer-test data. For 2 sites. For Chipuxet Basin.
Drainage divides	1963	GB 13	1:24,000	Ground-water and surface-water divides. For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Ground-water and surface-water divides. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	For South Branch Pawtuxet Basin.
	1968	WSP 1775	1:24,000	For Hunt and Annaquatucket Basins.
	1974	WSP 2033	1:48,000	For small area of Lower Pawcatuck Basin.
	1977	WISR 3	1:12,000	For Beaver Basin.
	1990	WRIR 89-4164	1:125,000	For South Branch Pawtuxet, Hunt, and Annaquatucket Basins. Not on topographic base.
	U	RAR 2	1:24,000	For Hunt and Annaquatucket Basins. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	For Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Recharge areas	U	RAR 2	1:24,000	For Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	For Chipuxet ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.

Table 33. Geologic and hydrologic information for the Slocum Quadrangle--*Continued*

Information	Date	Publication	Scale	Remarks
Ground-water reservoirs.....	1948	SC 2	NA	Aquifer-test data for 1 site near Exeter. For Usquepaug-Queen ground-water reservoir.
	1966	WSP 1821	1:24,000	Yields estimated for Usquepaug-Queen and Chipuxet ground-water reservoirs.
	1976	WISR 2	1:12,000	Aquifer test for 1 site. For Chipuxet ground-water reservoir.
	1985	WRIR 84-4254	NA	Estimated potential well yield for 1 site in Chipuxet ground-water reservoir.
	U	RAR 2	1:24,000	Shows Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	Shows Chipuxet ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Ground-water quality	1948	SC 2	1:53,400	Major inorganic constituents for 5 wells. For area near Exeter. Not on topographic base.
	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 1 well. Not on topographic base.
	1963	GB 13	1:24,000	Major inorganic constituents, physical properties. For 16 wells. For Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Dissolved solids, total hardness, iron, pH. For 12 wells. For Upper Pawcatuck Basin.
	1966	HB 6	1:24,000	Major inorganic constituents, physical properties. For 1 well. For South Branch Pawtuxet Basin.
	1976	WISR 2	1:12,000	Major inorganic constituents, physical properties. For 2 wells. For Chipuxet Basin.
	1985	WRIR 84-4254	NA	Summary of major inorganic constituents, detergents, and physical properties. For Chipuxet Basin.

Table 34. Geologic and hydrologic information for the Thompson Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GB 12	1:24,800	Till and stratified-drift deposits. For Wallum Lake study area. Not on topographic base.
	1962	GWM 18	1:24,000	Till and stratified-drift deposits. For Rhode Island part of quadrangle.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
	1974	GQ 1165	1:24,000	Detailed bedrock map. Geology mapped in 1960, 1962, and 1968.
Subsurface materials	1953	GB 6	1:122,000	Well records show principal aquifer for 1 well. Not on topographic base.
	1961	GB 12	1:24,800	Well records give water-bearing materials for approximately 15 wells. For Wallum Lake study area. Not on topographic base. Generalized geologic section.
	1974	WRIR 18-74	1:24,000	Shows areas of till ≥40 ft thick.
Altitude of bedrock surface	1953	GB 6	1:122,000	Record for 1 well gives land-surface altitude and depth to bedrock. Not on topographic base.
	1961	GB 12	1:24,800	Altitude of bedrock surface given at well locations. Wallum Lake study area. Not on topographic base.
	1962	GWM 18	1:24,000	Approximate contours in stratified drift, 100 ft interval. Altitude of bedrock surface shown at well locations.
Water-table altitudes	1953	GB 6	1:122,000	Record for 1 well gives land-surface altitude and depth to water. Not on topographic base.
	1962	GWM 18	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.
Water-table contours	1961	GB 12	1:24,800	Approximate water-table contours, 40 ft interval. For Wallum Lake study area. Not on topographic base.
	1962	GWM 18	1:24,000	Approximate water-table contours in stratified drift, 40 ft interval. Data on wells collected chiefly in 1961.
Transmissivity	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs. Shown in intervals of 2,500 ft^2/d. For Branch Basin.
Drainage divides	1961	GB 12	1:24,800	For subbasins of Quinebaug Basin. Not on topographic base.
	1974	WRIR 18-74	1:24,000	For Branch Basin.
	1990	WRIR 89-4164	1:125,000	For Blackstone, Branch, and North Branch Pawtuxet Basins. Not on topographic base.

Table 35. Geologic and hydrologic information for the Tiverton Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1964	GWM 21	1:24,000	Till, stratified drift, and mixed deposits. Not on topographic base.
Bedrock geology	1964	B 1158-D	1:24,000	Detailed bedrock map. Geology mapped in 1955.
	1964	GWM 21	1:24,000	Approximate contact between Pennsylvanian and pre-Pennsylvanian bedrock. Not on topographic base.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 2 wells. Not on topographic base.
	1964	GWM 21	1:24,000	Shows areas of till greater than 50 ft thick. Generalized geologic section for small area. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1964	GWM 21	1:24,000	Depth to bedrock shown at well locations. Bedrock outcrops shown. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1964	GWM 21	1:24,000	Depth to water shown at well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Saturated thickness	1964	GWM 21	1:24,000	Can be estimated from depth to bedrock and depth to water at some well locations. Not on topographic base. Data on wells collected chiefly in 1949 and 1963.
Drainage divides	1990	WRIR 89-4164	1:125,000	For Adamsville Basin and coastal areas. Not on topographic base.
Ground-water quality	1964	GWM 21	1:24,000	Shows wells that yield water with high iron content and wells that yield salty water.

Table 36. Geologic and hydrologic information for the Uxbridge Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GB 12	1:24,800	Till and stratified-drift deposits. For Wallum Lake study area. Not on topographic base.
	1962	GWM 19	1:24,000	Till and stratified-drift deposits. For Rhode Island part of quadrangle.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1961	GB 12	1:24,800	Well records show water-bearing materials for a few wells. For Wallum Lake study area. Not on topographic base.
Altitude of bedrock surface	1961	GB 12	1:24,800	Approximate bedrock contours in stratified drift, 50 ft interval. For Wallum Lake study area. Not on topographic base.
	1962	GWM 19	1:24,000	Altitude of bedrock surface shown at 3 wells.
Water-table altitudes	1962	GWM 19	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1961.
Water-table contours	1961	GB 12	1:24,800	Approximate water-table contours, 40 ft interval. For Wallum Lake study area. Not on topographic base.
	1962	GWM 19	1:24,000	Approximate contours in stratified drift, 20 ft interval. Data on wells collected chiefly in 1961.
Saturated thickness	1974	WRIR 18-74	1:24,000	Approximate lines of equal saturated thickness, 20 ft interval. For Branch Basin.
Transmissivity	1974	WRIR 18-74	1:24,000	Estimated from lithologic logs. Shown in intervals of 2,500 ft^2/d. For Branch Basin.
Drainage divides	1974	WRIR 18-74	1:24,000	For Branch Basin and subbasins.
	1990	WRIR 89-4164	1:125,000	For Branch Basin. Not on topographic base.
Induced infiltration	1974	WRIR 18-74	NA	Rates estimated for Branch Basin.

Table 37. Geologic and hydrologic information for the Voluntown Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1960	GWM 13	1:24,000	Till and stratified-drift deposits.
	1965	GQ 469	1:24,000	Detailed surficial map. Geology mapped 1962-64.
	1989	WISR 5	1:24,000	Till and stratified-drift deposits. For Upper Wood Basin.
	1993	WRIR 92-4119	1:68,700	Till and stratified-drift deposits. For Upper Wood Basin.
Bedrock geology	1965	GQ 436	1:24,000	Detailed bedrock map. Geology mapped 1962-63.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Not on topographic base.
	1961	GB 11	1:61,400	Shows stratified-drift deposits 0-50 ft thick. For Rhode Island part of quadrangle. Not on topographic base.
	1989	WISR 5	1:24,000	Records of wells and test holes show principal water-bearing material. For approximately 50 wells. For Upper Wood Basin.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1960	GWM 13	1:24,000	Altitude of bedrock surface shown at well locations.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to bedrock. For 7 wells. For Upper Wood Basin.
	1993	WRIR 92-4119	1:54,100	Bedrock contours, 40 and 50 ft intervals. For Upper Wood Basin. Not on topographic base.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1960	GWM 13	1:24,000	Water-table altitudes shown at well locations. Data on wells collected in 1953 and 1959.
	1989	WISR 5	1:24,000	Records of wells and test holes give land-surface altitude and depth to water. For approximately 40 wells. For Upper Wood Basin.
Water-table contours	1960	GWM 13	1:24,000	Approximate contour in area near Beach Pond. Data on wells collected in 1953 and 1959.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
	1993	WRIR 92-4119	1:54,100	Water-table contours in stratified drift, 10 ft interval. For Upper Wood Basin. Not on topographic base.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
Drainage divides	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.
	1989	WISR 5	1:24,000	For Upper Wood Basin.
	1993	WRIR 92-4119	1:68,700	For Upper Wood Basin.
Ground-water quality	1989	WISR 5	1:24,000	Major inorganic constituents, physical properties, nutrients. For 2 wells. For Upper Wood Basin.

Table 38. Geologic and hydrologic information for the Watch Hill Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1961	GWM 14	1:24,000	Shows till, stratified drift, and mixed deposits.
	1965	GQ 410	1:24,000	Detailed surficial map. Geology mapped 1956, 1959-60.
Bedrock geology	1967	GQ 655	1:24,000	Detailed bedrock map. Geology mapped 1958-59.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 7 wells. Not on topographic base.
	1961	GB 11	1:61,400	Shows stratified-drift deposits 0-50 ft thick. For Rhode Island part of quadrangle. Not on topographic base.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1961	GWM 14	1:24,000	Approximate bedrock contours in stratified drift and mixed deposits, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops shown.
	1974	WSP 2033	1:48,000	Approximate bedrock contours, 50 ft interval. For Lower Pawcatuck Basin.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1961	GWM 14	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1958.
Water-table contours	1961	GWM 14	1:24,000	Approximate water-table contours in stratified drift and mixed deposits, 10 and 20 ft intervals. Data on wells collected chiefly in 1958.
	1974	WSP 2033	1:48,000	Water-table contours in stratified drift, 10 ft interval. For Lower Pawcatuck Basin.
Saturated thickness	1974	WSP 2033	1:48,000	Lines of equal saturated thickness, 20 ft interval. For Lower Pawcatuck Basin.
Transmissivity	1974	WSP 2033	1:48,000	Lines of equal transmissivity, interval of 2,500 ft^2/d. For Lower Pawcatuck Basin.
Drainage divides	1974	WSP 2033	1:48,000	For Lower Pawcatuck Basin.

Table 39. Geologic and hydrologic information for the Westport Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1964	GWM 21	1:24,000	Till and stratified-drift deposits for Rhode Island part of quadrangle. Not on topographic base.
Bedrock geology	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.

Table 40. Geologic and hydrologic information for the Wickford Quadrangle

Information	Date	Publication	Scale	Remarks
Surficial geology	1959	GWM 1	1:24,000	Till, stratified drift, and mixed deposits.
	1961	GQ 136	1:24,000	Detailed surficial map. Geology mapped 1954-55.
	1966	WSP 1821	1:24,000	Till and stratified-drift deposits. For small area of Upper Pawcatuck Basin.
	U	RAR 2	1:24,000	Till and stratified-drift deposits. For Hunt Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	Till and stratified-drift deposits. For Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Bedrock geology	1964	B 1158-C	1:24,000	Detailed bedrock map. Geology mapped in 1956.
	1971	B 1295	1:125,000	Bedrock geologic map of Rhode Island.
Subsurface materials	1953	GB 6	1:122,000	Records of wells and test borings show principal aquifer. Lithologic logs for 15 wells. Not on topographic base.
	1960	HB 3	1:148,000	Lithologic log for 1 well.
	1961	GB 11	1:55,500	Shows thickness of stratified-drift deposits in ranges of 0-50, 50-100, and >100 ft. Not on topographic base.
	1963	GB 13	1:24,000	Records of wells show water-bearing material. For 4 wells.
Altitude of bedrock surface	1953	GB 6	1:122,000	Records of wells and test borings give land-surface altitude and depth to bedrock. Not on topographic base.
	1959	GWM 1	1:24,000	Approximate bedrock contours in stratified drift, 50 ft interval. Altitude of bedrock surface shown at well locations. Bedrock outcrops in stratified drift and mixed deposits shown.
	1963	GB 13	1:24,000	From seismic data and well records. For 2 locations.
Water-table altitudes	1953	GB 6	1:122,000	Well records give land-surface altitude and depth to water. Not on topographic base.
	1959	GWM 1	1:24,000	Water-table altitudes shown at well locations. Data on wells collected chiefly in 1954.
	1963	GB 13	1:24,000	Well records give land-surface altitude and depth to water. For 2 wells.
Water-table contours	1959	GWM 1	1:24,000	Approximate contours in stratified drift and mixed deposits, 10 and 20 ft intervals. Data on wells collected chiefly in 1954.
	1966	WSP 1821	1:24,000	Water-table contours, 5 ft interval. Based on measurements made August 23, 1959. For small area of Upper Pawcatuck Basin.
	1968	WSP 1775	1:24,000	10 and 20 ft intervals. For Hunt, Annaquatucket, and Pettaquamscutt Basins and coastal areas.
	U	RAR 2	1:24,000	Water-table contours, 10 and 20 ft intervals. For Hunt Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	Water-table contours, 5 ft interval. For Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Saturated thickness	1966	WSP 1821	1:24,000	Lines of equal saturated thickness, 25 and 50 ft intervals. For small area of Upper Pawcatuck Basin.

Table 40. Geologic and hydrologic information for the Wickford Quadrangle--Continued

Information	Date	Publication	Scale	Remarks
Hydraulic conductivity	1968	WSP 1775	1:24,000	Lines of equal saturated thickness, 20 ft interval. For Hunt, Annaquatucket, and Pettaquamscutt Basins and coastal areas.
	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft^2.
	1966	WSP 1821	1:24,000	Shows stratified drift with average range of 20-100 gal/d/ft^2. For small area of Upper Pawcatuck Basin.
Transmissivity	1960	HB 3	1:148,000	Computed from aquifer test on 1 well. Shown in gal/d/ft.
	1968	WSP 1775	1:24,000	Lines of equal transmissivity, 20,000 and 100,000 gal/d/ft intervals. For Hunt, Annaquatucket, and Pettaquamscutt Basins and coastal areas.
Drainage divides	1963	GB 13	1:24,000	Ground-water and surface-water divides. For small area of Upper Pawcatuck Basin.
	1966	WSP 1821	1:24,000	Ground-water and surface-water divides. For small area of Upper Pawcatuck Basin.
	1968	WSP 1775	1:24,000	For Annaquatucket and Pettaquamscutt Basins.
	1990	WRIR 89-4164	1:125,000	For Hunt and Annaquatucket Basins and small coastal basins. Not on topographic base.
	U	RAR 2	1:24,000	For Hunt Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	For small area of Chipuxet Basin. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Recharge areas	U	RAR 2	1:24,000	For Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
	U	RAR 3	1:24,000	For Chipuxet ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Ground-water reservoirs	1968	WSP 1775	1:24,000	Mathematical model used to evaluate yields for Hunt and Annaquatucket ground-water reservoirs. Yield estimated for Pettaquamscutt ground-water reservoir.
	U	RAR 2	1:24,000	Shows Hunt ground-water reservoir. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey.
Induced infiltration	1968	WSP 1775	NA	Potential streambed infiltration rates estimated for the Hunt River.
Ground-water quality	1953	GB 6	1:122,000	Major inorganic constituents, physical properties. For 2 wells. Not on topographic base.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island

[Publications have been prepared and published by the U.S. Geological Survey, or prepared by the Survey and published in cooperation with State agencies. Many publications have multiple maps or plates, which may be at different scales. Where a scale is shown in this table, it is the scale for the major map or plate in the report. Publications are listed numerically within each publication series, to facilitate reference from tables 4 through 40. The abbreviation used for each publication series is shown in parentheses]

	BULLETINS (B)
Published by the U.S. Geological Survey.	
101	Insect fauna of the Rhode Island coal field, by S.H. Scudder, 1893, 27 p.
311	The green schists and associated granites and porphyries of Rhode Island, by B.K. Emerson and J.H. Perry, 1907, 74 p., 1 pl., scale 1:62,500.
354	The chief commercial granites of Massachusetts, New Hampshire, and Rhode Island, by T.N. Dale, 1908, 228 p.
597	Geology of Massachusetts and Rhode Island, by B.K. Emerson, 1917, 289 p., 10 pl., scale 1:250,000.
615	Rhode Island coal, by G.H. Ashley, 1915, 62 p., 1 pl., scale 1:312,500.
1071-I	Surficial geology of the Kingston quadrangle, Rhode Island, by C.A. Kaye, 1960 (1961), p. 341-394, 3 pl., scale 1:24,000.
1158-A	Bedrock geology of the Coventry Center quadrangle, Rhode Island, by G.E. Moore, Jr., 1963, p. A1-A24, 1 pl., scale 1:24,000.
1158-B	Bedrock geology of the Crompton quadrangle, Rhode Island, by A.W. Quinn, 1963, p. B1-B17, 1 pl., scale 1:24,000.
1158-C	Bedrock geology of the Wickford quadrangle, Rhode Island, by R.B. Williams, 1964, p. C1-C15, 1 pl., scale 1:24,000.
1158-D	Bedrock geology of the Tiverton quadrangle, Rhode Island-Massachusetts, by S.J. Pollock, 1964, p. D1-D16, 1 pl., scale 1:24,000.
1158-E	Bedrock geology of the Kingston quadrangle, Rhode Island, by G.E. Moore, Jr., 1964, p. E1-E21, 1 pl., scale 1:24,000.
1241-G	Bedrock geology of the Chepachet quadrangle, Providence County, Rhode Island, by A.W. Quinn, 1967, p. G1-G26, 1 pl., scale 1:24,000.
1295	Bedrock geology of Rhode Island, by A.W. Quinn, 1971, 68 p., 1 pl., scale 1:125,000.
	GEOLOGIC QUADRANGLES (GQ)
1	Bedrock geology of the Pawtucket quadrangle, Rhode Island-Massachusetts, by A.W. Quinn, R.G. Ray, and W.L. Seymour, 1949, scale 1:31,680.
2	Surficial geology of the Pawtucket quadrangle, Rhode Island-Massachusetts, by N.E. Chute, 1949, scale 1:31,680.
13	Bedrock geology of the North Scituate quadrangle, Rhode Island, by A.W. Quinn, 1951, scale 1:31,680.
16	Bedrock geology of the Georgiaville quadrangle, Rhode Island, by G.M. Richmond, 1952, scale 1:31,680.
17	Bedrock geology of the East Greenwich quadrangle, Rhode Island, by A.W. Quinn, 1952, scale 1:31,680.
22	Surficial geology of the Georgiaville quadrangle, Rhode Island, by G.M. Richmond, 1953, scale 1:31,680.
42	Bedrock geology of the Bristol quadrangle and vicinity, Rhode Island-Massachusetts, by A.W. Quinn and G.H. Springer, 1954, scale 1:31,680.
62	Surficial geology of the East Greenwich quadrangle, Rhode Island, by J.H. Smith, 1955, scale 1:31,680.
70	Surficial geology of the Bristol quadrangle and vicinity, Rhode Island-Massachusetts, by J.H. Smith, 1955, scale 1:31,680.
84	Surficial geology of the Providence quadrangle, Rhode Island, by J.H. Smith, 1956, scale 1:31,680.
91	Bedrock geology of the Narragansett Pier quadrangle, Rhode Island, by D.R. Nichols, 1956, scale 1:31,680.
94	Surficial geology of the Crompton quadrangle, Rhode Island, by J.H. Smith, 1956, scale 1:31,680.
105	Bedrock geology of the Hope Valley quadrangle, Rhode Island, by G.E. Moore, Jr., 1958, scale 1:31,680.
106	Surficial geology of the Slocum quadrangle, Rhode Island, by W.R. Power, Jr., 1957, scale 1:31,680.
114	Bedrock geology of the Slocum quadrangle, Rhode Island, by W.R. Power, Jr., 1959, scale 1:31,680.
117	Bedrock geology of the Carolina and Quonochontaug quadrangles, Rhode Island, by G.E. Moore, Jr., 1959, scale 1:31,680.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

	GEOLOGIC QUADRANGLES (GQ)--*Continued*
Published by the U.S. Geological Survey.	
118	Bedrock geology of the Providence quadrangle, Rhode Island, by A.W. Quinn, 1959, scale 1:24,000.
136	Surficial geology of the Wickford quadrangle, Rhode Island, by J.P. Schafer, 1961, scale 1:24,000.
140	Surficial geology of the Narragansett Pier quadrangle, Rhode Island, by J.P. Schafer, 1961, scale 1:24,000.
143	Surficial geology of the North Scituate quadrangle, Rhode Island, by C.S. Robinson, 1961, scale 1:24,000.
166	Surficial geology of the Hope Valley quadrangle, Rhode Island, by T.G. Feininger, 1962, scale 1:24,000.
403	Bedrock geologic map of the Ashaway quadrangle, Connecticut-Rhode Island, by T. Feininger, 1965, scale 1:24,000.
410	Surficial geologic map of the Watch Hill quadrangle, Rhode Island-Connecticut, by J.P. Schafer, 1965, scale 1:24,000.
436	Bedrock geologic map of the Voluntown quadrangle, New London County, Connecticut, and Kent and Washington Counties, Rhode Island, by T. Feininger, 1965, scale 1:24,000.
469	Surficial geologic map of the Voluntown quadrangle, Connecticut-Rhode Island, by T. Feininger, 1965, scale 1:24,000.
655	Bedrock geologic map of the Watch Hill quadrangle, Washington County, Rhode Island, and New London County, Connecticut, by G.E. Moore, Jr., 1967, scale 1:24,000.
712	Surficial geologic map of the Ashaway quadrangle, Connecticut-Rhode Island, by J.P. Schafer, 1968, scale 1:24,000.
917	Surficial geologic map of the Oneco quadrangle, Connecticut-Rhode Island, by D.S. Harwood and Richard Goldsmith, 1971, scale 1:24,000.
930	Bedrock geologic map of the Oneco quadrangle, Connecticut-Rhode Island, by D.S. Harwood and Richard Goldsmith, 1971, scale 1:24,000.
940	Surficial geologic map of the Mystic quadrangle, Connecticut, New York, and Rhode Island, by J.E. Upson, 1971, scale 1:24,000.
1165	Bedrock geologic map of the Thompson quadrangle, Windham County, Connecticut, and Providence County, Rhode Island, by H.R. Dixon, 1974, scale 1:24,000.
1571	Bedrock geologic map of the East Killingly quadrangle, Connecticut and Rhode Island, by G.E. Moore, Jr., 1983, scale 1:24,000.
	MONOGRAPHS (M)
33	Geology of the Narragansett Basin, by N.S. Shaler, J.B. Woodworth, and A.F. Foerste, 1899, 402 p.
	OPEN-FILE REPORTS (OFR)
75-562	Preliminary bedrock geologic maps of the Newport and Prudence Island quadrangles and part of the Sakonnet Point quadrangle, Rhode Island, by G.E. Moore, Jr., 1975, 12 p., 3 pl., scale 1:24,000.
75-602	Preliminary bedrock geologic map of the Mystic quadrangle, New London County, Conn.; Southold County, N.Y.; and Washington County, R.I., by Richard Goldsmith, 1975, 16 p., 1 pl., scale 1:24,000.
76-622	Preliminary bedrock geologic map of the Oxford quadrangle, Massachusetts, Connecticut, and Rhode Island, by P.J. Barosh, 1976, 5 p., 1 pl., scale 1:24,000.
77-131	Preliminary map showing bedrock geology superposed on an aeromagnetic base map of the Worcester region, Massachusetts, Connecticut, and Rhode Island, by P.J. Barosh, 1977, 46 p., 2 pl., scale 1:125,000.
77-561	Preliminary study of sources and processes of enrichment of manganese in water from University of Rhode Island supply wells, by W.D. Silvey and H.E. Johnston, 1977, 33 p.
77-816	Report on the bedrock geology of the Narragansett Basin, Massachusetts and Rhode Island, by P.C. Lyons, 1977, scale 1:31,250.
84-725	Geohydrologic data for a low-level radioactive contamination site, Wood River Junction, Rhode Island, by B.J. Ryan, R.M. DeSaulniers, D.A. Bristol, Jr., and P.M. Barlow, 1985, 296 p., 1 pl.
88-139	U.S. Geological Survey ground-water studies in Rhode Island, by H.E. Johnston, 1988, 1 sheet.
91-199	Ground-water resources of Rhode Island, by E.C.T. Trench, 1991, 169 p.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

OPEN-FILE REPORTS--*Continued*

Published by the U.S. Geological Survey.

91-481 The stratigraphy and hydraulic properties of tills in southern New England, by R.L. Melvin, Virginia de Lima, and B.D. Stone, 1992, 53 p.

92-49 Generalized water-table map of Block Island, Rhode Island, by H.E. Johnston and A.I. Veeger, 1994, 1 sheet, scale 1:12,000.

92-155 Hydrologic data for Block Island, Rhode Island, by Emily Burns, 1993, 141 p., 1 pl., scale 1:12,000.

PROFESSIONAL PAPERS (PP)

424-C A seismic record of Mesozoic rocks on Block Island, Rhode Island, by C.R. Tuttle, W.B. Allen, and G.W. Hahn, 1961, p. C254-C256.

813-T Summary appraisals of the Nation's ground-water resources—New England Region, by Allen Sinnott, 1982, p. T1-T23.

WATER DATA REPORTS

National ground-water records prior to water year 1975 were reported by geographic area in a 5-year Water-Supply Paper series. Data for Rhode Island are in Water-Supply Papers entitled "Ground-Water Levels in the United States, Northeastern States."

MA-RI-75-1 Water resources data for Massachusetts and Rhode Island, water year 1975, by U.S. Geological Survey, 1976, 321 p.

MA-RI-76-1 Water resources data for Massachusetts and Rhode Island, water year 1976, by U.S. Geological Survey, 1977, 300 p.

MA-RI-77-1 Water resources data for Massachusetts and Rhode Island, water year 1977, by U.S. Geological Survey, 1978, 304 p.

MA-RI-78-1 Water resources data for Massachusetts and Rhode Island, water year 1978, by U.S. Geological Survey, 1979, 310 p.

MA-RI-79-1 Water resources data for Massachusetts and Rhode Island, water year 1979, by U.S. Geological Survey, 1980, 349 p.

MA-RI-80-1 Water resources data for Massachusetts and Rhode Island, water year 1980, by U.S. Geological Survey, 1981, 348 p.

MA-RI-81-1 Water resources data for Massachusetts and Rhode Island, water year 1981, by U.S. Geological Survey, 1982, 292 p.

MA-RI-82-1 Water resources data for Massachusetts and Rhode Island, water year 1982, by R.A. Gadoury, G.G. Girouard, and D.F. Letty, 1983, 237 p.

MA-RI-83-1 Water resources data for Massachusetts and Rhode Island, water year 1983, by R.A. Gadoury, G.G. Girouard, and K.G. Ries, III, 1985, 237 p.

MA-RI-84-1 Water resources data for Massachusetts and Rhode Island, water year 1984, by R.A. Gadoury, G.G. Girouard, and K.G. Ries, III, and H.L. White, 1986, 212 p.

MA-RI-85-1 Water resources data for Massachusetts and Rhode Island, water year 1985, by R.A. Gadoury, D.J. Kent, K.G. Ries, III, and H.L. White, 1987, 235 p.

MA-RI-86-1 Water resources data for Massachusetts and Rhode Island, water year 1986, by R.A. Gadoury, D.J. Kent, K.G. Ries, III, and H.L. White, 1988, 251 p.

MA-RI-87-1 Water resources data for Massachusetts and Rhode Island, water year 1987, by R.A. Gadoury, R.S. Socolow, D.J. Kent, and J.P. Russell, 1989, 243 p.

MA-RI-88-1 Water resources data for Massachusetts and Rhode Island, water year 1988, by R.A. Gadoury, R.S. Socolow, R.W. Bell, and T.J. Calderini, 1990, 231 p.

MA-RI-89-1 Water resources data for Massachusetts and Rhode Island, water year 1989, by R.S. Socolow, R.A. Gadoury, L.R. Ramsbey, and R.W. Bell, 1991, 227 p.

MA-RI-90-1 Water resources data for Massachusetts and Rhode Island, water year 1990, by R.S. Socolow, R.A. Gadoury, L.R. Ramsbey, and R.W. Bell, 1991, 260 p.

MA-RI-91-1 Water resources data for Massachusetts and Rhode Island, water year 1991, by R.A. Gadoury, R.S. Socolow, and L.R. Ramsbey, 1992, 247 p.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

	WATER-RESOURCES INVESTIGATIONS REPORTS (WRIR)
4-74	Availability of ground water in the Blackstone River area, Rhode Island and Massachusetts, by H.E. Johnston and D.C. Dickerman, 1974, 2 sheets, scale 1:24,000.
18-74	Availability of ground water in the Branch River Basin, Providence County, Rhode Island, by H.E. Johnston and D.C. Dickerman, 1974, 39 p., 1 pl., scale 1:24,000.
83-4231	Aquifer tests in the stratified drift, Chipuxet River Basin, Rhode Island, D.C. Dickerman, 1984, 39 p.
83-4251	A modification of the finite-difference model for simulation of two-dimensional ground-water flow to include surface-ground water relationships, by M.M. Ozbilgin and D.C. Dickerman, 1984, 98 p.
84-4254	Hydrology, water quality, and ground-water-development alternatives in the Chipuxet ground-water reservoir, Rhode Island, by H.E. Johnston and D.C. Dickerman, 1985, 100 p., 1 pl., scale 1:24,000.
84-4367	Water quality of Rhode Island streams, by J.C. Briggs and J.S. Feiffer, 1986, 51 p.
85-4190	Hydrogeology, water quality, and ground-water-development alternatives in the Beaver-Pasquiset ground-water reservoir, Rhode Island, by D.C. Dickerman and M.M. Ozbilgin, 1985, 104 p.
89-4031	Hydrogeology, water quality, and ground-water-development alternatives in the lower Wood River ground-water reservoir, Rhode Island, by D.C. Dickerman, E.C.T. Trench, and J.P. Russell, 1990, 109 p.
89-4164	Estimating surface-water runoff to Narragansett Bay, Rhode Island and Massachusetts, by K.G. Ries, III, 1990, 44 p., scale 1:125,000.
90-4082	Rhode Island streams—1978-88, an update on water-quality conditions, by J.C. Briggs, 1990, 39 p.
90-4207	Plan for developing a water-use data program in Rhode Island, by M.A. Horn and P.A. Craft, 1991, 26 p.
92-4119	Hydrogeology, water quality, and ground-water-development alternatives in the Upper Wood River ground-water reservoir, Rhode Island, by D.C. Dickerman and R.W. Bell, 1993, 87 p.
	WATER-SUPPLY PAPERS (WSP)
National ground-water records prior to water year 1975 were reported by geographic area in a 5-year Water-Supply Paper series. Data for Rhode Island are in Water-Supply Papers entitled "Ground-Water Levels in the United States, Northeastern States."	
102	Notes on the wells, springs, and general water resources of certain eastern and central States--Rhode Island, by W.O. Crosby, 1904, in Contributions to the hydrology of eastern United States, 1903, p. 119-125.
114	Massachusetts and Rhode Island, by W.O. Crosby, 1905, in Underground waters of eastern United States, p. 68-75.
1499-A	Water resources of the Providence area, Rhode Island, by H.N. Halberg, C.E. Knox, and F.H. Pauszek, 1961, 50 p., 1 pl., scale 1:125,000.
1775	Hydrologic characteristics and sustained yield of principal ground-water units, Potowomut-Wickford area, Rhode Island, by J.S. Rosenshein, J.B. Gonthier, and W.B. Allen, 1968, 38 p., 5 pl., scale 1:24,000.
1800	The role of ground water in the national water situation, by C.L. McGuinness, 1963, 1121 p., 4 pl.; Rhode Island, p. 753-762.
1821	Availability of ground water, upper Pawcatuck River Basin, Rhode Island, by W.B. Allen, G.W. Hahn, and R.A. Brackley, 1966, 66 p., 3 pl., scale 1:24,000.
2033	Availability of ground water in the lower Pawcatuck River Basin, by J.B. Gonthier, H.E. Johnston, and G.T. Malmberg, 1974, 40 p., 5 pl., scale 1:48,000.
2062	Geohydrologic impacts of coal development in the Narragansett Basin, Massachusetts and Rhode Island, by M.H. Frimpter and Anthony Maevsky, 1979, 35 p.
2250	Rhode Island water issues, 1984, *in* U.S. Geological Survey, National Water Summary 1983, p. 203-205.
2270	Low-level radioactive ground-water contamination from a cold scrap recovery operation, Wood River Junction, Rhode Island, by B.J. Ryan and K.L. Kipp, Jr., 1985, *in* Selected Papers in the Hydrologic Sciences, Seymour Subitzky, ed., 1985, p. 21-33.
2270	An electromagnetic method for delineating ground-water contamination, Wood River Junction, Rhode Island, by P.M. Barlow and B.J. Ryan, 1985, *in* Selected Papers in the Hydrologic Sciences, Seymour Subitzky, ed., 1985, p. 35-49.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

WATER-SUPPLY PAPERS (WSP)--*Continued*

Published by the U.S. Geological Survey.

2275	Ground-water resources--Rhode Island, by H.E. Johnston, 1985, *in* U.S. Geological Survey, National Water Summary 1984, p. 373-378.
2300	Surface-water resources--Rhode Island, by H.E. Johnston, 1986, *in* U.S. Geological Survey, National Water Summary 1985, p. 407-412.
2325	Rhode Island ground-water quality, by H.E. Johnston and P.M. Barlow, 1988, *in* U.S. Geological Survey, National Water Summary 1986, p. 443-448.
2338	Estimation of the recharge area contributing water to a pumped well in a glacial-drift, river-valley aquifer, by D.J. Morrissey, 1989, 41 p.
2350	Rhode Island water supply and use, by H.E. Johnston and M.J. Baer, 1990, *in* U.S. Geological Survey, National Water Summary 1987, p. 447-452.
2375	Rhode Island floods and droughts, by P.N. Walker and R.E. Lautzenheiser, 1991, *in* U.S. Geological Survey, National Water Summary 1988-89, p. 483-488.
2400	Rhode Island stream water quality, by R.W. Bell, 1993, *in* U.S. Geological Survey, National Water Summary 1990-91, p. 477-484.

GEOLOGICAL BULLETINS (GB)

Prepared by the U.S. Geological Survey in cooperation with State agencies in Rhode Island and published by State agencies.

Geological Bulletins 1-3 were published by the Rhode Island Industrial Commission; Bulletins 4 and 5 by the Rhode Island Port and Industrial Development Commission; and Bulletins 6-9 by the Rhode Island Development Council. Bulletins 10-14 were published by the Rhode Island Water Resources Coordinating Board.

1	Progress report on the ground-water resources of Providence, Rhode Island, by C.M. Roberts and M.L. Brashears, Jr., 1945, 35 p., 2 pl., scale 1:31,680.
2	Well and test hole records for Providence, Rhode Island, by C.M. Roberts and H.N. Halberg, 1945, 52 p., 2 pl., scale 1:31,680.
3	The geology and ground-water resources of the Pawtucket quadrangle, Rhode Island, by A.W. Quinn, R.G. Ray, W.L. Seymour, N.E. Chute, and W.B. Allen, 1948, 85 p., 3 pl., scale 1:31,680.
4	The geology and ground-water resources of the Georgiaville quadrangle, Rhode Island, by G.M. Richmond and W.B. Allen, 1951, 75 p., 3 pl., scale 1:31,680.
5	The geology and ground-water resources of Woonsocket, Rhode Island, by A.W. Quinn and W.B. Allen, 1950, 40 p., 2 pl.
6	The ground-water resources of Rhode Island-a reconnaissance, by W. B. Allen, with a section on surface-water resources, by H.B. Kinnison, 1953, 170 p., 1 pl.
7	Ground-water resources of the Bristol quadrangle, Rhode Island-Massachusetts, by W.H. Bierschenk, 1954, 98 p., 2 pl., scale 1:31,680.
8	Ground-water resources of the East Greenwich quadrangle, Rhode Island, by W.B. Allen, 1956, 56 p., 2 pl., scale 1:31,680.
9	Ground-water resources of the Kingston quadrangle, Rhode Island, by W.H. Bierschenk, 1956, 60 p., 2 pl., scale 1:31,680.
10	Ground-water resources of the Providence quadrangle, Rhode Island, by W.H. Bierschenk, 1959, 104 p., 3 pl., scale 1:31,680.
11	Appraisal of the ground-water reservoir areas in Rhode Island, by S.M. Lang, 1961, 38 p., 5 pl.
12	Ground-water resources in the vicinity of Wallum Lake, Rhode Island, by G.W. Hahn, 1961, 34 p., 4 pl.
13	Geohydrological data for the upper Pawcatuck River Basin, Rhode Island, by W.B. Allen, G.W. Hahn, and C.R. Tuttle, 1963, 68 p., 1 pl., scale 1:24,000.
14	Ground-water resources of Block Island, Rhode Island, by A.J. Hansen, Jr., and G.R. Schiner, 1964, 35 p., 1 pl.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

	GROUND-WATER MAPS (GWM)
Prepared by the U.S. Geological Survey in cooperation with State agencies in Rhode Island and published by State agencies. Published by the Rhode Island Water Resources Coordinating Board.	
1	Wickford quadrangle, Rhode Island, by K.E. Johnson and L.Y. Marks, 1959, scale 1:24,000.
2	Slocum quadrangle, Rhode Island, by G.W. Hahn, 1959, scale 1:24,000.
3	Crompton quadrangle, Rhode Island, by W.B. Allen, K.E. Johnson, and R.A. Mason, 1959, scale 1:24,000.
4	East Providence quadrangle, Massachusetts-Rhode Island, by W.B. Allen and L.A. Gorman, 1959, scale 1:24,000.
5	Narragansett Pier quadrangle, Rhode Island, by G.W. Hahn, 1959, scale 1:24,000.
6	Hope Valley quadrangle, Rhode Island, by W.H. Bierschenk and G.W. Hahn, 1959, scale 1:24,000.
7	Fall River quadrangle, Massachusetts-Rhode Island, by W.B. Allen and D.J. Ryan, 1960, scale 1:24,000.
8	Coventry Center quadrangle, Rhode Island, by R.A. Mason and G.W. Hahn, 1960, scale 1:24,000.
9	Carolina quadrangle, Rhode Island, by A.M. LaSala, Jr., and G.W. Hahn, 1960, scale 1:24,000.
10	Oneco quadrangle, Connecticut-Rhode Island, by K.E. Johnson, R.A. Mason, and F.A. DeLuca, 1960, scale 1:24,000.
11	Quonochontaug quadrangle, Rhode Island, by A.M. LaSala, Jr., and K.E. Johnson, 1960, scale 1:24,000.
12	North Scituate quadrangle, Rhode Island, by S.J. Pollock, 1960, scale 1:24,000.
13	Voluntown quadrangle, Connecticut-Rhode Island, by A.D. Randall, W.H. Bierschenk, and G.W. Hahn, 1960, scale 1:24,000.
14	Watch Hill quadrangle, Connecticut-Rhode Island, by K.E. Johnson, 1961, scale 1:24,000.
15	Chepachet quadrangle, Rhode Island, by G.W. Hahn and A.J. Hansen, Jr., 1961, scale 1:24,000.
16	Rhode Island part of the Ashaway quadrangle and some adjacent areas of Connecticut, by K. E. Johnson, 1961, scale 1:24,000.
17	Clayville quadrangle, Rhode Island, by A.J. Hansen, Jr., 1962, scale 1:24,000.
18	Rhode Island parts of the Thompson and East Killingly quadrangles, by A.J. Hansen, Jr., 1962, scale 1:24,000.
19	Rhode Island parts of the Attleboro, Blackstone, Franklin, Oxford, and Uxbridge quadrangles, by K.E. Johnson, 1962, scale 1:24,000.
20	Prudence Island and Newport quadrangles, Rhode Island, by G. R. Schiner and J.B. Gonthier, 1964, scale 1:24,000.
21	Tiverton and Sakonnet Point quadrangles, Rhode Island, and the Rhode Island portion of the Westport quadrangle, Massachusetts, by G.R. Schiner and J.B. Gonthier, 1964, scale 1:24,000.
	HYDROLOGIC BULLETINS (HB)
Published by the Rhode Island Water Resources Coordinating Board.	
1	Ground-water levels in Rhode Island, 1956, by W.B. Allen and S.M. Lang, 1957, 21 p.
2	Ground-water levels in Rhode Island, 1957, by G.W. Hahn and J.A. Wosinski, 1960, 32 p.
3	Hydraulic characteristics of glacial outwash in Rhode Island, by S.M. Lang, W.H. Bierschenk, and W.B. Allen, 1960, 38 p., 1 pl.
4	Ground-water levels in Rhode Island, 1958-1959, by K.E. Johnson, 1961, 46 p.
5	Ground-water levels in Rhode Island, 1960-1962, by A.J. Hansen, Jr., and G.R. Schiner, 1963, 49 p.
6	Hydrologic data for the South Branch Pawtuxet River Basin, Rhode Island, by J.B. Gonthier, 1966, 35 p., 2 pl., scale 1:24,000.
7	Geologic and hydrologic data for the Blackstone River area, Rhode Island, by H.E. Johnston and D.C. Dickerman, 1974, 42 p., 1 pl., scale 1:24,000.
	RECHARGE-AREA REPORTS (RAR)
Published by the Rhode Island Department of Environmental Management.	
1	Classification and delineation of recharge areas to the Blackstone and lower Blackstone-Moshassuck ground-water reservoirs in northeastern Rhode Island, by E.C.T. Trench and D.J. Morrissey, 1985, 21 p., 1 pl., scale 1:24,000.

Table 41. List of publications pertaining to the geology and hydrology of Rhode Island--*Continued*

RECHARGE-AREA REPORTS (RAR)--*Continued*	
Prepared by the U.S. Geological Survey in cooperation with State agencies in Rhode Island and published by State agencies. Published by the Rhode Island Department of Environmental Management.—*Continued*	
2	Classification and delineation of recharge areas for the Hunt ground-water reservoir in central Rhode Island, by E.C.T. Trench and D.J. Morrissey. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey, 1 pl., scale 1:24,000.
3	Classification and delineation of recharge areas for the Chipuxet ground-water reservoir in southern Rhode Island, by E.C.T. Trench and P.M. Barlow. Unpublished report, available at Rhode Island Subdistrict Office, U.S. Geological Survey, 1 pl., scale 1:24,000.
SCIENTIFIC CONTRIBUTIONS (SC)	
Scientific Contribution 1 was published by the Rhode Island Industrial Commission; Contributions 2 and 3 by the Rhode Island Port and Industrial Development Commission.	
1	Ground-water conditions in the vicinity of Mashapaug Pond, Providence, Rhode Island, by R.M. Jeffords and W.B. Allen, 1947, 61 p.
2	Ground-water resources in the vicinity of Exeter, Rhode Island, by W.B. Allen and R.M. Jeffords, 1948, 42 p.
3	Ground-water resources of Bristol, Warren, and Barrington, Bristol County, Rhode Island, by W.B. Allen and J.A. Blackhall, 1950, 14 p., 1 pl.
WATER INFORMATION SERIES REPORTS (WISR)	
Published by the Rhode Island Water Resources Board.	
2	Geohydrologic data for the Chipuxet River ground-water reservoir, by D.C. Dickerman, 1976, 86 p., 1 pl., scale 1:12,000.
3	Geohydrologic data for the Beaver-Pasquiset ground-water reservoir, Rhode Island, by D.C. Dickerman and H.E. Johnston, 1977, 128 p., 1 pl. (2 sheets), scale 1:12,000.
4	Geohydrologic data for the lower Wood River ground-water reservoir, Rhode Island, by D.C. Dickerman and P.J. Silva, 1980, 193 p., 1 pl. (2 sheets), scale 1:12,000.
5	Geohydrologic data for the upper Wood River ground-water reservoir, Rhode Island, by D.C. Dickerman, R.W. Bell, K.D. Mulvey, E.L. Peterman, and J.P. Russell, 1989, 274 p., 2 pl., scale 1:24,000.