Temporary State Commission on the Water Supply Needs of Southeastern New York

SECOND YEAR REPORT

March 1, 1973

Albany, New York

TEMPORARY STATE COMMISSION
ON THE
WATER SUPPLY NEEDS
OF
SOUTHEASTERN NEW YORK

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YEAR
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ON THE

WATER SUPPLY NEEDS

OF

SOUTHEASTERN NEW YORK

S E C O N D Y E A R R E P O R T

February 1, 1972 -- January 31, 1973

NELSON A. ROCKEFELLER
Governor

WARREN M. ANDERSON
Temporary President of the Senate

PERRY B. DURYEA, JR.
Speaker of the Assembly

Albany, New York

March 1, 1973

SOUTHEAST WATER SUPPLY COMMISSION

E. Virgil Conway, Chairman

H. Clark Bell, Vice Chairman

Neil H. Anderson
Herman Forster
Benjamin A. Gilman
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Jay P. Rolison, Jr.
John J. Santucci
William J. Schickler
Robert C. Wertz

Robert D. Hennigan, Executive Director

LETTER OF TRANSMITTAL

To His Excellency, Nelson A. Rockefeller, Governor
To The Honorable Warren M. Anderson, Temporary President of the Senate
To The Honorable Perry B. Duryea, Jr., Speaker of the Assembly

This Second Year Report of the Southeast Water Supply Commission describes the program activity and progress made by the Commission from February 1, 1972 to January 31, 1973.

The Southeast Water Supply Commission was directed to: determine the long range water supply needs of the metropolitan area including New York City and eight suburban counties, evaluate available water resource and facilities, develop specific alternatives both technical and managerial to meet needs, and make recommendations based on needs, cost, administration, and environmental impact.

The Commission has substantially completed its program of consulting, study and analysis. The final year of the Commission's existence will be devoted to developing recommendations to meet the recognized needs.

The Commission is to make its final report by December 15, 1973, and to be terminated on March 31, 1974.

Respectfully submitted,

E. Virgil Conway, Chairman

January 31, 1973
New York City

COMMISSION STAFF

Robert D. Hennigan, Executive Director
Emanuel Bund, Special Counsel
Irene W. Baker, Public Affairs
David A. Duffy, Administrative Assistant
Karen M. McMahon, Secretary
Kathryn L. Barrette, Stenographer

Paul W. Merkens, Director of Engineering Studies and Analysis
Stephen C. Lackey, Assistant Director of Engineering
Harold F. Breon, Water Resources Engineer
Jane E. Josiah, Stenographer

David E. Buerle, Director of Management Studies and Analysis
Leslie Van Derzee, Research Associate
Jeffrey H. Brewer, Research Assistant
Evelyn E. Ruffinen, Secretary

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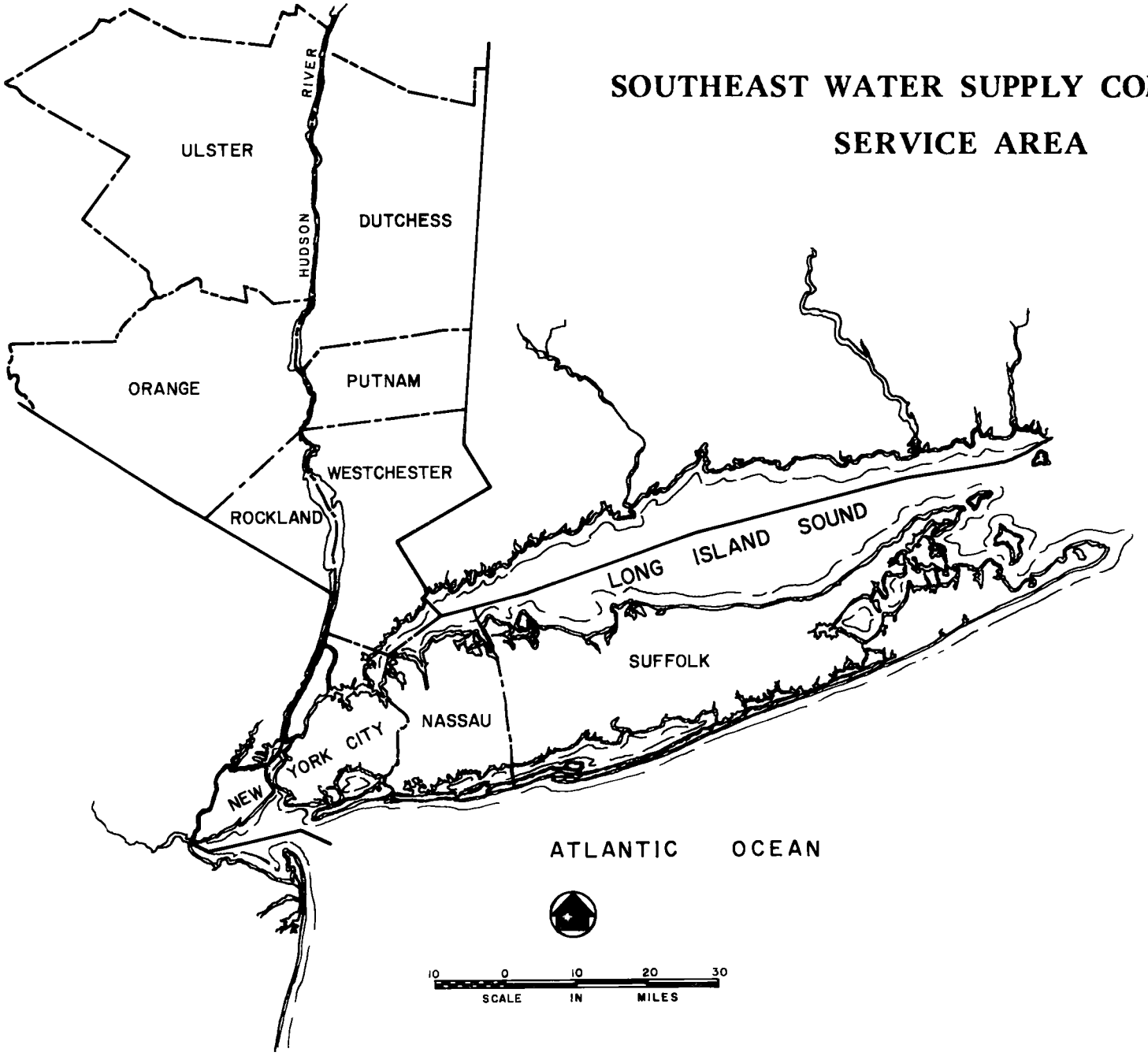
Chapter 593 - Law of 1969. 31

SOUTHEAST WATER SUPPLY COMMISSION SERVICE AREA



PART I
GENERAL BACKGROUND

CREATION

The Southeast Water Supply Commission was created in 1969 (C593-L1969) in response to the recognized need for an in-depth study of the water supply needs of the southeast region consisting of New York City and the eight suburban counties of Nassau, Suffolk, Westchester, Putnam, Dutchess, Rockland, Orange and Ulster. This action was triggered by the drought of the '60's and subsequent water supply proposals, particularly the plan to develop additional impoundments in the Adirondack Park.

ORGANIZATION AND PROGRAM DEVELOPMENT

The Commission was activated in late 1970. In 1971 a program design was formulated and a staff was recruited.

The program has three major elements:

1) quasi-formal public meetings and conferences,
2) technical and management studies and analysis, and
3) development of program recommendations.

A series of conferences with local officials, state agencies, public interest groups and federal and interstate agencies were commenced. The technical studies got underway, as did the management studies late in 1971.

PROGRAM-72

During 1972, the program continued as planned. The emphasis shifted somewhat. In 1971 a major effort was devoted to the conference phase, while in 1972 evaluation, studies and analysis were paramount.

CONFERENCES

The conference phase extended through 1972. Special commission conferences were held with:

1. Delaware River Master
2. Connecticut Water Resources Planning Board
3. U.S. Environmental Protection Agency concerning reuse and recharge
4. New Jersey Department of Environmental Protection
5. U.S. Corps of Engineers concerning the NEWS Study
6. Delaware River Basin Commission

LIAISON

Continuous liaison was maintained with federal, state and local agencies. Of particular note is the number of special agencies whose responsibilities tended to overlap with the Commission assignment. These include:

1. New York City Charter Revision Commission
2. Temporary State Commission on Local Government (Wagner)
3. Temporary State Commission to Make a Study of the Governmental Operation of the City of New York (Scott)
4. Temporary State Commission on the Catskills
5. Adirondack Park Agency

STAFF STUDIES AND REPORTS

Staff studies were carried out under two broad categories: 1) technical and 2) management and legal, the former under the direction of Paul W. Merkens and the latter under the direction of Dr. David E. Buerle.

These studies culminated in a series of reports to the Commission for review and action.

Published reports include:

First Year Report (2/1/72)

Documentation of the origin of the Commission, the plan and program design and the activity during the first year of operation.

Compendium of Water Supply Studies (8/1/72)

A summary and review of water supply studies completed or underway in the southeast region.

Proceedings - State Agency Conferences (11/1/72)

The minutes of the conferences held by the Commission with interested state agencies.

Scope of Water Supply Needs (11/1/72)

The quantification of water supply needs by region, subregion and county in the study area, based on popu-

lation projections, industrial demands, and per capita usage, and the safe yield of existing water supply systems.

Proceedings - Local Government Conferences (12/1/72)

The minutes of the conferences held by the Commission with New York City and the eight counties in the study area.

Emerging Water Supply Technology (3/1/73)

A study of the feasibility of 1) desalting, 2) weather modification, 3) reuse, and recharge in meeting water supply needs.

Unpublished reports include:

Institutional and Legal Considerations in Water Supply

Volume I - International, Federal, Interstate and State Roles (3/15/73)

Volume II - Regional and Local Roles (4/15/73)

Proceedings - Special Conferences (3/15/73)

The minutes of conferences held by the Commission with federal, interstate, New Jersey and Connecticut agencies, and with public interest groups.

Current studies underway include:

Reducing Consumption and Increasing Yield

A study of the impact on water consumption and use of 1) reservoir simulation, 2) leakage control, 3) water appliance and fixture design, 4) water pricing, 5) universal metering, and 6) public education and restricted use. Now in draft stage.

Technical Alternatives to Meet Water Supply Needs

A study and evaluation of the alternatives available in meeting water supply needs in the southeast region.

Management Alternatives for Water Supply Administration

A study and evaluation of the different approaches possible to administer a comprehensive water supply program in the southeast region.

Use of New York City Water in Nassau County

A special study by consultants to determine the feasibility of delivering water to Nassau County from the New York City system. Now in draft stage.

COMMISSION MEETINGS

In addition to special meetings some six executive meetings of the Commission were held to review reports and program status.

THE COMING YEAR

The basic foundation work of the Commission is completed. During 1973, the technical and managerial recommendations will be developed, as will the legislative program to implement the recommendations.

It is planned to hold hearings in May or June. The final recommendations are scheduled for completion by Fall 1973. The final report will be presented to the Governor and Legislature by December 15, 1973, and the Commission will terminate as scheduled on March 1, 1974.

PART II
SUMMARY

This section of the report is a summary and status report on the water supply situation and Commission action. It includes some findings relative to water needs and issues presented.

The information is presented in a series of charts, tabulations and figures to enable a quick and thorough review without the encumbrance of a lot of verbiage.

The presentation is as follows:

TITLE	ITEM	SUBJECT
Southeast Water Supply Commission	1.	Legislative History
	2.	Why Created ?
	3.	Mission
	4.	Program
Area and Resources	5.	Service Area
	6.	Major Groundwater Resources
	7.	Drainage Basins
Population	8.	Projections - tabulation
	9.	Projections - graphical
	10.	Distribution
	11.	Density - 1950 - 1970 - 2000 - 2020
Institutions	12.	Water Supply Authority
	13.	Water Systems
	14.	Regional Water Supply Systems
	15.	Drainage Areas and Systems

TITLE	ITEM	SUBJECT
Water Needs	16.	Projected Needs - tabulation
	17.	Regional Needs - graph
	18.	County Needs - graph
Safe Yield	19.	Yield by Subregion
Deficits	20.	Deficits by Subregion
Issues	21.	Major Issues - I
	22.	Major Issues - II and III
Status	23.	Program Status

TEMPORARY STATE COMMISSION ON THE WATER SUPPLY NEEDS OF SOUTHEASTERN NEW YORK

LEGISLATIVE HISTORY

CREATED	-	Chapter 593 - Laws of 1969
EXTENDED	-	Chapter 464 - Laws of 1970
		Chapter 598 - Laws of 1971
		Chapter 572 - Laws of 1972
ACTIVATED	-	December 1970
REPORT	-	December 15, 1973
TERMINATION	-	March 31, 1974

CHAIRMAN - *E. VIRGIL CONWAY*

S O U T H E A S T W A T E R S U P P L Y C O M M I S S I O N

WHY CREATED?

1. DROUGHT OF THE '60'S

2. GOOLEY DAM PROPOSAL/NYC - WESTCHESTER STUDY

3. FEDERAL ACTION - NEWS STUDY

4. LONG ISLAND WATER CRISIS

5. REGIONALIZATION VS. UNILATERAL ACTION

6. INTERGOVERNMENTAL RELATIONS
   - New York City vs. Outside Areas
   - County vs. County
   - City vs. Town
   - County vs. City, Town and Village
   - State vs. State
   - Federal vs. State

7. INADEQUATE SUPPLIES

S O U T H E A S T W A T E R S U P P L Y C O M M I S S I O N

M I S S I O N

1. Determine Long Range Water Supply Needs of Study Area to the Year 2020.

2. Evaluate Available Water Resource Facilities.

3. Develop Specific Technical Alternatives.

4. Develop Specific Organizational Alternatives.

5. Assess Environmental Impact of Proposals.

6. Make Recommendations Based on Needs, Cost, Administration and Environmental Effect.

S O U T H E A S T W A T E R S U P P L Y C O M M I S S I O N

P R O G R A M

1. CONFERENCES

   a) State Agencies
   b) Local Government
   c) Conservation
   d) Specialty (DRBC, NEWS, JV-ENG)

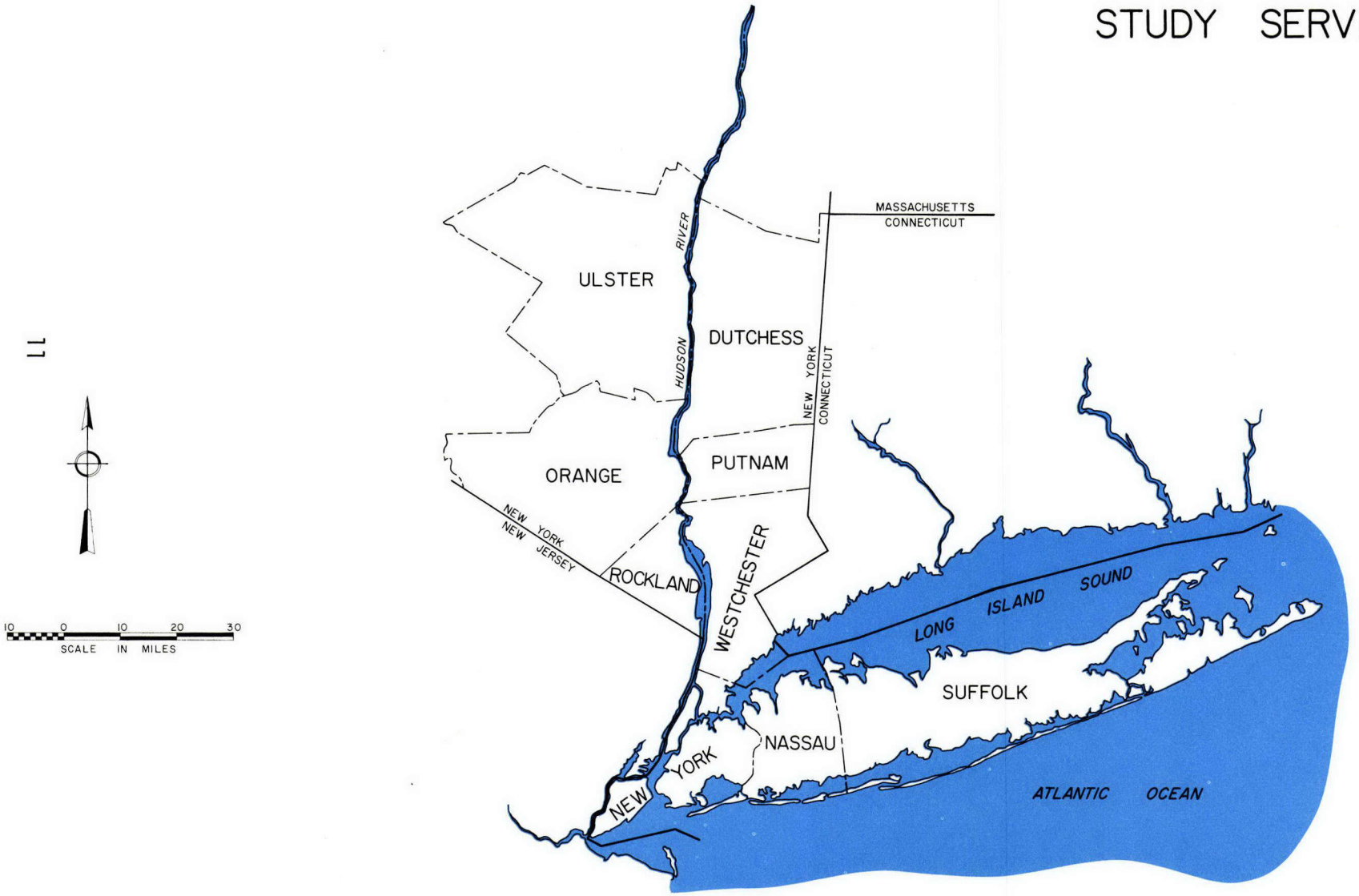
2. STUDIES AND ANALYSIS

   a) Inventory Phase
   b) Forecast Phase
   c) Existing Systems - Evaluation
   d) Review of Emerging Technology
   e) Reducing Demand - Increasing Yield
   f) Estimates of Water Supply Deficits
   g) Determination of Alternative Water Supply Projects
   h) Determination of Administrative and Management Alternatives

3. DEVELOPMENT OF RECOMMENDATIONS AND LEGISLATIVE PROGRAM

SOUTHEAST WATER SUPPLY COMMISSION

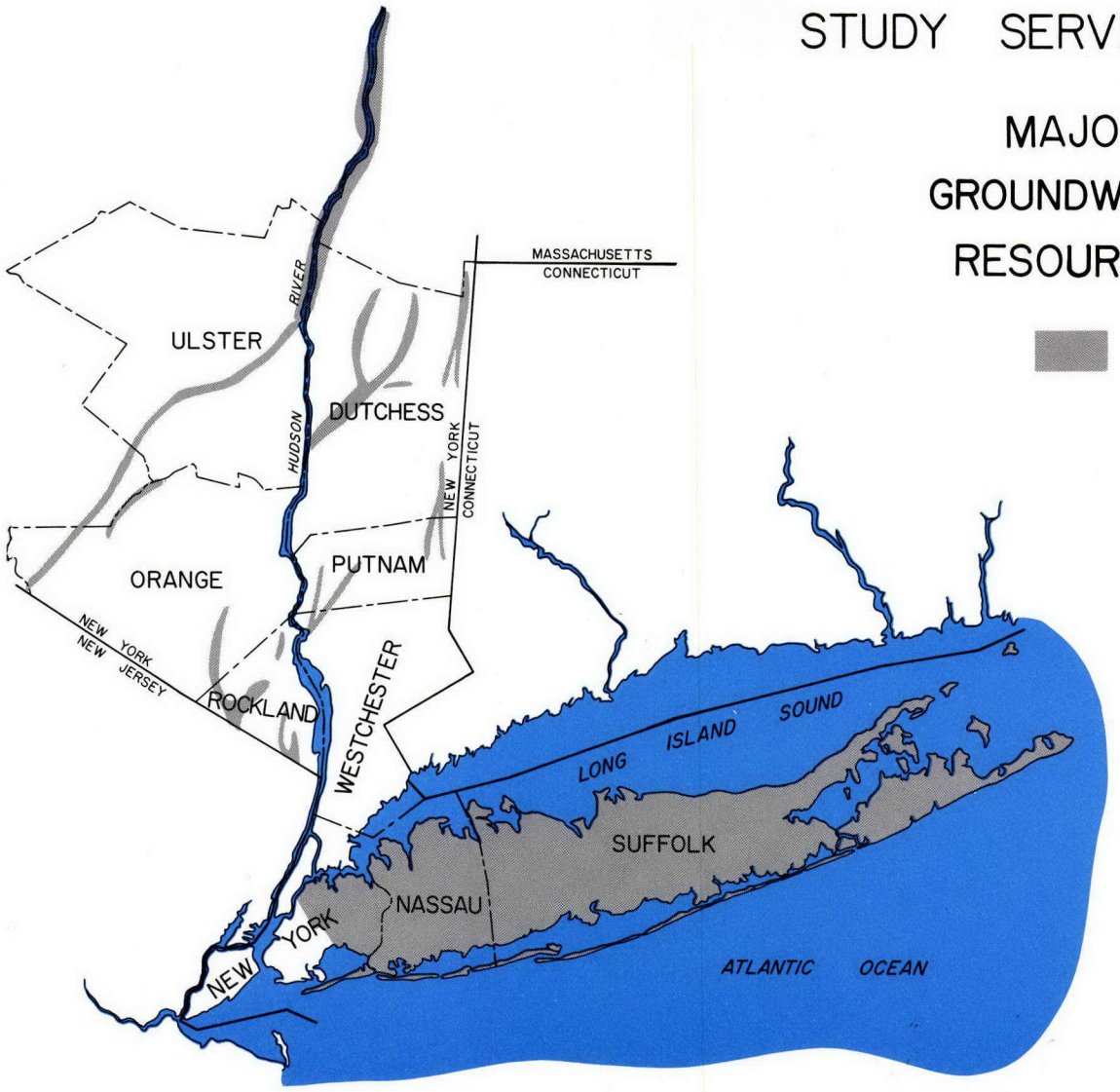
STUDY SERVICE AREA

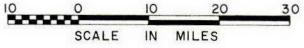


SOUTHEAST WATER SUPPLY COMMISSION

STUDY SERVICE AREA

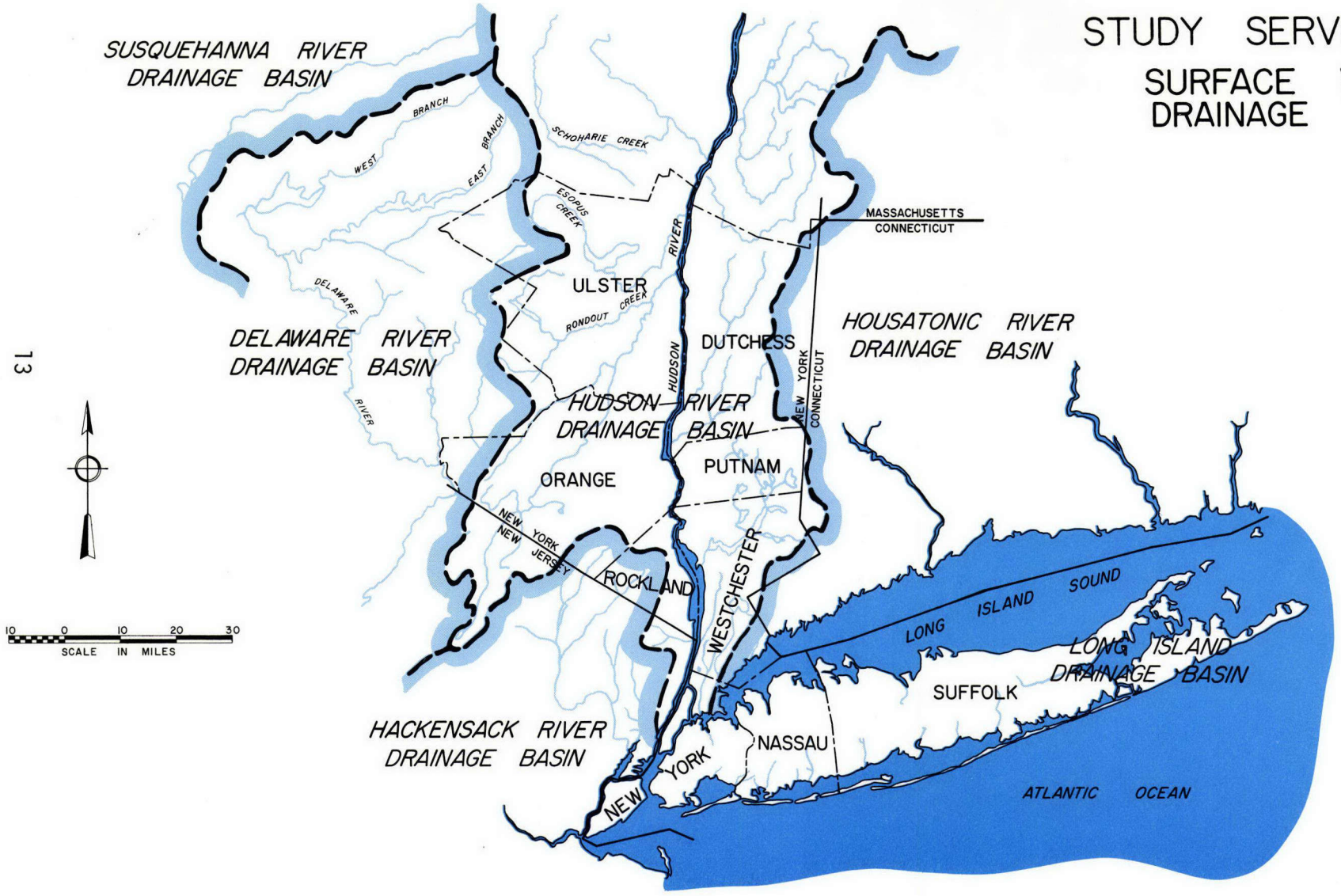
MAJOR GROUNDWATER RESOURCES





SOUTHEAST WATER SUPPLY COMMISSION

STUDY SERVICE AREA
SURFACE WATER DRAINAGE BASINS



POPULATION PROJECTIONS FOR SUBREGIONS IN SOUTHEASTERN NEW YORK TO 2020

(000's)

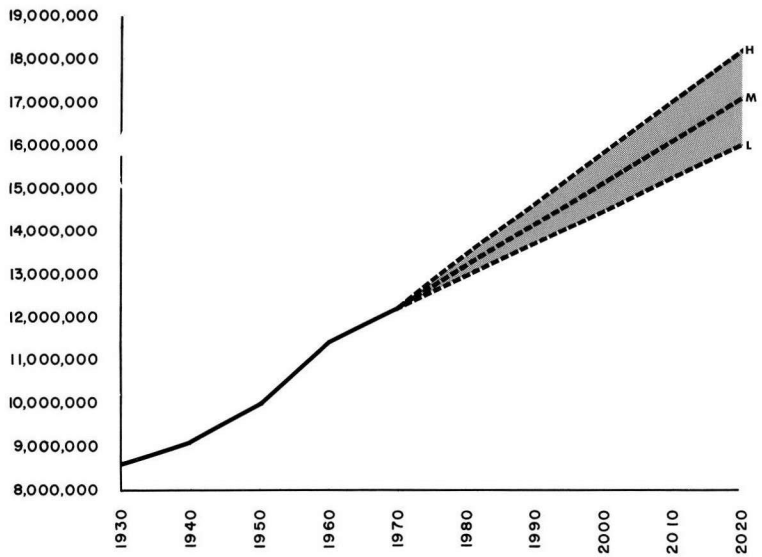
RANGE OF PROJECTIONS

Region and Subregion	1970	2000	2020
New York City			
High		8,318.2	8,600.0
Middle	7,895.5	8,078.2	8,200.0
Low		7,838.2	7,800.0
Nassau-Suffolk			
High		4,142.2	5,200.0
Middle	2,555.8	3,902.2	4,800.0
Low		3,662.2	4,400.0
Mid-Hudson			
High		3,346.6	4,400.0
Middle	1,766.2	3,166.6	4,100.0
Low		2,986.6	3,800.0
Total Region			
High		15,807.0	18,200.0
Middle	12,217.6	15,147.0	17,100.0
Low		14,487.0	16,000.0

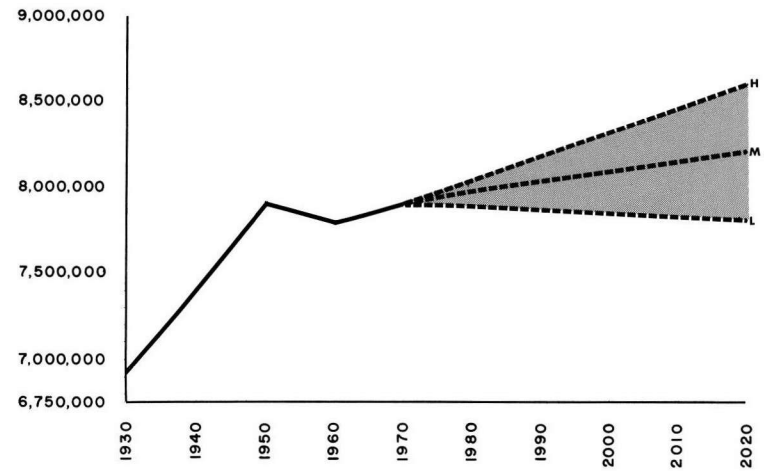
SOUTHEAST WATER SUPPLY COMMISSION

PAST AND PROJECTED POPULATION - SOUTHEASTERN NEW YORK

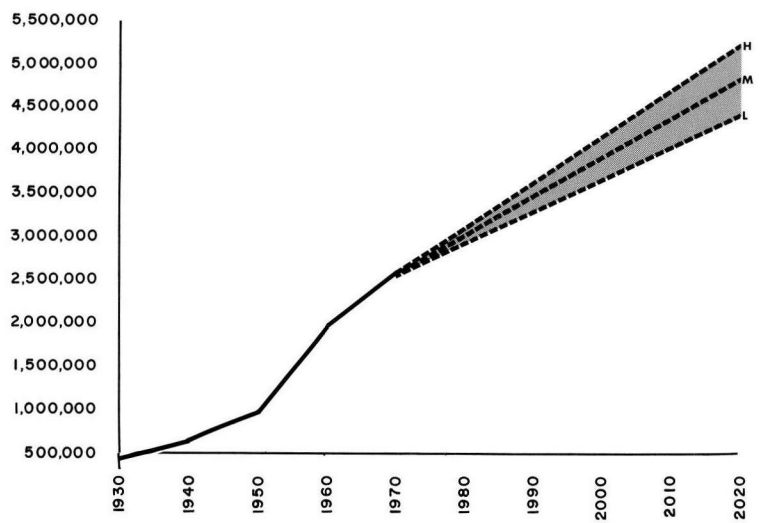
SOUTHEASTERN NEW YORK



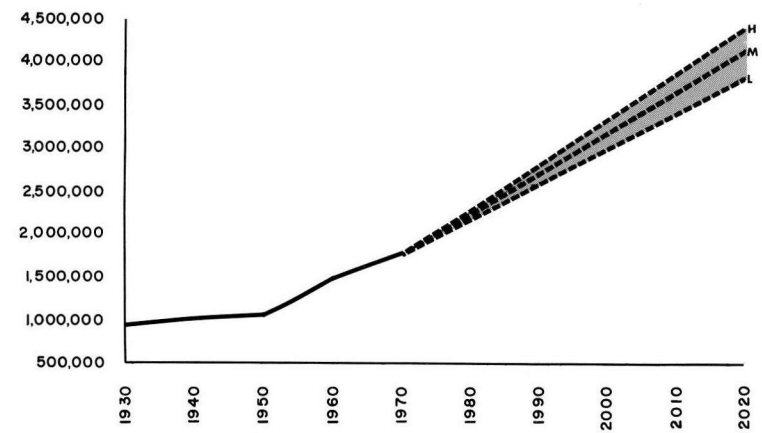
NEW YORK CITY SUBREGION



NASSAU-SUFFOLK SUBREGION

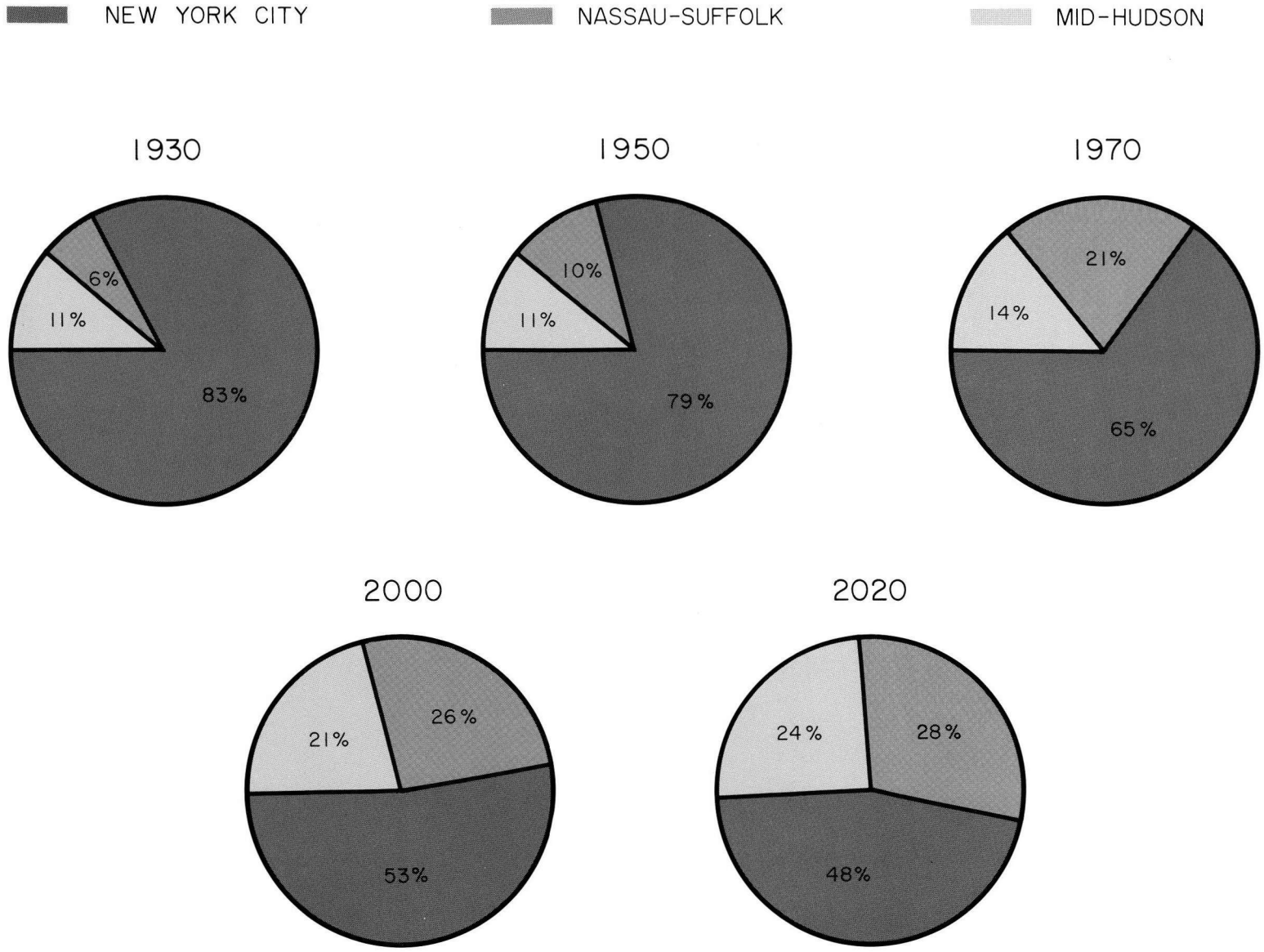


MID-HUDSON SUBREGION



SOUTHEAST WATER SUPPLY COMMISSION

POPULATION DISTRIBUTION — SOUTHEASTERN NEW YORK



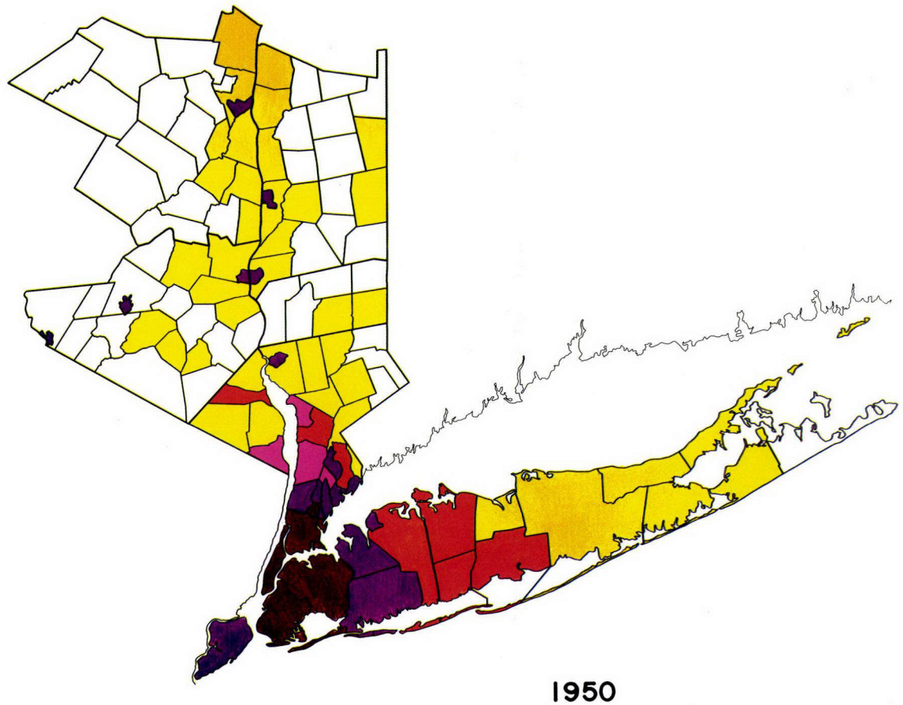
SOUTHEAST WATER SUPPLY COMMISSION

POPULATION DENSITY
1950, 1970, 2000, 2020

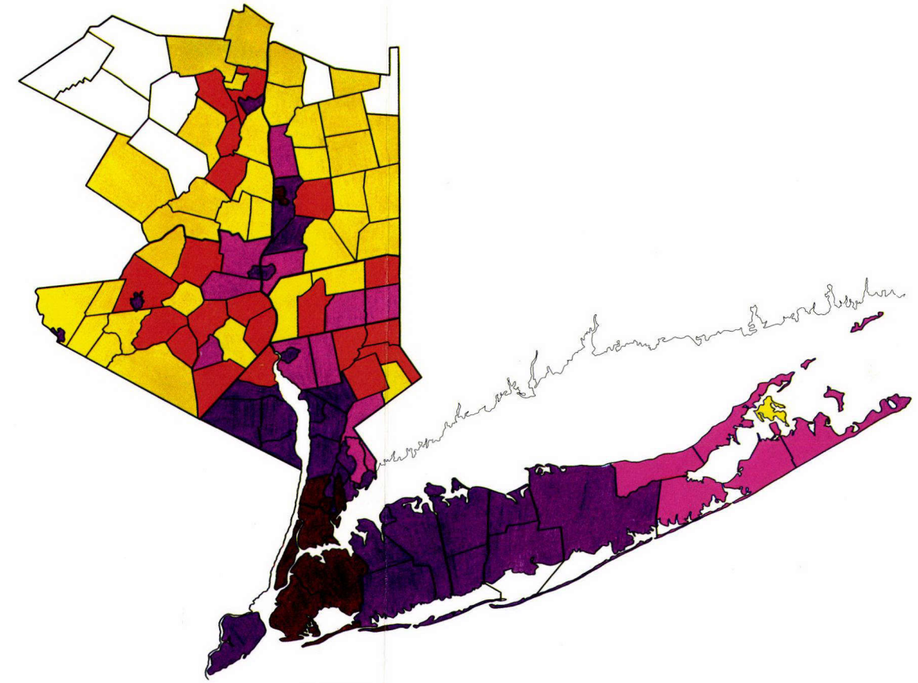
LEGEND

POPULATION PER SQUARE MILE

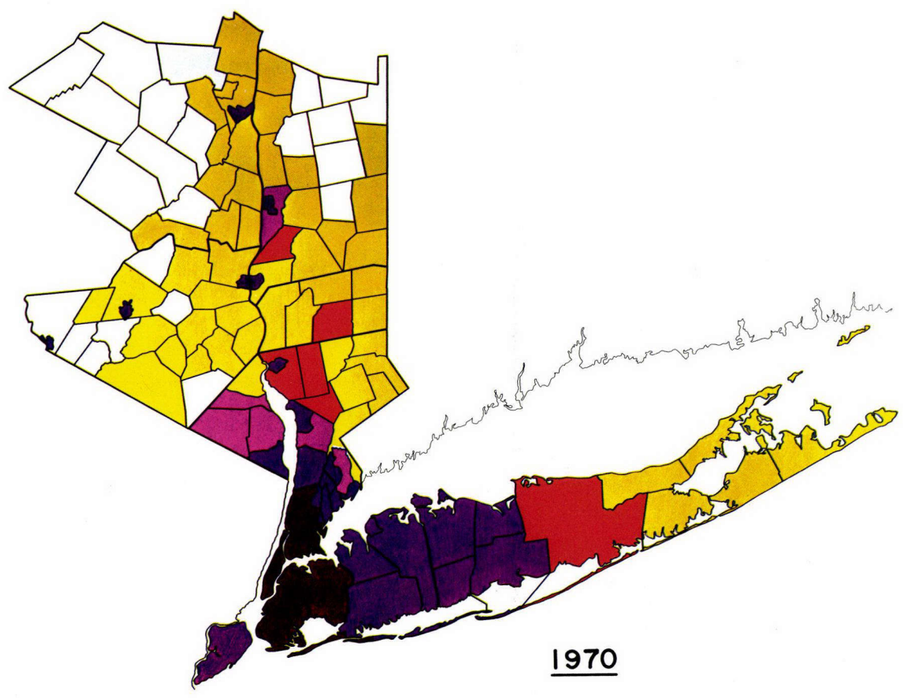
- 10,000+
- 2001 – 10,000
- 1001 – 2000
- 501 – 1000
- 101 – 500
- 0 – 100



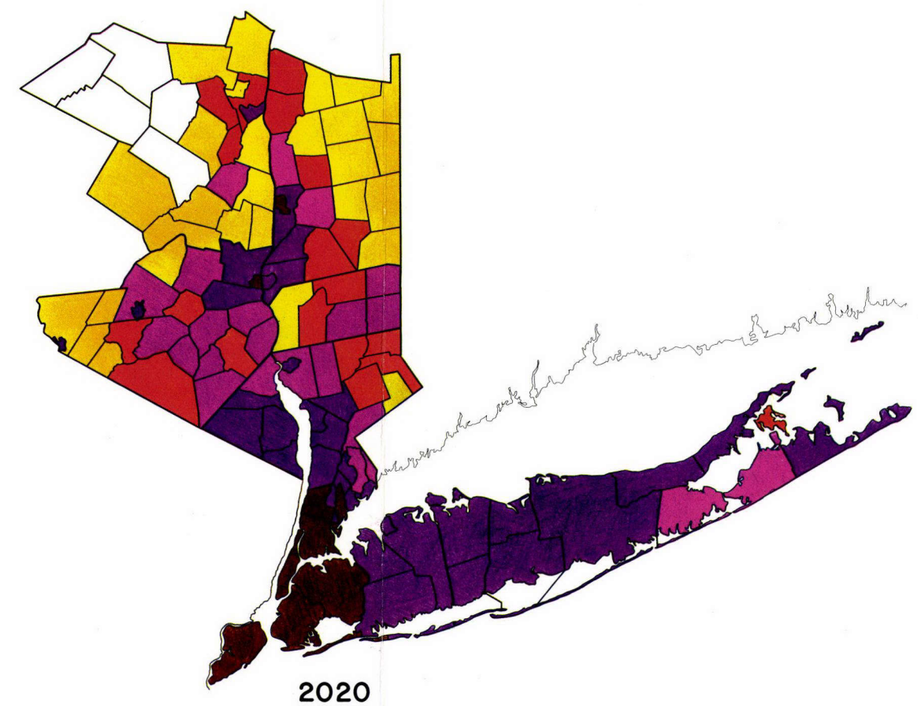
1950



2000



1970



2020

INSTITUTIONS WITH WATER SUPPLY AUTHORITY

LOCAL GOVERNMENT

COUNTIES	CITIES	TOWNS	VILLAGES	TOTAL	POPULATION (1000's)
New York City (Five Counties)	1	-	-	1	8,040
Dutchess	2 Beacon Poughkeepsie	20	8	30	215
Nassau	2 Glen Cove Long Beach	3	64	69	1,436
Orange	3 Middletown Newburgh Port Jervis	20	17	40	214
Putnam	0	6	3	9	46
Rockland	0	5	12	17	204
Suffolk	0	10	28	38	1,004
Ulster	1 Kingston	20	5	26	139
Westchester	5 Mount Vernon New Rochelle Peekskill White Plains Yonkers	19	22	46	869
TOTAL 8	14	103	159	284	12,167

OTHER WATER INSTITUTIONS

New York City Board of Water Supply
Suffolk County Water Authority
Westchester Joint Water Works
Major (8) Investor Owned Water Utilities Serving 1.7 Million People

SUMMARY OF WATER SYSTEMS

	Number of Systems	Population Served	Per cent of Total	Total Water Use (MGD)	Per cent of Total
Publicly Supplied Water	602	11,752,335	96	1,856.6	92
Municipal & Institutional Systems	215	10,000,413	85	1,670.5	90
Investor-owned Systems	387	1,751,922	14	184.9	10
Major Systems*	223	11,646,944	99	1,843.8	99
Other Systems	379**	105,391	1	12.8	1
Non-publicly Supplied Water		463,165	4	157.0	8
TOTAL WATER USAGE		12,217,500	100	2,013.6	100

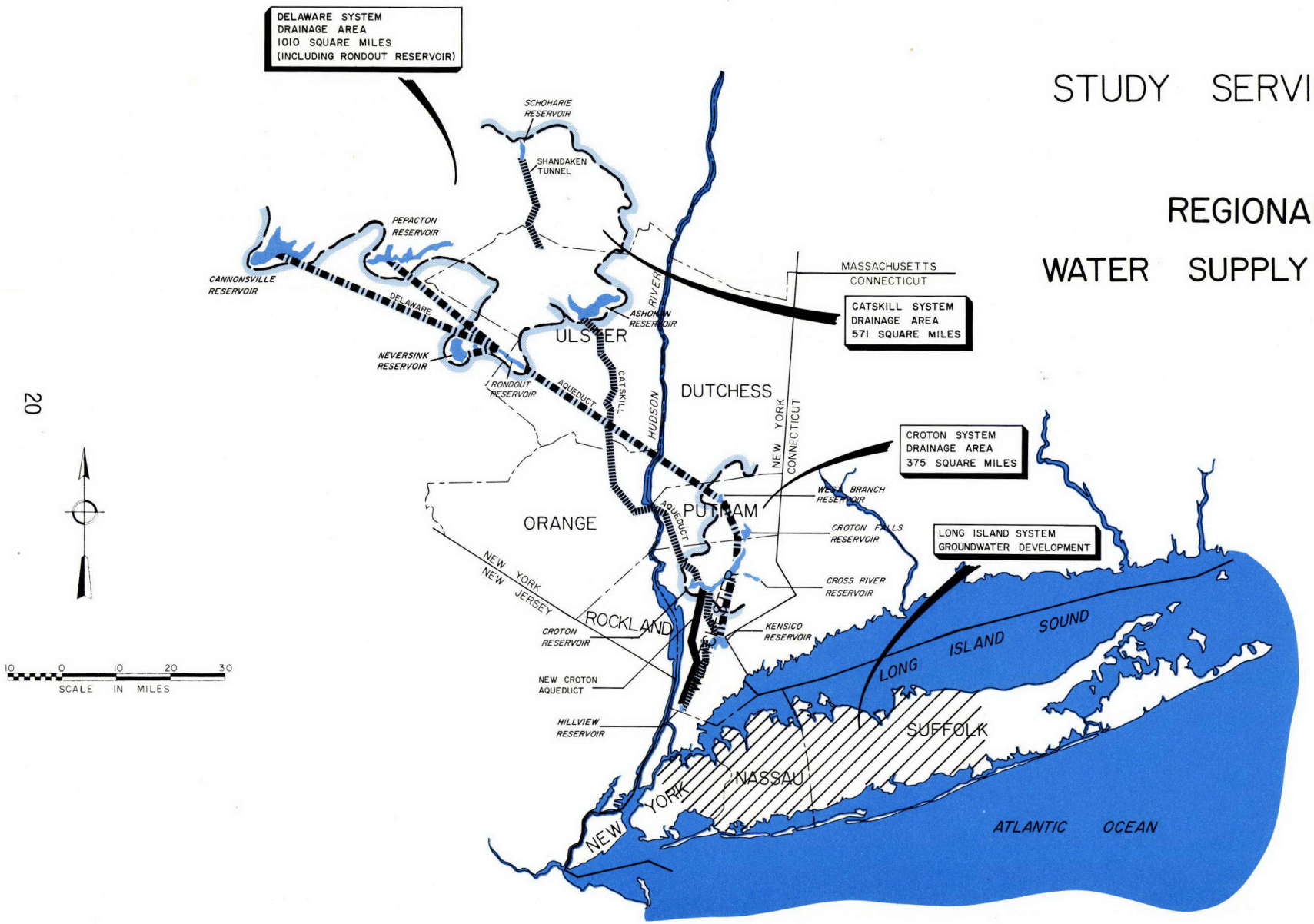
* All municipal systems and investor-owned systems serving over 1,000 people

** Average population served per system 280±

SOUTHEAST WATER SUPPLY COMMISSION

STUDY SERVICE AREA

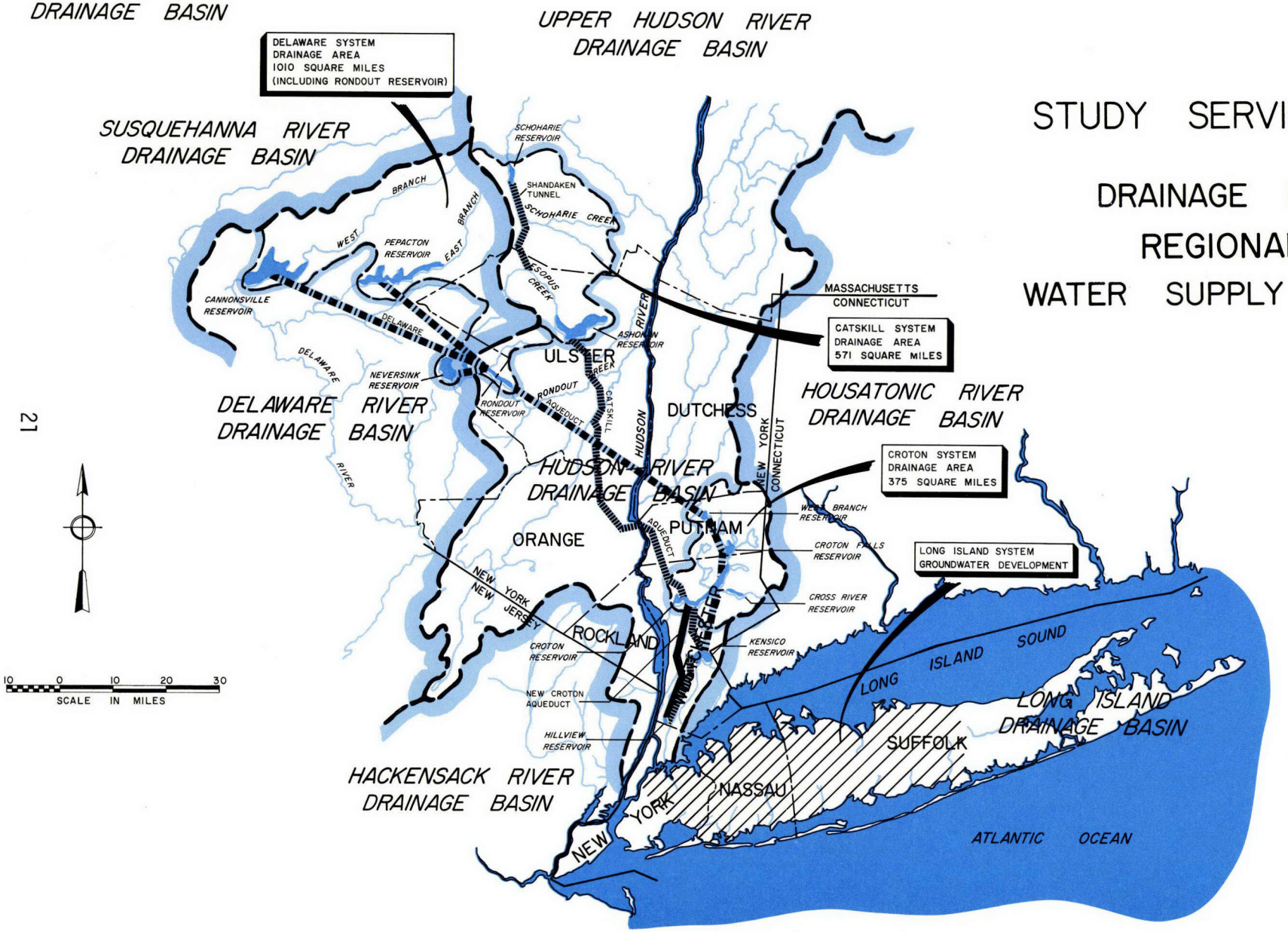
REGIONAL WATER SUPPLY SYSTEMS



SOUTHEAST WATER SUPPLY COMMISSION

STUDY SERVICE AREA

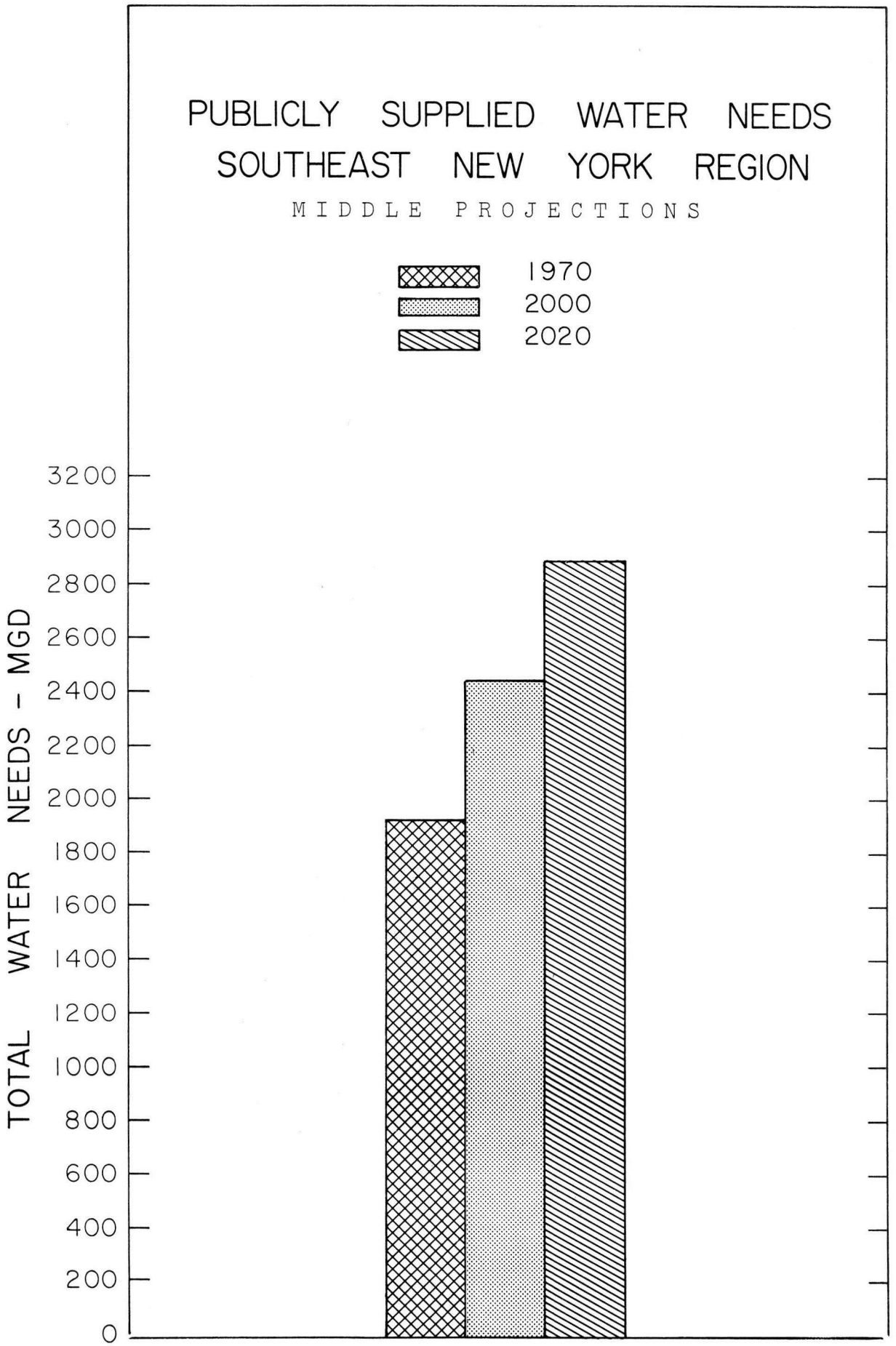
DRAINAGE BASINS REGIONAL WATER SUPPLY SYSTEMS



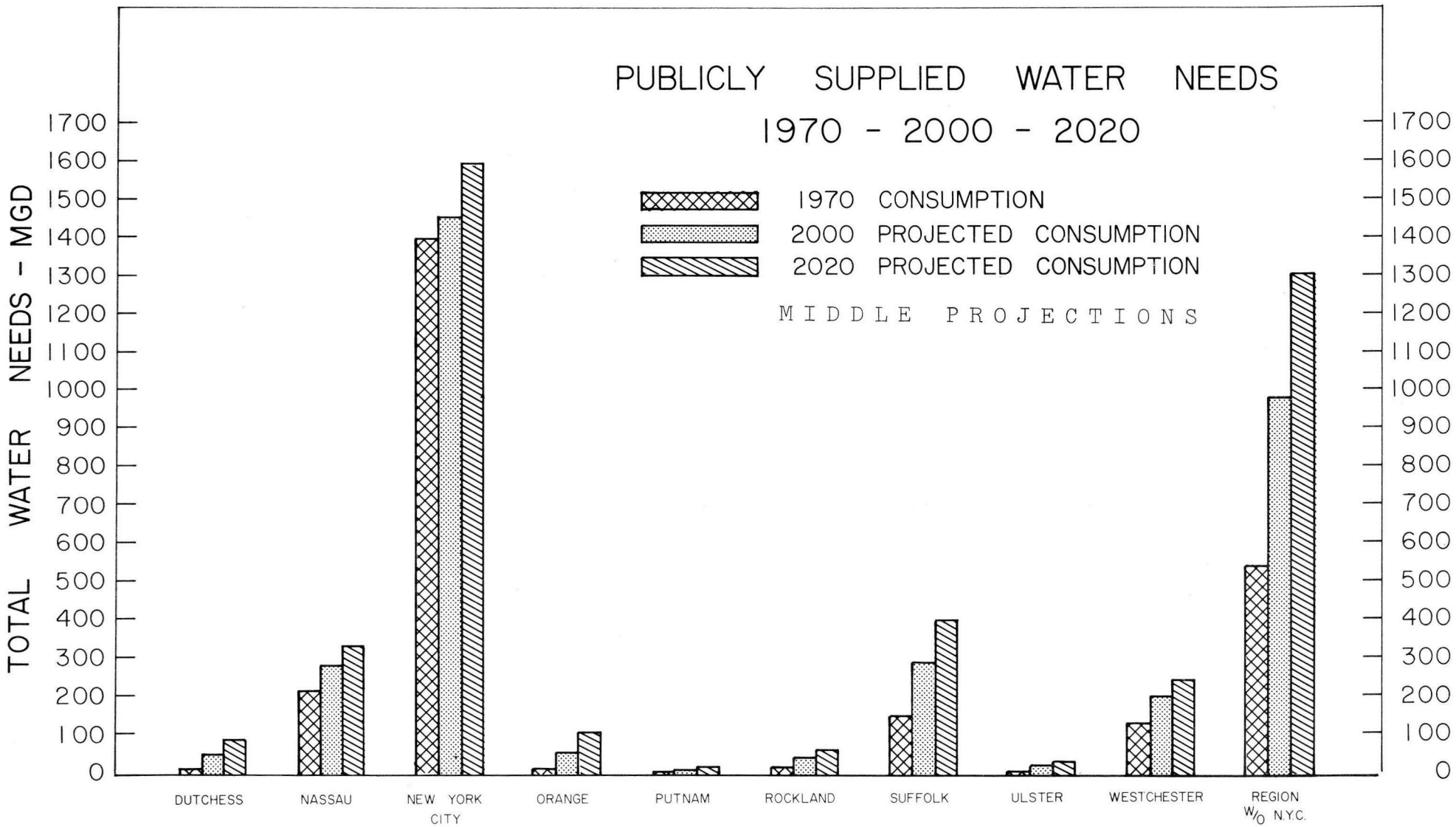
SOUTHEAST WATER SUPPLY COMMISSION

FORECASTS OF PUBLICLY SUPPLIED WATER NEEDS

	1970	2000	2020
Assumes Low Population Projection		2340.2	2738.1
Assumes Middle Population Projection	1949.4	2437.4	2913.7
Assumes High Population Projection		2535.5	3088.9


PUBLICLY SUPPLIED WATER NEEDS
SOUTHEAST NEW YORK REGION
MIDDLE PROJECTIONS
1970
2000
2020
TOTAL WATER NEEDS - MGD
3200
3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
0

SOUTHEAST WATER SUPPLY COMMISSION



SOUTHEAST WATER SUPPLY COMMISSION

SAFE YIELD OF PUBLIC WATER SUPPLIES BY SUBREGION

SUBREGION	SAFE YIELD (MGD)
Long Island	617.0
New York City	1,297.0
Mid-Hudson	165.5
TOTAL	2,079.5

SOUTHEAST WATER SUPPLY COMMISSION

DEFICITS IN PUBLIC WATER SUPPLIES (MGD) BY SUBREGION

	1970	2000			2020		
		Low	Middle	High	Low	Middle	High
Long Island[1]	25.1	93.5	108.3	123.0	140.4	164.8	189.1
New York City	(76.0)	119.2	162.5	206.0	227.1	305.3	383.4
Mid-Hudson	22.1	195.5	217.4	238.2	343.7	384.0	424.1
TOTAL	(28.8)	408.2	488.2	567.2	711.2	854.1	996.6

[1] Nassau County Only - Suffolk County Will Meet Projected 2020 Needs Locally

SOUTHEAST WATER SUPPLY COMMISSION

ISSUES

I - ADDITIONAL WATER

II - WATER RESOURCE MANAGEMENT AND REGULATION

III - URBAN WATER SYSTEM ADMINISTRATION

I. ADDITIONAL WATER

1. Source Development
   a) Hudson River
   b) Susquehanna River
   c) Lake Ontario
   d) Local Surface Water
   e) Groundwater

2. New Technology
   a) Weather Modification
   b) Direct Reuse
   c) Recharge
   d) Desalting

3. Water Resources Management
   a) Conjunctive Use - Ground and Surface Water Systems
   b) More Effective Use of Existing Facilities
   c) Conservation Measures

ISSUES

II. WATER RESOURCE MANAGEMENT AND REGULATION

1. Federal - Interstate - State
   Regional - Local Roles

2. Water Takings, Waste Water Disposal, Stream and Reservoir Management, Interbasin Transfer of Water, Water Planning, Financing, Regulation of Use of the Water Resource, Regulation of the Operation of Urban Water Utility Services

III. URBAN WATER SYSTEM ADMINISTRATION AND OPERATION

1. Institutional Arrangement
   - a) Federal Agency
   - b) Federal-State Agency
   - c) Interstate Agency
   - d) State Agency
   - e) Regional Agency
   - f) Private Corporations
   - g) Local Government

2. Urban Water Utility Services
   - a) WATER SUPPLY
   - b) Sewage Disposal
   - c) Drainage

3. Management and Operation - Water Supply
   - a) Public Education
   - b) Metering
   - c) Leakage Control
   - d) Rate Setting
   - e) Service Levels and Conditions
   - f) Financing
   - g) Planning
   - h) Internal Regulation
   - i) Pricing
   - j) Fixture Design
   - k) Relationships to Urban Water Utility Services System
   - l) Construction

S O U T H E A S T W A T E R S U P P L Y C O M M I S S I O N

P R O G R A M S T A T U S

CONFERENCE REPORTS

State Agency	-	Completed - Distributed
Local Government	-	Completed - Distributed
Specialty	-	Completed - Printer's

STUDIES AND ANALYSIS REPORTS

First Year Report	-	Completed - Distributed
Compendium of Studies	-	Completed - Distributed
Scope of Water Supply Needs	-	Completed - Distributed
Emerging Technology	-	Completed - Distributed
Institutional Legal and Financial Considerations in Water Supply Volume I - Federal and State Roles Volume II - Local Level	-	First Draft

RECOMMENDATIONS

Technical	-	Under Study
Managerial	-	Under Study
Legislative	-	Under Study

SCHEDULE

1.	Completion of Studies	-	March 15, 1973
2.	Hearings	-	May-June, 1973
3.	Completion of Rec. and Leg. Program	-	October 1, 1973
4.	Presentation to Governor and Legislature	-	December 15, 1973
5.	Termination of Commission	-	March 31, 1974

APPENDIX A

CHAPTER 593—Laws of 1969

(as amended by Chapter 464 Laws of 1970
and by Chapter 598 Laws of 1971,
and by Chapter 572 Laws of 1972)

An Act creating a temporary state commission of the water supply needs of southeastern New York, and making an appropriation therefor.

Approved and effective May 21, 1969.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. Statement of legislative findings. The future economic growth and physical well-being of the southeastern portion of New York state, including the city of New York and the counties of Nassau, Suffolk, Westchester, Rockland, Putnam, Orange, Ulster and Dutchess will require the development of vast new sources of water and related water supply facilities. Early, comprehensive planning is essential if the long-range needs of this area for adequate water supply facilities are to be met with due regard for conservation, natural beauty, cost and the most equitable and efficient utilization of the water and other natural resources of the state of New York.

§ 2. a. A temporary state commission is hereby created to be known as the temporary state commission on the water supply needs of southeastern New York. The commission shall consist of fifteen members to be appointed as follows: seven members shall be appointed by the governor; four members shall be appointed by the temporary president of the senate; and four members shall be appointed by the speaker of the assembly. Any vacancy in the commission shall be filled in the same manner in which the original appointment was made. The governor shall designate a chairman and vice-chairman from the members of the commission.

b. No member, officer or employee of the commission shall be disqualified from holding any other public office or employment, nor shall he forfeit any such office or employment by reason of his appointment hereunder, notwithstanding the provisions of any general, special, local law, ordinance, city or county charter.

§ 3. The commission, giving due consideration to any plans and studies already made, shall:

1. Make a study of the future water supply needs of the southeastern portion of the state of New York, including the city of New York and the counties of Nassau, Suffolk, Westchester, Rockland, Putnam, Orange, Ulster, and Dutchess and the relationship of these needs to the water resources available both within and without such portion of the state to fulfill such needs;

2. Make a study of alternative methods for constructing, financing and administering the needed water supply facilities;

3. Make specific recommendations directed toward meeting the water supply needs of such southeastern portion of the state, including, but not limited to, recommendations as to:

a. alternatives for the development of additional water supply facilities, and

b. alternatives for financing and administering the construction, operation and maintenance of the facilities, including governmental structures and a delineation of the areas of proper state and local responsibilities;

4. Make specific recommendations as to the alternatives in view of the projected needs, potential effects on existing water supplies and on other communities of the state, potential effects on conservation and natural beauty, and projected costs of the alternatives presented.

§ 4. For the accomplishment of its purposes, the commission shall be authorized and empowered to undertake any studies, inquiries, services or analyses it may deem relevant, through its own personnel or in cooperation with or by agreement with any other public or private agency.

§ 5. The commission may request and shall receive from any unit of local government and any department, board, bureau, commission, office, agency, or other instrumentality thereof, or from any agency of the state, such facilities, assistance and data as it deems necessary or desirable for the proper execution of its powers and duties.

§ 6. The commission may employ and at pleasure remove such personnel as it may deem necessary for the performance of its function and fix their compensation within the amounts made available by appropriation therefor. The commission may hold public or private hearings and shall have all the powers of a legislative committee pursuant to the legislative law.

§ 7. The members of the commission shall receive no compensation for their services but shall be allowed their actual and necessary expenses incurred in the performance of their duties hereunder.

§ 8. The commission is hereby authorized and empowered to enter into any agreements and to do and perform any acts that may be necessary, desirable or proper to carry out the purposes and objectives of this act.

§ 9. The commission shall no later than the fifteenth day of December, nineteen hundred seventy-three, make a final report to the governor, the legislature and the Department of Environmental Conservation.

§ 10. The commission shall continue in existence until March thirty-first, nineteen hundred seventy-four.

§ 11. The sum of one hundred thousand dollars ($100,000) or so much thereof as may be necessary, is hereby appropriated from any moneys in the state treasury in the general fund to the credit of the state purposes fund, not otherwise appropriated and shall be available for the fiscal year commencing April first, nineteen hundred sixty-nine, to the commission for its expenses, including personal

service and travel in and outside the state, in carrying out the provisions of this act. Such moneys shall be payable on the audit and warrant of the comptroller on vouchers certified or approved by the chairman or vice-chairman of the commission or by an officer or employee of the commission designated by the chairman.

§ 12. This act shall take effect immediately.