

Grade 8 Environmental Issues Inquiry New York State Archives

*******We would like feedback about this inquiry! If you would like to provide feedback, please send it to the following email address: jessica.maul@nysed.gov**

Compelling Question: Is there enough water?

Standards:

Social Studies:

8.8 DEMOGRAPHIC CHANGE: After World War II, the population of the United States rose sharply as a result of both natural increases and immigration. Population movements have resulted in changes to the American landscape and shifting political power. An aging population is affecting the economy and straining public resources. (Standards: 1, 3, 4, 5; Themes: ID, GEO, SOC, GOV, ECO)

8.8c Pollution, population growth, the consumption of natural resources, clearing of land for human sustenance, and large-scale industrialization have put added stress on the global environment.

→ Students will explore the effects of pollution, industrialization, and population growth on the environment, including urban areas (Love Canal), plant and animal life (Adirondack Park) and energy sources (Three Mile Island).

Science – 8th Grade Earth Science (Human Impact)

MS-ESS3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* [Clarification Statement: Examples of the design process could include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts could include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]

MS-ESS3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. [Clarification Statement: Examples of evidence could include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts could include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.]

Staging the Question:

<https://ny.pbslearningmedia.org/resource/psu08-liq.sci.watersystem/liquid-assets-a-water-system/#.Wfc6fFWnFp8>

Students view this video on the New York City water system to understand the current system for New York City's water supply. Discuss the current system and possible impacts on surrounding areas.

Supporting Question #1:

How did New York City get water in the early 20th century and what impact did this system have on the surrounding environment?

Formative Performance Task #1: Using evidence from the documents, list the impacts of the New York City water supply system on the environment.

Featured Sources:

Maps of the New York City Water Supply System, 1924

Photographs of the Reservoirs, Dams, and Aqueducts Supplying NYC with Water

Supporting Question #2:

What issues related to water supply did New York City face in the mid-20th century and what solutions were proposed?

Formative Performance Task #2: List the water issues faced by NYC in the late 1960s and describe the proposed solutions.

Featured Sources:

Developing and Managing the Water Resources of New York State, 1967 Pages 11, 15, 17, 23, 24, 33-35 <http://purl.nysed.gov/nysl/11437>

Supporting Question #3:

What impact would the proposed solutions have had on the environment and how did the public react to the proposal?

Formative Performance Task #3: List the effects of the proposed solution discussed in the article *The Upper Hudson: Time for a Decision* and summarize the reaction expressed in the letters.

Featured Sources:

The Upper Hudson: Time for a Decision in *The Conservationist*, December-January, 1968-69

Letters to the Governor Regarding the Proposed Water Plan (9)

Supporting Question #4:

How did state lawmakers respond to the public reaction regarding the proposed water plan?

Formative Performance Task #4: Summarize the action taken by lawmakers regarding the proposed water plan.

Featured Sources:

Legislators Set Joint Hearing on State's Wild Rivers Program from *The Leader-Herald, Gloversville*, February 22, 1969.

Excerpt from *The Wild, Scenic and Recreational Rivers System Act*, 1972

Argument: Using the case study from the 1960s as an example, explain the impact of a growing human population on water resources and discuss ways to ensure the sustainability of the water supply.

Extension Activity: Research New York City and New York State water consumption today. How does it compare to the predictions of the 1967 report?

<https://data.cityofnewyork.us/Environment/Water-Consumption-In-The-New-York-City/ia2d-e54m>

Taking Informed Action: Research water consumption in your local community. Is the information easily accessible? If not, find out who you could contact to make that information available to the public. Are there concerns about water supply and sustainability in your community? Does your community have a water conservation program?



New York State Archives

DIGITAL COLLECTIONS

EDUCATION

GRANTS & AWARDS

MANAGING RECORDS

RESEARCH

WORKSHOPS

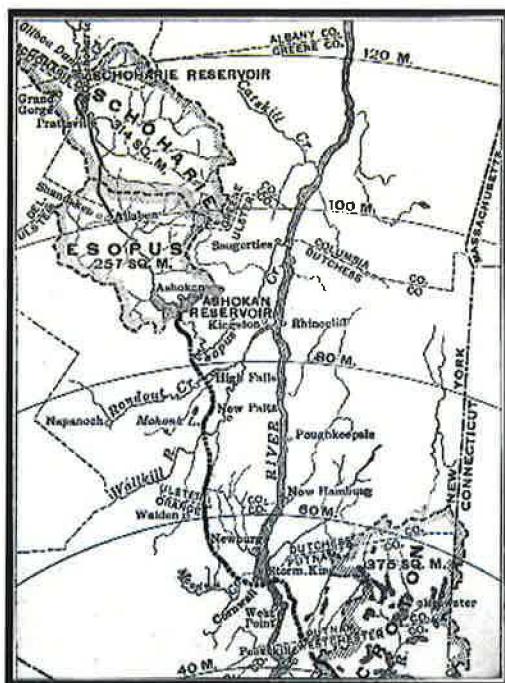
Digital Collections

SEARCH DIGITAL COLLECTIONS

BROWSE THE COLLECTION COPYRIGHT LEARNING ACTIVITIES

< Previous Back Next >

Map of Northern Section of New York City Water Supply System. From J.R. Smith's "Human Geography," Book I. Copyright, 1924, The John C. Winston Company



Map of Northern Section of New York City Water Supply System. From J.R. Smith's "Human Geography," Book I. Copyright, 1924, The John C. Winston Company. Map showing waterways and reservoirs supplying water to New York City north of Westchester County from Westchester through Greene County. Map ... [\[more\]](#)

Identifier: NYSA_A3045-78_Dn_N7

Date: 1924

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnN7

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 144663.
Call Numbers: Dn_N7

Relation: **Is format of:** Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnN7

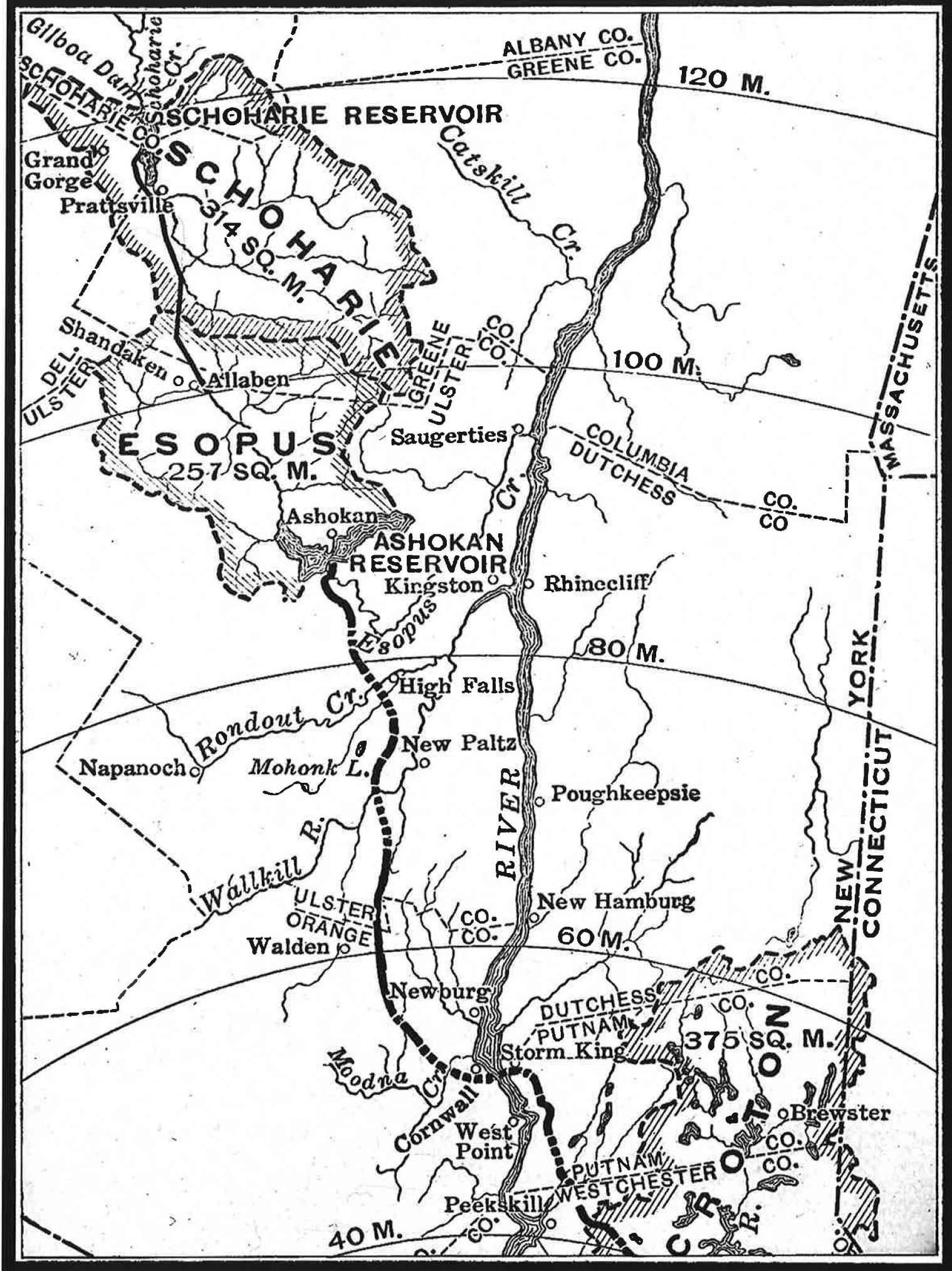
Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Orange County](#) (is associated with)
[Dutchess County](#) (is associated with)
[Putnam County](#) (is associated with)
[Rockland County](#) (is associated with)
[Westchester County](#) (is associated with)
[Columbia County](#) (is associated with)
[Ulster County](#) (is associated with)
[Greene County](#) (is associated with)
[New York City](#) (is associated with)







New York State Archives

DIGITAL COLLECTIONS

EDUCATION

GRANTS & AWARDS

MANAGING RECORDS

RESEARCH

WORKSHOPS

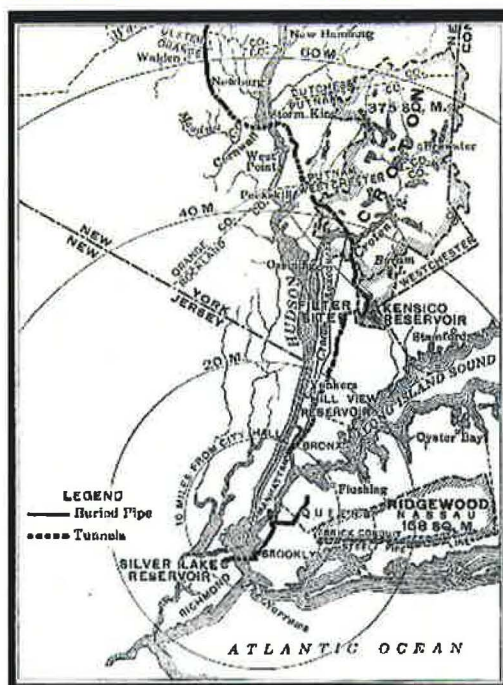
Digital Collections

SEARCH DIGITAL COLLECTIONS

BROWSE THE COLLECTION COPYRIGHT LEARNING ACTIVITIES

< Previous Back Next >

Map of Southern Section of New York City Water Supply System. From J.R. Smith's "Human Geography," Book I. Copyright, 1924, The John C. Winston Company



Map of Southern Section of New York City Water Supply System. From J.R. Smith's "Human Geography," Book I. Copyright, 1924, The John C. Winston Company. Map shows waterways and reservoirs supplying water to New York City south of Ulster County from Orange County to Richmond County. Map includes ... [more](#)

Identifier: NYSA_A3045-78_Dn_N72

Date: 1924

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnN72

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 144662,
Call Numbers: Dn_N72

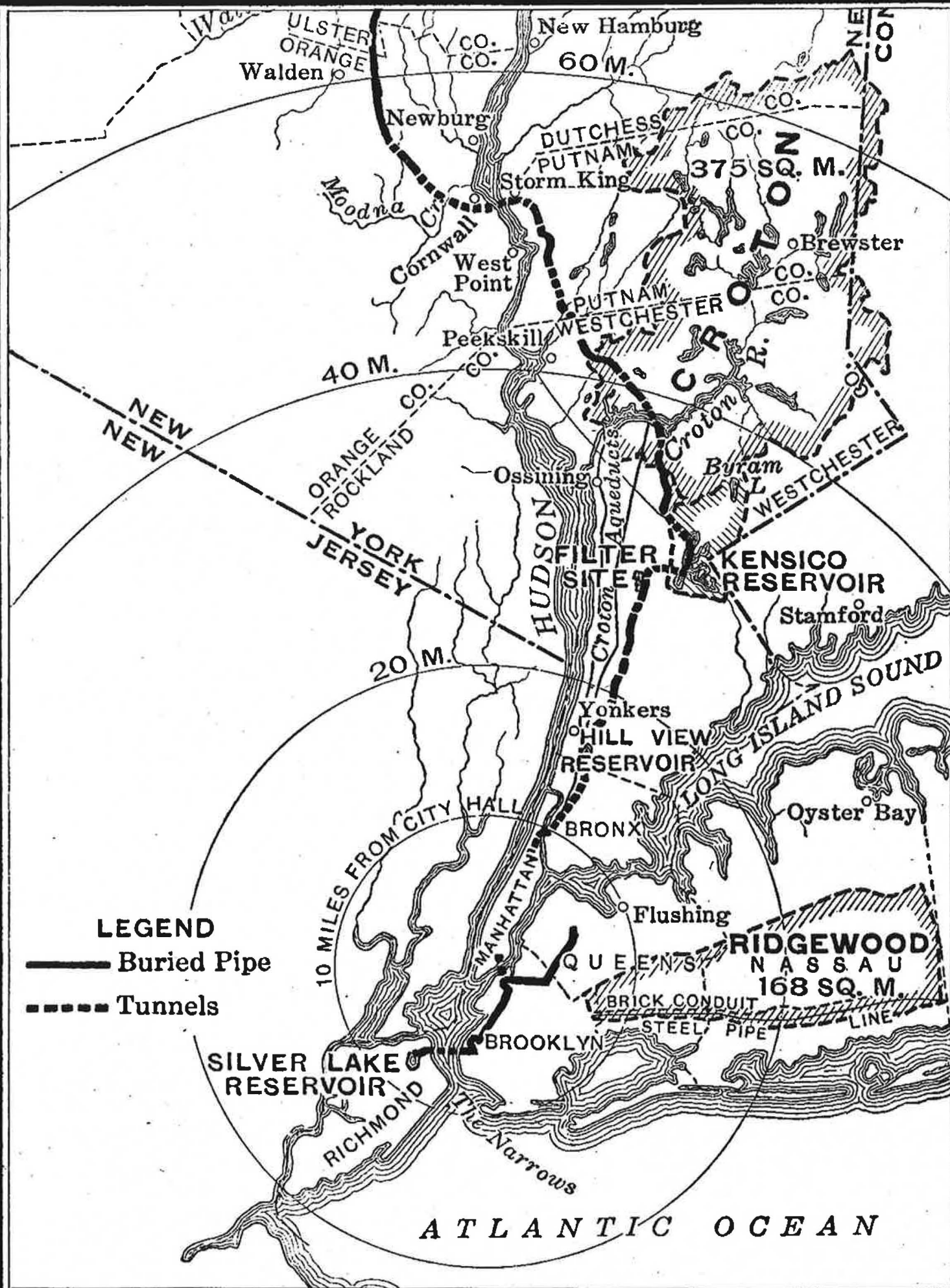
Relation: **Is format of:** Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnN72

Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Orange County](#) (is associated with)
[Dutchess County](#) (is associated with)
[Putnam County](#) (is associated with)
[Rockland County](#) (is associated with)
[Yonkers](#) (is associated with)
[Bronx](#) (is associated with)
[Queens](#) (is associated with)
[Brooklyn](#) (is associated with)





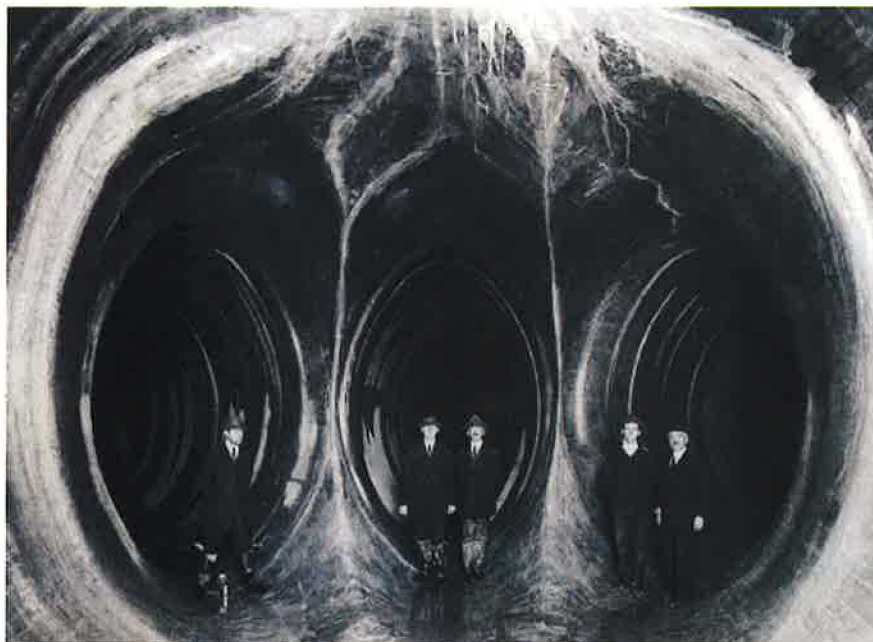
New York State Archives

[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#) [Back](#) [Next >](#)

Catskill Aqueduct



Catskill Aqueduct, showing interior division into three channels for siphon connections. Catskill, from negative of Ewing Galloway, (1923).

Identifier: NYS_A3045-78_P8498

Date: 1923

Language: English

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional glass lantern slides, ca. 1856-1939. Series A3045-78, Preliminary No. 8498; Test slide 24613.

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 1856,
Negative Numbers: P8498



Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Greene County](#) (is associated with)



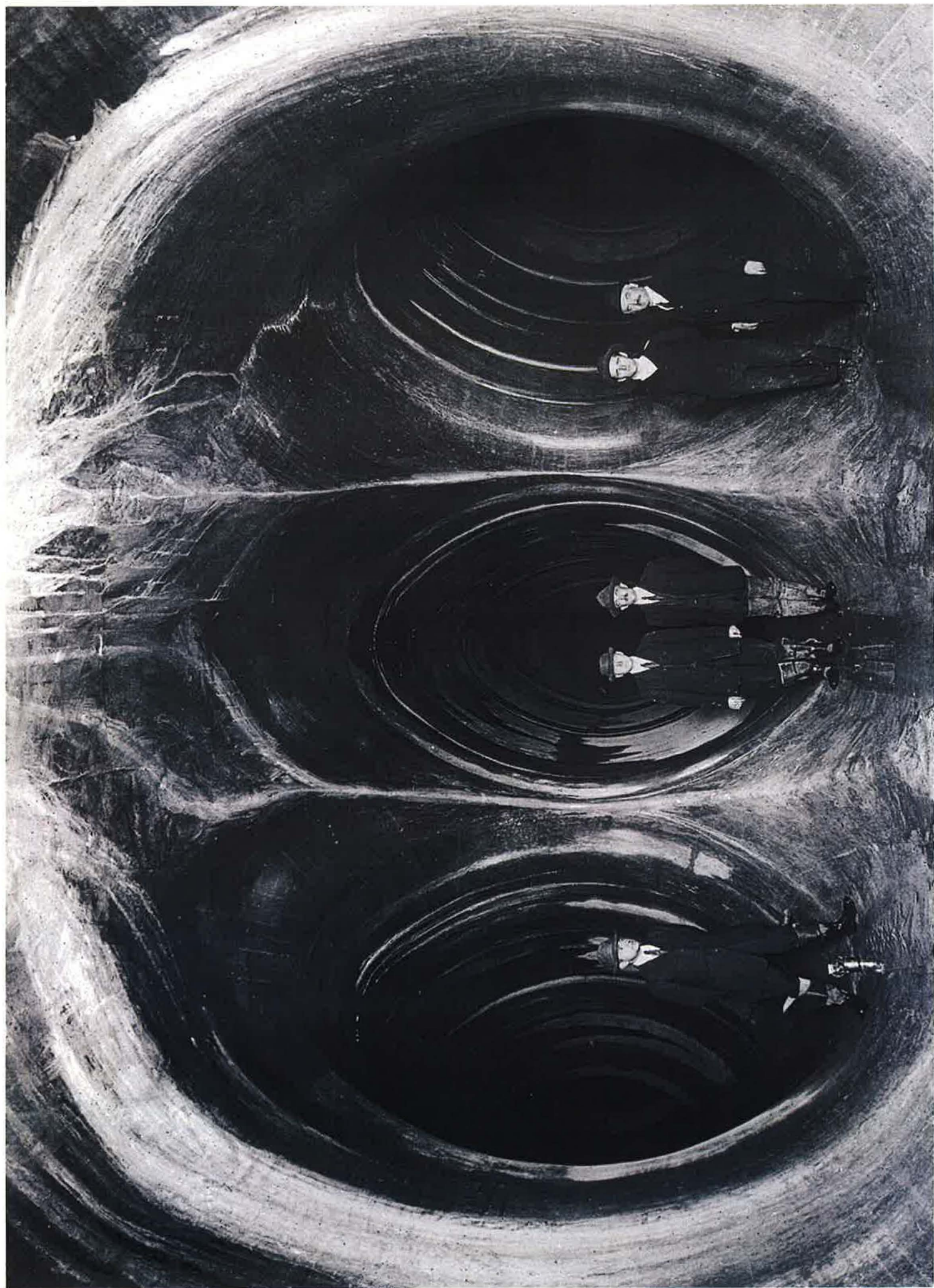
The New York State Archives is part of the Office of Cultural Education, an office of the New York State Education Department.

[About Us](#)
[Contact Us](#)
[Finding Aids](#)
[News](#)
[Site Map](#)

[New York Archives Magazine](#)
[Archives Partnership Trust](#)
[New York State Historical Records Advisory Board](#)
[Office of Cultural Education](#)

[New York State Education Department](#)
[New York State](#)
[Privacy Policy](#)
[Terms of Use](#)

To report technical problems with this web site, please contact the New York State Archives at archinfo@nysed.gov





New York State Archives


[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#)
[Back](#)
[Next >](#)

Gilboa Reservoir, Aerial View, Looking South



Aerial view of the Schoharie Reservoir, looking south. A dam blocks the near end of the reservoir. The Catskill Mountains loom in the distance.

Identifier: NYSA_A3045-78_Dn_SdG1

Contributor: Fairchild Aerial Surveys, Inc.

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide DnSdG

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 144683.

Call Numbers: Dn_SdG1

Relation: **Is format of:** Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide DnSdG



Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Catskill Mountains](#) (is associated with)

[Schoharie County](#) (is associated with)



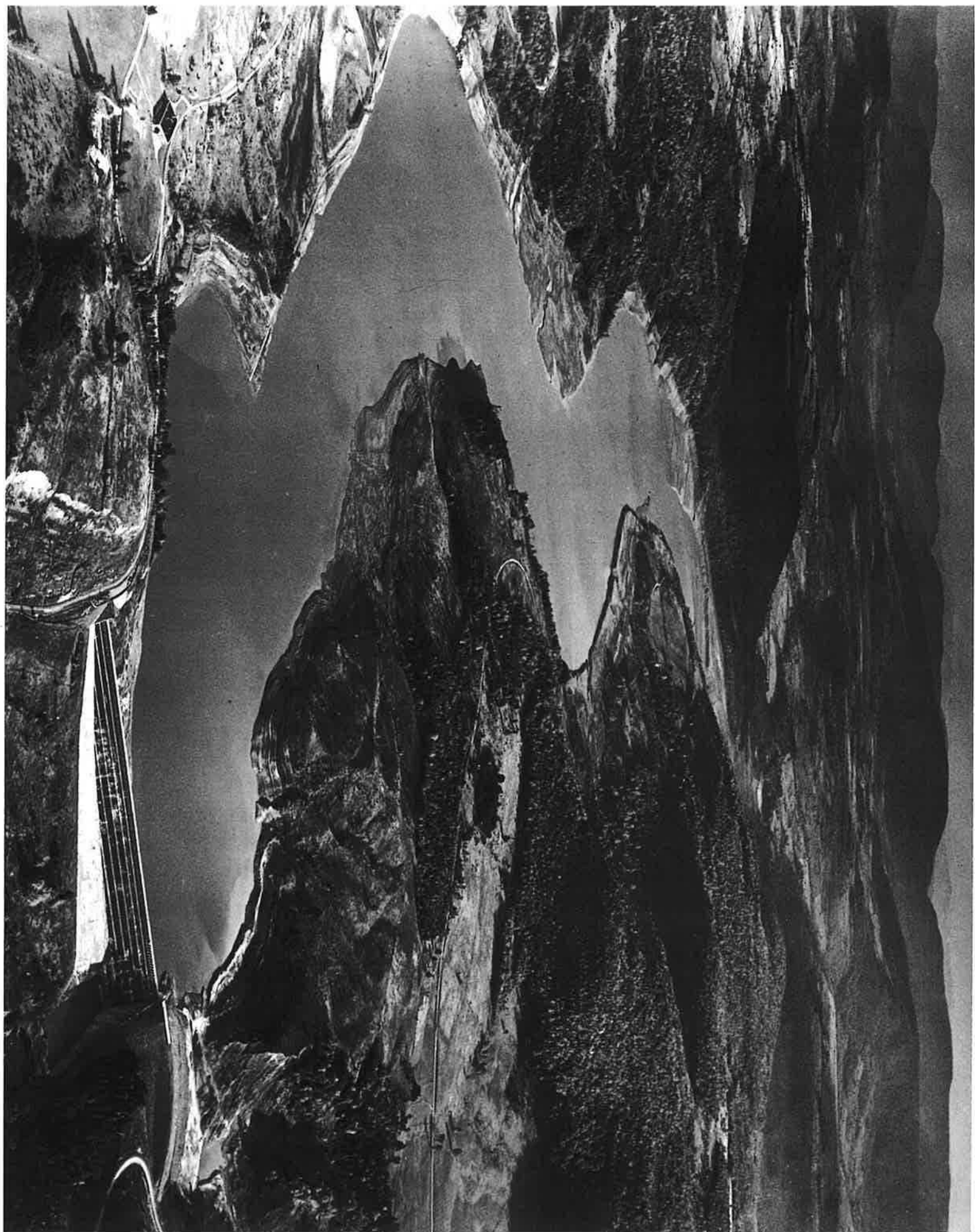
The New York State Archives is part of the Office of Cultural Education, an office of the New York State Education Department.

[About Us](#)
[Contact Us](#)
[Finding Aids](#)
[News](#)
[Site Map](#)

[New York Archives Magazine](#)
[Archives Partnership Trust](#)
[New York State Historical Records Advisory Board](#)
[Office of Cultural Education](#)

[New York State Education Department](#)
[New York State](#)
[Privacy Policy](#)
[Terms of Use](#)

To report technical problems with this web site, please contact the New York State Archives at archinfo@nysed.gov





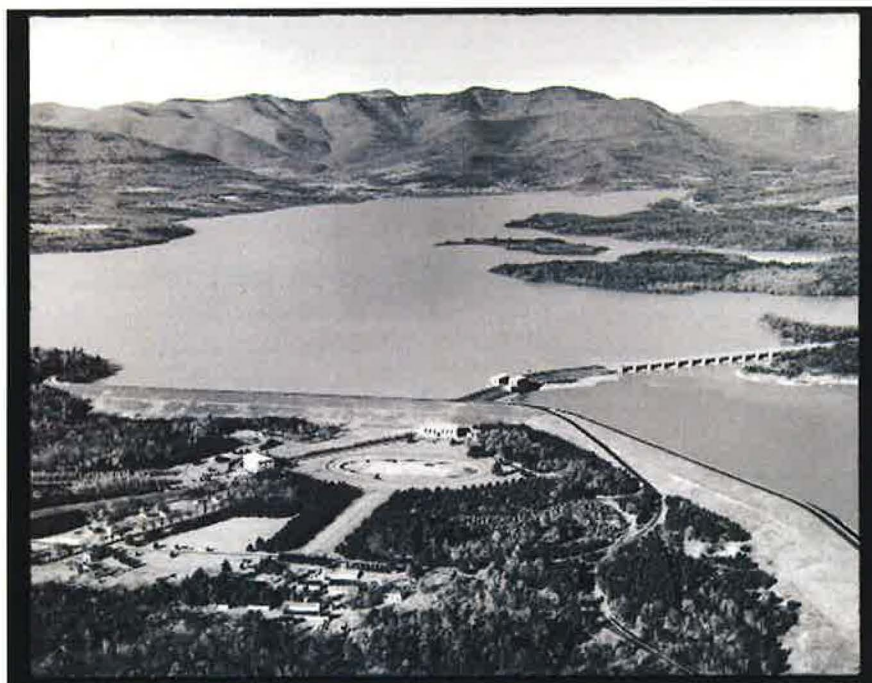
New York State Archives

[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#)
[Back](#)
[Next >](#)

Ashokan Reservoir, New York, Aerial View



Aerial view of Ashokan Reservoir in New York. In the foreground are several houses and a park-like area among the trees. On the right, roads lead around the reservoir and to a bridge or dam that crosses the reservoir at a narrow point. The Catskill Mountains loom in the distance.

Identifier: NYSA_A3045-78_Dn_HuE4

Date: 1933

Contributor: Fairchild Aerial Surveys, Inc.

Repository: New York State Archives

Source: New York State Archives, Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide DnHuE4

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 144684,
Call Numbers: Dn_HuE4

Relation: Is format of: Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide DnHuE4

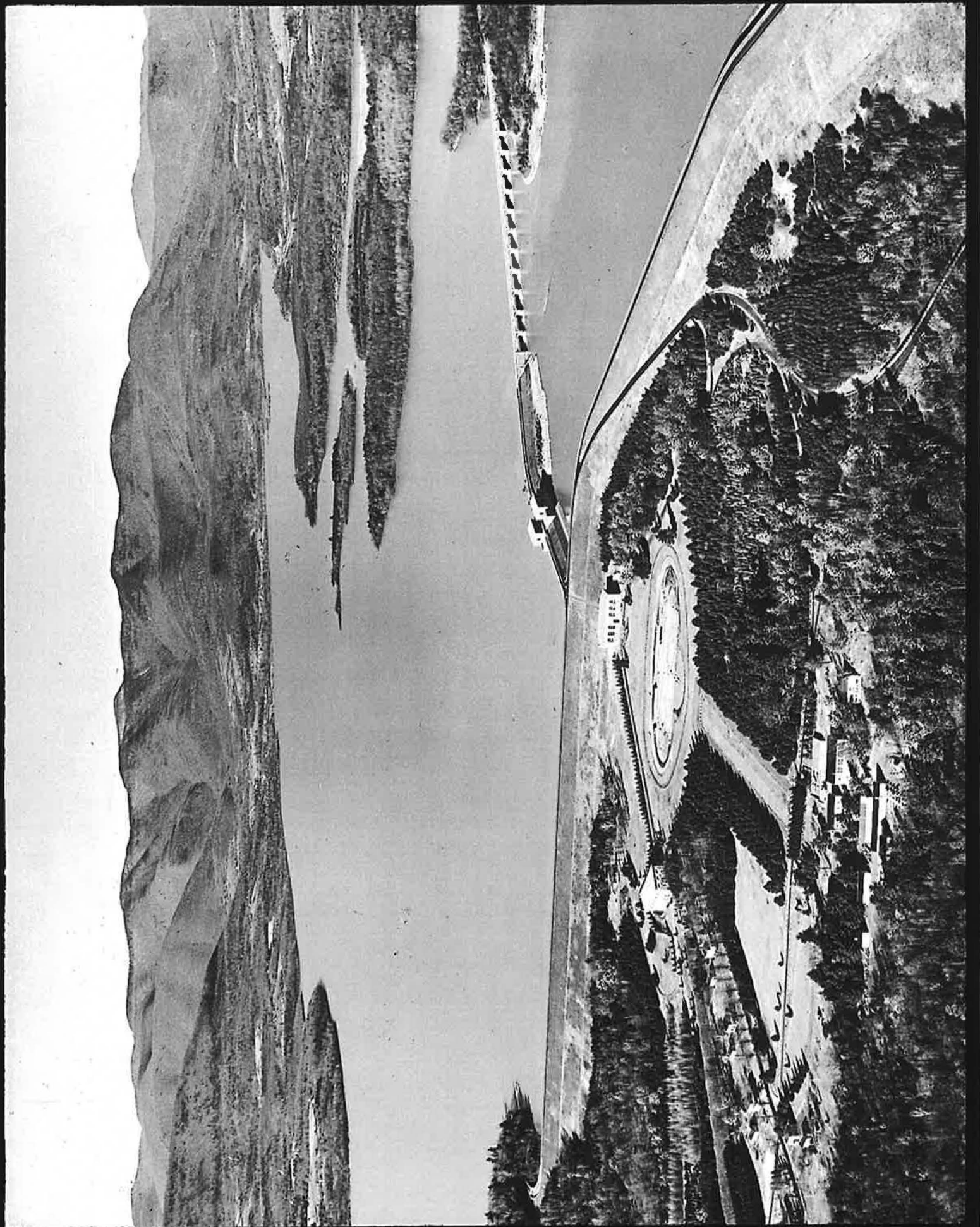
Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Catskill Mountains](#) (is associated with)
[Ulster County](#) (is associated with)







New York State Archives

[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#)
[Back](#)
[Next >](#)

New York. Croton Dam and end of reservoir, Westchester Co.



View of the Croton Dam and reservoir in the town of Cortlandt in Westchester County. A car can be seen approaching a roadway built over the top of the dam. Forest covered hills surround the reservoir. The dam was built in 1842 to supply New York City with water.

Identifier: NYSA_A3045-78_Dn_Cvd3

Date: 1912

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnCvd3

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 143153.
Call Numbers: Dn_Cvd3

Relation: **Is format of:** Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnCvd3

Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Westchester County](#) (is associated with)



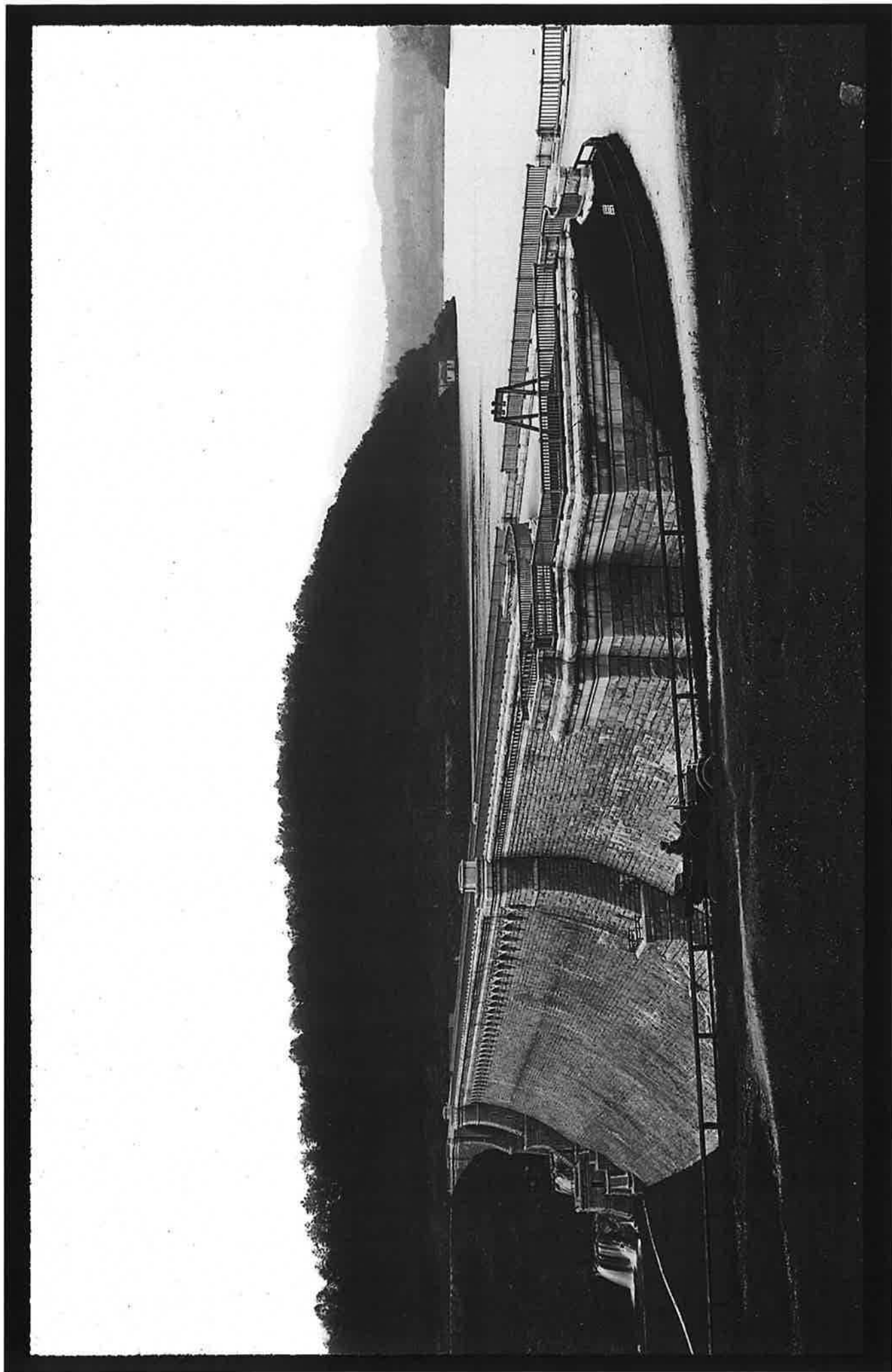
The New York State Archives is part of the Office of Cultural Education, an office of the New York State Education Department.

[About Us](#)
[Contact Us](#)
[Finding Aids](#)
[News](#)
[Site Map](#)

[New York Archives Magazine](#)
[Archives Partnership Trust](#)
[New York State Historical Records Advisory Board](#)
[Office of Cultural Education](#)

[New York State Education Department](#)
[New York State Privacy Policy](#)
[Terms of Use](#)

To report technical problems with this web site, please contact the New York State Archives at archinfo@nysed.gov





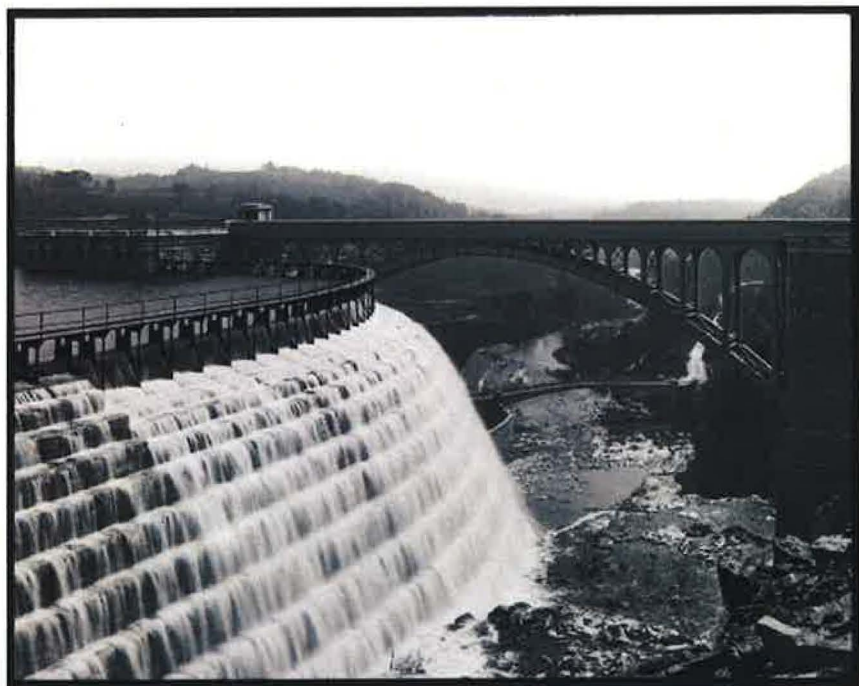
New York State Archives

[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#)
[Back](#)
[Next >](#)

New York. Croton Dam from above, showing spillway, gates, bridges and Croton River Valley. Westchester Co.



View from above the Croton Dam in the town of Cortlandt in Westchester County showing the spillway, gates, bridges and Croton River Valley. Hills and farmland can be seen in the distance. The dam was built in 1842 to supply New York City with water.

Identifier: NYSA_A3045-78_Dn_Cvd2

Date: 1912

Repository: New York State Archives

Source: New York State Archives, Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnCvd2

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 143154,
Call Numbers: Dn_Cvd2

Relation: Is format of: Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives, Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, DnCvd2

Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Westchester County](#) (is associated with)

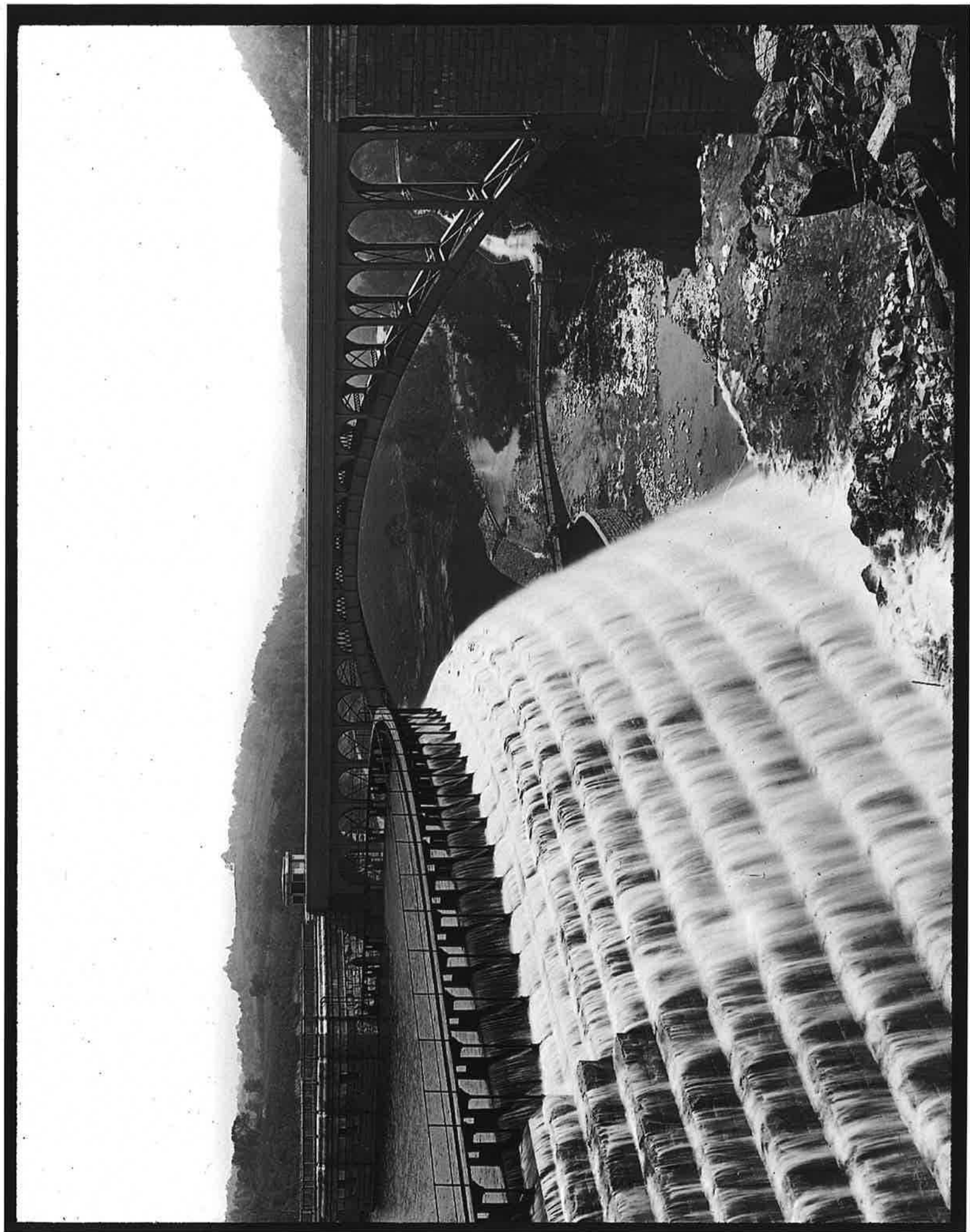


The New York State Archives is part of the Office of Cultural Education, an office of the New York State Education Department.

[About Us](#)
[Contact Us](#)
[Finding Aids](#)
[News](#)
[Site Map](#)

[New York Archives Magazine](#)
[Archives Partnership Trust](#)
[New York State Historical Records Advisory Board](#)
[Office of Cultural Education](#)

[New York State Education Department](#)
[New York State Privacy Policy](#)
[Terms of Use](#)





New York State Archives

[DIGITAL COLLECTIONS](#)
[EDUCATION](#)
[GRANTS & AWARDS](#)
[MANAGING RECORDS](#)
[RESEARCH](#)
[WORKSHOPS](#)

Digital Collections

[SEARCH DIGITAL COLLECTIONS](#)
[BROWSE THE COLLECTION](#)
[COPYRIGHT](#)
[LEARNING ACTIVITIES](#)
[< Previous](#)
[Back](#)
[Next >](#)

High Bridge in New York City



View of High Bridge, a multiple-arch bridge over the Harlem River near New York City. Opened in 1848, the bridge, which runs from Manhattan to the Bronx, is the oldest bridge in New York City connecting two boroughs. It was built to accommodate the Croton Aqueduct, which carried water from the ... [\[more\]](#)

Identifier: NYSA_A3045-78_D47_NB95

Date: 1895 - 1910

Repository: New York State Archives

Source: New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide D47_NB95, Box 11

Rights: This image is provided for education and research purposes. Rights may be reserved. Responsibility for securing permissions to distribute, publish, reproduce or other use rest with the user. For additional information see our [Copyright and Use Statement](#).

Alternate Identifier: DMS ID Number: 142787,
Call Numbers: D47_NB95

Relation: Is format of: Digital representation of 3.25in.x4in. b&w lantern slide in New York State Archives. Education Dept. Division of Visual Instruction. Instructional lantern slides, 1911-1925, A3045-78, Lantern slide D47_NB95

Related collections

[Instructional lantern slides](#) (is part of)

Related places

[Manhattan](#) (is associated with)

[Bronx](#) (is associated with)

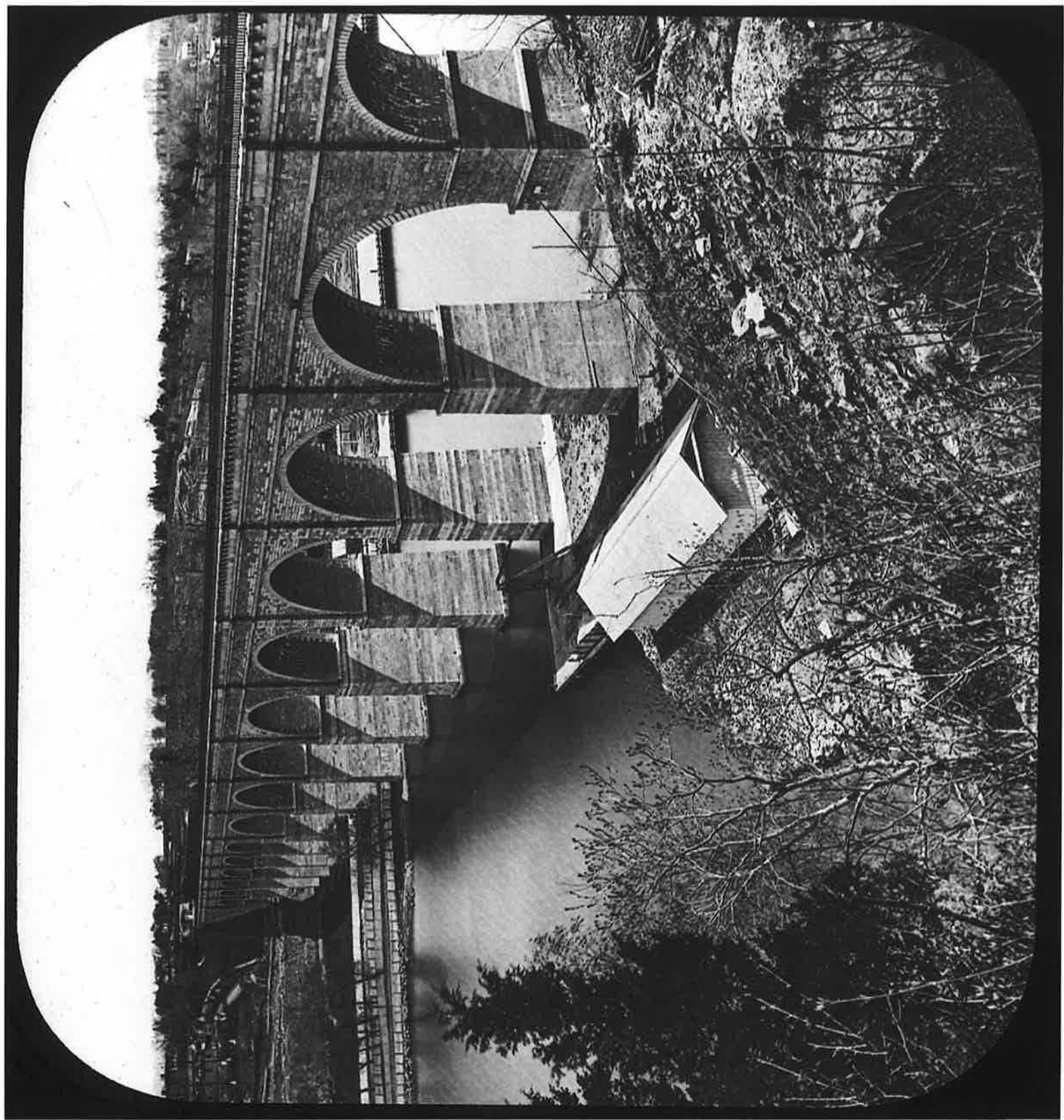


The New York State Archives is part of the Office of Cultural Education, an office of the New York State Education Department.

[About Us](#)
[Contact Us](#)
[Finding Aids](#)
[News](#)
[Site Map](#)

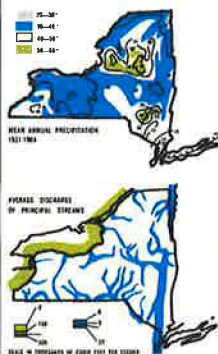
[New York Archives Magazine](#)
[Archives Partnership Trust](#)
[New York State Historical Records Advisory Board](#)
[Office of Cultural Education](#)

[New York State Education Department](#)
[New York State](#)
[Privacy Policy](#)
[Terms of Use](#)



What We Have..... WATER RESOURCES AVAILABILITY

New York State is rich in land and water resources. Average annual precipitation is 40 inches over the State area of 49,600 square miles, representing an average annual supply of 5,600 gallons per capita per day. About half the water returns to the atmosphere by evaporation from land and water surfaces and by transpiration from vegetation. The remainder runs off through stream channels except



for a small portion which percolates through the soil and becomes ground water.

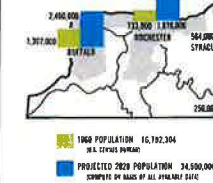
In addition to the annual supply—which distinguishes water as a renewable resource—there are enormous quantities in storage on more than 350 miles of water boundary and within the State. Freshwater supplies in the Great Lakes, Erie and Ontario, and Lake Champlain are shared with other states and Canada. The Atlantic Ocean has a great untapped potential as a saltwater and possible freshwater resource. Innumerable interior lakes dot the State, with more than 1,100 in the Adirondacks alone. The largest are Lake George,



Lake Chautauque, Oneida Lake and the major Finger Lakes: Canadigua, Keuka, Seneca, Seneca and Cayuga. The total lake water surface area of 3,500,000 acres is equivalent to more than ten percent of the State's area.

Water moves through the State in a drainage system comprising 70,000 miles of rivers and streams. The Barge Canal system is a combination of water resources lying together over 40 percent of the State. There are also hundreds of miles of saltwater shoreline which have unique characteristics and potentialities.

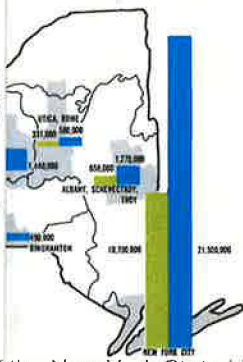
Ground water supplies sufficient to meet small municipal and individual domestic needs are widespread. Large reservoirs of underground storage are located on Long Island, along the Mohawk and Susquehanna Rivers and in other areas. Many potentially large ground water supplies have not been quantitatively identified yet.



PROJECTED GROWTH OF STANDARD METROPOLITAN STATISTICAL AREAS (1960 CENSUS BOUNDARIES)

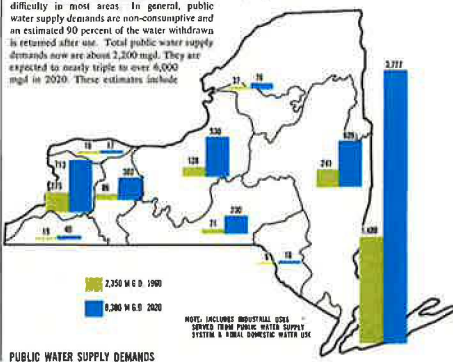
What We Need.... WATER DEMANDS

Only a small part of the total water resources available in the State are being used for withdrawal purposes. Nevertheless in some areas local supplies have been completely developed. The most notable example is New York City which taps sources many miles away for its water supply system. Likewise the Onondaga County water system extends about 20 miles to Lake Ontario for a source of supply. Major use is made of water resources for non-



consumptive purposes, including recreation, fish and wildlife, navigation, hydroelectric power generation and water transport and dilution. Considering all purposes the State's resources are subject to heavy demands.

Public water supply demands are of major importance in the total demands. They are concentrated in the major urban complexes, New York City, Buffalo-Niagara Falls, Syracuse, Rochester and others. Extensive supplies have been developed in these areas to take care of local needs. Most smaller communities also have public water supply systems. Individual needs can be taken care of without difficulty in most areas. In general, public water supply demands are non-consumptive and an estimated 90 percent of the water withdrawn is returned after use. Total public water supply demands now are about 2,300 mgd. They are expected to nearly triple to over 6,000 mgd in 2020. These estimates include



NOTE: INCLUDES INDUSTRIAL USES SERVED TO AND FROM PUBLIC WATER SUPPLY SYSTEMS & DOMESTIC WATER USE

PROBLEMS AND SOLUTIONS

This New York City reservoir, empty during the peak of a recent summer drought, exemplifies New York State water resources problems, large and small, which must be responsive to the State's Accelerated Water Resources Program.

A complete definition of State water problems and their solution has not been made yet. However, the needs and potentials for water resources development have been determined on a regional basis. These, in turn, indicate the nature of probable solutions and the possible major elements of a comprehensive statewide water resources development plan. The ultimate objective is the effective management of our water resources.

The major water resources needs in the State are:

- Overall improvement of water quality
- Major new water supply sources for the New York City Metropolitan area
- Flood control for the Susquehanna River Basin
- Statewide flood plain management
- Improved management of the major lakes in the State
- Development of water-based recreation facilities
- Development of the Barge Canal System as a total water resource
- Flow regulation
- Irrigation water



From th

Water Quality Management

The major step forward in water quality management was the Pure Waters Program, initiated in 1965 with public approval of a billion-dollar Pure Waters Bond Act. The statewide cooperative program to ensure that all waters will meet the stream classification standards established by the Water Resources Commission is well underway. As a result of the construction of adequate sewage and industrial waste treatment facilities anticipated under this program, presently polluted water supplies will attain a high enough quality to meet many short and long range water needs. Nevertheless, additional supplies must be developed to meet major water demands. Reservoir storage to implement low stream flows during natural low flow periods, will increase stream assimilation capacities and provide an important water quality management tool to supplement improved waste treatment.



From the digital collections of the New York State Library.

Water Supply— New York City

Public water supply demands in the New York City Metropolitan Area (which include the city and five adjoining counties) are expected to increase from 1,500 mgd at present to about 4,000 mgd in 2020. Total available supplies are about 2,600 mgd. New sources must be developed to meet the future need for 1,400 mgd. Supplying this is equivalent to doubling the yield of the present New York City system.

The capital cost of New York City's present supply system is more than a billion dollars. These past developments indicate the scope of future efforts required to meet the area-wide needs and ultimately the regional needs extending into adjoining states.

The reconnaissance indicates further developments can be made in the Hudson River Basin to meet future needs. Supplies can be obtained by direct withdrawal from the river with treatment and upstream storage. Additional investigations are being made in a State-financed, inter-municipal public water supply study for the New York City-Westchester County area, giving consideration to within-basin sources, inter-basin diversions and system operation and management problems.



From the New York State Library

THE PLAN

The primary objective of water resources planning in New York State is to provide a framework within which to allocate available resources in an optimum manner for meeting the needs and desires of the people of the State. The planning involves two basic considerations—quantity and quality. Adequate quantities of water of suitable quality must be supplied to meet present and future needs—if the State is to continue to grow and prosper. To meet this goal, an overall plan must include all significant potentials, such as development and utilization of ground water, better regulation and use of natural lakes and construction of surface reser-

voirs. The nature of an overall plan is emerging from the current basin and regional studies.

The most apparent need now is for additional major storage reservoirs to ameliorate the most critical water problems and to develop the greatest potential benefits. There are hundreds of possible reservoir sites in the State. However, good sites are limited. Through a series of progressively more stringent screening processes, the number of sites has been reduced to a relatively few which appear to be the most promising. Fifty-eight have been selected in this category. The potential reservoirs would have 6,200,000 acre-feet of storage and would add 153,000 acres to the State's water surface. The estimated capital cost of construction is \$914,000,000.

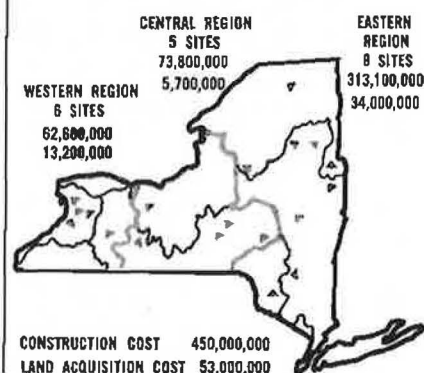
More detailed project feasibility studies may show some of these sites to be less desirable. Others may be scheduled for construction far into the future. Included in the suggested initial development plan are those sites likely to prove feasible after more intensive studies. Preliminary evaluations indicate these sites can meet certain well-defined needs and have outstanding capabilities for multi-purpose development. The suggested plan considers possible development of 20 reservoirs with 2,700,000 acre-feet of storage and 67,000 acres of water surface. The estimated present capital cost of construction is \$450,000,000, including land acquisition costs but not those of related recreational facilities. The distribution of sites is shown on this page. The acquisition of any sites that may be within the Forest Preserve must be within the Constitution.

The plan shows the magnitude of investments which must be made if the State is to keep pace with its growing population by managing its basic natural resources to provide for continued economic growth. It is estimated that approximately one-third of the construction cost will be underwritten by federal funds.

The benefits of such a program would include major benefits for public water supply, recreation, fish and wildlife and flood control. Less extensive, but nevertheless important, benefits would be realized for agricultural water supply (irrigation), water quality control, hydroelectric power generation and navigation. Basic indirect benefits, such as stimulation of industrial growth and enhancement of adjoining shore areas, are potentially large. Under the Pure Waters Program, nearly \$2 billion has been assigned to clean up our waters. The dimension of multi-purpose water resources capital construction seems a realistic additional investment to guarantee the success of the Pure Waters Program and to provide the basic foundation for continued economic growth and social well-being in the Empire State.

Implementation of the plan will require a major coordinated effort at all levels of public and private endeavor. New legal, financial and institutional arrangements will have to be developed to overcome the many obstacles involved. Imaginative and creative thinking will have to be applied to resolve formidable tech-

RESERVOIR DEVELOPMENT PROGRAM FIRST STAGE



nical and management problems. The public interest will have to supersede vested self-interests. The challenge is great, but it has been met in similar programs elsewhere. Modern concepts of water resources development indicate the direction of major efforts.

The planning, development and management of water resources is a responsibility shared by agencies at all levels of government—local, state and federal. On this premise many forces can be applied to move the program forward through successive stages. Regional Water Resources Planning and Development Boards created under existing State law (Part V, Article V of the Conservation Law) can develop comprehensive plans for the management of water resources. The programs can be directed by the State Water Resources Commission, which is charged with coordinating State agency functions related to water resources and with formulating State policy. The member State agencies can provide major assistance in their various areas of responsibility.

Through the Water Resources Commission, Federal agency capabilities are brought to bear in State-directed planning endeavors. As a result of State efforts, Congress in 1966 authorized the Corps of Engineers to utilize federal funds to cooperate in New York State planning activities. A large joint program with the U. S. Geological Survey, in which the Federal government matches State funds, dollar for dollar, is underway. The Soil Conservation Service is providing direct support with federal funds to the Regional Board activities through cooperative arrangements.

Project financing, which is frequently a stumbling block, similarly can be expedited by cooperative effort. Existing national programs

provide for payment of construction costs and cost-sharing for certain types of projects and for various project purposes. The Corps of Engineers and Soil Conservation Service are the major water resources project construction agencies in New York.

New areas of cooperation are in the process of being explored. For example, the State might undertake the responsibility for feasibility investigations and design for structures in a comprehensive river basin development plan evolved in cooperation among State and federal agencies, with the cost of these responsibilities later to be reimbursed through federal appropriation. This would, of course, involve prior agreement with the federal construction agency which would normally undertake these activities.

Another possibility is the obtaining of first instance funds from the Federal government for facility construction to meet special functions, such as recreation storage in reservoirs (CF the Federal Water Supply Act of 1958 water supply storage as needed).

The State has a primary interest in plan implementation and could assume an appropriate share of the cost. The citizens of the State recently demonstrated their concern for water resources by approving a \$1 billion bond issue to fight water pollution. With water supplies of adequate quality the next logical objective is greater utilization through multi-purpose development. Local communities likewise have a major interest in projects in their vicinity and can be expected to share in the costs as well as benefits. The belief that project costs should be allocated among beneficiaries in proportion to their benefits is basically sound and widely acknowledged.

THE FIRST STEP

Historically, progress in water resources development has come by crisis and catastrophe instead of by planning. Floods have stimulated control works; droughts have fostered water supply developments. Between the crises there usually has been little action. The critical need is long-range planning for orderly development to meet foreseeable needs and to develop the full potential of water resources.

The planning process, precursor to development, is time-consuming. Comprehensive studies are required on a multitude of aspects. Basic data are frequently lacking and must be collected and analyzed. Major research, extensive field investigations, system analyses and model studies are required. It is imperative that these major planning efforts be completed as expeditiously as possible.

Meanwhile the increasing pressures of population and economic growth will imperil key reservoir sites. Often these sites are also the most suitable ones for other purposes, such as highway crossings, industrial plant locations, housing development and agriculture. Sites which were reported on most favorably 20 to 30 years ago have been preempted by other developments. At best, additional developments within potential project areas would make them more expensive and less economically feasible. At worst, they would make projects prohibitively expensive.

Thus, the FIRST STEP is

Reservation of Reservoir Sites—A program must be evolved and financing provided for acquisition or reservation of reservoir sites, including lands needed for public access to the water surface.

F. General Water Development Resources Plan

1. APPROACH TO PROBLEMS

Planning for water resources development in the Eastern Region involves two principal water uses—public water supply and recreation. Public water supply demands vary almost directly with the population, which is expected to more than double in the region by 2020. Recreational water demands are increasing even more rapidly than the population.

The Albany-Troy-Schenectady Area and the Utica-Rome Area have population concentrations with major public water supply requirements that are being reasonably well met. Other smaller centers located in the northern portion of the region have surface water and ground water supplies that are generally adequate. Any supply problems are local in nature. In the mid-Hudson area, the major centers of Newburgh, Beacon and Poughkeepsie can obtain additional supplies from the Hudson River with proper treatment.

Ground water supplies are available in limited quantities throughout the major river valleys in the region. The Mohawk River Valley contains the largest supplies because of extensive highly permeable sand and gravel deposits. Only a small fraction of the total supplies have been developed. The principal area of ground water availability and supply is on Long Island. At present different parts of the Island are in different stages of ground water development. Kings County and northeastern Queens County now receive nearly all their water from the New York City municipal system. Deep wells are used in the remainder of Queens County with some indications of excessive withdrawals causing salt water intrusion. Western Nassau County is at a similar stage of development. Eastern Nassau County and Western Suffolk

County are supplied mainly from deep wells with some local imbalances and some potential for additional supplies. Shallow, privately-owned wells predominate in eastern Suffolk County where large additional supplies can be developed. Local ground water supplies will be inadequate in parts of the Island within the next 10 years. For the Island as a whole, supplies are available to meet demands for 40 to 50 years, but large scale artificial re-charging will be required.

The greatest water supply problem in the region is in the New York City Metropolitan Area. The present Croton, Catskill and Delaware water supply systems for New York City proved scarcely adequate during the recent drought. Even with the addition of Cannonsville Reservoir, water supplies will be sufficient only to 1975-1980. Thereafter a major source of additional supply is required.

Surface waters offer the best potential for meeting future New York City needs. There are large potentials for additional development in the Hudson River Basin. A surplus of about 5,500 mgd is available in the basin. Use of significant quantities will require additional storage for flow regulation and control of the salinity front. Potential usable storage of over 2,500,000 acre-feet can be obtained in the basin by development of new reservoir sites and redevelopment of existing sites.

Many reservoir sites have been identified in the Eastern Region. Single-purpose recreational reservoirs and recreational facilities in conjunction with water supply reservoirs can be constructed at many locations. The abundance of surface water supplies and opportunities for multi-purpose development suggest a system of major reservoirs at key locations as the basic framework for a water resources development plan.

2. GENERAL PLAN

Seventeen reservoir sites in the Eastern Region appear to have the most potential merit



and are most favorable for development. Pertinent data for the sites are summarized in the map on the opposite page and Table 1.

Nine sites are located in the Hudson River Basin, three each are in the St. Lawrence River and Lake Champlain Basins and one each is in the Black River and Delaware River Basins. The total estimated capital cost of all developments is \$517,000,000. The sites could provide 3,520,000 acre-feet of storage and 92,000 acres of water surface. It is estimated that associated recreational facilities would cost about \$58,000,000.

The Gooley No. 1 site in the upper Hudson River Basin has the greatest potential for storage, but is followed closely by Forestport Reservoir in the Black River Basin and Hinkleley redevelopment in the Mohawk River Basin. Although all the sites have potential for a variety of uses of storage, primary reservoir functions would be public water supply, recreation and possible export of water to adjoining basins.

Nine of the sites appear to have the most favorable characteristics for initial development. These sites are Gooley No. 1, Trout Brook, Ganahgote, Shushan and Fort Hunter in the Hudson River Basin, Huckleberry Marsh in the St. Lawrence River Basin, Halfway Lake in the Lake Champlain Basin, the McKeever Diversion—Forestport Reservoir in the Black River Basin and Bridgeville Reservoir in the Delaware River Basin.

The five Hudson River Basin projects have



an estimated cost of \$223,000,000. They would provide 1,200,000 acre-feet of storage and 26,500 acres of water surface. Associated recreational facilities would cost about \$21,000,000.

The Gooley No. 1 site is one of seven possible sites in the same general location in the upper Hudson sub-basin. It has the lowest unit storage cost, but is representative of a project in this area. The site is in the Adirondack Park on the Hudson River one-half mile downstream from its confluence with the Indian River. Reservoir storage would be used primarily for water supply. A minimum regulated flow of 595 mgd could be obtained based on a storage-regulated flow relation for the critical 5-year drought period, 1961-1965. Releases into the Hudson River would provide additional benefits for water quality control, fish and wildlife, navigation and power generation en route to downstream municipal, industrial and agricultural water users. The adjoining area could be developed into an outstanding center for future recreation.

The Trout Brook site is in the same general area on a tributary of the Schroon River. This site, also, is in the Adirondack Park. The reservoir would be considerably smaller and would provide a minimum regulated flow of 74 mgd. The adjoining area has excellent recreation possibilities along the south shoreline facing wooded mountains to the north.

The Ganahgote site is in the lower Hudson

sub-basin on Shawangunk Kill near its confluence with the Wallkill River. Few feasible reservoir sites remain in the area because of extensive urban and suburban developments. As a dual purpose water supply and recreation project the reservoir would provide a flow of 51 mgd. A major recreation area could be developed on the west shore opposite the dam site, with a commanding view of almost the entire lake and the steep Shawangunk Mountains to the west.

The Shushan site in the upper Hudson sub-basin is on the Batten Kill near Vermont in a predominantly rural area. The reservoir would provide a relatively large regulated flow amounting to 222 mgd. A recreational development at the west end of the reservoir would overlook the picturesque valley and provide a scenic view of the Green Mountains across the lake to the east.

The Fort Hunter site in the Mohawk River Basin is located on Schoharie Creek 2½ miles upstream from the Mohawk River. The reservoir would provide a large regulated flow of 306 mgd. A recreation area on the east shore would give a view of nearly the entire lake, and would be a major attraction near the Capital District.

The other four reservoir projects at widely different locations in the Eastern Region have an estimated capital cost of \$90,000,000. They would provide 720,000 acre-feet of storage and 19,700 acres of water surface. Associated recreational facilities would cost about \$15,000,000.

The Huckleberry Marsh Reservoir on the Salmon River in the extreme north part of the region has been under consideration for about 10 years. The site offers great potential for recreational development in an area where needs are pressing and stimulus to the local economy would be extremely beneficial.

Halfway Lake is a relatively small reservoir

which would be constructed by damming a small stream at the northern edge of Glens Falls. It would be connected to Lake George by a boat canal. The reservoir has great potential for recreational use in an area where existing facilities are inadequate for the large population within easy driving distance. Significant economic benefits would be realized by Glens Falls. The site also offers potential for other uses which may be incorporated into later stages of project development.

Bridgeville Reservoir on the Neversink River in the Delaware River Basin is another highly desirable recreation project in an area where demands are heavy. The shoreline would be about 17 miles long and access would be excellent. The reservoir could also serve as a source of additional water supply to local communities.

The McKeever Diversion-Forestport Reservoir in the Black River Basin is conceived as a multi-purpose project for recreation, power generation, flood control and stream flow regulation. Diversions to Hinckley Reservoir in the Mohawk River Basin also are possible as a later development stage.

Feasibility level investigations are needed to verify the engineering and economic feasibility of all the sites. If the selected sites are found unsatisfactory, alternatives are available in the same general areas.

Based on the reconnaissance the most economical means of supplying water to meet the future deficiencies in the New York City Metropolitan Area would be by stage development of pumping from the lower Hudson River in conjunction with upland regulating storage to augment low water flows. Treatment of Hudson River wastes would be required at all stages. Between 1970 and 1980, 200 mgd could be obtained by pumping from the Hudson River at Kingston into the Catskill Aqueduct via Ashokan Reservoir. Between 1980 and

1990, an additional 300 mgd could be obtained from the Hudson River by pumping at Hyde Park into the Delaware Aqueduct. Between 1990 and 2020, the final increment of 800 mgd could be obtained by pumping from the Hudson River at Hyde Park into a new aqueduct. Within these stages, project elements such as pumping stations and treatment plants could be developed incrementally in synchronization with the increasing water demand. About 700,000 acre-feet of upland storage would be required to obtain the additional 1,300 mgd supply. The upland regulating storage would permit recreation development at the reservoirs and provide

incidental flood control. The augmented low water flow in the Hudson River, as a result of reservoir releases, would be beneficial to recreation, fish and wildlife and navigation. The estimated cost of this program is about \$700,000,000.

After 2020, additional demands of as much as 2,000 to 3,000 mgd could be supplied from the Hudson River by construction of a barrier dam and by utilizing the discharge otherwise needed to control the salinity in the open river. However, many problems are associated with barrier dam construction and would need to be solved. These include effects on water

quality, fish and wildlife, navigation and flooding. Another alternative after 2020 is to augment low water flows still further by more upland storage regulation and further expansion of pumping from the lower Hudson River. The maximum additional supply obtainable by this means is from 1,000 to 1,500 mgd. Desalination is another potential means for obtaining additional water supplies for the area after 2020. Technological developments and further investigations and research during the intervening period can be used to good advantage to determine which is the most satisfactory method of meeting these extremely long-range needs.

TABLE 1 PERTINENT DATA FOR MOST PROMISING RESERVOIR SITES, EASTERN REGION

RESERVOIR	NO.	STREAM	DRAINAGE AREA SQ. MI.	STORAGE ACRE FEET	SURFACE AREA ACRES	LAND ACRES	ACQUISITION COST	RESERVOIR CAPITAL COST	RECREATION FACILITIES	POSSIBLE USES
HUDSON-MOHAWK RIVER BASIN										
*Gooley No. 1	1	Hudson River	619	554,000	14,500	16,000	\$8,680,000	\$57,653,000	\$7,500,000	M, P, R
*Trout Brook	2	Trout Brook	90	68,400	1,750	23,000	1,340,000	13,758,000	4,012,000	M, R
*Ganahgote	3	Shawangunk Kill	142	89,100	3,500	3,850	3,160,000	15,740,000	3,138,000	M, R
*Shushan	4	Batten Kill	240	208,000	3,400	4,500	2,890,000	51,583,000	2,465,000	M, R
*Fort Hunter	5	Schoharie Creek	612	283,000	3,300	4,000	2,840,000	84,014,000	3,446,000	M, R, N, P
Hinckley	10	West Canada Creek	373	445,000	13,000			45,451,000	3,587,000	M, R
Schaghticoke	11	Hoosic River	645	175,000	2,500			32,159,000	2,822,000	M, R
Ohio Gorge	12	West Canada Creek	225	268,000	3,750			44,075,000	2,976,000	M, R
Bloomington	13	Shawangunk Kill	42	30,000	900			8,326,000	4,015,000	M, R
ST. LAWRENCE RIVER BASIN										
*Huckleberry Marsh	6	Salmon River	118	120,000	4,500	5,250	1,580,000	7,610,000	3,800,000	R, Q
Edwards Elm Creek	14	Oswegatchie River	320	25,000	600			13,420,000	3,780,000	R
Raquette Lake	15	Raquette River	193	249,000	17,500			29,650,000	1,150,000	R, P, D
BLACK RIVER BASIN										
*McKeever Diversion Forestport	7	Moose River Black River	237	512,000	11,700	14,950	6,150,000	58,350,000	4,150,000	R, Q, P, F, D
DELAWARE RIVER BASIN										
*Bridgeville	8	Neversink River	190	63,000	1,600	2,100	1,050,000	8,000,000		R, M
LAKE CHAMPLAIN BASIN										
*Halfway Lake	9	Halfway Creek	40	26,500	1,900	2,400	6,350,000	16,350,000	5,150,000	R
Union Falls Redevelopment	17	Saranac River		350,000	6,050			20,200,000	2,900,000	R, M, P
Cherrypatch Pond	18	W. Br. Ausable River	117	53,000	1,800			10,850,000	2,650,000	R
M—Municipal & Industrial Water Supply Q—Water Quality Management P—Power D—Diversion F—Flood Control R—Recreation, Fish & Wildlife N—Navigation *Initial Development Site ¹ Average Annual Inflow (Ap)										

The Upper Hudson: Time For Decision

Among Many Plans, One For Damming The Upper Hudson Is Proposed For A New York City Water Supply. The Author Sees A Great Loss

by Paul Schaefer, President, The Adirondack Hudson River Association

Conservation Commissioner R. Stewart Kilborne, in a speech September 28, 1968 before the New York State Conservation Council, commented specifically upon surveys conducted under the jurisdiction of the State Water Resources Commission of the quality and quantity of ground and surface water in the State and a projection of water needs of the State through the year 2020. The results of this survey were summarized in a booklet titled, "Developing and Managing the Water Resources of New York State," available from the Department's Division of Water Resources, Albany.

The upper Hudson River site referred to by Paul Schaefer in the accompanying article is one of many across the State included in the study.

Referring to this study and report, Commissioner Kilborne stated: "I want to make it clear that the report is not—and should not—be considered a recommendation for the construction of a specific reservoir—"

Then, with respect to pressing future needs for water, the Commissioner added that: "The people of the State have an important voice in choosing the right solution and I can assure you that economics will not be the only factor in selecting the proper solution."—A. W. BROMLEY

THE Upper Hudson River, from the Boreas to Lake Harris some 30 miles upstream, is wild and lovely. The country through which it flows has many unique natural splendors and is abundant with chal-

lenges for the adventurous.

Close to the geographical center of the Adirondack Park, the Hudson contains an unusual combination of white-water rapids and deep, dark pools, ancient forests and imposing cliffs, deep, side canyons and high waterfalls. Over the centuries, the river has cut a deep gorge through rugged mountains and its serpentine flow has worn caves and grottoes in the base of the cliffs which hem it in. Numerous glacial lakes and crystal streams, enclosed by heavy forest, are found throughout the high plateaus hundreds of feet above the river.

The river, itself, is isolated from main highways by the ruggedness of this terrain, with the result that much of the wilderness character of the region has been preserved. This is deer, bear and trout country. Here, also is an abundance of smaller wildlife, including beaver, otter, fisher and hare. Eagles are occasionally seen circling in the thin strip of sky above the canyon.

The best access to the river, of course, is by canoe. One can shove off into the Hudson just below the bridge in the community of Newcomb and for five action-filled hours run through the most spectacular river scenery in eastern America. In springtime, the river will tax the capabilities of the best white-water enthusiasts. Many of those who make the trip enjoy tarrying on the way. There are numerous fine campsites which have been used by fishermen for over a century. At Blue Ledge, there is a sunny, boulder strewn sand bar under the high cliffs. Build your campfire there with the music of untamed rapids soothing your soul and with banks of ferns and clumps of flowers in profusion around you. Great pines rim the pool, cedars cling precariously to cliff ledges and sparkling water drips down through blankets of moss.

At Kettle Mountain there is a camp-

site under great pines and hemlocks, close to another rapids. Here the waters of O.K. Slip Brook, the outlet of a lake by the same peculiar name, meet and join the Hudson. Hike up this narrow side canyon, so filled with great blocks of stone broken from the cliffs that at times you must go under them, and you will suddenly come to its end. There, dropping off an incredibly high precipice, is one of the loveliest waterfalls in the Adirondacks!

Trail to Blue Ledge

While there are numerous good trails to the river, an extremely interesting one starts at Huntley Pond on the North Woods Club road. Following the trail a short distance around this State-owned trout lake and southwesterly two and one-half miles the hiker will find himself at the foot of the massive cliffs at Blue Ledge. One of the truly great Adirondack experiences you can know is to see the power of the river in springtime at this place. Great boulders and hidden obstructions cause the water to fairly boil as it whirls untamed on to the next rapids. All along the river's plateau, the steady roar of rapids can be heard; the precipitous walls of rocks and trees seem to hold within them the wildness which is the reality of this great river.

Upstream, the Indian and the Cedar rivers add their tribute to the Hudson. The former is a continuous succession of rapids and small falls; the latter, a quiet stream meandering through spired evergreen country. Goodenow Flow, Wolf Creek and Ords Falls are also part of this great complex of woods and waters.

Harris Campsite

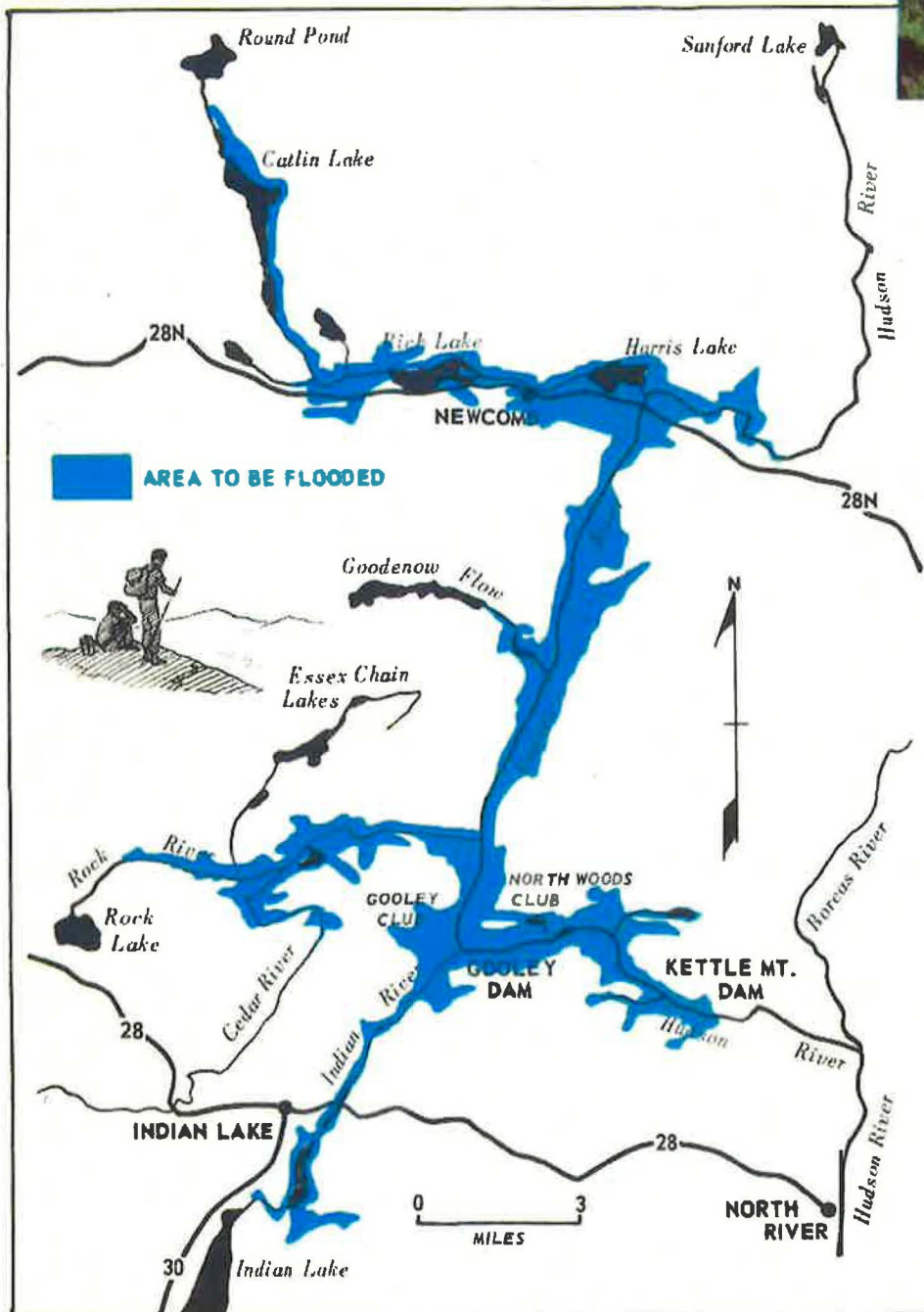
At Lake Harris is one of the State's finest public campsites, complete with a beach and boat-launching site. Almost every campsite is right on the lake which



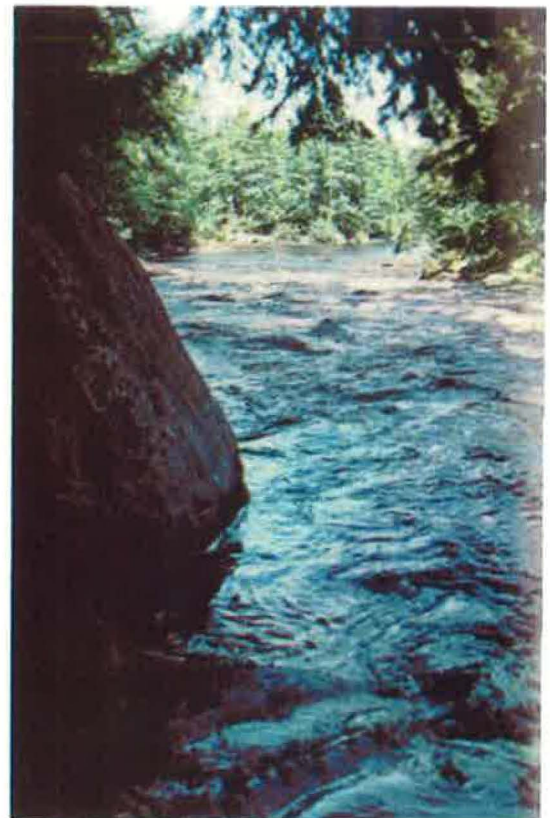
Deer are plentiful at Northwoods Club

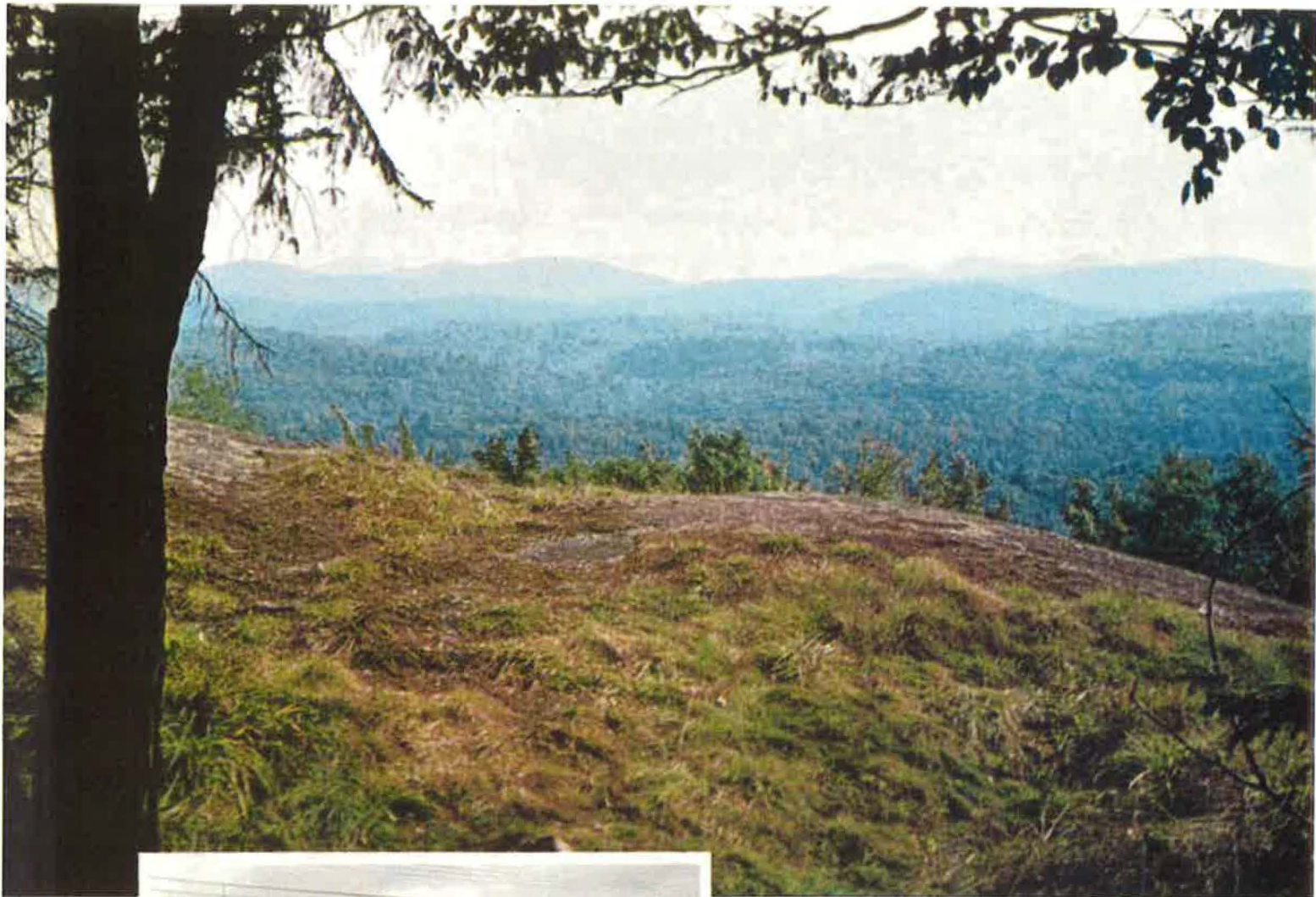


The Falls at O.K. Slip, higher than Niagara



Hudson River below Gooley dam site





*The Newcomb school,
which would be inundated*



**The Blue Ledge country
of Winslow Homer**

is nearly two miles long. To the west is Rich Lake and the Huntington Wildlife Forest, operated by Syracuse University.

This region is favored habitat for both large and small wildlife.

Town of Newcomb

The Town of Newcomb is historically important to the Adirondacks. Today, Newcomb has three churches, a school, a medical center and other attributes of a modern village. All of this country, some 16,000 acres, would be inundated—or isolated—by the proposed reservoir—most of it by a depth of more than 100 feet of water.

Because of the widely fluctuating nature of the proposed water impoundment, the wild forest character of the entire central Adirondack Park would be substantially lost.

A 50-foot drop in the water level would expose a totally destroyed forest region around Harris and Rich lakes, the river proper and the lands near the north Woods Club, so graphically painted by Winslow Homer. The lands of the Gooley Club and many favored winter yarding grounds of the deer would be under water. The Adirondack Park's most spectacular river scenery would be obliterated forever; 100 miles of existing river and lake frontage would be transformed into dreary mud flats. Much of the land involved is the State Forest Preserve, while some is privately-owned but usefully managed for the benefit of many.

When we think of private lands here and elsewhere within the Adirondack Park, we should keep in mind that each citizen of New York State has an undivided interest in all 2,700,000 acres of

the State Forest Preserve. This is The People's Club—a vast heritage of mountains, lakes, rivers and forests! Owners of private lands pay equal taxes on State lands and often a very large percentage of town and county taxes. In the Upper Hudson area, the wildlife moves freely from private to State lands. In many cases, the owners of the private lands have been, to a very large extent, responsible for the gradual building up of the Park.

In addition, they have often protected lands from devastation for long, critical periods of time when the State was financially unable to acquire them, and later sold or given portions of their lands to the State to become part of the Forest Preserve. This is not to say that adjustments for better access to State lands should not be made, for adjustments are needed for the mutual benefit of all concerned. In this respect, a careful study of the Upper Hudson country should be made, in line with the serious reappraisals now contemplated by the Governor's Temporary Study Commission on the future of the Adirondacks.

The controversy as to the best ultimate use of this region is one we must face dispassionately and realistically.

What are the alternatives to this impoundment? What engineering and conservation measures can be undertaken to make preservation of the Upper Hudson River possible? There ARE engineering and conservation measures which can adequately replace the need to drown out the Upper Hudson!

The use of water meters by all municipalities and the correction of faulty mains and laterals, in itself, could vastly increase our present supply of water. We have hardly spoken about the vast waters which are available in our polluted rivers and streams. We have hardly spoken about the recycling of water by large municipalities, and cleaning it, or mov-

ing it upriver to mix with other fresh waters on the way down nor have we fully investigated the stores of underground water. Every year the likelihood of getting fresh water from the limitless waters of the ocean becomes more certain because of technological breakthrough in desalinization. Progress in the atmospheric sciences also promises aid in the future.

The proposition that we should continue to solve the water problems of the late 20th Century with 19th Century methods, destroying our favored wilderness and pastoral valleys in the process, is ridiculous!

Can the State involve itself in any greater conservation program than one that would assure the permanent preservation of the Upper Hudson River? In the process of carrying out such an objective, can we not make this region even more useable to our people and at the same time co-ordinate a policy with the private land owners in the region?

The people of New York State want more, not less, protection for their world famous Adirondack Park. They want more, not fewer rivers in which to canoe, glacial lakes in which to fish, forests in which to hunt and wildlife to see and enjoy. For them, this is a priceless and irreplaceable inheritance dreamed of by statesmen nearly a century ago and gradually built into a reality.

This is a time for decision on the Upper Hudson—a time for engineers and conservationists to embark on programs of research and water management of sufficient depth and magnitude to solve such problems as confront us!

It is fundamental that we preserve the Upper Hudson so that posterity, too, can know the beauty and the wonder of this wild, untamed river which quickens the pulse and so well symbolizes the dynamic powers of nature which have shaped the world we live in.

**Boat launching site
Harris Lake**

The Conservationist is an official publication of the N.Y.S. Conservation Dept., published every two months at the Department's office, State Offices Campus, Albany, N. Y. No advertising accepted. Subscription rate \$2 per year. Special rate of \$1 per year for subscriptions received by a primary or secondary school in New York State, or at such schools by teachers. NO STAMPS PLEASE. Second Class postage paid at Albany, New York. Additional entry office at Garden City, N.Y. Printed in U.S.A. POSTMASTER (Re undeliverable Second Class matter): Please send form 3579 to THE CONSERVATIONIST, Room 339, State Campus, Albany, N. Y. 12226.

SUBSCRIBER ZIP CODE NECESSARY



Adirondack



SWIM CAMP

A MOUNTAIN-LAKESIDE CAMP FOR BOYS • RAINBOW LAKE, N. Y.



39 Mill Valley Road
Pittsford, New York
January 13, 1969

The Honorable Nelson D. Rockefeller
Governor of the State of New York
State Capitol
Albany 1, New York

Dear Mr. Rockefeller:



In the December-January 1968-69 issue of The Conservationist, Paul Schaefer, President of the Adirondack Hudson River Association mentions the possibility of the Hudson River being dammed where it flows through the Adirondack Mountains.



I wish to state my opposition to any attempt either state or federal to erecting a dam across the Hudson at any place where it flows through the Adirondack Mountains and in particular the Gorge near the Gooley Club. Anyone who has been in this region by canoe or foldboat or kayak or has hiked or hunted here cannot help but be impressed by the beauty of the region and leaves it refreshed in mind and spirit. I thank God we still have in our state a few remaining places not altered or "improved" by mankind. A dam would surely inundate a vast amount of acreage which should be left forever wild and would change an unfettered pure mountain river into a large lake the waters of which would be spilled out in dribbles at the whim of mankind.



I request that you oppose any action with regard to damming the Hudson River in the mountain area.

Sincerely,

Joseph C. Reiners Jr.
Joseph C. Reiners Jr.



Owners and Directors: Mr. and Mrs. Joseph C. Reiners, Jr.

39 Mill Valley Rd., Pittsford, N.Y. 14534

Tel: 586-5622

Associate Director: Joseph C. Reiners

123 VanVoorhis Ave., Rochester, N.Y. 14617

Tel: 342-2028

328 East 53 Street
New York, N.Y. 10022

February 20, 1969

Governor Nelson A. Rockefeller
22 West 55th Street
New York, New York

Water Conservation

Dear Governor Rockefeller:

To possibly eliminate the building of costly dams that irretrievably inundate thousands of acres of recreation lands, please advocate the conservation of present water supplies by:

Installation of water metering. Why should water be "free" to waste or pollute at will. Even air can no longer be considered free as much of it must be filtered and conditioned before it is breathable.

Measures to further re-constitute and re-circulate waste water
-- an engineering success already in limited use.

Admittedly, the above measures also are costly but they will not despoil the land for future generations. Is it not politically possible to divert the "always-so-readily-available" dam money to the development and execution of new, imaginative ideas for increasing water supplies? Or have the dam-builders become another entrenched, self-perpetuating division of the government?

Please, no Gooley dams!

Sincerely,


Vivian Akersten

ARIETTA
CANADA LAKE, N. Y. Phone 2554

Dec. 26, 1969

Hear Sir: -

Dear Sir: - Inclosed please find
clippings in our local news-
paper: which states very clear-
ly - the position about the
Cooler dam - I would like
to call your attention to a
dam site on the West
branch of the Sacandaga
river - town of Arietta
which would impound as
much water as the Cooler
dam - also the state owns
most of the land - and would
be in expensive as far as
purchase of land -

AVERY'S HOTEL

ARIETTA.

CANADA LAKE, N. Y.

Phone 2554

practically no contamination
A survey was made for
this dam site about
70 years ago - test

holes - were dug and per-
linery work was done -
if you are looking for
abundance of this pure
water kindly investigate
the merits of this project

Yours Respectfully
Lyman A. Avery

F. Gooley
P. O. Box 165
Newcomb, N. Y. 12852
March 20, 1969

The Honorable Nelson A. Rockefeller
Governor of New York State
The Capitol
Albany, N. Y. 12224

Dear Honorable Nelson A. Rockefeller:

With the other natives of Newcomb, my husband and I are extremely opposed to the building of the Gooley and Kettle Dams and the building of all other dams on the Upper Hudson River resulting in the drowning out of the Upper Hudson Valley and the village of Newcomb.

The Township of Newcomb is historically and economically important to the Adirondack area:

(1) The first settlement was made in 1810. The Township was formed in 1838. One of the greatest personalities of American History, Theodore Roosevelt, became President in the Township of Newcomb.

(2) The National Lead Company's plant and mine at Tahawus is in the Township of Newcomb the largest Titanium operation in the world. Affording opportunity to the earning of a livelihood for workers within a radius of about 40 miles more or less.

(3) Responsible companies have been lumbering here in a competent and conservative manner since 1885. Affording jobs, through the years, to hundreds of people.

(4) The scenic beauty attracts tourists. The village is surrounded by mountains. An unobstructed view is to be had from Route 28N of the majestic peaks of Mt. Marcy, 5,344 ft., the highest mountain in the state, East River Mt., Mt. Colden, the McIntyre range, Mt. Santanoni, Mt. Goodnow, Mt. Vanderwhacker and others.

(5) The Hudson River with its sources from the west, Catlin Lake, Fishing Brook, Rich Lake, Lake Harris, and its eastern water sources, Lake Tear of the Clouds, Lake Henderson, Lake Sanford and East River meets with the western branch and forms the Hudson just above the Newcomb river bridge on Route 28N and flows south from there. The Cedar and Indian Rivers joins the Hudson farther south. The forest bordered Hudson with its ledges and its singing and skipping rapids is wild, beautiful and relaxing. The river attracts venturesome canoeists and others who enjoys fishing and boating.

Today, Newcomb has four churches, a modern Central School with grades from Kindergarten through four years of high school, a forestry experimental station owned and operated by Syracuse University a new Medical Center, a new Town Hall. There are several organization: church organizations, Lions Club, girl and

Boy Scout and others, a volunteer fire department, and ambulance and apparatus, a Post Office, approximately 166 homes and other buildings, 8 businesses, a Town owned recreation area and beach on Lake Harris, one of New York State's finest public camp sites on Lake Harris, a water pumping station and a complete sewer disposal plant, a fairly new state highway Route 28N extending through the town and four cemeteries.

We strongly favor your Pure Waters Program for the pollution abatement of New York State's waters providing the necessary pure water supplies for the future. This program could be used effectively to remove pollution from the Hudson river, thus giving to New York City all the pure water it needs.

If the United States Congress follows the recommendation of former President Johnson to approve a \$40 million grant and an \$18 Million Long-term loan to Israel for the development and construction of a desalination system--Why cannot the Federal Government do the same for its metropolis, New York City?

Most of the residents of Newcomb are native born. Many persons have moved in here, bought land and built homes. All are of the staunch middle class whose roots are imbedded in this good earth. Most of us have worked hard and for long years to accumulate what we now have. We are extremely opposed to the drowning out of this most beautiful valley with its wild and plant life, our homes and all we cherish and hold dear. Where will we go to start all over again?

The Government helps one group at the expense and loss to another group. The power of Eminent Domain can be ruthless and heartbreaking.

I feel the destruction of the Upper Hudson River is a violation of our fundamental rights as citizens of New York State and the United States, so long as there are other means of acquiring water for New York City.

Have you ever been to Newcomb in the heart of the Adirondacks? I know you are a very busy Governor, but I earnestly urge you to take time out from your full day and ride up to Newcomb and see for yourself why this beautiful wild valley should not be destroyed.

I beseech you to do all you can in your power, as Chief Executive of New York State, to save us from destruction.

Respectfully and gratefully,

(Mrs.) Mary E. Breen Bralley

Mary E. Breen Bralley
Historian of the Township of
Newcomb

F
Gover

12 Briggs Avenue
Fairport, N.Y. 14450
January 18, 1969

Governor Nelson Rockefeller
Governor's Office
Albany, N.Y.

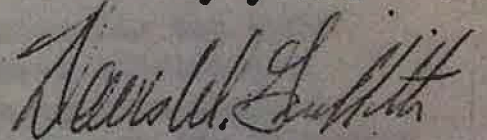
Dear Governor Rockefeller:

I hope you will attempt to frustrate the insane proposal of the Army Engineers to build the Gooley Dam on the upper Hudson.

It would be folly to flood the most majestic area of our Adirondack forest preserve simply to provide New York City with more water for it to waste.

The time to consider this kind of ruination of our finest river is after, not before, New York City meters and charges for its water, after it repairs its notoriously leaky water mains, after an atomic-powered desalinization plant is built, and after all alternate reservoir sites are fully developed.

Sincerely yours



Davis W. Griffith

F
m
l
e

e

DEAR MR. Rockefeller,

I beg you to do all you can to PREVENT the flooding of the forest in the Adirondacks. I think a dam will be bad on the beautiful forest and on all of the beautiful animals.

BESIDES you can kill animals by doing this. I HAVE BEEN THERE and saw how beautiful the woods ARE THERE. To do this will make me very sad.

SINCERELY
YOURS,

Annie Lyons

U.S. POSTAGE
6c



Post Card

FRANKLIN D. ROOSEVELT

4/16/69
DEAR GOV. ROCKEFELLER
WOULD YOU PLEASE
START A FILE ON ALL
OF THE PROTESTS THAT
ARE BEING MAILED TO
YOU ON THE GOOLEY &
KETTLE MT. DAMS? I
KNOW A MAJORITY
OF PEOPLE WHO ARE
STRONGLY AGAINST
THIS PROJECT.
THERE ARE A LOT
NATIVES - PLEASE
USE THEM

GOV. NELSON
ROCKEFELLER
GOVERNOR'S
MANSION
ALBANY
NEW YORK

SINCERELY
MRS. M. B. MAGEE
351 WELLINGTON RD.
IDELMAR - NEW YORK

Helen
ROME, NEW YORK

THE HONORABLE NELSON ROCKEFELLER
GOVERNOR OF NEW YORK STATE

DEAR SIR:

WE, THE UNDERSIGNED RESIDENTS OF THE
ROME, N.Y. AREA, WISH TO CONVEY TO YOU
THE IDEA THAT WE ARE EMPHATICALLY OPPOSED
TO ANY ATTEMPT BY NEW YORK CITY OR ANY
OTHER CITY OR ORGANIZATION, TO DAM UP THE
HUDSON RIVER, OR ANY OTHER STREAM, WITH THE
RESULTING FLOODING OF OUR STATE FOREST
PRESERVE.

"FOREVER WILD", MEANS JUST THAT.

WE BELIEVE THAT NEW YORK CITY SHOULD
CONSIDER THE BILLIONS OF GALLONS OF
RUN-OFF AND OR PROCESSING OF FRESH WATER
FROM THE SEA, TO MEET THEIR NEEDS.

Elwood E. Hull
Bertha M. Hull
Donald C. Jones
Richard C. Kingman
Sally Rushford
Jesse M. Atkinson
Raymond P. Testa
L. M. Seilley
Douglas M. Jones
Raymond R. Thompson

William F. Wollock
Erwin L. Withey
Mary P. Pitoniak
Edward Kellermann
Francis A. Hendle
Agnes H. Jones
Clarence Joslin
Eliz. Niermeyer

RECEIVED

MAR 24 1969

COMMISSIONER
OF
CONSERVATION

Rec'd. 3/25 Dr. Ch.

Feb. 7, 1969

Dear Governor Rockefeller-

I do hope "we the people" still have a voice in our government. If so, I would like to say - loud & clear the people of upper New York State are STRONGLY AGAINST the development of the Gooley & Kettle Trt. dams. We want to preserve the land of the Adirondacks for wild life & beauty.

I understand there is an alternative of developing surface water around the Long Island area which is much closer to New York City & I would think, less expensive.

Very Concerned-
Elma R. Twickell

Legislators Set Joint Hearing On State's Wild Rivers Program

ALBANY, N.Y. (AP) — Efforts to promote a statewide "wild - rivers" program and to block the building of dams and reservoirs on the upper Hudson River were the focal point today for a joint public hearing by the legislature's conservation committees.

The hearing at the Capitol provided a forum for conservationists who have been striving since last summer to gain enough support to spike state proposals for damming a white water section of the Hudson to meet long - range water needs downstate.

One of the staunchest opponents is the New York State Conservation Council, which claims nearly 300,000 members and has given full backing to two bills filed in this session of the legislature.

In remarks for today's hearing, Martin Turner, council president, said the group would not tolerate "the spectre of hydroelectric, flood-control or water - supply impoundments or recreational facilities in the Adirondack Park" above Lake Luzerne.

His target was the possible construction of a dam and res-

ervoir at the confluence of the Hudson and Indian rivers near the heart of the Adirondack Park. The late Sen. Robert F. Kennedy led a canoe party through the area in 1967 in his bid to spur wild-rivers legislation.

The hearing was called by Assemblyman Clarence D. Lane of Windham, in the Catskills, and Sen. Bernard C. Smith of Northport, Long Island, both Republicans. They are the chairmen of the conservation committees in their respective houses and the sponsors of the bills the council endorses.

Other scheduled speakers included Paul Schaefer of the Adirondack Hudson River Association, Arthur M. Crocker of the Association for the Protection of the Adirondacks and John Jamieson of the Forest Preserve Association of New York.

Other proposed legislation dealing with hunting and fishing in various parts of the state also was to be discussed.

The concern of the Conservation Council was evidenced at a meeting of its legislative committee here Wednesday. The delegates, from 61 counties, voted overwhelmingly to go on rec-

ord as strongly favoring the two bills Smith and Lane are sponsoring.

One bill would declare the Hudson a "wild river" between its source and Lake Luzerne, or within the Adirondack Park, and require that its present character remain undisturbed.

In addition, the legislature would be permitted to bring other rivers and streams in the state under the bill's provisions.

The second bill specifically would prevent the construction of dams and the impoundment of the Hudson's waters above Lake Luzerne.

The State Constitution says land in the Adirondack Preserve must be kept "forever wild" but permits the legislature to use three per cent of the land for reservoirs for municipal water supplies.

The Division of Water Resources of the State Conservation Department has designated 18 sites in Northeastern New York as potentially suitable for water storage. The one at the confluence of the Indian and Hudson rivers — known as Gooley No. 1—is considered as having the best characteristics for such use.

Excerpt from the Wild, Scenic and Recreational Rivers System Act, 1972

The purpose of the Wild, Scenic and Recreational Rivers System Act is to institute a State wild, scenic and recreational rivers system within New York. Many rivers of the State, and their immediate environs, possess outstanding natural, scenic, ecological, recreational, aesthetic, botanical, geological, hydrological, fish and wildlife, historical, cultural, archaeological and scientific values. Improvident development and use of these rivers and their immediate environs will deprive present and future generations of the benefit and enjoyment of these unique and valuable resources. It is the policy of the State as set forth in the Wild, Scenic and Recreational Rivers System Act (title 27 of article 15 of the Environmental Conservation Law) hereafter termed "the act", that designated rivers of the State and their immediate environs possessing the aforementioned characteristics shall be preserved in a free-flowing condition and shall be protected for the benefit and enjoyment of present and future generations.