

8: Nature of New York's Water Resources

NYC Water Supply

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NYC Water Supply System

❖ NYC's water supply system is a **watershed-based, gravity flow model** (pumping = <5%) that moves water 125 miles from the Catskills to New York City via the Croton Watershed.

It also provides water for communities along the path of its aqueducts.



Link to the parts of the NYC reservoir system:
<http://www.nyc.gov/html/dep/html/watershed/protection/reservoirs.shtml>

Annual Drinking Water Quality Report with map:
<http://www.nyc.gov/html/dep/pdf/wsstate17.pdf>

NYC Water Distribution System

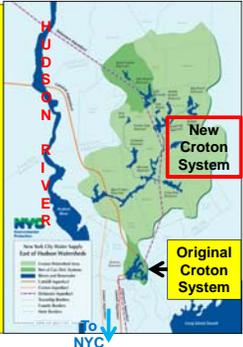
❖ **1830s: Water shortages in Manhattan were common.** NYC relied on natural ponds and small reservoirs.

➢ **1840s: CROTON SYSTEM was built in Westchester** with an aqueduct bringing the water to distribution reservoirs in Manhattan.

• **1850s-1880s: Croton System was expanded northward** (NEW CROTON SYSTEM 1890).

• **1880-90s: Croton System couldn't keep up with demand** esp. after the City of Brooklyn was connected to the system.

➢ **1905: After a Board of Water Supply study, the CATSKILL SYSTEM was funded by NYS.**



NYC Water Distribution System

❖ **1907-1927 – CATSKILL SYSTEM was constructed.**

- The **ASHOKAN RESERVOIR** was built in river valleys west of Kingston.
- The **CATSKILL AQUEDUCT** carried water by gravity to the Kensico Reservoir of the Old Croton System
- A tunnel crossed the Hudson.
- The **SCHOHARIE RESERVOIR** was built to supplement water storage "just in case!"

➢ **Before the Catskill System was finished, it was realized that it could not provide NYC's increasing demand for water!**



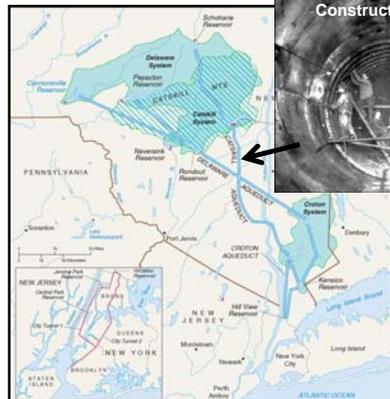
Ashokan Watershed and Reservoir

Constructed in the Catskills starting in 1907





Water behind the **Ashokan Dam** flooded valleys that contained towns, farms, cemeteries and roads, displacing local residents. Today signs around the reservoir indicate the location of features flooded by the reservoir




N.Y.C. Water Supply System

NYC Water Distribution System

- ❖ The NYS Legislature authorized NYC to tap the headwaters of the DELAWARE RIVER on the west side of the Catskills.
- Starting in the 1920s the DELAWARE SYSTEM was constructed.
- THREE RESERVOIRS were built - RONDOUT, NEVERSINK and PEPACTON.
- TUNNELS were required to move water across the watershed divides to the Rondout.
- The DELAWARE AQUEDUCT carries water across the Hudson to the Croton Watershed.
- The CANNONSVILLE RESERVOIR, the last of the system, was put into service in the mid-1960s



NYC Water Supply System

http://www.nyc.gov/html/dep/html/watershed_protection/reservoirs.shtml

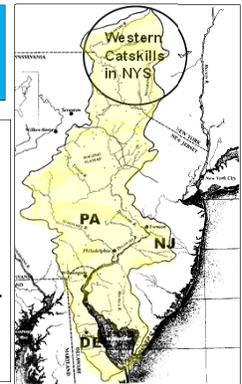


NYC Water Distribution System

- NYC's water supply is a watershed-based system using gravity flow methodology, with some pumping, to move water 125 mi. from the Catskills to NYC.
- The Catskill-Delaware System provides 90% of the water.
- The Croton System provides 10%.
- Has 19 reservoirs and 3 controlled lakes.
- Water is moved via gravity through a series of aqueducts to terminal reservoirs (Kenisco) in Westchester County.
- Water goes through a purification process before entering the tunnels of the distribution system.
- A series of water tunnels delivers the water to all five boroughs via water pressure created by gravity. Less than 5% of the water is pumped on a regular basis to maintain pressure.

Delaware River Watershed

- ❖ More than just a New York watershed.
- Headstreams of the Delaware rise in the Catskills.
- NYC dams the headstreams for its water supply.
- PA, NJ and DE have successfully sued NYS to release greater amounts of water from the NYC reservoirs.



PROBLEMS facing the NYC Water Supply System

Water volume problems.

- ✓ Supply: cities and towns along the right-of-way tap into the system.
- ✓ PA, NJ and DE have sued NYS and won to get a guaranteed flow of water down the Delaware River.
- ✓ Dependent on rain and snow melt. Reservoir levels lower in times of drought. (1981 = 33% capacity; 2002 = 41% capacity)

Water quality problems.

- ✓ Salt in the water from winter road salting followed by snowmelt and rain.
- ✓ Seepage from septic tanks, gasoline tanks, etc.
- ✓ Run off from farms, landfills and other places.
- ✓ Airborne pollutants.
- ✓ Quality of pipes.
- ✓ Threat from terrorism.

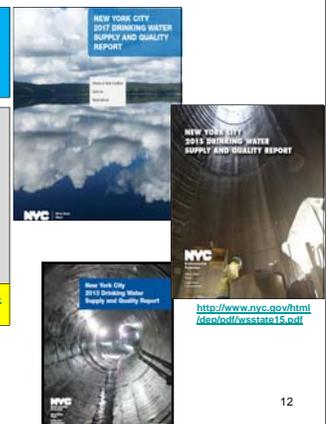
Look over the information provided at this site:
http://www.nyc.gov/html/dep/html/drinking_water/index.shtml

NYC Drinking Water Report

- NYC and NYS monitor the city's water supply.
- ❖ A *Drinking Water Supply and Quality Report* is issued every year. See it at:

<http://www.nyc.gov/html/dep/pdf/wsstate17.pdf>

NOTE: Change the number and hit return to view other years. To see 2010's report, change the 17 to a 10.



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GROUNDWATER

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