An aerial photograph of the Chicago skyline, featuring the Willis Tower on the left and various skyscrapers in the center. The city extends to the right towards Lake Michigan. The text is overlaid on the upper right portion of the image.

DRAINING CHICAGO

A Complicated, Ever-Changing, and
Surprising Story
September 14, 2019
Welcome to Chicago

Richard Lanyon



West Fork



North Branch

South Branch

Chicago River

LAKE MICHIGAN

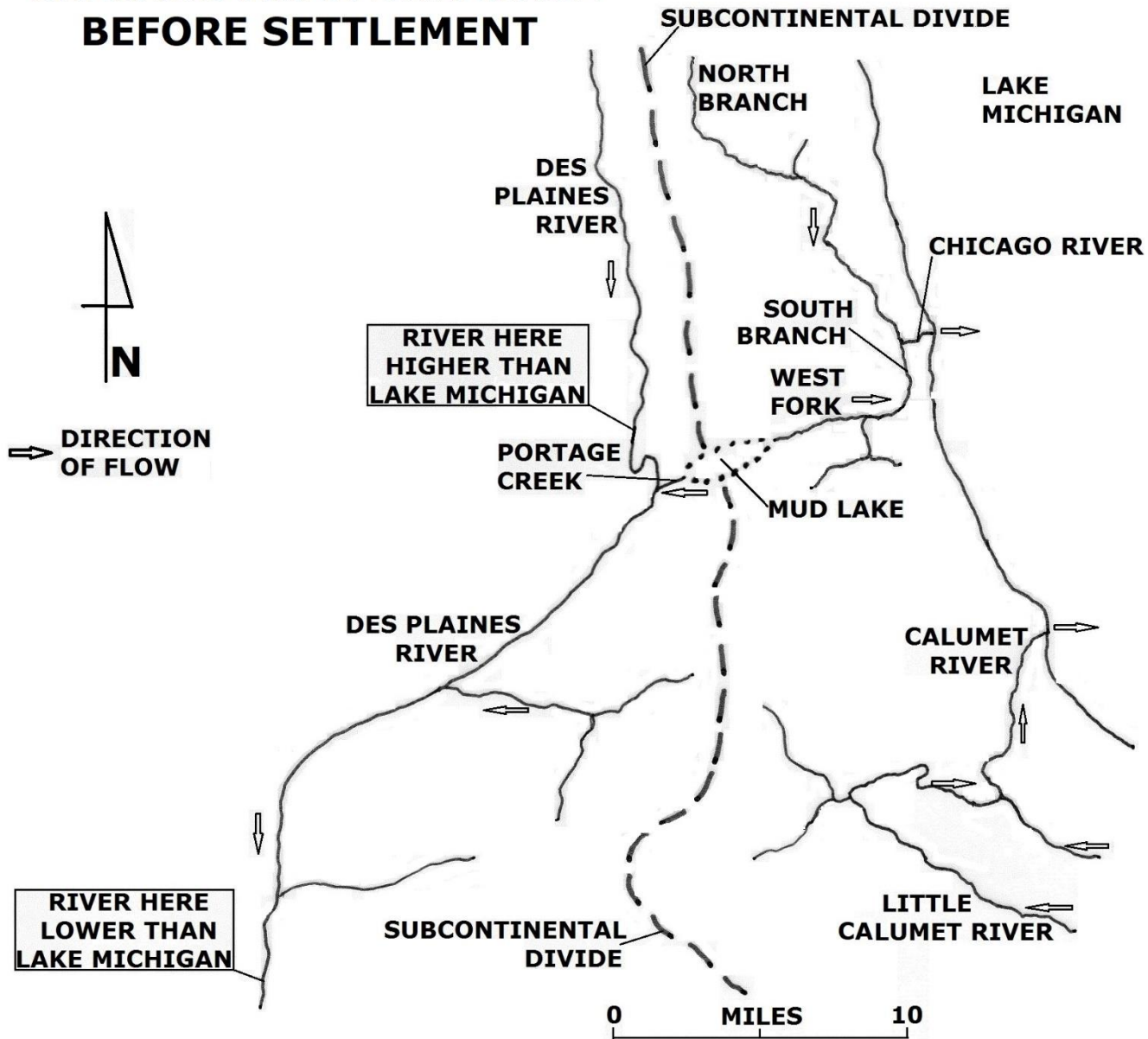
CHICAGO LITHOGRAPHING CO.

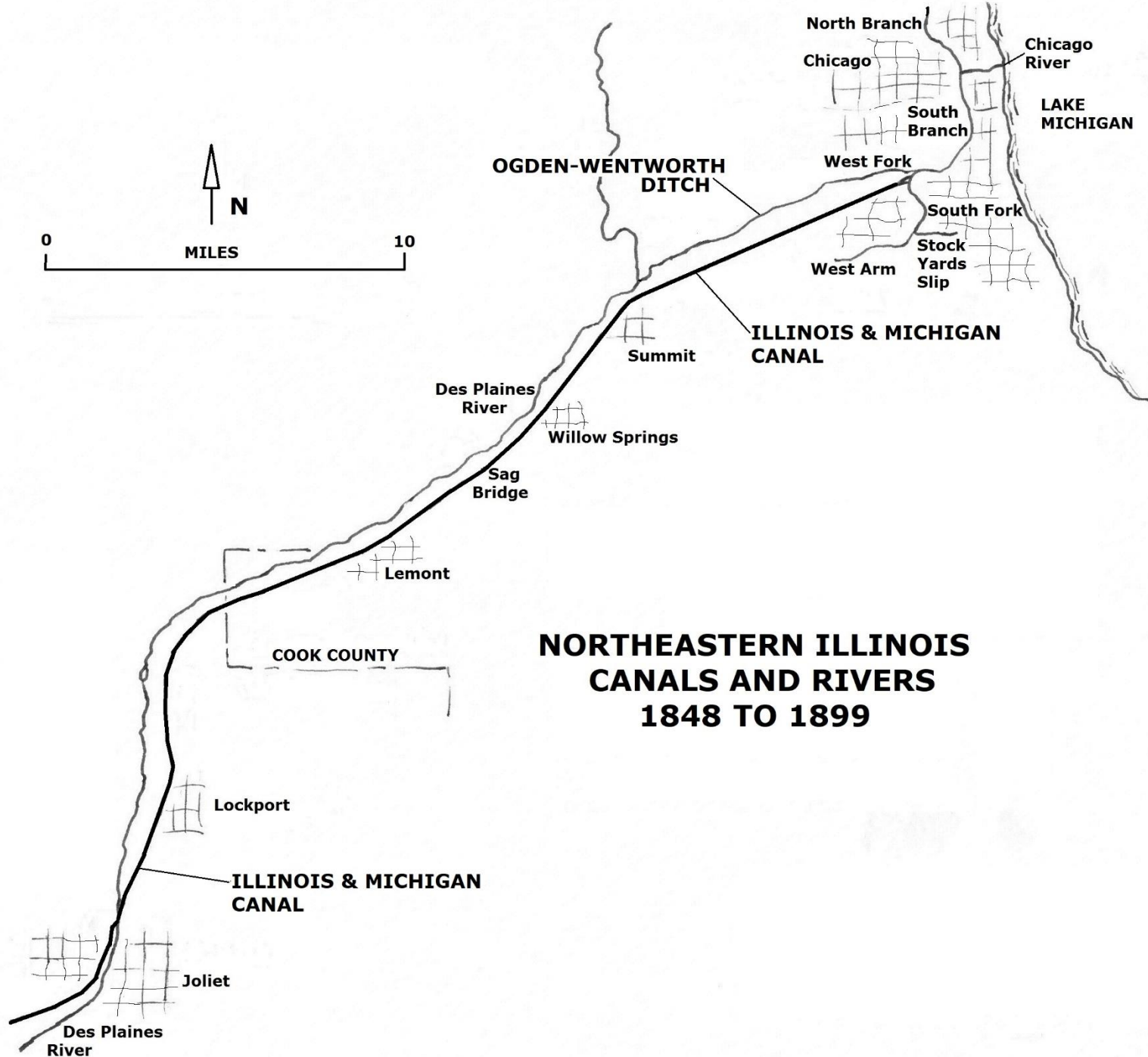
CHICAGO IN 1820.

ENTERED ACCORDING TO ACT OF CONGRESS IN THE YEAR 1857 BY H. HENCKE IN THE CLERK'S OFFICE OF U.S. DISTRICT COURT FOR THE NORTHERN DISTRICT OF ILLINOIS



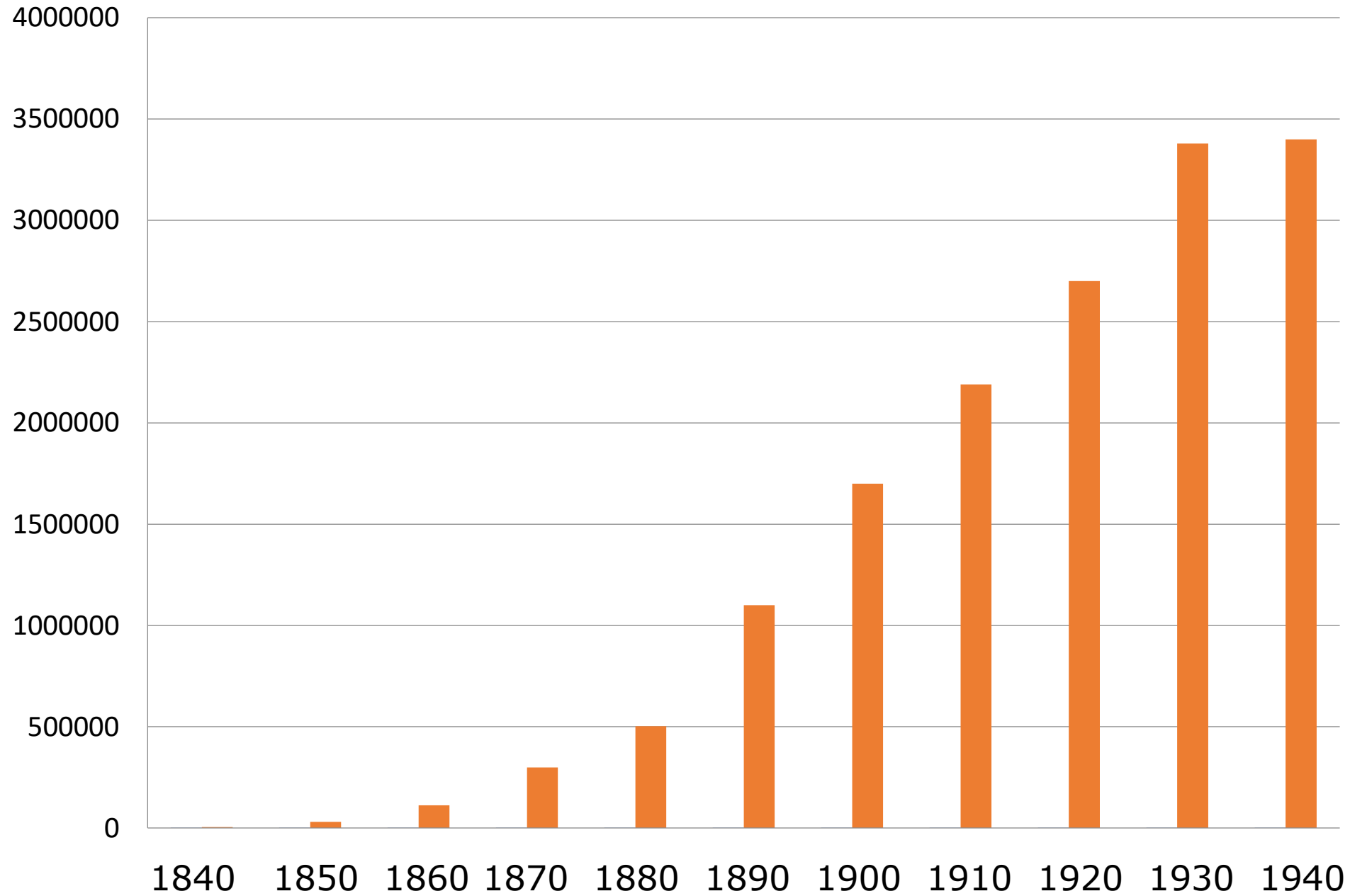
CHICAGO AREA DRAINAGE BEFORE SETTLEMENT





NORTHEASTERN ILLINOIS CANALS AND RIVERS 1848 TO 1899

CHICAGO POPULATION





ORIGINAL STREET LEVEL

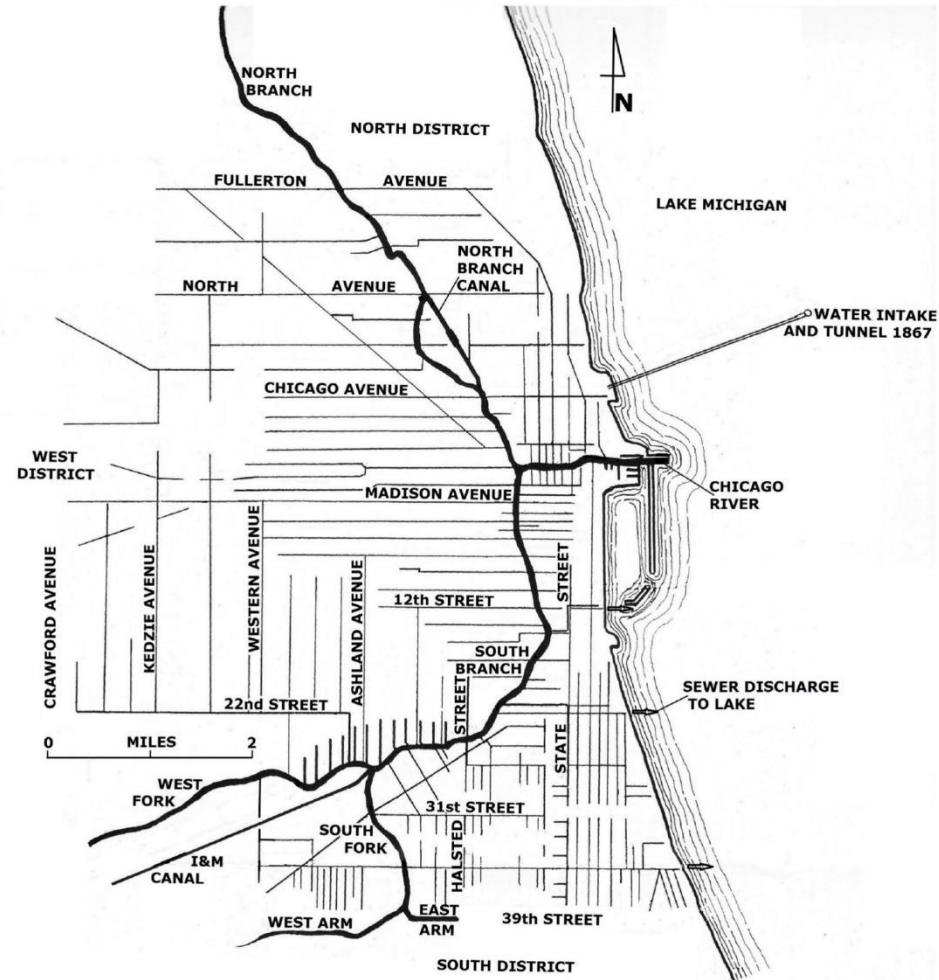
RAISED STREET LEVEL

RAISING THE STREETS BEGAN IN 1855

CHICAGO SEWERS & WATER SUPPLY 1856 TO 1871



Ellis Sylvester Chesbrough



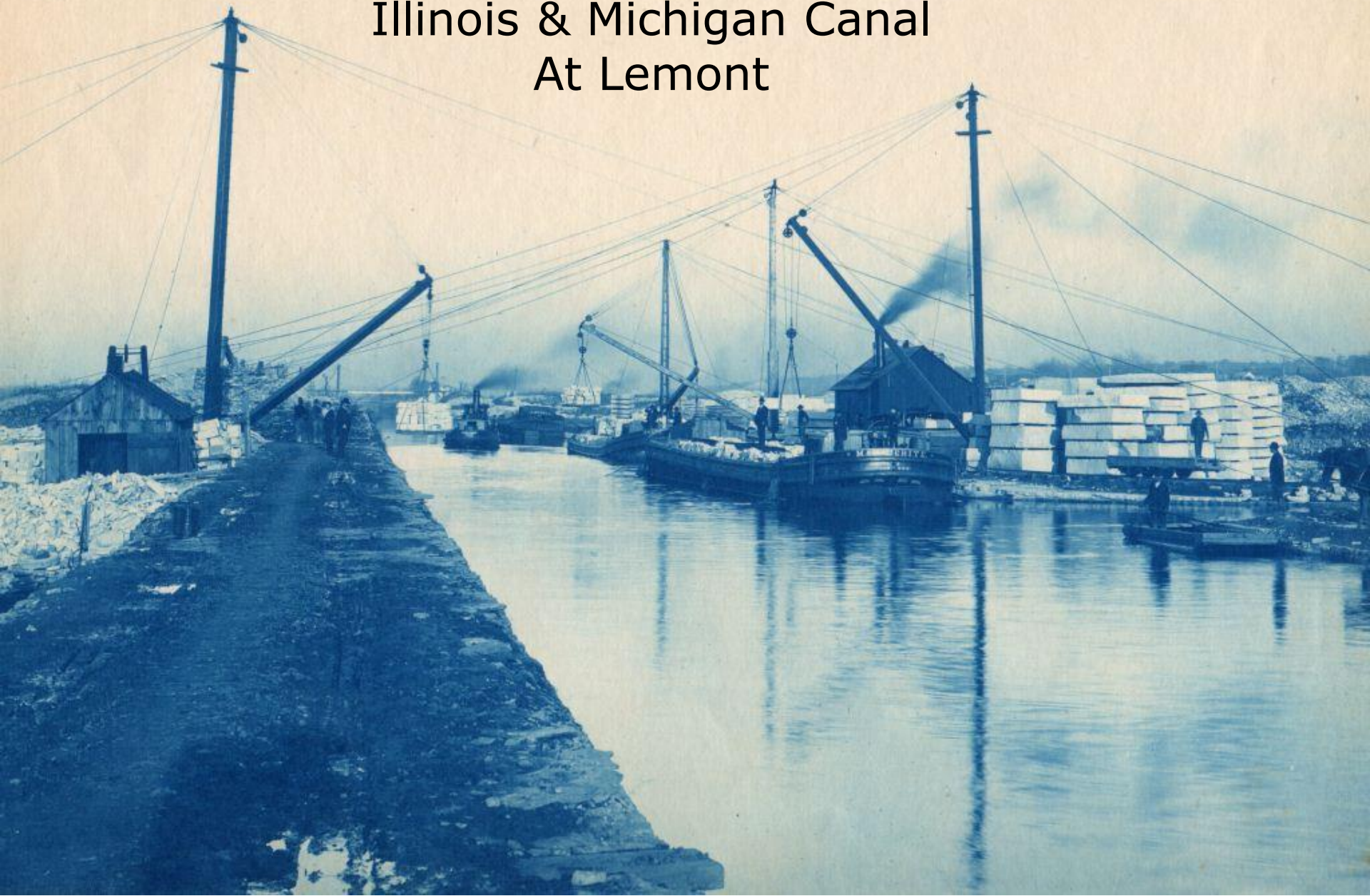
CHICAGO SEWERS 1871

FIGURE 2

CHICAGO 1880s

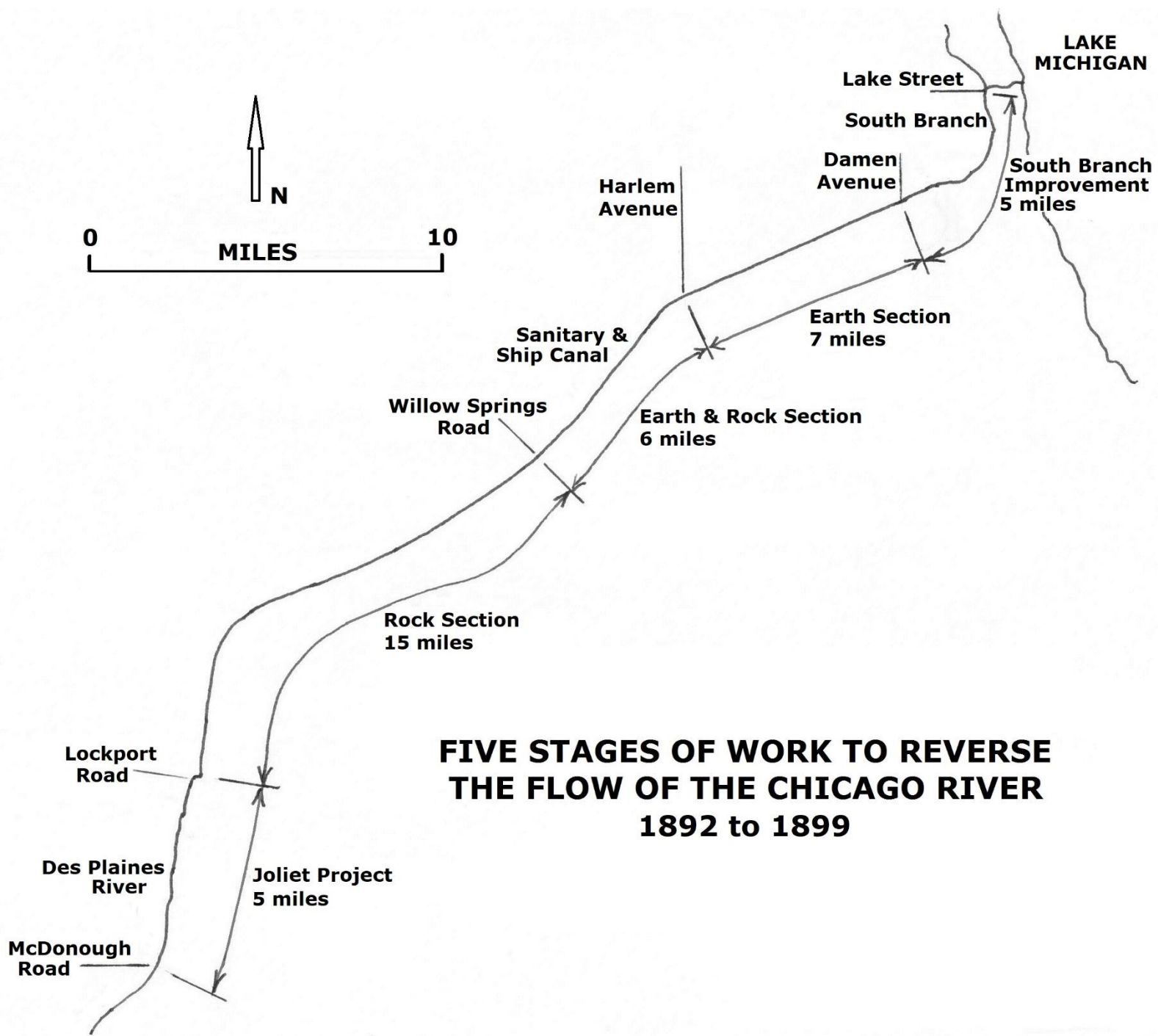
- Public water supply problems: loss of pressure and not treated
- River grossly polluted and an offensive nuisance
- 1880, Citizen Association proposes river reversal
- 1885, August flood from the Des Plaines River caused extensive damage
- 1886, public outrage leads to creation of the Drainage and Water Supply Commission
- 1887, City accepts plan to build canal to reverse river flow, state legislation introduced
- 1889, City expands and Sanitary District created

Illinois & Michigan Canal At Lemont



South Branch of the Chicago River





**FIVE STAGES OF WORK TO REVERSE
THE FLOW OF THE CHICAGO RIVER
1892 to 1899**

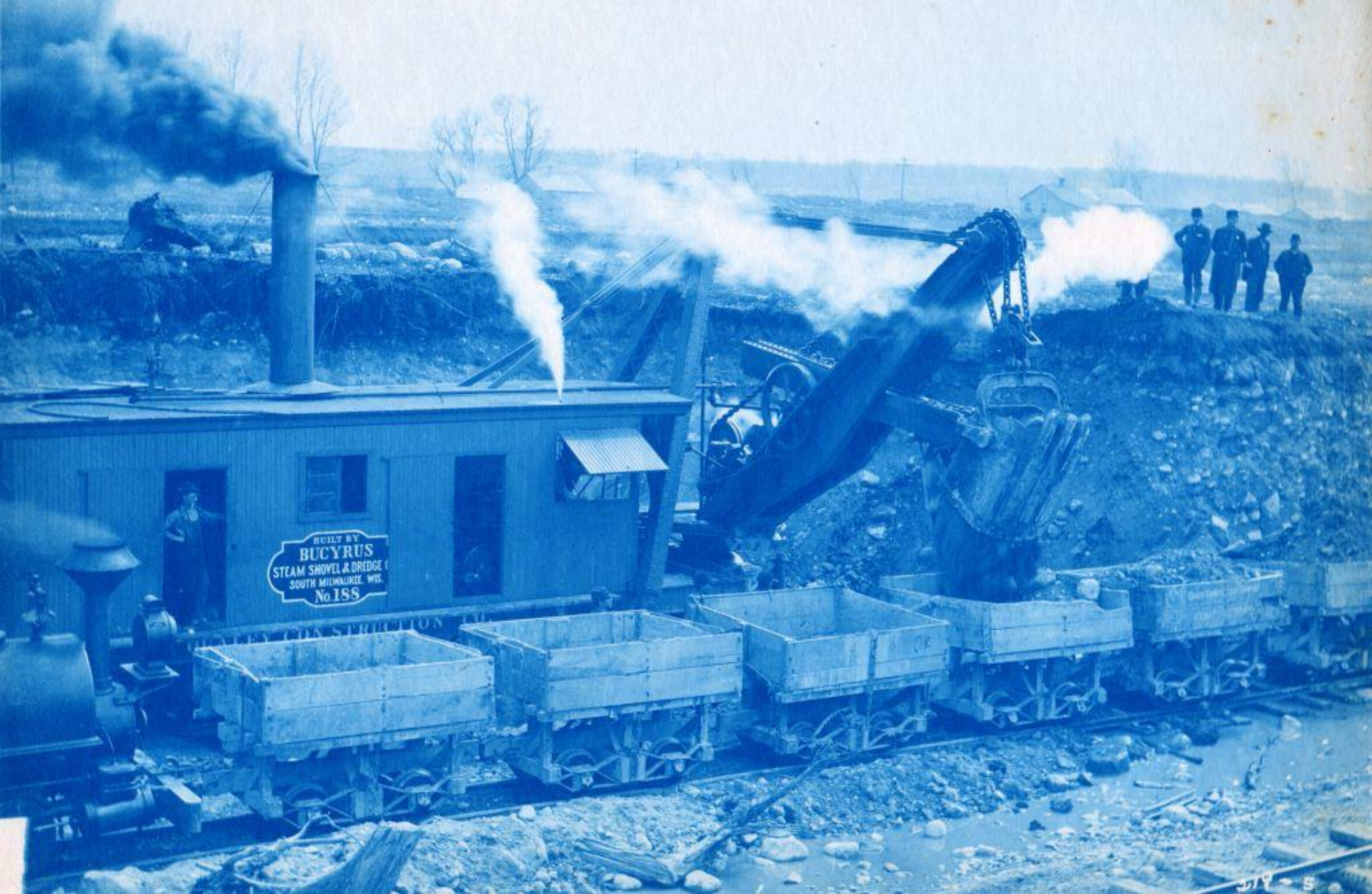


Des Plaines River Spillway and Levee



24-6 9-20-94

Construction Camp - Levee - Des Plaines River



Steam Shovel Excavating Overburden



500 Pound Dynamite Blast

Manually Loading Broken
Rock

into a

Hopper for Hoisting and
Transport

By a Cableway

To the Spoil Pile





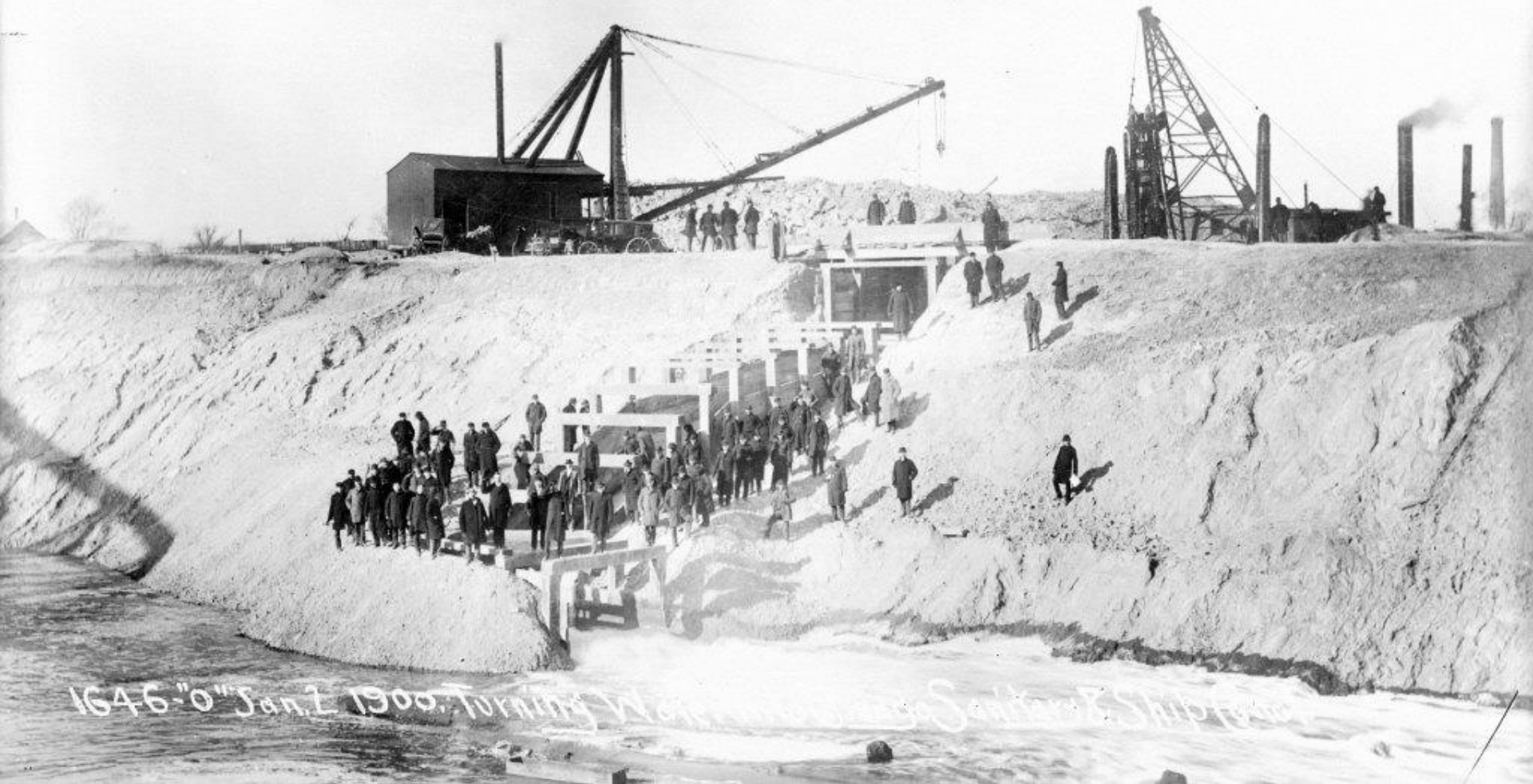
12/11

327-10

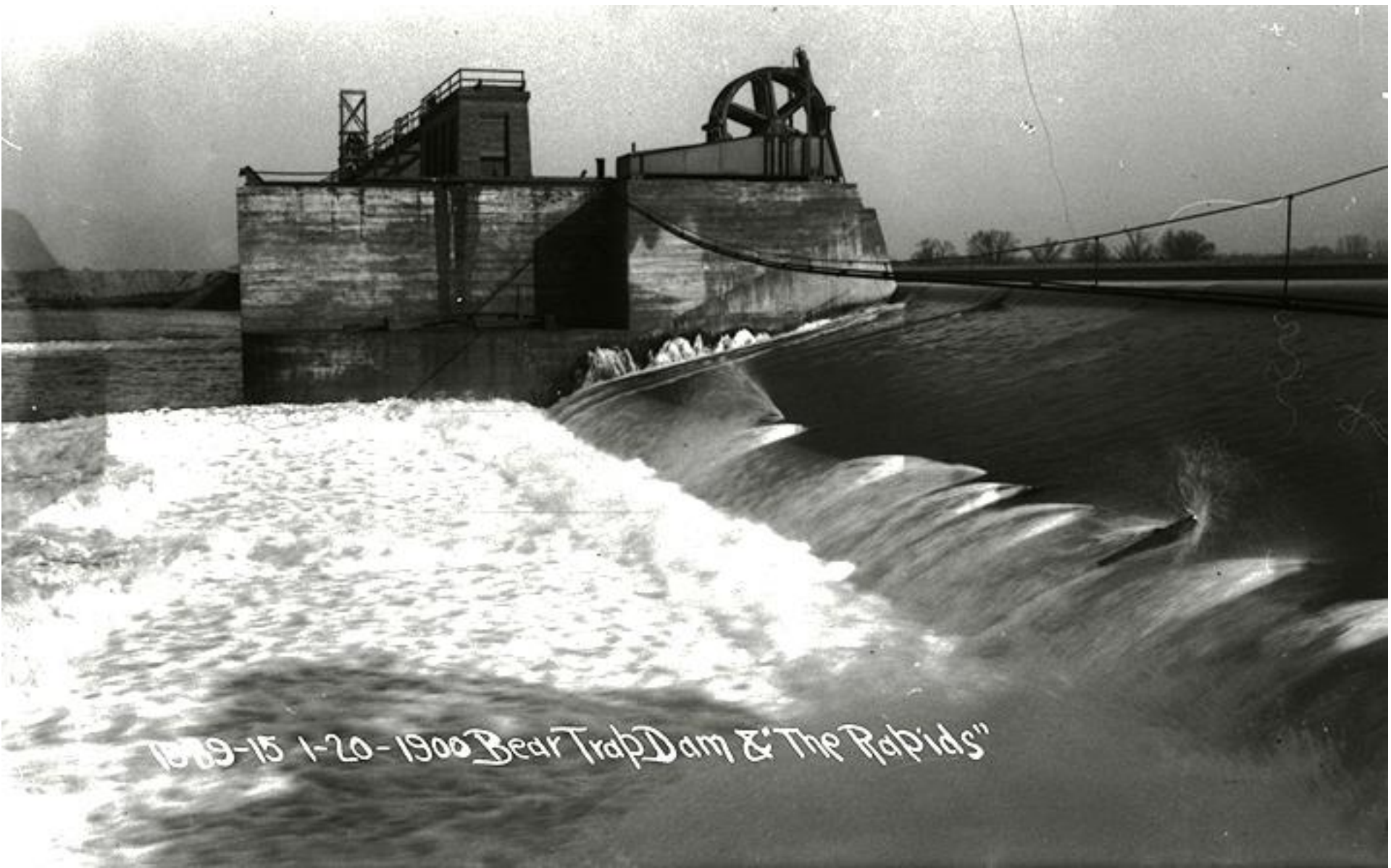
+

WILL CO. COOK CO.

Letting Water into the Excavated Canal near Kedzie Avenue on January 2, 1900



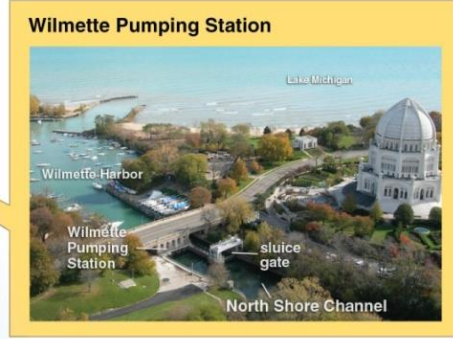
1646-0" Jan. 2, 1900. Turning Water into the Canal & Ship Canal



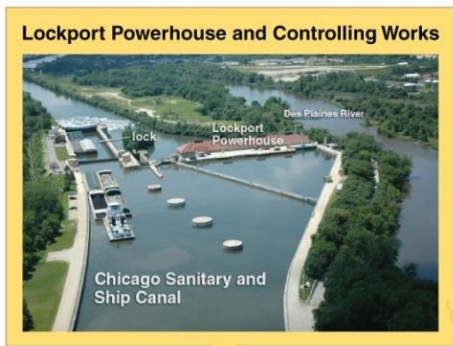
1899-15 1-20-1900 Bear Trap Dam & The Rapids"

Water Rushing over the Lockport Dam
Permanent flow reversal began January 17, 1900

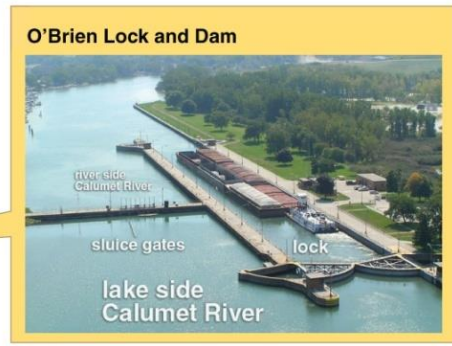
CHICAGO WATERWAY SYSTEM LOCKPORT POOL



77-mile network of canals with three inlets on lakefront...



...and one outlet at Lockport

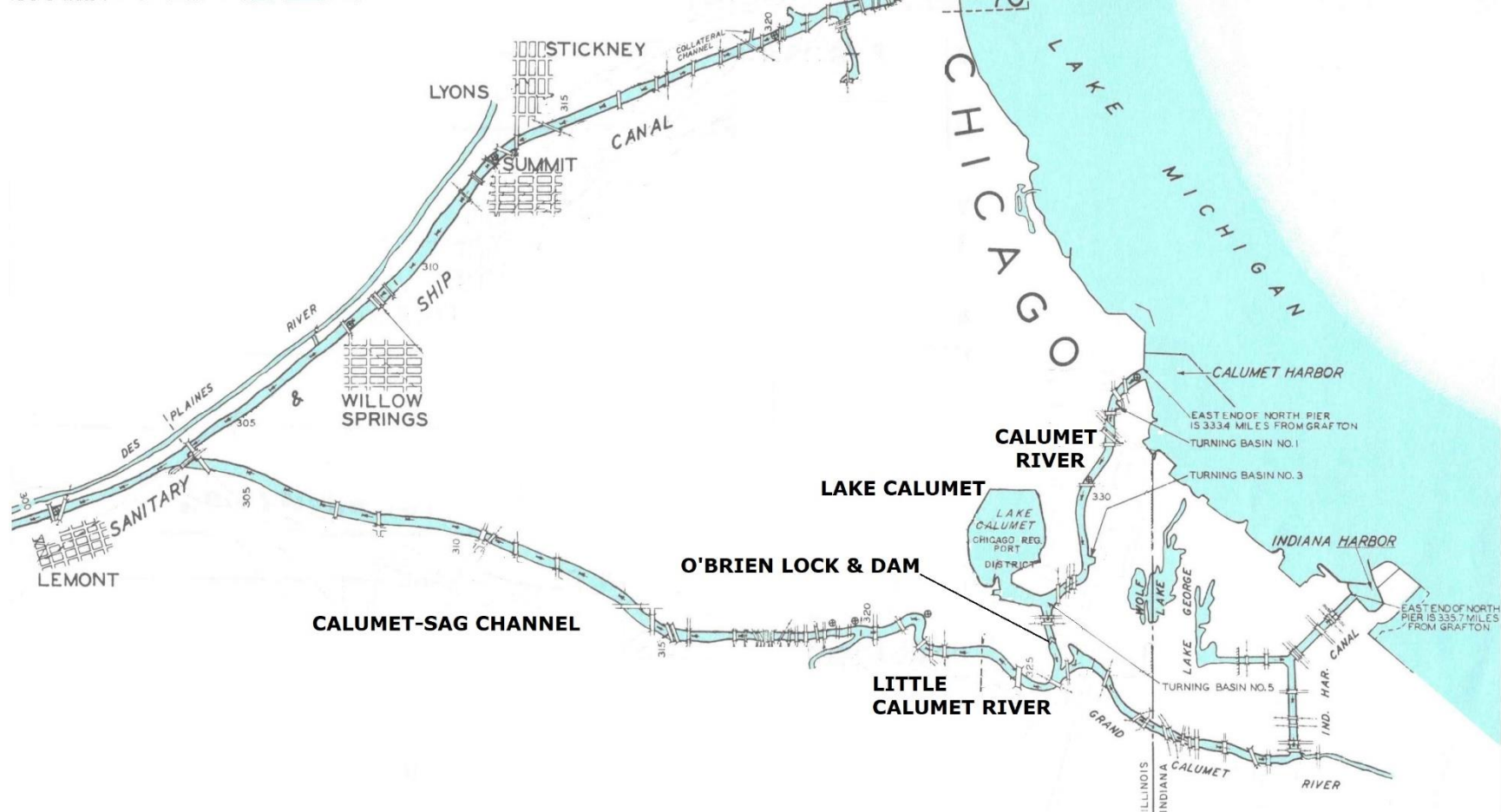


70% of the water passing Lockport is water reclamation plant effluent



**Lockport
Powerhouse**

Lock



CALUMET BRANCH OF THE ILLINOIS WATERWAY



OCTOBER 1914
LOOKING WEST TOWARD SAG BRIDGE

SPOIL PILE

**STEAM SHOVEL
LOADING ROCK**

LOCOMOTIVE

DUMP CARS

4994, 10-5-1914

Original Calumet-Sag Channel

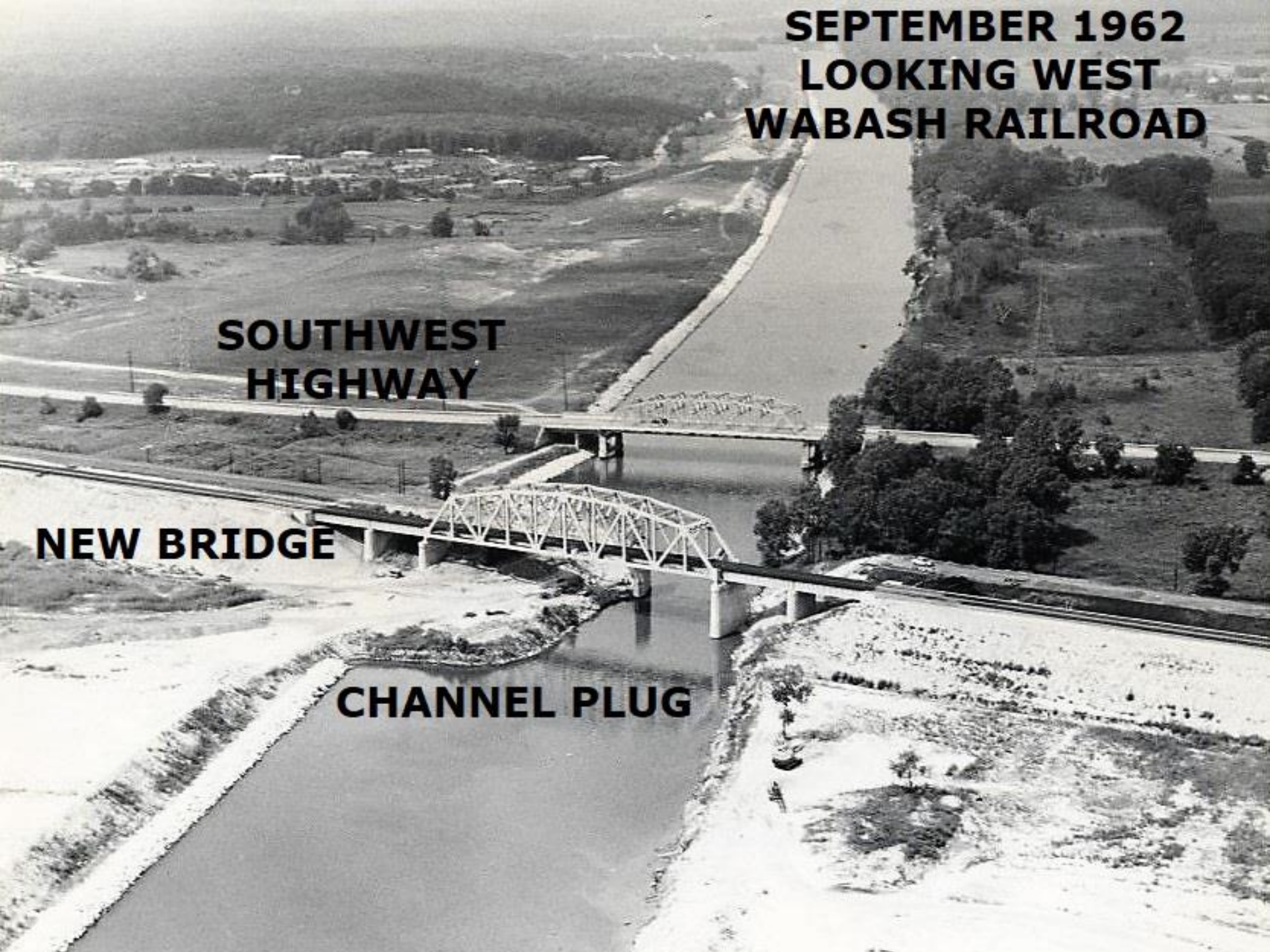


**SEPTEMBER 1962
LOOKING WEST
WABASH RAILROAD**

**SOUTHWEST
HIGHWAY**

NEW BRIDGE

CHANNEL PLUG

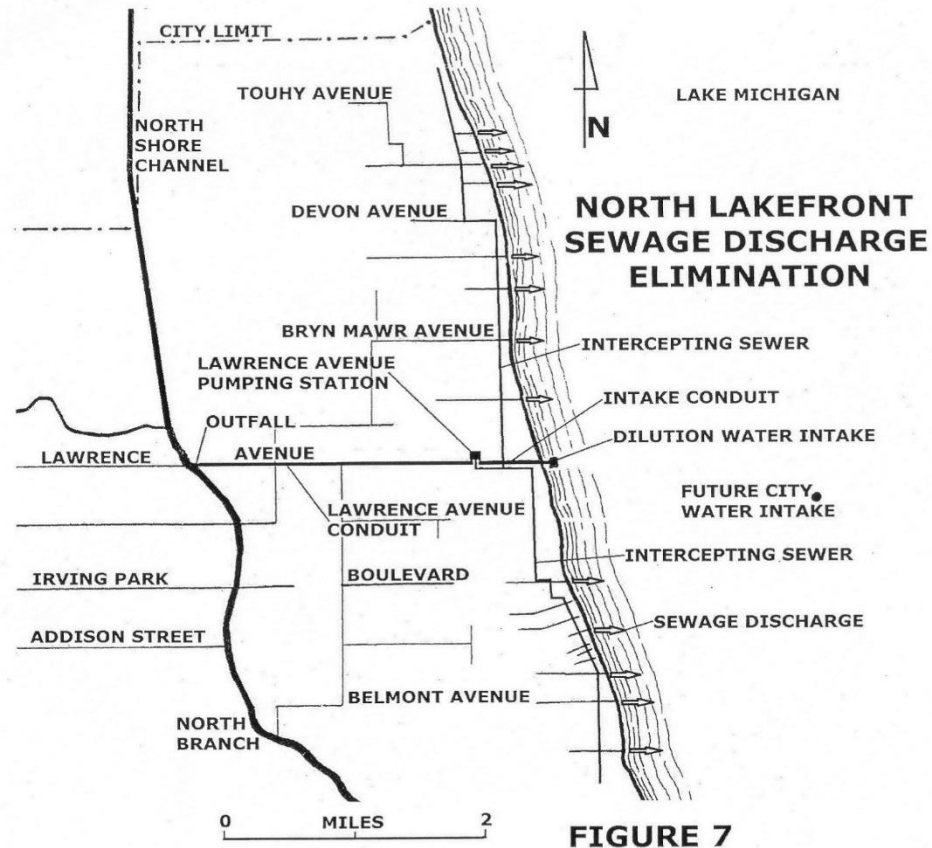


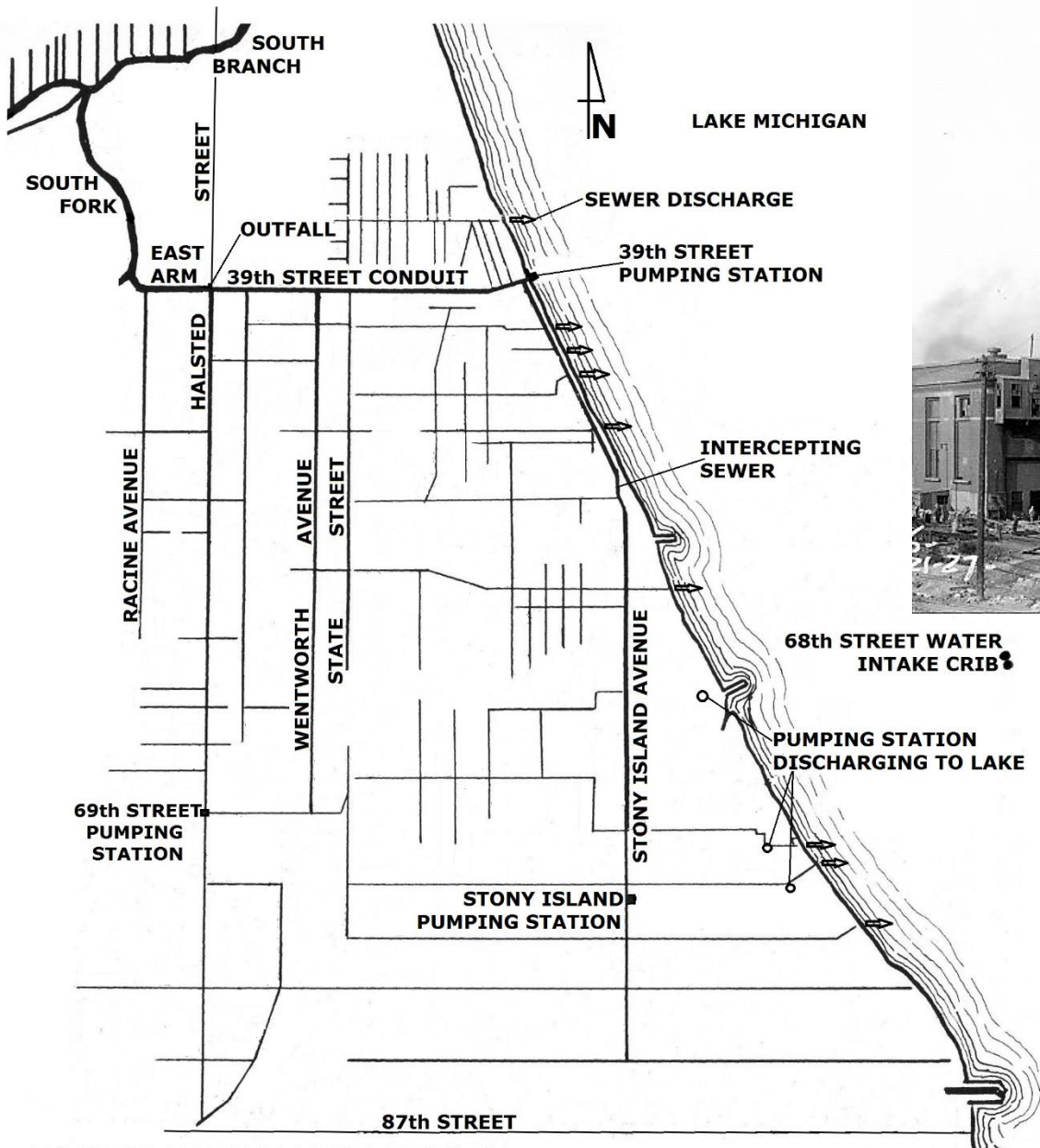
CANAL BUILDING TIMELINE

- 1848 Illinois & Michigan Canal opens
- 1900 Sanitary & Ship Canal opens
- 1907 Sanitary & Ship Canal extended and North Branch channelized
- 1916 South Branch deepened and widened
- 1917 North Shore Channel completed
- 1922 Original Calumet-Sag Channel completed
- 1933 Illinois Waterway opened, replaces I&M Canal
- 1965 Calumet-Sag Channel and Little Calumet River widened and new lock completed

- 65 years to reach current capacity, no capacity increases since 1965

ELIMINATING NORTH SIDE SEWER DISCHARGES TO THE LAKE BY 1907



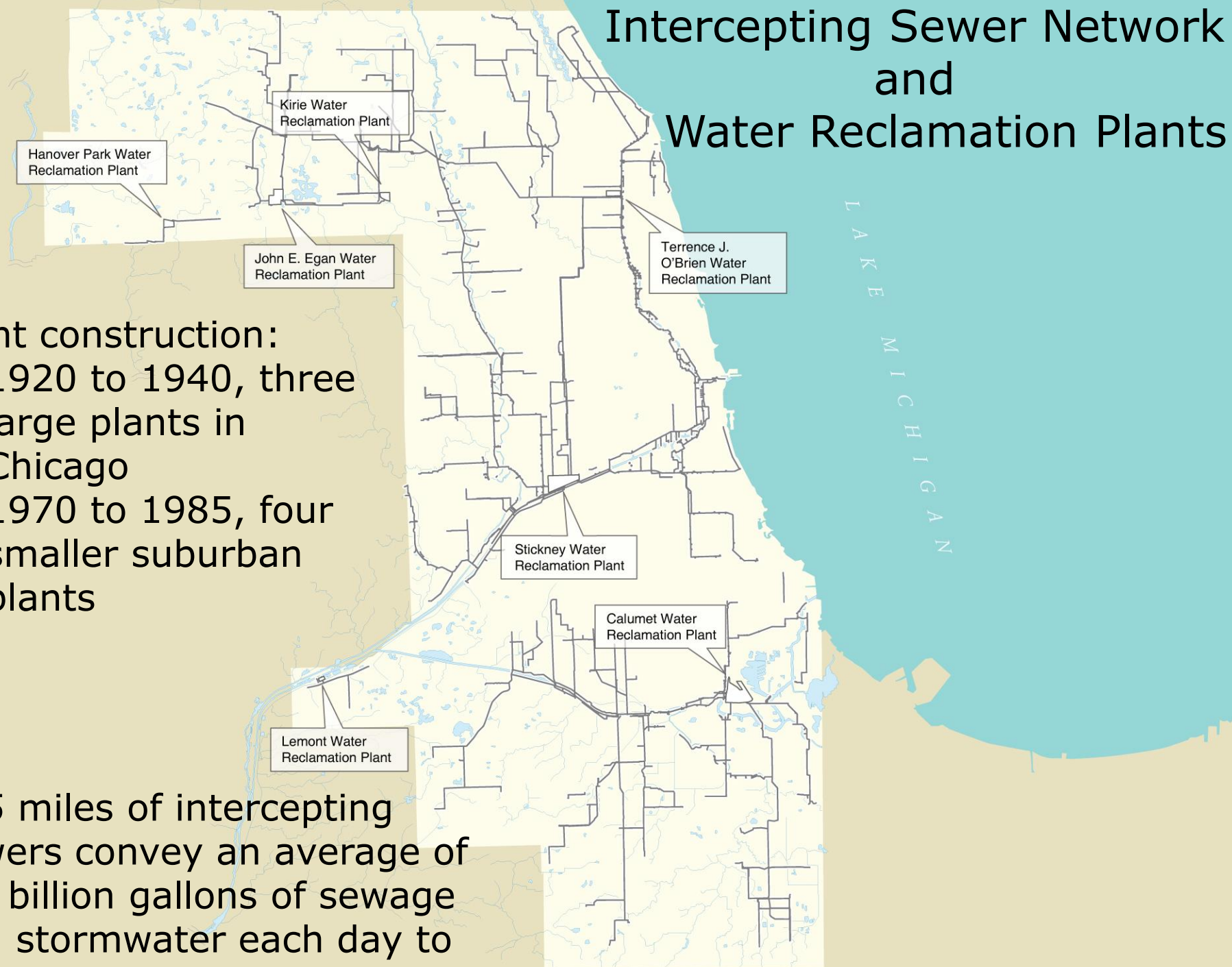


ELIMINATING SOUTH SIDE
SEWER
DISCHARGES TO THE LAKE
BY 1907

**SOUTH FORK EAST ARM &
SOUTH LAKEFRONT SEWAGE
DISCHARGE ELIMINATION**

FIGURE 3

Intercepting Sewer Network and Water Reclamation Plants



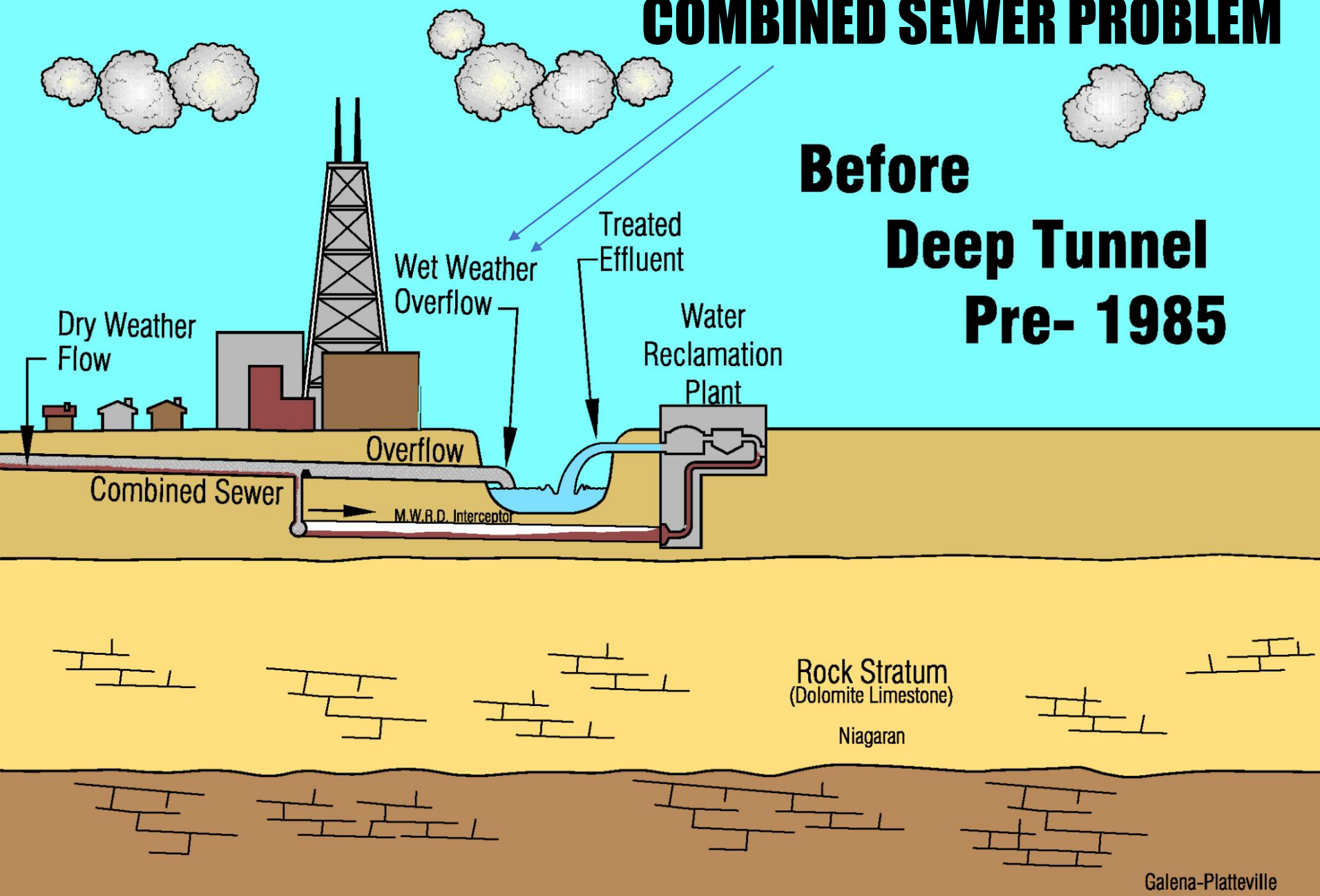
Plant construction:

- 1920 to 1940, three large plants in Chicago
- 1970 to 1985, four smaller suburban plants

555 miles of intercepting sewers convey an average of 1.3 billion gallons of sewage and stormwater each day to seven water reclamation plants

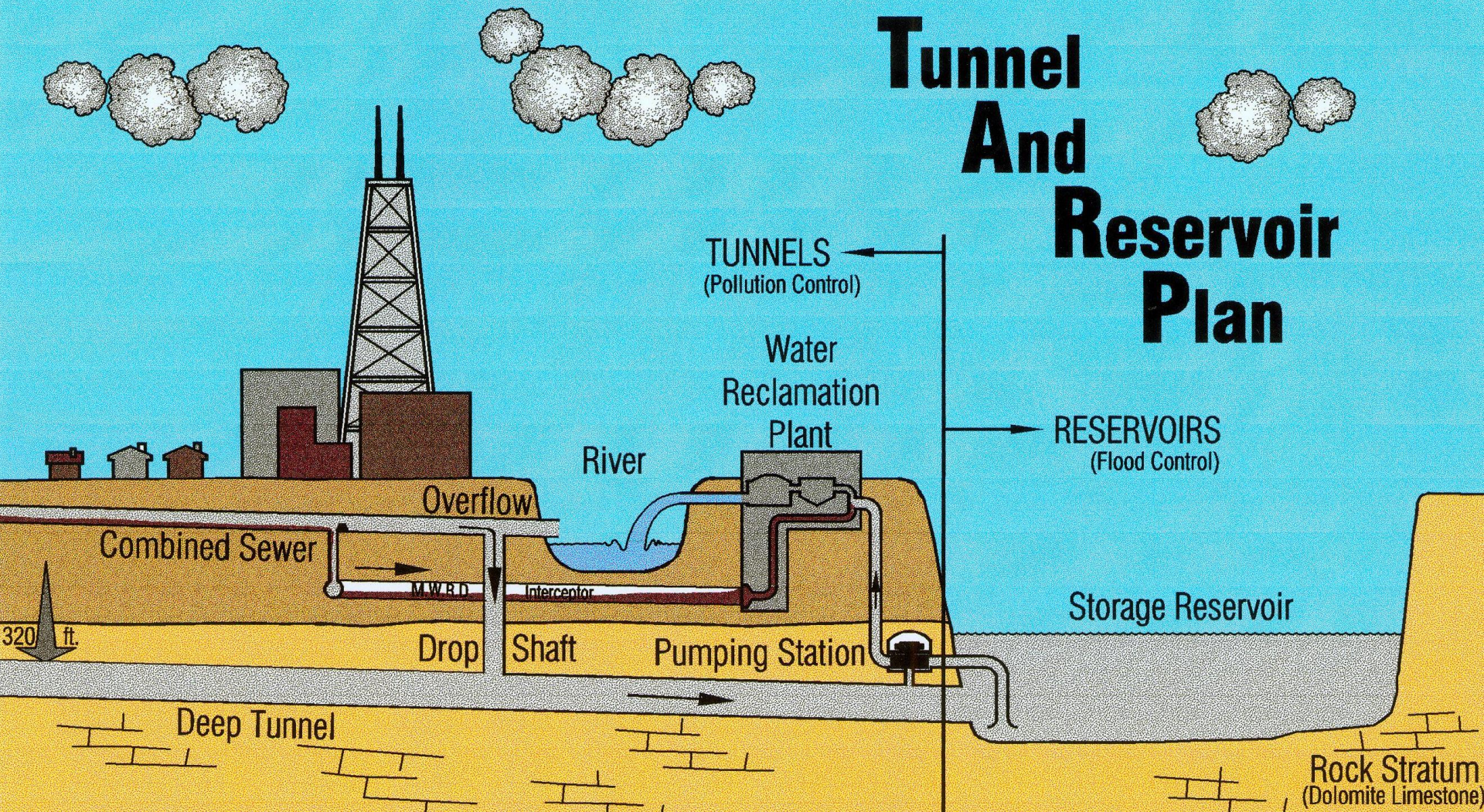
COMBINED SEWER PROBLEM

**Before
Deep Tunnel
Pre- 1985**

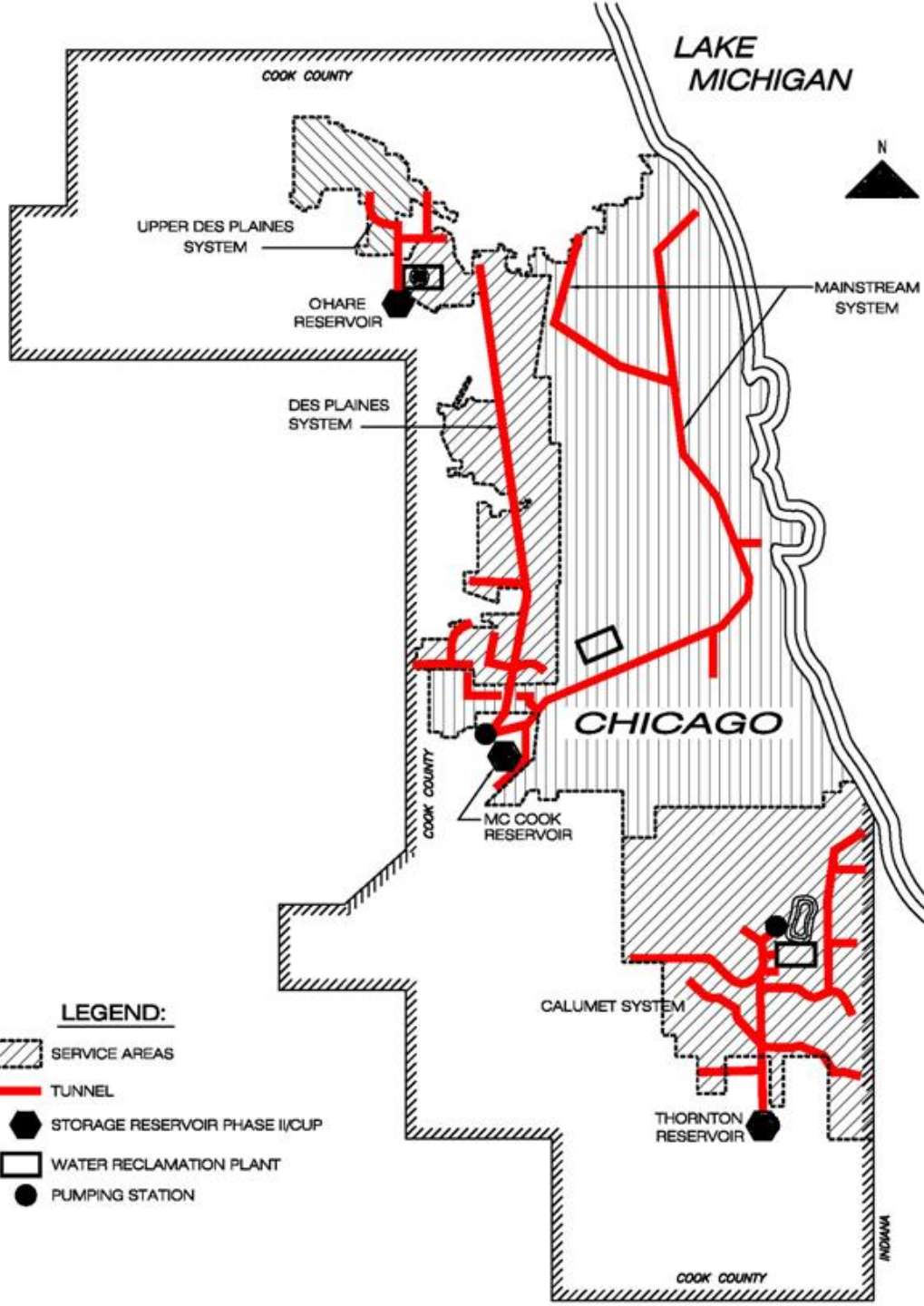


Galena-Platteville

Tunnel And Reservoir Plan



Tunnels and reservoirs will capture all combined stormwater and eliminate all overflows, except for the few very large storms each year.



System	Area	Tunnel Length
	Sq. Mi.	Miles
Calumet	91	36.7
Des Plaines	35	25.6
Mainstream	220	40.5
Upper Des Plaines	14	6.6
Total	360	109.4

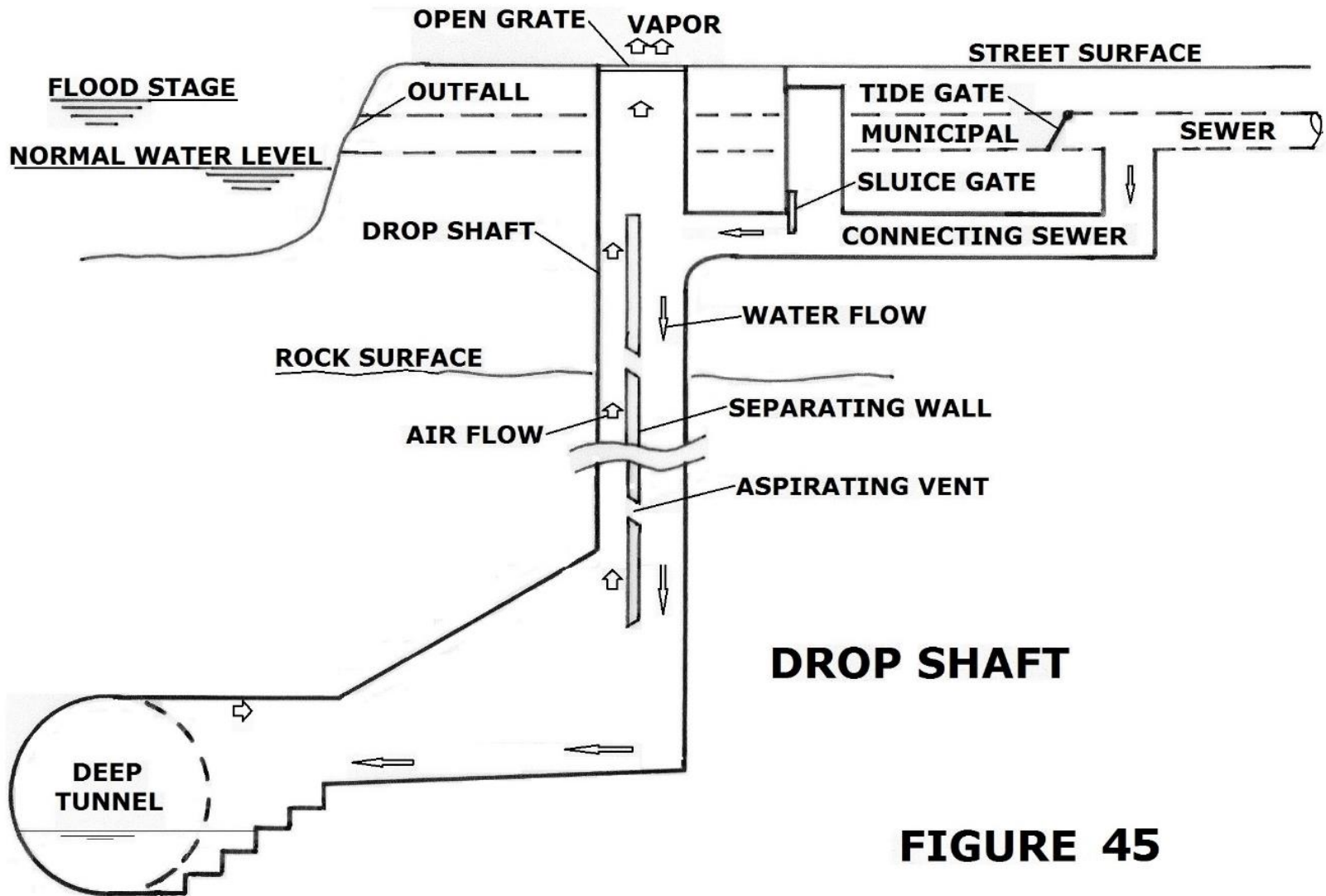
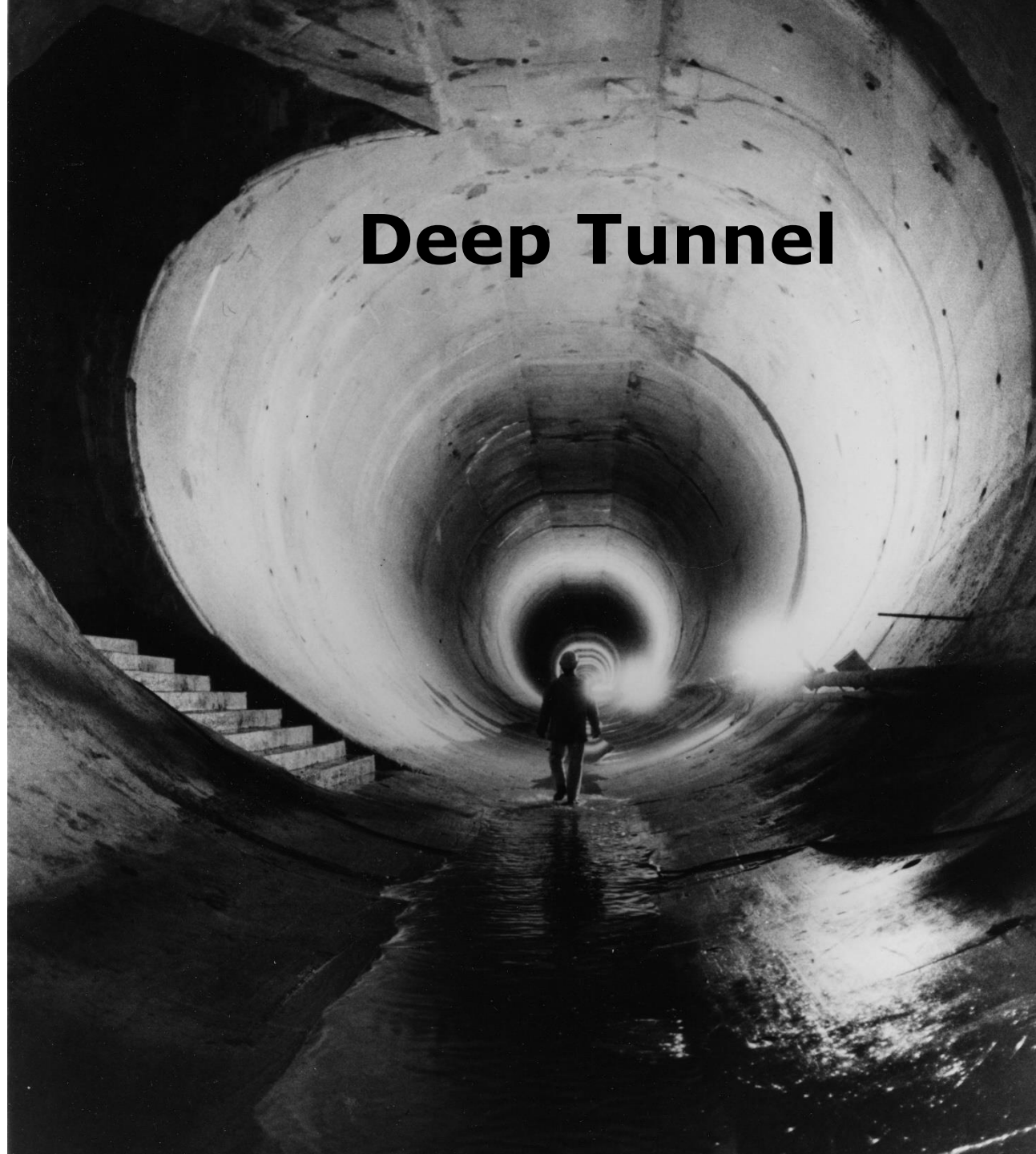


FIGURE 45

Drop Shaft boot



Deep Tunnel

Kirie Water Reclamation Plant
capacity = 110 million gallons per day

Majewski Reservoir

400 million gallons





Thornton Reservoir

7 billion gallons

Capacity = 430 million gallons per day



CALUMET WATER RECLAMATION PLANT

McCook Reservoir, Stage 1, 3.5 billion gallons





McCook Reservoir Mainstream Tunnel Portal

McCook Reservoir, Stages 1 & 2, 10 billion gallons



McCook Reservoir, first total fill event, February 21, 2018



Capacity = 1.44 billion gallons per day



STICKNEY WATER RECLAMATION PLANT

A wide-angle photograph of the Centennial Fountain in Chicago. A large, powerful jet of water is being sprayed from the fountain on the left, arching across the sky towards the right. The water is bright white against the clear blue sky. In the background, there are several tall, modern skyscrapers with glass and brick facades. A bridge is visible in the distance over the water. The water in the foreground is dark blue with some ripples. The overall scene is bright and sunny.

CENTENNIAL FOUNTAIN

*Thank You
for loving Lake Michigan*