



Brooklyn Waterfront Research Center

Historical Maps, Geospatial Methods, and Brooklyn's Early Chemicals and Petroleum Industries

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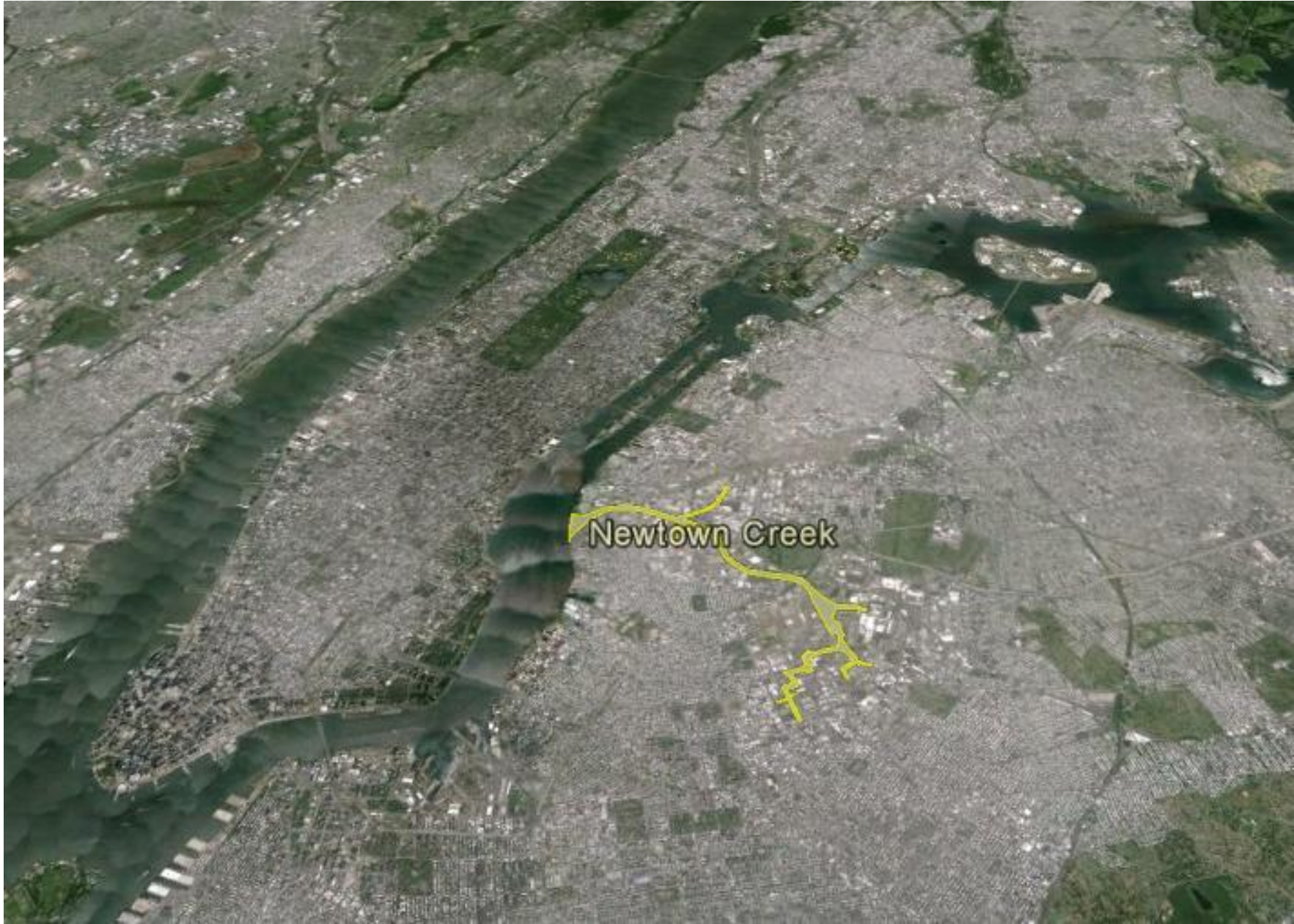
NYC College of Technology CUNY

October 17, 2013

Old maps



New maps



The point of this talk:

1 History

In the 19th and 20th centuries ...

2 Economic geography

Newtown Creek, a narrow channel between Brooklyn and Queens ...

3 Geospatial referencing

Examined with GIS methods, historical maps ...

4 Environmental legacy





This is an aerial photograph of an industrial and urban area. A dark river flows through the center of the image. To the left of the river, there is a dense grid of streets and buildings. To the right, there are large green fields and some industrial structures. A red pin is located on the riverbank, and a blue pin is located in the lower right quadrant. Labels with leader lines point to these pins. The year '1856' is displayed in large white text in the upper right.

North American Kerosene
Gas Light Company

1856

Kalbfleisch Chemical Works

1859: illuminating oils

By the fall of 1859, there were in this country at least 33 "coal- oil" refineries actively engaged in the manufacture of hydrocarbon illuminating oils that differed very little in chemical composition from the petroleum-based illuminants that would shortly displace them. By far the largest of these coal-oil works was the pioneer plant of the New York Kerosene Oil Works, located on the east bank of Newtown Creek in what is now the Borough of Queens.

From "Dr. Gesner's Kerosene: The Start of American Oil Refining," by Kendall Beaton, *The Business History Review*, Vol. 29, No. 1 (Mar., 1955), pp. 28-53 .

Abraham Gesner's process for refining kerosene from coal:

After the liquid was obtained by dry distillation in a closed retort, it needed to be chemically treated to removed undesirable impurities.

Gesner used sulfuric acid, 5 to 10 percent the volume of the oil being treated.

US Patent 11203 (1854)



Central Refining Co.
Oil Works

Pratt Oil Works

Preston's
Bone Black
Factory

Van Iderstine's
Tallow Factory
Buchanan's
Tallow Factory

Gaff & Fleischman
Distillery

Washington Oil Refinery

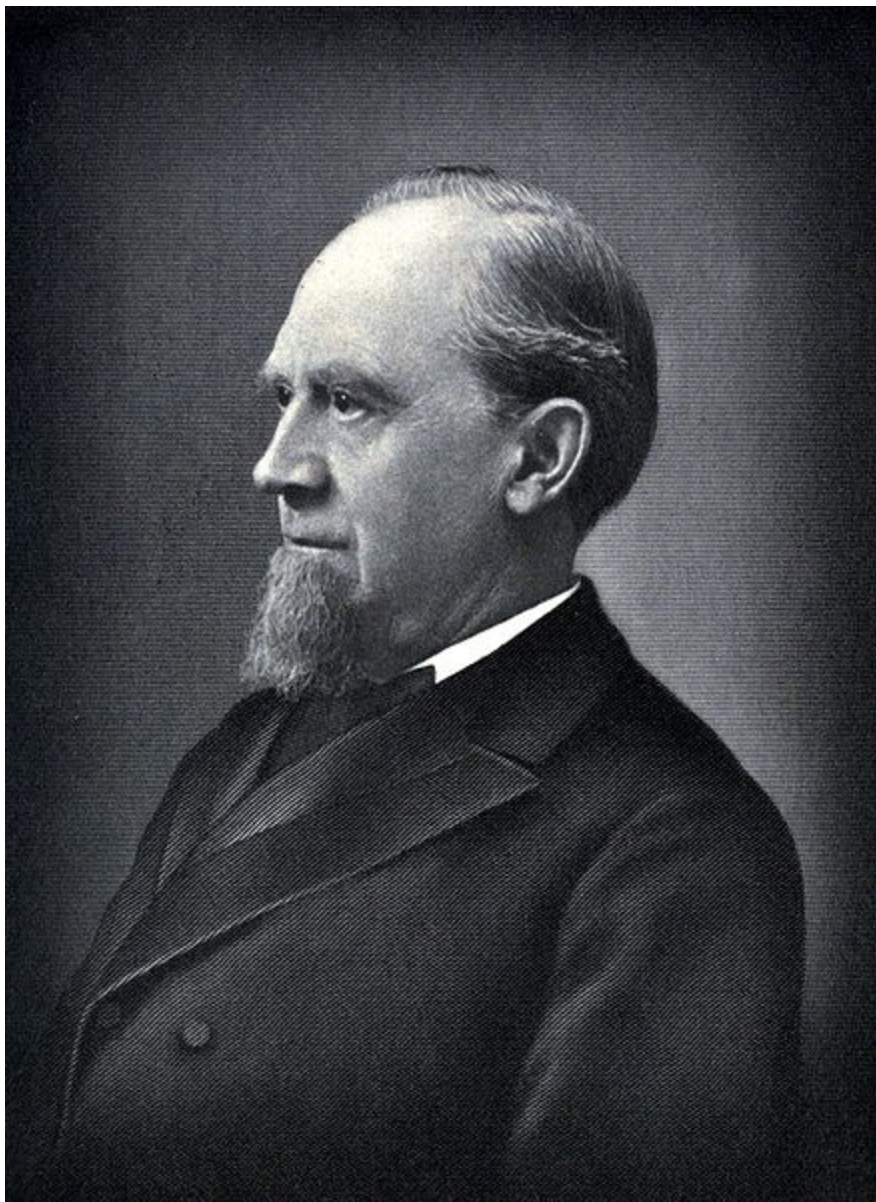
Kings County
Oil Refinery

E.W. Abendroth
Tartaric Acid
Factory

Thompson & Bedford
Co - Oils

Higginson's Insurance Maps

1868



Charles Pratt

- Pratt came to New York in 1851 to work for Schenck & Downing, dealers in paints, oils including whale oil, and glass.
- In 1858, Pratt is named a partner of the firm that had become Raynolds and Devoe.
- “Pratt was especially interested in the emerging petroleum industry and in the 1860s he helped oversee the creation of the Devoe and Pratt Manufacturing Company—later the Devoe Manufacturing Company. This subsidiary operated an oil refinery on the Newtown Creek in Queens. Its special “Patent Cans” were particularly well suited to exporting

Flow chart of batch operations at Pratt Oil Refinery ca. 1871, producing kerosene from petroleum

from F. Williamson and A. R. Daum, The American Petroleum Industry, Evanston, Northwestern University Press, 1959

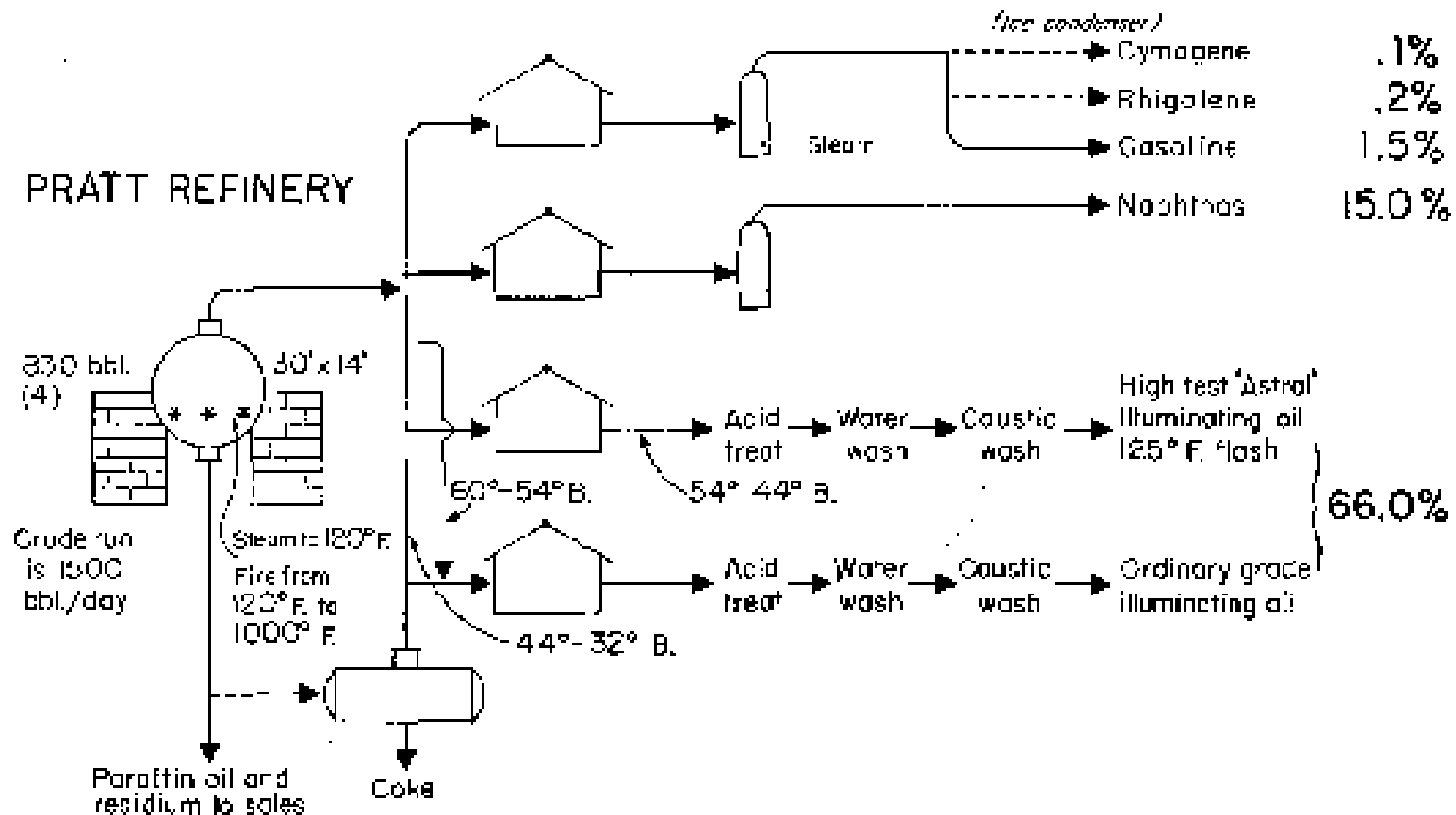
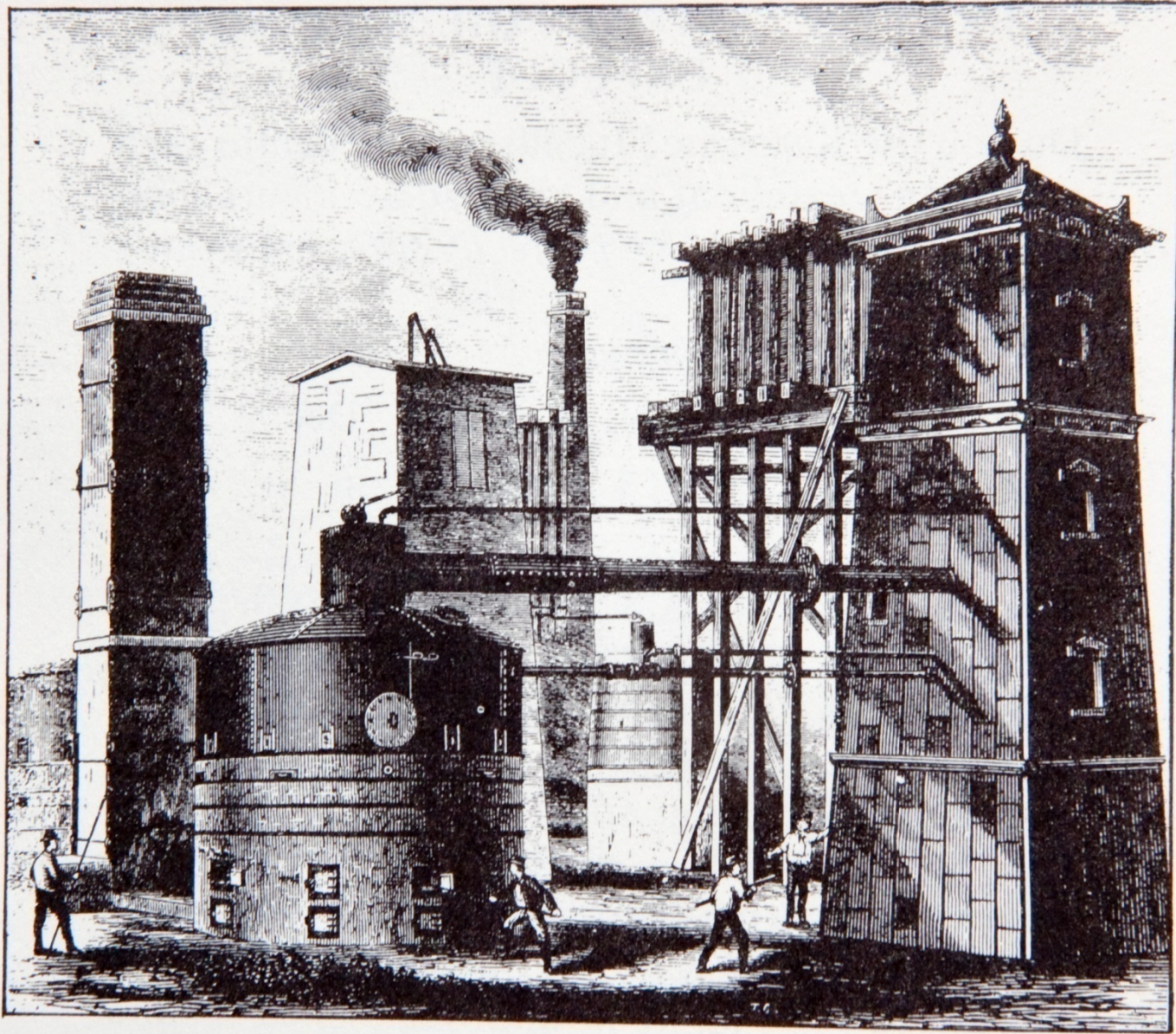


FIGURE 11-10. Flow chart of batch operation.



Gasoline still, fractionating tower, and condenser at the Pratt Astral Oil Works.
(Scientific American, Supplement, May 18, 1872)

Pratt's Astral Oil



William Nichols and Newtown Creek

William Nichols, born in Brooklyn in 1852; attended Brooklyn Polytechnic Institute and New York University, earning a BS degree in Chemistry in 1870.

1870 Nichols joined Laurel Hill Chemical Company as a chemist. In 1871, with Baumgarten retired, the company became Walter and Nichols Co. The company acquired more land and built capacity for production of sulfuric acid, HNO_3 , and HCl. Reorganized as G. H. Nichols and Company.

1876 J. B. F. Herreshoff joined the company, began a career of developing new technologies that affected all areas of the company's operations.

1880s As other producers did, the G. H. Nichols Co. began to use pyrites as the source for sulfur (formed in the thermal decomposition of FeS_2).

1890 G. H. Nichols develops an interest in refining copper from the company's pyrite waste stream.

1890 Herreshoff developed a form of the contact catalytic process (SO_2 product of chamber process oxidized to SO_3 in flow through red-hot Pt tube), with strong effects on the company's fortunes.

1891 G. H. Nichols and Co. splits, conveying land to the Nichols Chemical Company; G. H. Nichols and Co continues to refine copper.

1892 Nichols constructs one of the first large-scale systems for electrolytic refining of copper: Nichols Lake Substitute (NLS) competes with Lake Superior copper, the US Bureau of Mines standard.

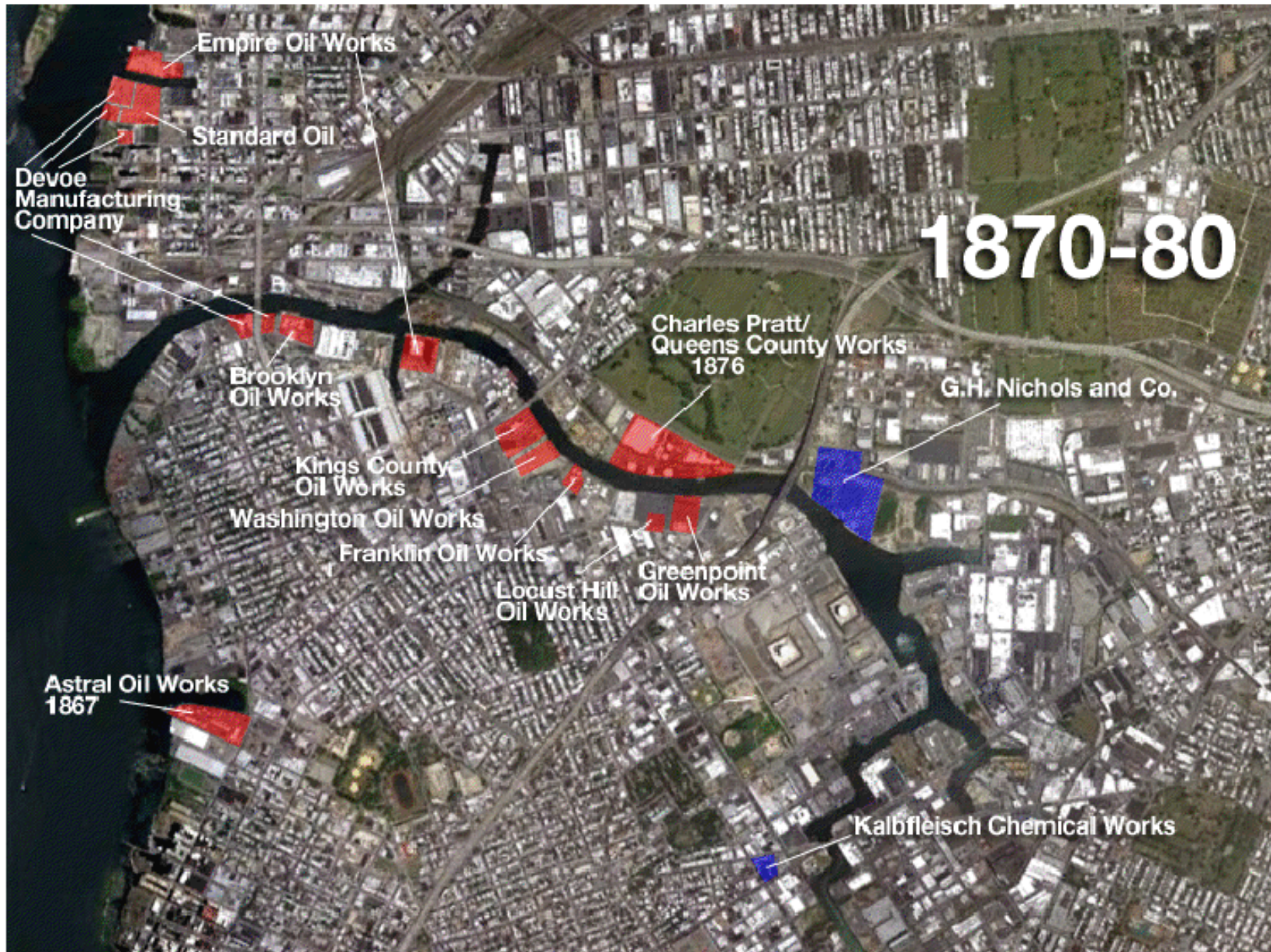
1895 Nichols produces high purity blister copper, cast as bars, ingots, wire, etc. G. H. Nichols and Phelps Dodge (supplier of pyrite) form partnership.

1899 Nichols leveraged the company's catalytic contact process to organize the General Chemical Company, merging 12 companies and 19 plants.

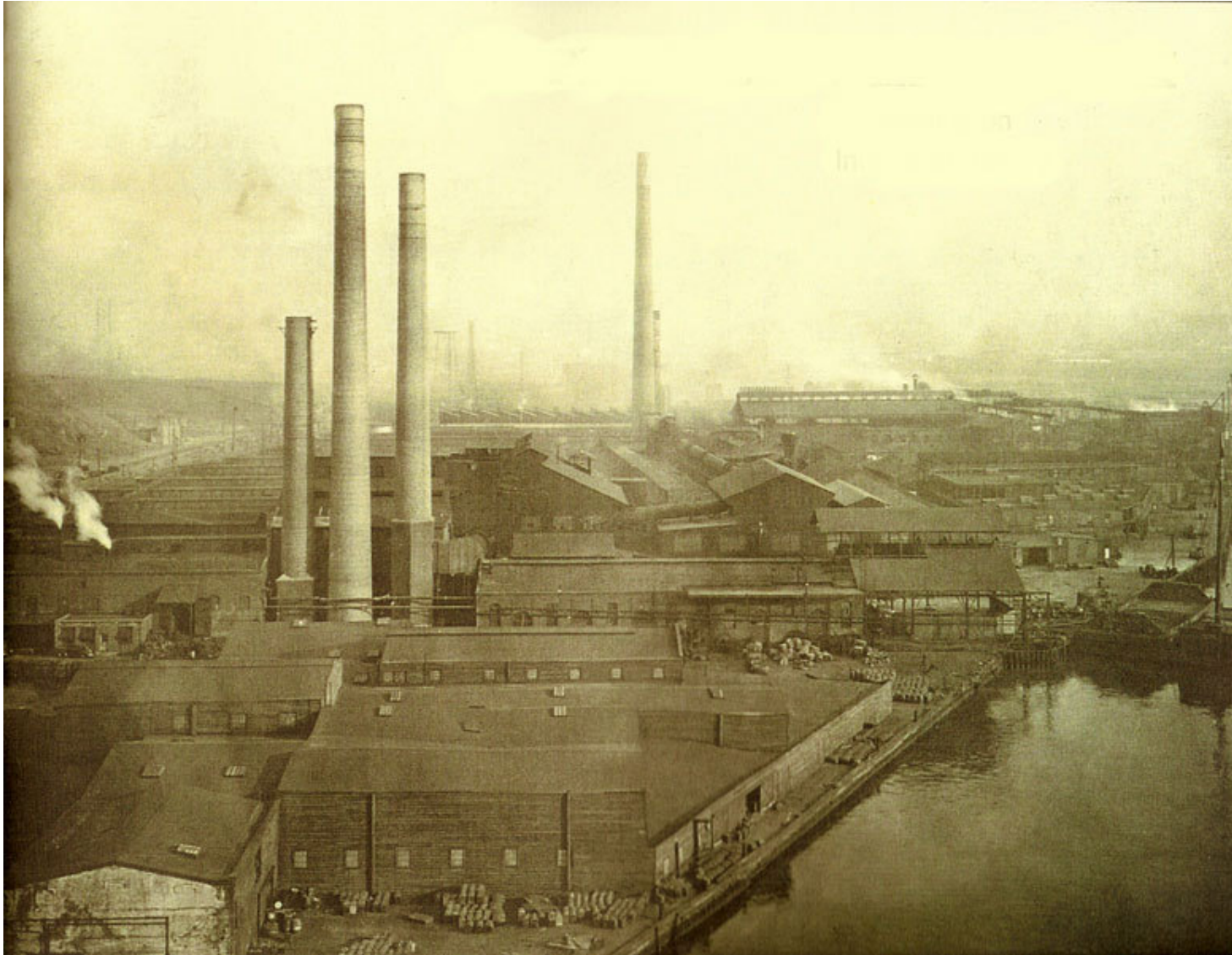
By the time Germany invaded Belgium, August 1914, the US sulfuric acid industry produced 4,047,982 short tons annually. The combined total of Britain, Germany, and France was about half as great.

REF: C. Cravens, Copper on the Creek, Furnace Press, New York, 2000; W., American Chemical Industry, background and Beginnings, Garland Publishing, Inc., New York and London, 1983; H. Wigglesworth, Industrial and Engineering Chemistry 19, 1205-6 (1927).

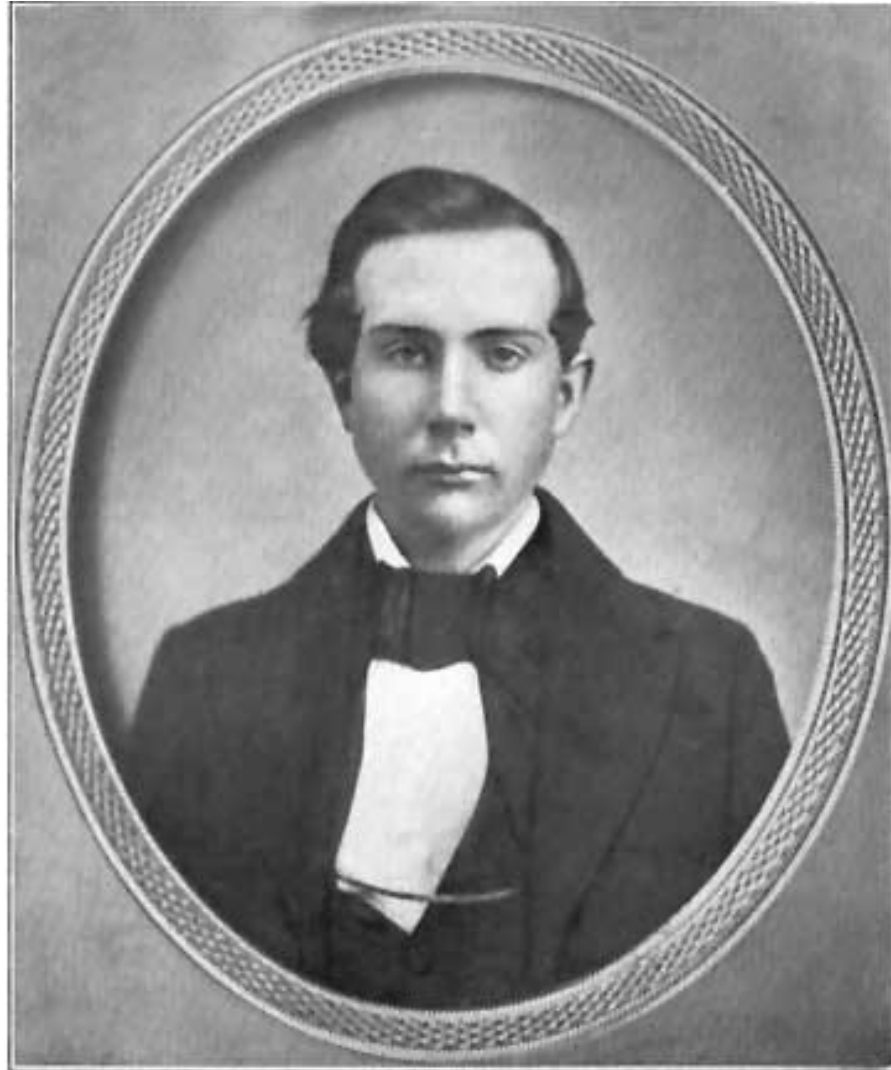
Sulfuric acid production and oil refineries



Nichols Chemical and Nichols Copper Companies, late 19th century



John D. Rockefeller; the growth of the Standard Oil Company at Newtown Creek



NYC DOITT aerial photograph 1924



NYC DOITT aerial photograph 2010



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Queens, Vol. 2, Double Page Plate No. 30; Part of Ward Two Laurel Hill; Map by Berlin Ave., Newtown Creek, Laurel Hill Boulevard; Including Newtown Brook School Road, Newtown Turnpike

from First and second wards: Long Island City and Newtown. (In [3 layers](#)) Depicts: 1912 Last modified: 2013 3 control points.

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Viewing warped map



Epilogue

- 1978 A Coast Guard helicopter flying over Newtown Creek notices a 400 gallon oil slick.** Sump pumps installed along Newtown Creek recover 95000 gallons of oil in 6 month period. The Coast Guard describes slick as part of 17 million gallon oil spill.
- 1990 Mobil enters a consent agreement with NYS Department of Environmental Conservation. TRC Environmental Corporation finishes an assessment for Eldorado Coffee Company (in neighborhood of Newtown Creek) finding elevated levels of benzene, toluene, and other chemicals in air and soil samples.
- 1998 BP and Amoco merge to form BP Amoco; Exxon and Mobil merge to form ExxonMobil.
- 2004 Riverkeeper (advocacy group) file suit against ExxonMobil citing the Clean Water Act and the Resources Conservation and Recovery Act.** Chevron enters into consent agreement with NYS DEC.
- 2005 Riverkeeper files a complaint against ExxonMobil, BP, and Chevron.
- 2006 US House of Representatives authorizes EPA to conduct a public health and safety study of the spill.** Exxon restarts its oil recovery pumps as per 1990 consent agreement.
- 2007 NYS AG Andrew Cuomo files suit against ExxonMobil. EPA releases its study of the spill: estimates spill to be as large as 30 million gallons; surrounding air contains high levels of methane; recommends further study.
- 2010 September, the US EPA adds Newtown Creek to Superfund National Priorities List;**
November, ExxonMobil agrees to pay \$25 million and commit to a more thorough cleanup of its huge oil spills along Newtown Creek and a faster timetable for the process, according to a settlement announced on Wednesday by Attorney General Andrew Cuomo.
- 2012-present Under authority of the EPA, the collection and analysis of samples from Newtown Creek-bed in progress.

Thank you.



Brooklyn Waterfront Research Center

<http://bwrc.commons.gc.cuny.edu/>

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New York Public Library

Brooklyn Historical Society



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Water and Work: The Ecology of Downtown Brooklyn

A one-year seminar series for sixteen faculty members, along with a public symposium, on the natural and cultural history of Brooklyn's waterfront.

Along the Shore: Changing and Preserving the Landmarks of Brooklyn's Industrial Waterfront

Two one-week workshops for fifty community college faculty members on selected Brooklyn waterfront landmarks.