

MANAYUNK CANAL
7 Lock Street, Venice Island
Philadelphia PA 19127
www.manayunkcanal.org

**FAIRMOUNT
WATER WORKS
INTERPRETIVE
CENTER**
640 Water Works Drive
Philadelphia PA 19130
215-685-0723
www.fairmountwaterworks.org
Tues.-Sat. 10 AM – 5 PM
Sunday 1 PM – 5 PM

MANAYUNK / FAIRMOUNT TIMELINE

1815 ~ Fairmount Water Works opens; Schuylkill Navigation Company chartered by the Commonwealth of PA

1816 ~ Work begins at both ends of the Navigation in Schuylkill County and Philadelphia

1818 ~ November 1, Flat Rock Dam and Flat Rock Canal completed by Ariel Cooley

1819 ~ March 15, opening of spring Boating Season, first toll collected on Flat Rock (Manayunk) Canal

1819 ~ April 10, first water power sold by the SNC at Flat Rock, to Capt. John Towers

1819 ~ Work begins on the Fairmount Dam by City of Philadelphia, water rights negotiated with SNC

1821 ~ Fairmount Dam completed by Ariel Cooley

1824 ~ Flat Rock community changes name to Manayunk; Fairmount Canal opens to tidewater at the outlet lock

1825 ~ Schuylkill Navigation officially opens through Reading to connect Schuylkill County and Philadelphia

1828 ~ Schuylkill Navigation extended 2.5 miles to Mill Creek at Port Carbon, completing 108-mile Charter

1854 ~ Act of Consolidation - Manayunk and Roxborough annexed into City of Philadelphia

1860 ~ Thirty-eight mills at Manayunk

1868 ~ Roxborough Water Works and Reservoir open near Flat Rock Dam

1909 ~ Fairmount Water Works is decommissioned, Schuylkill River too polluted to drink without filtration

1917 ~ Last coal boats lock through at Manayunk

1948 ~ Schuylkill River Desilting Project spares Manayunk Canal from filling, Flat Rock Dam from dismantling

1978 ~ Dedication of City of Philadelphia project revamping the canal and trail, initiated by Harry Olson

1985 ~ Manayunk Development Corporation incorporated, takes lead in fostering canal projects

1996 ~ Friends of the Manayunk Canal founded by Darlene Messina

1999 ~ Venice Island zoning changes from industrial to residential, canalside development begins

2014 ~ Opening of PWD's Venice Island site at Lock 69/70, with stormwater tank and Performing Arts & Rec Center

2015 ~ Bicentennial of the Fairmount Water Works

2017 ~ Closing of PaperWorks, last mill on Venice Island; end of rail on historic towpath route

2018 ~ Grant awarded to city to stabilize Outlet Locks 69/70

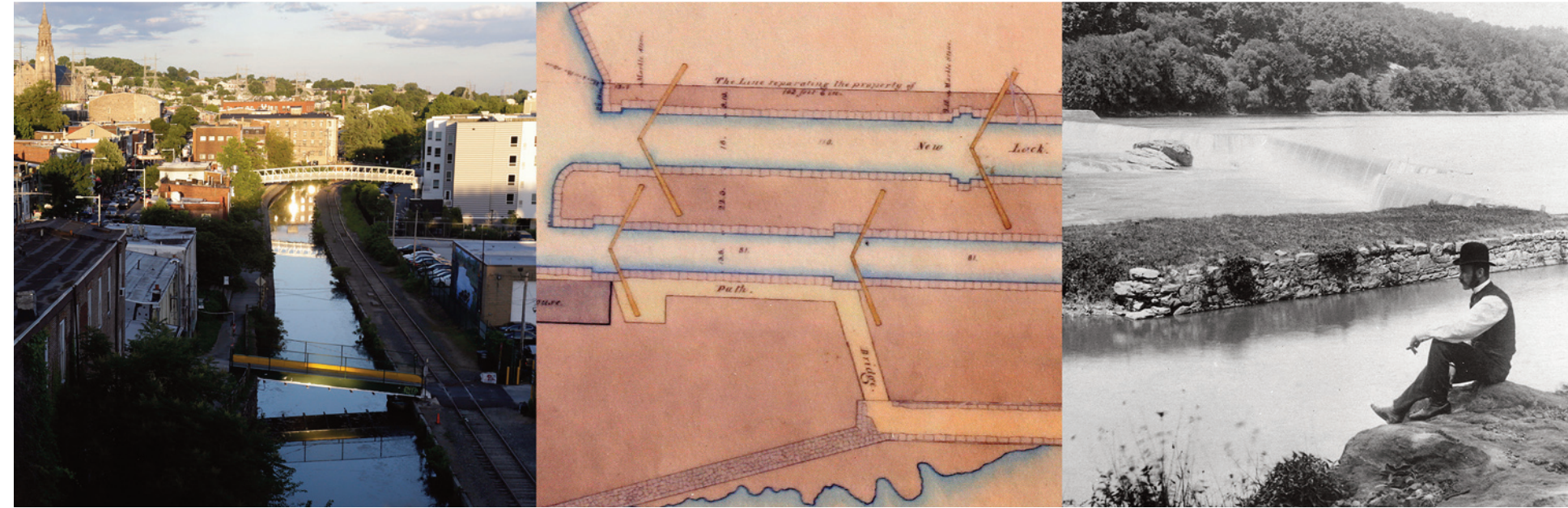
2018 ~ Plans made public to fill gap in Schuylkill River Trail from Manayunk to Fairmount

2019 ~ Philadelphia Water Department begins Manayunk Canal dredging and restoration of flow

2019 ~ Bicentennial of the Manayunk Canal

FAIRMOUNT and the MANAYUNK CANAL 1819~2019

Two Hundred Years of Confluence



Fairmount Water Works ~ Philadelphia Water Department

“The plan... for improving the navigation is as follows – First: That a dam to be formed of logs, braces and stones, such as is commonly called a crib dam... should be erected a little above the Flat Rock Bridge... that from this dam near the eastern shore of the river a canal of sufficient width and depth should be formed to extend near two miles down the stream, and there to have a communication, by means of four locks with the river below: this dam and canal would include a fall of about twenty six feet, and when improved, besides a good navigation for six miles would afford many valuable seats for mills or other water works; and would also in the opinion of some judicious men furnish the best means of supplying the city and liberties of Philadelphia with wholesome water; of a better quality and at much less expense than can be furnished by the mode of raising it by steam engines near the city as now practised.”

CADWALADER EVANS JR.
President, Schuylkill Navigation Company
1817 Address to the Stockholders
and to The Publick in General

FAIRMOUNT and the MANAYUNK CANAL 1819-2019

Two Hundred Years of Confluence

The Fairmount Water Works, a National Historic Landmark, in 2015 hosted its 200th anniversary celebration with great fanfare. Four years later, in 2019, another water-related bicentennial occurred: the Manayunk Canal.



Manayunk Outlet Locks 69/70, and former towpath bridge over the Schuylkill River, 2018.

These two sites are connected by the Schuylkill River, or more precisely, by the now-abandoned Schuylkill Navigation system. Today they are both inside the Philadelphia city limits, but the Manayunk Canal was originally outside. Yet the flow of water knows no municipal boundaries. From the beginning, even when Flat Rock a.k.a. Manayunk was an independent town and later a borough, the canal’s many benefits and liabilities have coursed into Philadelphia. Coal from the headwaters and goods from Manayunk’s textile mills came by boat to tidewater below the Fairmount Dam. Their industrial effluent and the town’s sewage, and that of other upriver factory towns, also flowed down. Philadelphia, the lowest and largest city on the Schuylkill, received it all.

In the 19th century, the private Schuylkill Navigation Company (SNC), which built the Flat Rock Canal, and the public Philadelphia Watering Committee, which built the dam and water works, did not foresee how severe the liabilities would become. Throughout the Industrial Revolution in the Schuylkill Valley, people were dying from water-borne illnesses, the primary factor in the 1909 decommissioning of the Fairmount Water Works. The pumping station, built when the river was relatively pure, had no filtration or treatment capacity. Yet the Manayunk Canal, attracting almost forty mills, had helped Philadelphia become the Workshop of the World.

In the 21st century, the canal is still “watered,” but no longer by the Schuylkill River. It has silted in against a metal plate installed in the 1970s across Lock 68. Small springs and stormwater keep the canal full, but the water stagnates, gathering runoff pollutants. At the outlet lock, it empties sluggishly into the Schuylkill River, just a mile above the drinking water intake for Philadelphia’s Queen Lane Treatment Facility. It is just a few miles farther to the Belmont intake, and a few more to the Delaware River. Thus the health of our two major rivers still depends, at least in part, on the health of the Manayunk Canal. Fortunately, the Philadelphia Water Department has begun work to restore the canal’s river flow, through a new control inlet at Lock 68. Before long, boats may return – this time for recreation.



NICOLINO CALYO (Italian-American, 1799–1884)
Fairmount Waterworks, Philadelphia, c. 1835–40
Gouache on paper, 12 x 19 1/2 in.

The painting shows the Fairmount Canal, lock tender’s house, and outlet lock at tidewater across from the Fairmount Water Works. In the distance, a boat sails on the slackwater pool created by the Fairmount Dam, which extends nearly six miles upstream to the outlet of the Manayunk Canal. From the 1820s to the 21st century, the pool has served as a reservoir from which the Philadelphia Watering Committee (now PWD) has drawn source drinking water for several pumping stations and filtration plants. The same was true of the Flat Rock pool until the Roxborough Water Works was decommissioned in 1962. Both pools are used by rowing clubs and other boaters.



Above: Gears in the sluce house at Lock 68, Manayunk Canal, 2016

Right: From the 1828 Report of the SNC. There is also a Statement of Articles ascending, which includes Merchandise, Mules, Limestone, Oysters, and 1302 tons of Virginia Coal.

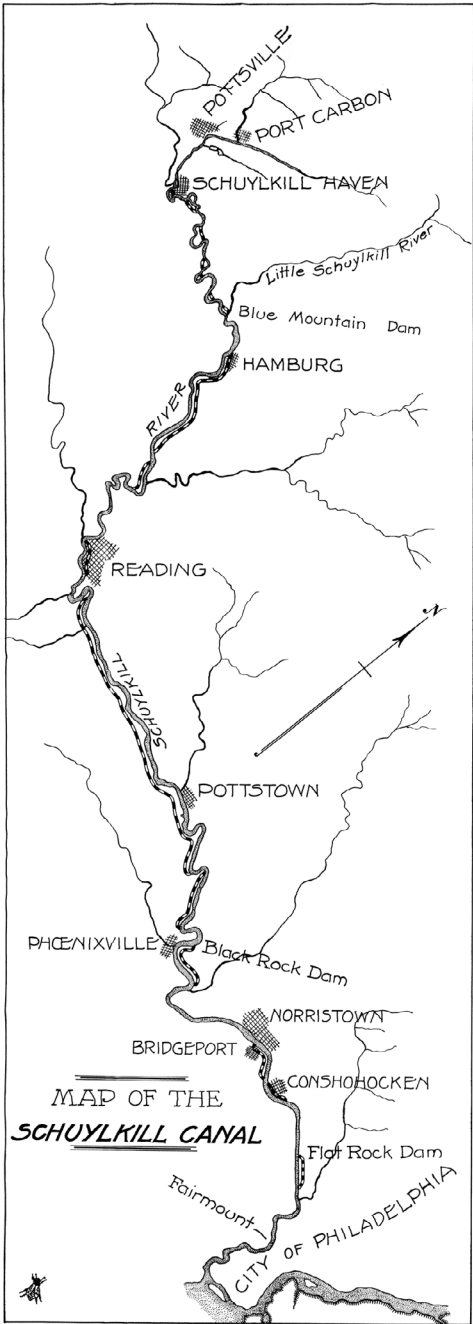
Statement of Articles descending the Schuylkill Navigation, 1827.							Tons.	Cwt.	qrs.
Coal, - - - - -	-	-	-	-	-	-	31360	10	0
Flour, 31,436½ barrels,	-	-	-	-	-	-	2994	00	0
Wheat, 24,244½ bushels,	-	-	-	-	-	-	606	00	0
Corn, 12,951 do.	-	-	-	-	-	-	323	15	0
Rye, 1643, do.	-	-	-	-	-	-	41	1	0
Flaxseed, 6151 do.	-	-	-	-	-	-	153	15	0
Oats, 434, do.	-	-	-	-	-	-	5	9	0
Whiskey, - - - - -	-	-	-	-	-	-	483	4	0
Iron, - - - - -	-	-	-	-	-	-	1533	3	1
Oil, - - - - -	-	-	-	-	-	-	61	5	0
Butter, - - - - -	-	-	-	-	-	-	62	16	2
Tallow, - - - - -	-	-	-	-	-	-	13	1	3
Pork and Lard, - - - - -	-	-	-	-	-	-	9	1	2
Flax, - - - - -	-	-	-	-	-	-	18	12	2
Leather, - - - - -	-	-	-	-	-	-	36	5	0
Paper, - - - - -	-	-	-	-	-	-	35	0	1
Bark, - - - - -	-	-	-	-	-	-	96	0	0
Lumber, - - - - -	-	-	-	-	-	-	2006	2	0
Rags, - - - - -	-	-	-	-	-	-	4	10	1
Potash, - - - - -	-	-	-	-	-	-	4	15	2
Hides, - - - - -	-	-	-	-	-	-	2	00	0
Dried apples, - - - - -	-	-	-	-	-	-	5	1	2
Soap, - - - - -	-	-	-	-	-	-	3	5	0
Nuts, - - - - -	-	-	-	-	-	-		18	0
Sundries, - - - - -	-	-	-	-	-	-	171	3	3
Hats, - - - - -	-	-	-	-	-	-	18	15	0
Live hogs, 245, - - - - -	-	-	-	-	-	-	22	00	0
Glue, - - - - -	-	-	-	-	-	-	2	00	0
Cake Meal, - - - - -	-	-	-	-	-	-	98	5	0
Eggs, 745 dozen,	-	-	-	-	-	-	5	00	0
Apples, 71 barrels,	-	-	-	-	-	-	50	6	0
Ship stuff and shorts,	-	-	-	-	-	-	3521	00	0
Limestone, - - - - -	-	-	-	-	-	-	1472	10	0
Iron ore, - - - - -	-	-	-	-	-	-	526	5	0
Nails, - - - - -	-	-	-	-	-	-	679	00	0
Sawed Marble, - - - - -	-	-	-	-	-	-	1279	00	0
Cord wood, - - - - -	-	-	-	-	-	-	6078	00	0
Stone, - - - - -	-	-	-	-	-	-			
Total,							53,782	16	3

A CONDUIT FOR COAL

The Manayunk Canal was only a two-mile section of the 108-mile Schuylkill Navigation system of dams, locks, aqueducts, pools, and canals. This ambitious inland waterway, supported by Benjamin Franklin, influenced by Josiah White, designed by engineers, built by immigrants, and owned by prominent Philadelphians, literally powered the Industrial Revolution in Southeastern Pennsylvania and beyond.

The Schuylkill Navigation, sometimes known misleadingly as the Schuylkill Canal, officially opened in 1825 and its last miles were completed in 1828. In some places, the Navigation tamed the unruly shallows of the river; in others it avoided them. Its richest cargo was anthracite coal, loaded in the mountains of Schuylkill County and destined for all possible downriver markets. Anthracite is a hard coal (also called “stone coal” or “black diamond”) that burns hotter, longer, and cleaner than bituminous coal. Most of the anthracite in America, 480 square miles of coal-bearing rock, is near the Schuylkill headwaters.

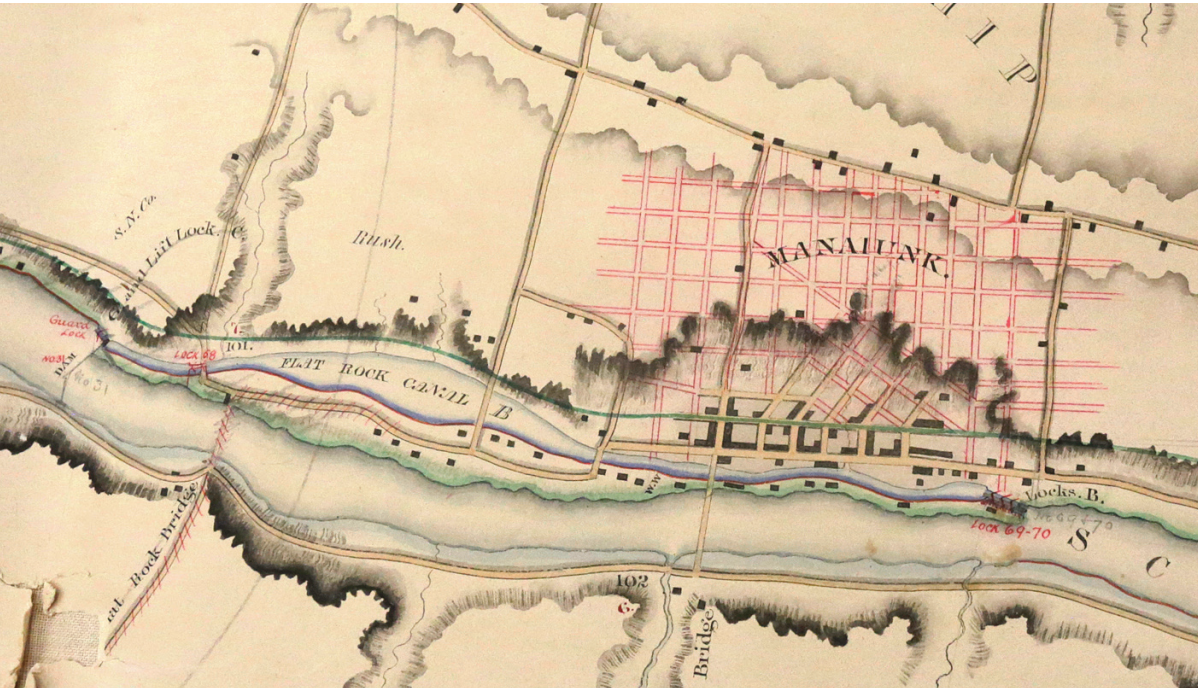
Over its century of commerce, the Navigation carried millions of tons of coal, and, in both directions, other raw materials and manufactured goods. The Company also leased water power to private mills, like those in Manayunk, and pumping stations, like the Fairmount Water Works. Thus the Navigation created factory towns, and its dams incidentally impounded drinking water for several of them. Towns that were founded or grew because of the Navigation include (in order going downstream) Pottsville, Schuylkill Haven, Auburn, Port Clinton, Hamburg, Leesport, Reading, Birdsboro, Pottstown, Phoenixville, Norristown, Bridgeport, Conshohocken, and Manayunk. According to *The Schuylkill* by J. Bennett Nolan, by the 20th century there were “fifty-eight river communities, and approximately five hundred and fifty industries located along the Schuylkill between the mountains and the Delaware.”



The extent of the Schuylkill Navigation system, 108 miles and a 618-foot elevation drop. Longer reaches like the Hamburg Canal and Girard Canal can be seen parallel to the river.

THE BIRTH OF MANAYUNK

The Flat Rock canal was channeled through a swampy floodplain called the Dead Waters, and a mule towpath was later constructed on the river side. The first toll was collected on March 15, 1819. At that time, there were only eleven scattered households in the Flat Rock settlement eight miles upriver from Philadelphia. Though the canal was completed by engineer Ariel Cooley by November 1, 1818 as his contract required, it was not used, except perhaps for ice skating, until the boating season opened in the spring.



Undated plan of “Manaiunk” believed drawn in 1833 by SNC engineer Edward Gill. The red markup is probably after the crossed-out Flat Rock Bridge was destroyed by the famous “freshet” of 1850.

Flat Rock was renamed “Manayunk” in 1824 after the names “Udoravia” and “Bridgewater” were also considered. As most scholarship has it, “Manayunk” is a Lenape word then spelled Manaiunk. It was their name for the river, usually translated “where we go to drink.” The citizens of Flat Rock decided to change the “i” to a “y” because it looked more “poetical” according to Hagner, lining up nicely like this:

MANA
YUNK

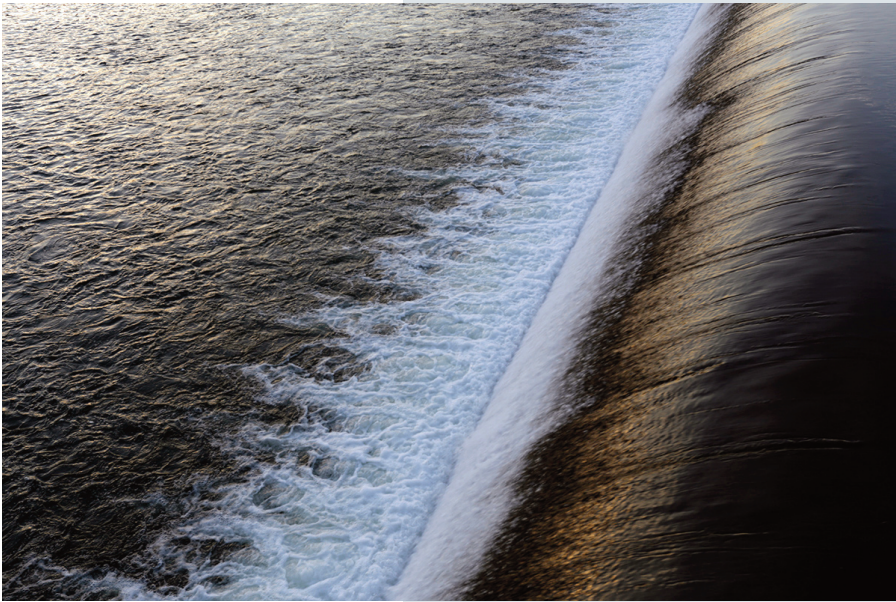
Canals provided both navigation and power. They created through routes and local access, and their elevation above the river permitted a gravity flow to turn water wheels. The first two water powers were sold in 1819 and 1820 to Captain John Towers and Charles V. Hagner. Hagner writes in 1869, “Captain John Towers may justly be considered the pioneer of Manayunk.... always a very daring, venturesome man, and the very one to commence building a mill at Manayunk; for, from the fear of ice freshets so universally prevailing at that time, no other was willing to run the risk.” By 1828, there were ten mills, and by 1860 there were thirty-eight. Manayunk became known as the “Manchester of America” for its vigorous industrial production and dubious working conditions. Hagner reports that some cloth-shearers from England arrived as “remarkably large stout men of fine healthy color and appearance, but one month’s residence at Manayunk was quite sufficient to ‘use them up.’ ”

WATER RIGHTS FIGHTS

After several years of expensive and dangerous steam power at the Fairmount Water Works, in 1819 the Philadelphia Watering Committee began building a long crib dam. They hired Ariel Cooley, who had just finished the Flat Rock Dam and Canal. The new Fairmount Dam would have two major roles. For the City, it would impound and divert river water through breast wheels, to power pumps and fill the reservoirs atop “Fair Mount” with drinking water for the citizens below. For the SNC, it tamed the final rapids of their 108-mile system, allowing boats to reach tidewater ports on the Delaware, and other canals. Some Schuylkill Navigation cargo made it to New York City and even overseas, where anthracite was prized.

The SNC owned the water rights to the entire Schuylkill River, as granted by the Commonwealth of Pennsylvania in the 1815 Charter. A deal was struck for the City to build the locks and canal for the SNC on the west bank, in exchange for water power and drinking water. The Fairmount Dam would raise the level of the river, providing a slackwater pool suitable for rowing and skating clubs, but drowning the natural Falls of the Schuylkill four miles up. (Its submerged rocks can be glimpsed under the Twin Bridges in East Falls.) The City paid Josiah White, innovative builder of the 1816 Falls dam and locks (first in the Navigation), and his partner \$150,000 for their rights. Until then, the ocean tides advancing up the Delaware and Schuylkill rivers stopped at the Falls; now they stop at Fairmount Dam.

The water rights at Fairmount were subject to bitter legal battles. The permitted water quantities were spelled out in a contract, but subsequent letters alleged that in dry summers the City sometimes diverted more than their share, citing public health priority. Historian Walter Sanderlin wrote, “The [Navigation] waterway and the city of Philadelphia were obviously on a collision course over the use of water from the Fairmount Dam.” After both the Water Works and the Navigation ceased operations in the early 1900s, the river was finally allowed to pour over the dam in the lovely cascade that visitors enjoy today.



“...in case the said mayor, aldermen and citizens of Philadelphia, shall make a canal running between Quarry-hill at Fair Mount and the river Schuylkill, they shall be at liberty to demand and receive all the tolls receivable on the said canal... except on boats employed on the said canal for the use of the said mayor, aldermen and citizens of Philadelphia, which shall not pay any toll.”

“An Act to Authorize the Governour to Incorporate A Company, to make a Lock Navigation, on the River Schuylkill,” 1815. (The Quarry-Hill canal was never built.)

Skyline of Philadelphia at sunset, reflected in the Fairmount Dam overfall, 2018.

WATER POLLUTION AT MANAYUNK AND FAIRMOUNT

The Flat Rock Dam and the Fairmount Dam were both culprits, along with the other thirty dams along the Navigation, in causing huge volumes of black coal sediment known as “culm” to back up the river’s flow. Culm was carried by the

Schuylkill River from its headwaters where coal breakers had created it, all the way to the Delaware River. The SNC continually dredged its channels to allow canal boats to move, but the Schuylkill still could not clean itself of the sewage, factory effluent, and other waste that was dumped into the river from the booming factory towns.

The 1824 SNC pollution control agreement stated that anyone who purchased water power at Flat Rock would be “effectually restrained and protected from suffering any dye-stuffs, or any noxious, fetid or injurious articles or matter whatsoever, to flow, pass or fall from their respective premises into the river Schuylkill, and shall be obliged and bound to confine all such dye-stuffs, or noxious, fetid or injurious articles or matters, within one or more wells or repositories sunk or made upon their respective premises, and at a reasonable distance from the margin of the said river Schuylkill, and of any canal, water course or passage leading into the same.”

This wonderfully concise and common-sense regulation was apparently not heeded. By the early 1900s, our principal rivers had become a thirty-mile dead zone (“the Philadelphia sag”) of pollution, sludge, and bad smells. No fish could live there. The thirty-two dams of the Navigation kept the Schuylkill from cleaning itself, or distributing nutrients that aquatic life needed. They blocked anadromous fish like the American shad from migrating upstream; actually, the Fairmount Dam blocked them all by itself. Drinking water became exceedingly expensive for the City to clean. Something had to be done.



At the 1954 groundbreaking for removal of silt from the Schuylkill, officials watch large sections fall into river near Boathouse Row. Suction carried silt through pipes 11 miles to Eastwick. Image courtesy Philadelphia Newspapers Inc. and Adam Levine, PWD.

THE END OF THE NAVIGATION

Despite continual channel enlargements and refinements, the Schuylkill Navigation was beset by multiple events and trends that spelled its demise. Freshets, or floods, repeatedly damaged the infrastructure. Rail transport served the Schuylkill Valley starting in the 1840s until, after an especially severe flood in 1869, the Philadelphia and Reading Railroad leased the Navigation in 1870 to augment its own coal trade. The steep, hard-to-maintain Schuylkill County section was abandoned in 1887, making Port Clinton the Head of Navigation. In 1889, the P&R built a rail spur onto Venice Island in Manayunk, taking over the historic towpath. The last coal boat locked through Manayunk around 1917, and in the 1930s the Great Depression all but killed the textile business. Other mills stayed in business, however, and pleasure boats continued on the canals into the 1940s. The life of the canals was prolonged by their use for water power.

Yet the pollution problem could not be ignored. In 1948, the Commonwealth of Pennsylvania and the Federal government launched the massive Schuylkill River Desilting Project, which is detailed in Chari Towne’s important book *A River Again*. Lasting through the 1950s with some work continuing later, the Project was the first environmental cleanup by a government agency in America. The Navigation was a casualty. Dams were dismantled, locks filled, desilting basins built over them, and canals left dry. The river channel was dredged of millions of tons of coal waste. With ensuing regulations including the Clean Water Act of 1972, discharges from industry, agriculture, and sewerage were curtailed, and the Schuylkill was able to clean itself. By the Manayunk Canal’s bicentennial year of 2019, there were more than fifty species of fish identified in the former dead zone.

Four of the Navigation dams remain: Black Rock, Norristown, Flat Rock, and Fairmount. Their presence is justified by their job impounding drinking water for four cities, Pottstown, Phoenixville, Norristown, and Philadelphia, and for recreation like fishing and the Schuylkill Navy’s huge rowing regattas, both of which bring economic benefits to the region. The Philadelphia Water Department maintains two drinking water intakes in the Fairmount pool. By 2009, all four of these dams had fishways, or fish ladders, encouraging anadromous fish to swim upstream in the spring. The shad, once so numerous in the Schuylkill they could be gathered by the thousands with nets, are beginning to return on their own.



The last mill on Venice Island, PaperWorks, closed in 2017. Manayunk Canal and Schuylkill River Trail, 2016.

NEW USES FOR THE MANAYUNK CANAL

In 1978, a new “towpath” instigated by Manayunk resident Harry Olson was constructed by the City of Philadelphia, on the opposite side of the canal from the original towpath. It would become an essential link in the 130-mile Schuylkill River Trail. Forty years later, the last missing Manayunk link, from the canal to Kelly Drive, is finally in the planning stages. In 1999 the zoning on Venice Island, the land between the canal and the river, was changed from Industrial to

Residential despite its status as a floodplain. Several mills were repurposed, others demolished. Some new buildings have risen to the scale of the massive old factories. Squint, and they can be seen again.

Two major 21st century projects have brought new life to the canal. In 2014, a stormwater retention tank was built by PWD near Lock Street, and with it came the new Venice Island Performing Arts and Recreation Center. The site is adorned with rain gardens and a green roof to manage runoff along a basketball court, plus a spray park and water-themed art. In 2015, the Pennsylvania Railroad’s iconic arched bridge became part of the new Cynwyd/Ivy Ridge Trail. Walkers, runners, and cyclists may cross to and from Lower Merion, high over the Schuylkill River with the best possible overlook of the urban section of the canal.

Today, Manayunk is a fascinating canal section to study because it is the only one in the entire Navigation that still has intact lock chambers at both ends. The Oakes Canal reach in Montgomery County, thanks to the volunteer Schuylkill Canal Association, boasts a restored working Lock 60. However, its Outlet Lock 61 and part of the canal bed were completely buried by the Schuylkill River Desilting Project.

In late 2018, a \$1 million grant was awarded to the City to stabilize Manayunk’s Outlet Lock 69/70 at Lock Street. Another grant went to the Manayunk Development Corporation for towpath trail improvements, from Pennsylvania’s Transportation Alternatives Set-Aside. The Philadelphia Water Department

also invited contracts for a major reconstruction of the upper lock and sluiceway and Flat Rock Dam. The canal and lock area will be dredged to restore clean river flow to the canal, which would improve water quality at the Queen Lane intake downstream. Happily, this project would also make the silted canal suitable for navigation again – if not for 100-foot coal boats, then at least for kayaks and canoes.



A rendering of the proposed Flat Rock Dam intake unit to restore flow to the canal. The brick ruin in the distance is the Lock 68 sluice house. The Schuylkill River Trail and former towpath is on the left. Image courtesy of PWD.

Maybe someday more Navigation canals can be watered and their towpaths cleared, reviving a network of inland waterways like the popular touring canals of Britain and Europe. Maybe locks can be restored and studied by historians and archaeologists for their skilled hand stonework and clever engineering. Maybe they can be useful one day for commerce and power.



One can dream. Along with the lovely Oakes Canal, the Manayunk Canal can point the way.

FURTHER READING

- Sara Jane Elk, “Manayunk,” *Workshop of the World*
- Edward J. Gibbons, “The Building of the Schuylkill Navigation System, 1815-1828”
- Jane Mork Gibson, “The Fairmount Waterworks,” *Phila. Museum of Art Bulletin*
- Charles V. Hagner, *Early History of the Falls of Schuylkill, Manayunk, Schuylkill and Lehigh Navigation Companies, Fairmount Waterworks, etc.*
- E. Mintz and K. Smith, Manayunk Main Street Historic District Nomination
- Chari Towne, *A River Again: The Story of the Schuylkill River Project*

CREDITS

- Painting by Nicolino Calyo courtesy of Hirschl & Adler Galleries, New York; photograph by Eric W. Baumgartner
- Map Page 5: Reading Company Collection, courtesy of Hagley Museum and Library
- Map Page 6: Schuylkill Navigation Co., c.1833; from SNC Records MG-110, PA State Archives, photograph by Sandy Sorlien
- Text and color photographs: Sandy Sorlien / Graphic Design: Kramer & Larkin
- Special thanks: Karen Young, Kay Sykora, Adam Levine, Bill Schaal, Larry Whyte

“I have ever viewed [Manayunk] as an extensive workshop, its population and water-power; actively involved in production, adding much to the wealth and comforts of our country.”

CHARLES V. HAGNER, 1869

