Form No. 10-300 (Rev. 10-74)

NHL

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC FAIRMOUNT WATER WORKS

AND/OR COMMON

2 LOCATION

STREET & NUMBER West of the Art Museum on the east banks of the Schuylkill

__NOT FOR PUBLICATION

CITY, TOWN Philadelphia __ VICINITY OF

CONGRESSIONAL DISTRICT 2nd

STATE Pennsylvania CODE COUNTY CODE

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
__DISTRICT	X PUBLIC	__OCCUPIED	__AGRICULTURE	__MUSEUM
X BUILDING(S)	__PRIVATE	X UNOCCUPIED	__COMMERCIAL	X PARK
__STRUCTURE	__BOTH	__WORK IN PROGRESS	__EDUCATIONAL	__PRIVATE RESIDENCE
X SITE	**PUBLIC ACQUISITION**	**ACCESSIBLE**	__ENTERTAINMENT	__RELIGIOUS
__OBJECT	__IN PROCESS	X YES: RESTRICTED	X GOVERNMENT	X SCIENTIFIC
	__BEING CONSIDERED	__YES: UNRESTRICTED	X INDUSTRIAL	__TRANSPORTATION
		__NO	__MILITARY	__OTHER:

4 OWNER OF PROPERTY

NAME City of Philadelphia, Mayor Frank Rizzo

STREET & NUMBER City Hall Telephone: 212-MU6-1776

CITY, TOWN Philadelphia __ VICINITY OF STATE Pennsylvania

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC. Department of Records

STREET & NUMBER City Hall

CITY, TOWN Philadelphia STATE Pennsylvania

6 REPRESENTATION IN EXISTING SURVEYS

TITLE Philadelphia Historical Commission

DATE 1960 __FEDERAL __STATE X COUNTY __LOCAL

DEPOSITORY FOR SURVEY RECORDS Philadelphia Historical Commission, 1313 City Hall Annex

CITY, TOWN Philadelphia STATE Pennsylvania

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
__PREHISTORIC	__ARCHEOLOGY-PREHISTORIC	__COMMUNITY PLANNING	X LANDSCAPE ARCHITECTURE	__RELIGION
__1400-1499	__ARCHEOLOGY-HISTORIC	X CONSERVATION	__LAW	__SCIENCE
__1500-1599	__AGRICULTURE	__ECONOMICS	__LITERATURE	X SCULPTURE
__1600-1699	X ARCHITECTURE	__EDUCATION	__MILITARY	__SOCIAL/HUMANITARIAN
__1700-1799	__ART	X ENGINEERING	__MUSIC	__THEATER
X 1800-1899	__COMMERCE	__EXPLORATION/SETTLEMENT	__PHILOSOPHY	__TRANSPORTATION
__1900-	__COMMUNICATIONS	__INDUSTRY	__POLITICS/GOVERNMENT	__OTHER (SPECIFY)
		X INVENTION		

SPECIFIC DATES 1812-22 BUILDER/ARCHITECT Frederick Graff (1774-1847)

STATEMENT OF SIGNIFICANCE

The water works at Fairmount is an engineering triumph as well as an architectural treasure. Needed to supplement the first city water works in Centre Square, designed by Benjamin Latrobe in 1799, Fairmount was opened as a steam pumping station in 1815, and became the first municipal water works in the country to use paddle wheels to pump water, and later it became the first to abandon the paddle wheels for more efficient water turbine engines. The four Greek-Revival buildings on the site were enhanced by sculpture designed by the first native American sculptor, William Rush.

Frances Trollope writing in her Domestic Manners of the Americans describes the vast yet simple machinery, the chaste classical building enclosing it, and the many examples of nature improved, appreciating at once its synthesis of technology, architecture, landscape and sculpture. She called it "one of the very prettiest spots the eye can look upon." It still is.

Frederick Graff had been Latrobe's chief draftsman on the Centre Square project. Richard Webster, the Philadelphia historian, describes the history of the building in a soon to be published catalogue:

> The new facility began operations, September 1815, in a stuccoed stone house on the east bank of the Schuylkill at the foot of Fair Mount. Water was pumped into a reservoir atop the hill from where it was gravity-fed to homes and hydrants. The steam engines were costly and troublesome, however, and in 1819 the shift to water power was begun. A dam designed by Ariel Cooley of New England was thrown across the river to the by-pass locks of the Schuylkill Navigation Company on the west side, and the machinery and mill-house, both evidently designed by Frederick Graff, were built next to the steam-engine house. A forebay blasted from the wall of limestone formed the races for what would later be eight breast water wheels which were placed with four pairs of double-acting force pumps in the lower part of the mill-house. After striking the wheels the water flowed into the river below the dam, and the wheels powered the pumps which pushed water from the flumes into a main that extended beneath the forebay and up the hill to the reservoirs. It was an ingenious, self-contained system worthy of its 1975 designation as a National Engineering Landmark by the American Society of Civil Engineers.

(continued)

There is no documentation that indicates that Robert Mills was the architect of the building, but many historians feel that Mills may have in fact been the designer, with Graff as engineer.

In 1911 the water works was obsolete and most of the pumps removed although some remain and the interior of the mill houses were converted to an acquarium. The buildings are empty today but in good repair.

The grounds around the water works were landscaped and formed the nucleus of one of the first parks in America compared to town commons and squares. There were garden walks and summer houses where Philadelphians flocked in good weather. There were river boats on the Schuylkill running excursions up-river that were very fashionable. Charles Dickens, critical of everything American, found the Water Works at Fairmount beautiful.

7 DESCRIPTION

CONDITION		CHECK ONE	CHECK ONE
__EXCELLENT	__DETERIORATED	X UNALTERED	X ORIGINAL SITE
X GOOD	__RUINS	__ALTERED	__MOVED DATE_____
__FAIR	__UNEXPOSED		

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

An 1852 guidebook published in Philadelphia, sounding a bit like Baedeker describes the complex as follows:

> The Fairmount Water-Works, from which the City of Philadelphia is supplied with water, is situated on the east bank of the Schuylkill River, a short distance above the boundary line of the city proper, at which place a water-power was obtained by the erection of a dam across the river. This dam was built by sinking wooden cribs filled with stone; it is 1248 feet long, part being founded upon rock, which is dry at low tide, and the remainder being sunk through mud to rock, in some places to the depth of 30 feet below high tide. This dam was erected in 1819, and has successfully withstood seven freshets, in two instances having as much as ten and a half feet of water flowing over it. The water backed up by the dam is conducted into a forebay on the back and east side of the mill-buildings, the whole of which forebay, as well as the site upon which the mill-buildings stand, was excavated from the solid rock; the length of this race or forebay is 419 feet, and the depth of the excavation necessary to form it was 60 feet. The forebay is 90 feet wide, and 6 feet deep below the top of the dam, which allows a passage of the water to the mill-buildings, on its west side to the wheels, which discharge the water into the river below. The mill-building is of stone, 238 feet long and 56 feet wide, divided into 12 apartments, four of which contain 8 double-acting pumps, 16 inches in diameter, and 6 feet stroke; the other apartments, are forebays leading to eight water-wheels.

The Annual Report of the Watering Committee (1852) notes the following:

> Water flowed over dam for first time 25 July 1821. Dam rebuilt 1842-43. (p. 30).
>
> Race for supplying water to wheels is 253' x 90' x c. 6'(depth). On western side are "mill-houses; substantial buildings of stone," 238' x 56'. "The lower part is divided into twelve apartments, eight of which contain the wheels and the forebays supplying them with water, and the remaining four, eight double acting force pumps. The building is terminated at each end by porticos of doric order, and along the eastern front is a terrace paved with brick, extending the whole of its length." (pp. 31-32).
>
> Jonval Turbine water wheel erected 1851. (p. 32).

(continued)

First wheel and pump put in operation 1 July 1822. (p. 33).

Six water wheels and pumps erected by I. P. Morris & Co., two by Merrick & Towne; all from plans of Frederick Graff, "who designed and directed to the time of his death, all of the works at Fair Mount, including the steam as well as the water power works . . . " (p. 37).

The original steam engine was designed by Samuel Evans and in 1823 was supplying Schuylkill water indoors to 3,954 private dwellings and 185 factories; the water rent for a family home was $2.00 a year. Water was carried by cast iron pipe which replaced earlier wooden types.

Two notes by Thomas Wilson in 1824 record:

Work began in 1812 on the dam, locks and canal.
"On the east side of the river the whole of the bank was a solid rock, which it was necessary to excavate . . . to form a race, and a site for the mill houses, running parallel with the river."
Mill buildings: stone, 238' long x 56' wide; lower section for eight double forcing pumps and forebays leading to water wheels, arched with brick.

"The centre part of the building is one hundred and ninety feet by twenty-five feet, with circular doors to the pump chambers, and a range of circular windows over the arch ways of the wheel rooms; on a line with the cornice of the central part is the base course of two pavilions with Doric porticoes, which terminate at the west front." One is Committee's office; other, residence of caretaker.
On east front is terrace, 253' x 26' providing walk along race and leading by steps to top of head arches mound, dam and pier.

Put in operation in 1822. Capable of pumping 4 million gallons in 24 hours.

The attribution to Robert Mills probably originates with Talbot Hamlin (Greek Revival Architecture in America, Dover, 1944). He notes the architectural style is in the manner of Latrobe with the Roman dome and Greek details--and Latrobe may have been influenced by the French architect Nicholas Le Doux. Robert Mills worked with Latrobe, as did Frederick Graff, whose father, incidentally, rented Jefferson a few rooms in his house at 7th and Market Streets

(continued)

where he wrote the Declaration of Independence. The buildings in their sylvan setting integrated architecture and engineering in the new American spirit.

Stuccoed pavilions with Doric tetrastyle porticos terminate each end of the building and a brick-paved terrace extended the length of the eastern front, facing the forebay. In the absence of an accepted industrial style the Roman Revival of the end pavilions, perhaps inspired by LeNotre's Temple d'Amour at Chantilly, was the most appropriate available. It conjured up images of Roman civilization and its famed engineering feats, including the great aqueducts that had fed its ancient water systems.

From the beginning the Watering Committee appreciated the scenic virtues of the site, and the landscaped area was expanded to more than twenty acres as the operation grew in the 1820's, and it eventually became the nucleus of the extensive Fairmount Park system. Sculpture by the great William Rush, a member of the Committee, was introduced to further enhance the setting. His allegorical Schuylkill Chained and Schuylkill Freed were finished in 1825 and placed above the two entrances to the mill-house. A couple of years later Rush's Nymph and Rittern was moved from the abandoned Centre Square Works to a niche above the forebay, and in 1829 his statue of Mercury was perched atop a gazebo which served as a rest spot halfway up the rocky mount. The Water Works became one of Philadelphia's best known sites and its citizens' favorite promenade. This blending of new technology with old landscape and the cultivation of that natural scenery was a self-confident expression of man's peaceful, beneficial mastery of nature. Views of it were recorded in virtually every medium, including transfer prints on earthenware and porcelain.

There were a number of later alterations to the Water Works. Some of these changes, such as the erection of iron railings in the late 1840's, were minor, while others were more extensive. The Water Works' present appearance is largely the result of work done in the 1860's when the terrace was raised and above the mill-building were built the central temple structure and the flanking wooden huts. The tower seen projecting above the Works in late-nineteenth-century illustrations was the standpipe designed and erected by Frederic Graff in 1852 to supply a new reservoir near Twenty-second and Poplar Streets. The brick Italianate facade protected the pipe from frost and added a picturesque element to the scene until it was demolished about 1920 during the construction of the Philadelphia Museum of Art.

Attempts were made to keep the Water Works abreast of changing technology and beginning in 1867 the water wheels were replaced by turbines. By 1911, however, the facility was no longer practical and was closed; the forebay was filled in and the buildings were converted to an aquarium. Although vacant since 1962, the classical ensemble still serves as a splendid foil for the majestic Museum of Art looming above it.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

Annual Report of the Chief Engineer of the Water Department, 1868. Philadelphia, 1868.

Annual Report of the Watering Committee for the Year 1852. Philadelphia, 1852.

Blake, Nelson Manfred. Water for the Cities. Syracuse: Syracuse University Press, 1956.

Eberlein, Harold Donaldson. "The Fairmount Water Works, Philadelphia," Architectural Record, vol. 62 (July 1927), pp. 57-67.

Gilpin, Thomas. "Fairmount Dam and Water Works, Philadelphia," PMHB, vol. 37, no. 4 (1913), pp. 471-79.

Hamlin, Talbot. Greek Revival Architecture in America. Dover, 1944.

Report of the Watering Committee . . . Read January 9, 1823. 2nd edition, Philadelphia, 1827.

Scharf and Westcott. History of Philadelphia, 1609-1854. 3 volumes, 1884.

Sellers, Charles Coleman. "William Rush at Fairmount," Sculpture of a City: Philadelphia's Treasures in Bronze and Stone, ed. Nicholas B. Wainwright, New York: Walker Publishing Co., Inc., 1974, pp. 8-14.

Tatum, George B. Penn's Great Town. Philadelphia: University of Pennsylvania Press, 1961.

Trollope, Frances. Domestic Manners of the Americans, ed. Donald Smalley, New York: Alfred A. Knopf, 1949, pp. 261-262.

Wainwright. Early Lithography. Historical Society of Pennsylvania.

White. Philadelphia Architecture. Philadelphia: published for the Philadelphia Art Alliance by the University of Pennsylvania Press, 1953.

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

FOR NPS USE ONLY
RECEIVED
DATE ENTERED

Refer to the red line on USGS map:

Beginning at a point on the west bank of the Schuylkill River 350 feet north of the intersection of the northern wall of the dam with the west bank of the river, the boundary proceeds west about 1650 feet to its intersection with the western curb of the access road to the waterworks, then in a general southeasterly direction along the western curb of said road (following around the western curb of the circle) to a point about 300 feet past the termis on a projection of said curb, then east about 475 feet to the west bank of the river, and then north along the west bank of the river about 2000 feet to the point of beginning.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

See continuation sheet

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

UTM REFERENCES

	ZONE	EASTING	NORTHING
A	18	484690	4424030
B	18	484400	4423460
C	18	483730	4424020
D			

VERBAL BOUNDARY DESCRIPTION

See continuation sheet

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

Carolyn Pitts, Architectural Historian

ORGANIZATION: Historic Sites Survey, National Park Service

DATE: 1/22/76

STREET & NUMBER: 1100 L Street N.W.

TELEPHONE: 202-523-5464

CITY OR TOWN: Washington

STATE: District of Columbia

12 STATE HISTORIC PRESERVATION OFFICER CERTIFICATION

THE EVALUATED SIGNIFICANCE OF THIS PROPERTY WITHIN THE STATE IS:

NATIONAL ___ STATE ___ LOCAL ___

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE DATE

FOR NPS USE ONLY

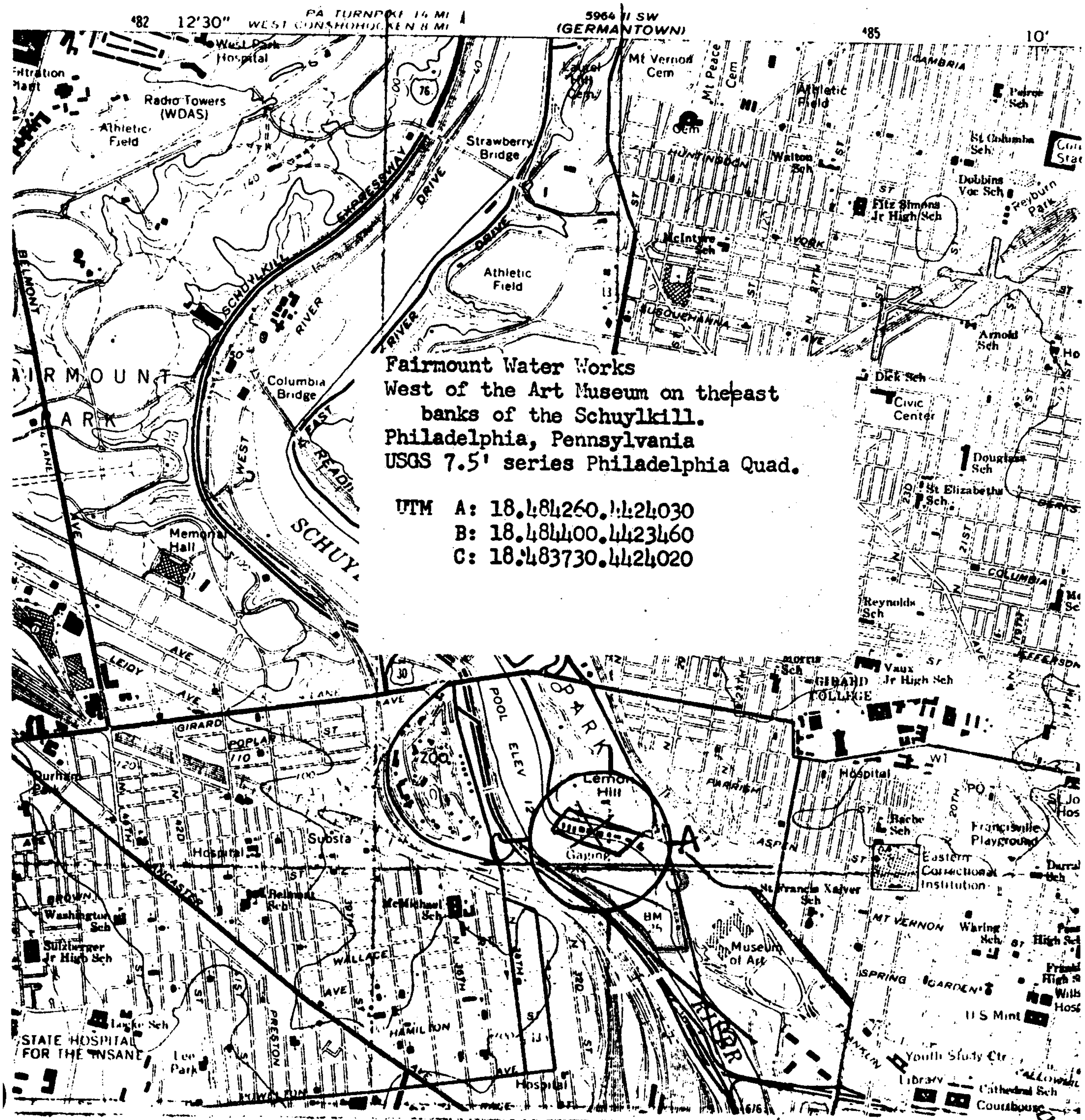
I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION

ATTEST: DATE

KEEPER OF THE NATIONAL REGISTER



Fairmount Water Works
West of the Art Museum on the east
banks of the Schuylkill.
Philadelphia, Pennsylvania
USGS 7.5' series Philadelphia Quad.

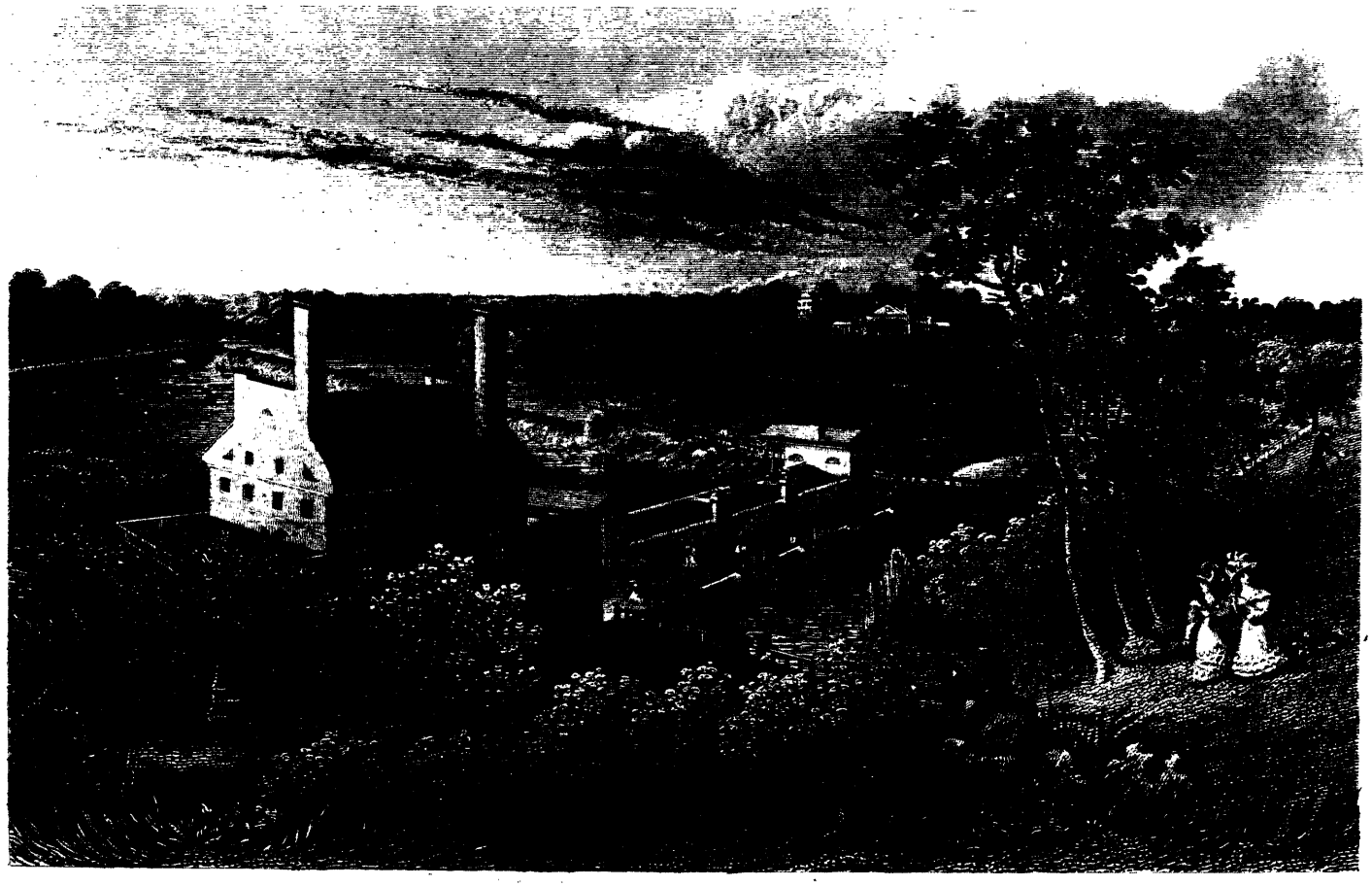
UTM A: 18.484260.4424030
B: 18.484400.4423460
C: 18.483730.4424020

C. Lehman Fecit

FAIRMOUNT.

From the head arches of the Forebay.

Pub. by C.G.Childs & H.H.Hobson. Philad.a 1829.



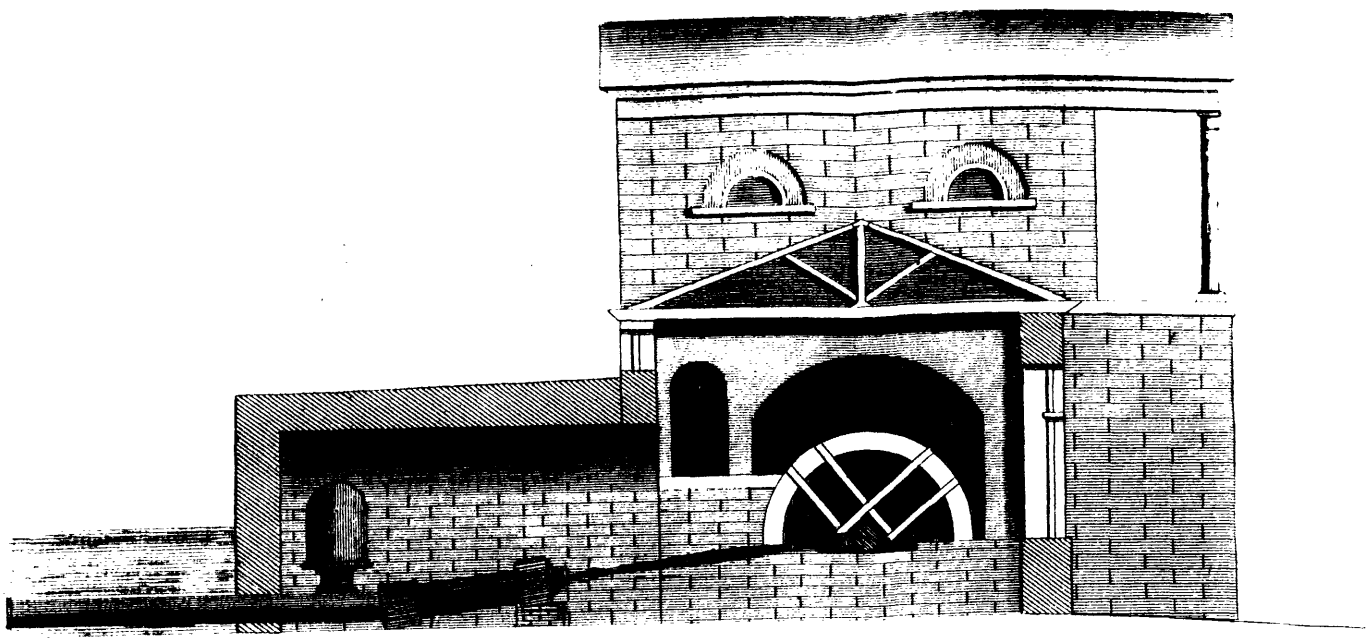
Painted by T. Doughty.

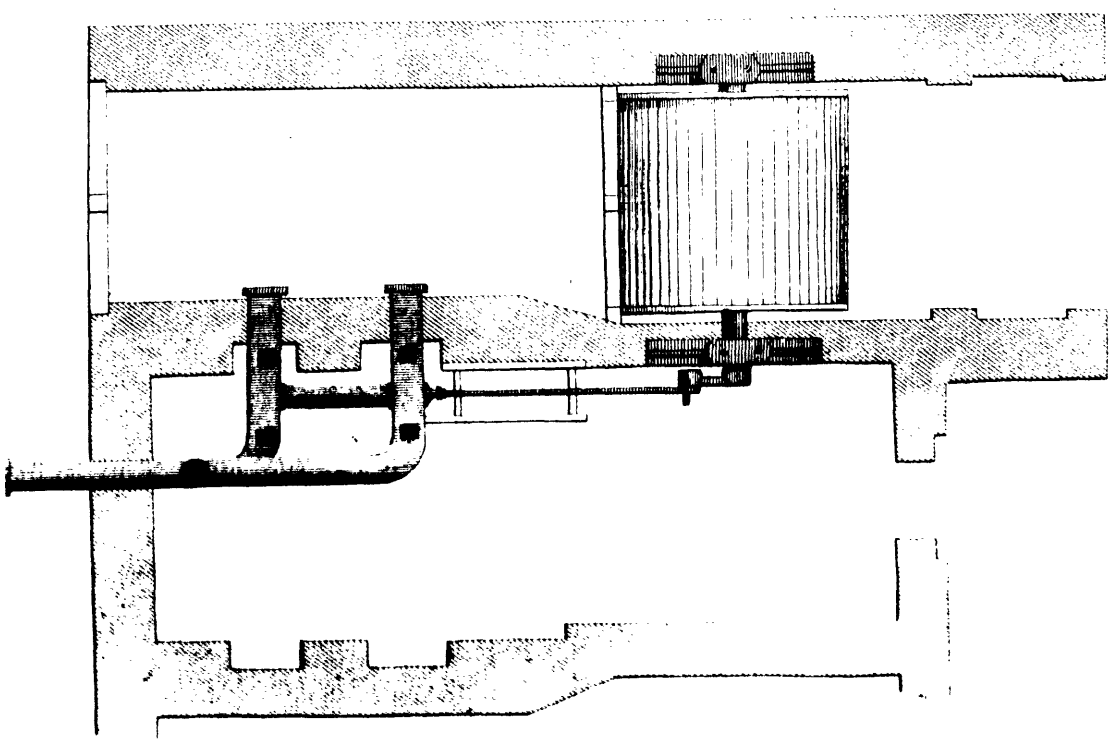
Engraved by [illegible]

FAIRMOUNT WATER-WORKS.

FROM THE RESERVOIR.

Pub.d by C.G. Childs Engraver Philadelphia 1829.

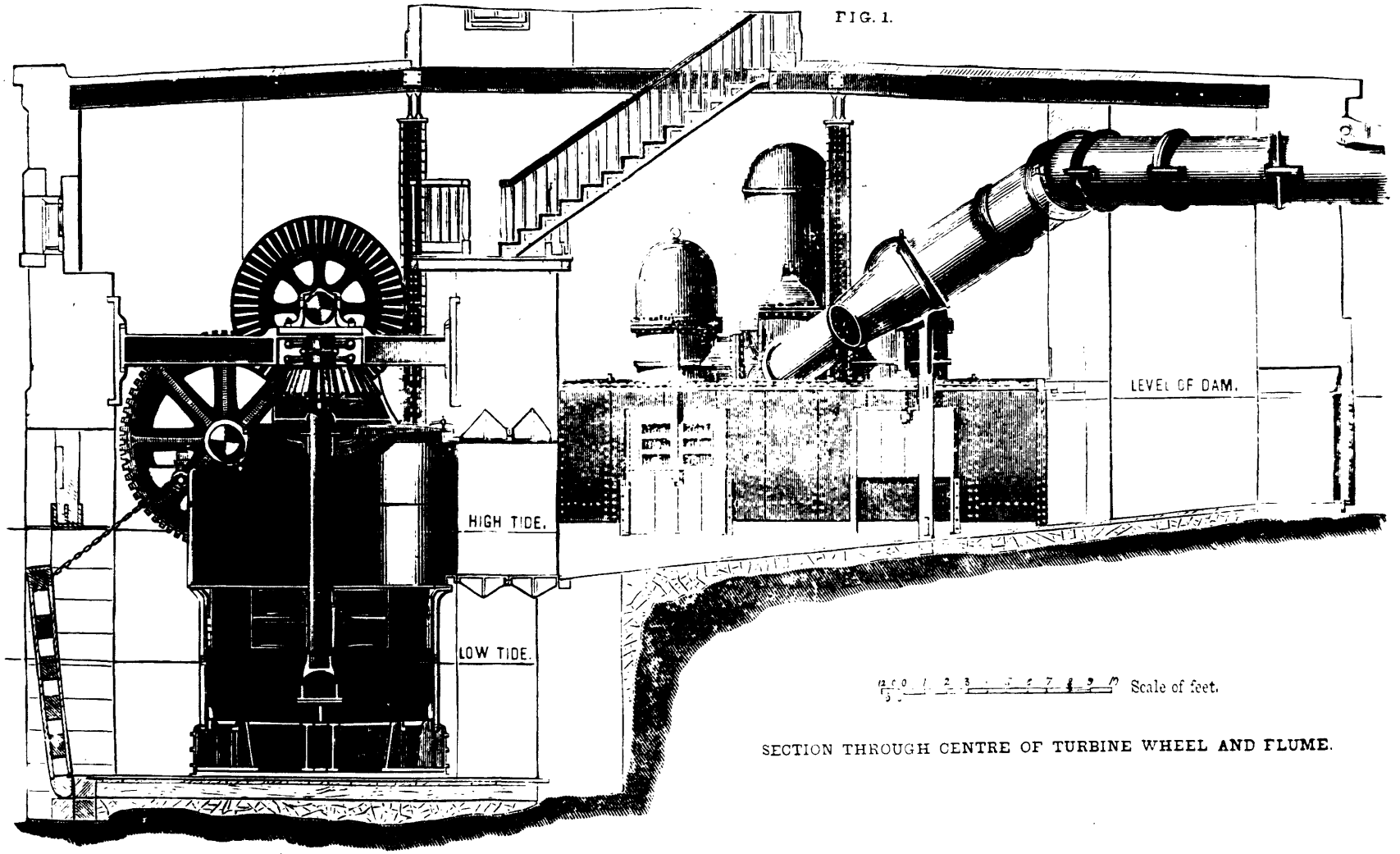




PLAN & SECTION

of the Water Wheel and Pump

FIG. 1.



SECTION THROUGH CENTRE OF TURBINE WHEEL AND FLUME.