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**REPORT**

OF THE

**COMMITTEE**

OF THE

**SELECT AND COMMON COUNCILS**

OF

**PHILADELPHIA,**

ON

**THE NAVIGATION**

OF

**THE RIVER SCHUYLKILL.**

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*PHILADELPHIA:*

PRINTED BY LYDIA R. BAILEY,

No. 26 North Fifth Street.

1832.

*In Select and Common Councils, November 10, 1831.*

*Resolved, That the letter of William Rush Esq., relative to the navigation of the river Schuylkill, be referred to the Committee on Chesnut, Mulberry, and Sassafras street Wharves.*

*On the 22d of December 1831, the Committee reported; which Report, with the Documents submitted, are hereto annexed.*

*On the 23d of February 1832, the Committee made a further Report; which, with the Documents submitted, are also annexed.*

## REPORT, &c.

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THE Committee to whom was referred the letter of William Rush Esq., relative to encroachments on the river Schuylkill, beg leave to report that they have consulted with Messrs. Samuel Hains, Frederick Graff, and David M'Clure, and have received communications from them, which they herewith submit to Councils. From the views of these Gentlemen, and the facts stated by them, the importance of Councils making an early application to the Legislature, to pass an Act providing against encroachments by wharves and buildings, on both sides of the Schuylkill, from Fair Mount to its mouth, will be clearly seen. In order to enable the Legislature to act with proper information on the subject, it will be necessary to have a correct survey made of the Schuylkill, designating the soundings, area for the passage of water at different points, &c., as recommended by the above named Gentlemen. The Committee, therefore, respectfully submit the following resolutions.

1. *Resolved, by the Select and Common Councils, That Samuel Hains and David M'Clure be appointed to make a survey of the river Schuylkill, from Fair Mount to its mouth, with a plan thereof, and report the same to Councils; the expense thereof to be charged to Appropriation No. 21.*

2. *Resolved, by the authority aforesaid, That on said report being made, the Wardens of the Port be requested by Councils not to suffer any encroachments on said river, contrary to said plan and report, until opportunity can be afforded of the Legislature acting on the subject.*

*December 22, 1831.*

DANIEL OLDENBERGH,  
JOSHUA LIPPINCOTT,  
JOHN R. NEFF,  
SILAS W. SEXTON.

To the Committee of Councils, appointed on the communication of William Rush, Esq., on the subject of the navigation of the Schuylkill river.

Gentlemen,—

In compliance with your request, I offer my opinion as to the most effectual manner of maintaining the navigation of the river Schuylkill, of preserving from the destructive effects of back water the store houses and other improvements on its banks, and of protecting the future operations of the Water Works at Fair Mount, which in my opinion will be destroyed if the wharves on that river should be extended from the Upper Ferry to its junction with the river Delaware, agreeably to the plan which has been already adopted with the wharves recently erected.

On mature consideration of the subject, I beg leave to recommend that correct soundings be made of the depth of the river to hard bottom, or rock, in order to establish standard widths, to be regulated in such manner as to give free vent to the water between the wharves which should be erected, equal in area, of not less, in any section of the river, throughout, than 7200 feet, taking as a data, that the spaces to be left between the wharves to be erected on each side of the river shall never be less than 450 feet, and that where the river shall be found shoal, by the projection of hard or rock bottom, that the distance shall be widened between the wharves to be built opposite such shoal, in a ratio so as to retain the required area as above mentioned, which should on no account be diminished.

I also recommend, that, with the operation of sounding the river, a survey be made, establishing permanent boundaries, or wharf lines, whereby the sites for wharves intended to be erected can be ascertained and regulated, suitable to the space to be retained between them at any point.

It is my opinion, that no wharves or other improvements should in future be raised higher than two feet above the established high tide plane, and that no permanent or other fixtures should be erected on any wharf at a less distance from the said line than 100 feet, which, added to the space of 450 feet recommended to be retained between the wharves, will leave, together, an area for the passage of ice and water in times of freshets, of 650 feet.

The rise of ice and water above high tide at the Permanent Bridge at High street, during the freshet of 1812, was 10 feet 2 inches; the water way between the wharves and piers of the High Street Bridge is 407 feet 10 inches, and the width between the abutments is 532 feet 3 inches, and had it not been for the additional passage afforded for the ice and water over the turn-pike road on the west side of the Bridge, the rise of the river would have been much greater. Under these considerations, I am of opinion that the area for the passage of the water, recommended as a standard throughout the whole section of the river, cannot be too great.

The effects produced by the freshets of 1784 and 1822, leave but very little doubt that much greater disasters may take place again, unless immediate and effectual means be adopted to prevent innovations on this stream, some of which, it is to be regretted, have already been made, by extending wharves into the river from 10 to 20 feet beyond low water mark.

In order to illustrate more clearly the necessity of establishing permanent wharf lines, I beg leave to state, that on a measurement of the water space between the wharf at the foot of Cedar street on Schuylkill, and the wharf lately erected on the property of the New Alms House, opposite, the distance was found to be only 405 feet, and the space betwixt the wharf of Messrs. Wetherill below Chesnut street, and the wharf opposite, measures but 366 feet, leaving only an area of water passage of 5856 feet, whilst the area between the abutments of High Street Bridge is 11800 feet.

If the soundings of the river, and a survey of wharf lines be established as recommended, it will enable the Wardens of the Port to determine the locations for wharves without difficulty, and will preserve a perfect navigation, and prevent destruction by inundations, which otherwise must occur by every trifling freshet, when a number of wharves shall be built according to the present regulations.

Very respectfully,

Your humble servant,

FREDERICK GRAFF.

*December 19, 1831.*

To the Committee of Councils, appointed on the communication of William Rush Esq.

Gentlemen,

The undersigned having carefully examined the subject to which you had called their attention, agree to report—that in their opinion regular wharf lines ought to be fixed on each side of the river Schuylkill, from Fair Mount to the river Delaware.

The distance between the two lines, in no place to be less than five hundred feet—and that distance to be increased, where the average depth of the channel to hard bottom is less than sixteen feet, so as to give in all places a section of *clear water way*, the area of which shall be at least eight thousand square feet.

The channel between the wharf lines to be located so as to embrace the deepest part of the river to hard bottom, without regard to present improvements or deposits of soft mud, avoiding as much as possible all crooks and turns of short radius.

Lines for permanent buildings ought also to be fixed on each side of the river, one hundred and fifty feet distant from each wharf line, between which and the wharf line, no building, fixture, or improvement, of a permanent character, to be made, that shall rise on an average higher than two feet above common high water.

In order to decide upon the best location for the channel of the river, a correct survey of its margin, with numerous and accurate soundings to hard bottom, will be necessary.

The wharf and building lines, when fixed and established, to be recorded and known by bearings and distances taken to fixed and permanent objects, that may be at all times easily referred to.

Very respectfully, yours, &c.

SAMUEL HAINS,  
DAVID M'CLURE.

*December 19th, 1831.*

## REPORT, &c.

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THE Committee to whom was referred the communication of William Rush, Esq., on the subject of the navigation of the river Schuylkill,

Beg leave respectfully to report, that they have attended to the duty assigned them; that they have conferred with the Wardens of the Port, whose resolutions are herewith presented,—and from the best information they have been able to collect on the subject, they are of opinion that there ought to be a space left between the wharves on each side of the river, of at least 400 feet. In conformity with this view of the subject, the Committee requested Messrs. Graff, M'Clure, and Hains, to delineate wharf lines on the plan of the river, in such manner as in their opinion would be least injurious to private property, which they have done and explained in their report, also herewith submitted.

Under all the circumstances of the case, your Committee deem the subject of sufficient importance to induce them to recommend to Councils to petition the Legislature for a law to establish lines to which wharves may hereafter be erected, at least 400 feet from each other—and also lines not less than 125 feet from the said wharf lines, within which no stores or other permanent building shall be built, and that no wharf shall be more than two feet above ordinary high water mark.—The Committee therefore respectfully offer the following resolution—

*Resolved*, by the Select and Common Councils, That the Committee be authorized to confer with such committees as may for that purpose be appointed by the Commissioners of the district of Spring Garden and the proper authorities of the townships of Passyunk, Moyamensing, Blockley, and Kingsessing, on the subject of the laws which are proper to be passed for regulating

the construction of wharves on the river Schuylkill; and that the City Solicitor be directed to prepare a bill, under the instructions of the Committee, to be presented to the Legislature for their consideration.

DANIEL OLDENBERGH,  
JOSHUA LIPPINCOTT,  
JOHN R. NEFF,  
S. W. SEXTON. } Committee.

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WARDEN'S OFFICE,  
Philadelphia, Feb. 6th 1832.

*Extract from the minutes of the Wardens of this date, viz.*

The Board met agreeably to adjournment, (all present) and after deliberating on the subject, passed, unanimously, the following resolutions, viz.

*Resolved*, That it is necessary and expedient to fix and determine by law the *wharf lines*, on both shores of the river Schuylkill, from Fair Mount dam to the mouth of said river, so that an area of not less than                    feet be left for the free passage of the water.

*Resolved*, That it is important to the public interest, that provision be made by law, to lay out a street or passage along the fronts of said river, and that no buildings or other obstructions, ought to be erected within the distance of                    feet from the *wharf lines* thereof.

Attest—THOMAS JACKSON, *Clerk*.

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*To the Select and Common Councils of the city of Philadelphia.*

Gentlemen,—In pursuance of a resolution of Councils of the 22d of December 1831—The undersigned proceeded to survey and take the soundings of the river Schuylkill, noting the rela-



tive situation of wharves, buildings, and other permanent improvements on its margin, as well as the width of the channel, and its depth in various places at low water to hard bottom, and have marked the results on the plan of the river accompanying this report. Owing to indisposition, the unfavourable state of the weather, and breaking up of the ice, we were prevented from proceeding further than from Fair Mount to Gray's Ferry Bridge.

At the request of the Committee of Councils appointed on the communication of William Rush Esq., in relation to this subject, we have, in conjunction with Frederick Graff, Esq., delineated on the said plan, wharf lines on each side of the river, at the distance of 400 feet from each other, showing the limits to which wharves may hereafter be extended, in such way as in our opinion is best calculated to pass off the freshets in the river, preserve its navigation, and be the least injurious to private property. A detail of the soundings is sent herewith.

SAMUEL HAINS,  
DAVID M'CLURE.

*February 23d, 1832.*

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*Explanation of the Survey and Soundings of the river Schuylkill, and of the wharf lines delineated on a plan of the said river, from Fair Mount to Gray's Ferry.*

1. The figures on the red lines denote the width of the river at low water.
2. The figures immediately under the red lines, express the area of a section of the river from low water to common bottom.
3. The figures immediately under those last mentioned, express the area of a section of the river to hard bottom, of sand, gravel, or rock, as the case may be.
4. The wharf lines are at the distance of 400 feet from each other; that on the eastern side of the river commences at the S. W. corner of the eastern abutment of the Lancaster Schuylkill bridge, thence extending in a straight line to the N. W. corner of Nixon's wharf, along the said wharf to the S. W. corner

thereof, thence in a straight line to a point 40 feet west of the N. W. corner of Bolton's wharf, thence in a straight line to the most westerly part of the wharf on the south side of Vine street, 686 feet west of Ashton street, as measured along the said Vine street, thence to a point 30 feet west of the public wharf at Sassafras street, 390 feet west of Ashton street, measured along Sassafras street; thence to a point in range with the north line of Mulberry street, at the distance of 350 feet west of Ashton street, thence to the N. W. corner of the wharf at High street, 473 feet west of Ashton street, and along the face of the said wharf to the south line of High street; thence to the most westerly point of Watson's wharf on the south side of Chesnut street, 323 feet west of Beech street, thence to the N. W. corner of the New-York and Schuylkill Coal Company's wharf, 133 feet west of their brick storehouse, and 465 feet west of Beech street, thence to a point 30 feet west of Jacob S. Waln's most southerly wharf, and 360 feet west of Willow street, thence to the N. W. corner of the wharf at the Woollen Factory, 560 feet west of Willow street, thence along the said wharf, and to a point in range with the south line of Lombard street, 470 feet from Bank street, measured along the said Lombard street; thence to the N. W. corner of Lawrence's wharf, on the south side of Cedar street, 828 feet west of Bank street, measured along the south line of Cedar street; thence to the N. W. corner of the wharf belonging to the *Naval Asylum*, and along the same to the S. W. corner thereof; thence in a straight line to a point 90 feet west of the wharf belonging to the *Arsenal*; thence at the distance of 400 feet from the line of low water on the west side of the river, to the extent of 1200 feet, thence to a point 60 feet north of a rock on which a buoy is placed, thence to a point 500 feet southerly from Hamilton's rock, thence to the edge of low water on the southerly side of the river, thence 500 feet further, to a point 500 feet distant from fast land on the north westerly side of the river, thence to a point 440 feet from the most prominent point of fast land immediately north of Mill Creek, thence S. W. to a point 400 feet north of Gray's Ferry Bridge, thence to a point 30 feet east of low water, at the east end of the said Bridge.

When the wharf lines are fixed and determined, a more particular reference to permanent objects on shore will be necessary, previous to their being recorded.

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*The following are the details of the survey of the river Schuylkill, from Fair Mount to Gray's Ferry.*

In various parts of the river, since the survey taken by Mr. M'Clure in 1828, some alterations have taken place, particularly in that of the soundings.

Under the Upper Bridge it has deepened 4 feet. Its greatest depth at present is 31 feet taken at low water, and 33 feet taken to hard bottom, which is stony. At the time the bridge was built, the depth was only about 14 feet. The water course between the abutments is 340 feet. The whole character of the soundings, at this, and other places, is appended to this report.

The greatest depth taken on the line at right angles from Nixon's wharf, is 12 feet to mud, and 21 feet to hard bottom, which is gravel. It has deepened, since the survey of 1828, two feet. The breadth of the river from the wharf to low water mark, on the opposite side, is 416 feet.

The greatest depth taken on the line at right angles from Bolton's wharf, is 11 feet to mud, and 21 feet to hard bottom, which is also gravel. It has deepened 1 foot. The breadth of the river, from the wharf to low water mark, on the opposite side, is 480 feet.

The greatest depth taken on a line at right angles from the wharf at Vine street, is 16 feet to sand, and 23 feet to hard bottom, which is also gravel. The whole vertical section here has been considerably increased, not that its greatest depth is more than formerly, but there is a much larger proportion of deep soundings. The breadth here, from the wharf to the opposite side, at low water, is 491 feet.

The greatest depth taken on a line at right angles from Race street wharf, is 12 feet to rock, corresponding with the former

survey. The bottom here is one general ledge of rocks, nearly half way across. The breadth from the wharf, to the opposite side, at low water, is 450 feet.

The greatest depth taken on a line at right angles from Arch street, at low water mark, is 13 feet to sand, and 16 feet to hard bottom, which is stony, and also corresponds with the former survey. The breadth from low water to low water is 480 feet.

Under the Middle Bridge, the greatest depth is 29 feet to hard bottom, which on the former survey was covered with about 4 feet of alluvion.

The greatest depth on the line which connects Wetherill's wharf on the east and that on the west side of Schuylkill, is 20 feet to sand, and 29 feet to hard bottom, which is gravel. It has deepened here about 2 feet. The distance between these two wharves is 367 feet.

The greatest depth taken on a line at right angles from White's wharf below Walnut street, is 18 feet to sand, and 22 feet to hard bottom, which is gravel. It has deepened here 2 feet. The breadth of the river, from the wharf to low water mark on the opposite side, is 396 feet.

The greatest depth taken on a line at right angles from the wharf at the Woollen Factory, between Spruce and Pine streets, is 18 feet to soft sand, and 26 feet to hard bottom, which is also gravel. It has deepened here two feet. The breadth of the river from the wharf to low water mark on the opposite side, is 388 feet.

The greatest depth, taken on a line at right angles, from the wharf at Lombard street, is 18 feet to soft sand, and 28 feet to hard bottom, which is gravel. It has deepened 1 foot. The breadth of the river, from the wharf to low water mark on the opposite side, is 420 feet.

The greatest depth taken on a line at right angles, from the wharf at South or Cedar street, to the Alms House wharf on the opposite side, is 19 feet to sand, and 20 to hard bottom, which is gravel. It has deepened about one foot. The breadth between the wharves is 409 feet.

The greatest depth taken on a line at right angles, from the wharf at the Arsenal, is 19 feet to sand, and to hard bottom 27.

feet, which is gravel. It has deepened here 3 feet. The breadth of the river from the wharf to low water mark, on the opposite side, is 492 feet.

The greatest depth taken at Gray's Ferry Bridge is 26 feet to mud, and at 41 feet, which was as far as the rod could be pushed, did not reach hard bottom. No alterations in the soundings have taken place here.—The breadth, from low water to low water, is 330 feet.

Thus it appears that an increase of depth from 1 to 4 feet is found in various places, occasioned by causes very naturally calculated to produce this effect, the principal of which is the increased number of wharves, by which the river has been narrowed, and the passage for the water considerably circumscribed. Under such circumstances, connected with the pressure of a strong freshet, it is easy to conceive how readily every moveable obstruction must give way before the mighty element, when it is straightened, and seeks a passage.

The extensive flat, between the Middle and Upper Bridge, on the West side of the river, has claimed particular attention, and excited deep solicitude. Over this flat the freshets find a free passage, and which not unusually rise so high as to occupy nearly one half the then existing vertical section across the river.

In round numbers;—the breadth of the flat at right angles with Bolton's wharf is 750 feet. On the rise of a freshet 10 feet above the ordinary tide, (which a few years since took place) there will exist on this flat a section of 9360 feet, at the same time there will be found over the breadth of the river 480 feet (taken at low water) an additional area of 7680 feet, to which areas add 3744 feet, (the area of the section at low water) and the amount is 20,784 feet, the whole area across the river during such a freshet, of which, as has been stated, 9360 feet occupies the space over the flat, which is nearly one-half the whole section.

In an ordinary tide, there will be found on the flat a section of 2160 feet, over that portion of the river circumscribed to the low water mark, 2880 feet, and the area of the section at low water, 3744 feet, which in all amount to 8784 feet, the whole area of the section in an ordinary tide; 2160 feet of which, as

has been stated, cover the flat, making nearly one-fourth of the area of the whole section.

The consideration of this subject alone is sufficient to awaken our fears, should obstructions be indiscriminately multiplied; and as the bed of the river at Race street, as has been stated, is one ledge of continued rock, the constructing of any extensive permanent obstacles on this flat, would inevitably be attended with tremendous consequences, not only to private property, but also to the pure fountain, whose streams, in these days of temperance, give health and comfort to our citizens—the glory and boast of our city, the Fair Mount Water-Works.

The following tables exhibit a number of soundings taken at low water. The first column of each, shows the distance each sounding is taken from the shore or wharf expressed at the head of the tables;—the second column, the corresponding depth to the alluvion, the nature of which is given;—and the third column shows the depth to hard bottom, from the surface of the water, the character of which is also exhibited. At the foot of each table is given the areas of the sections to hard and soft bottom, taken at low water.

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*Under the Upper Bridge at Low Water.*

	Feet.	In.
From the abutment east to low water, - - -	24	5
From low water to low water, - - -	297	2
From low water to abutment west, - - -	18	5
From the abutments east to west, - - -	340	0

*From Low Water East to Low Water West.*

Feet.			Feet.		Feet.
20	-	-	13 gravel	-	13 stony.
40	-	-	26 sand	-	29 stony.
59	-	-	30 sand	-	33 stony.
79	-	-	30 sand	-	33 stony.
99	-	-	30 sand	-	33 stony.

Feet.			Feet.			Feet.
119	-	-	31	sand	-	33 stony.
139	-	-	26	sand	-	29 rock.
158	-	-	26	sand	-	29 rock.
178	-	-	24	sand	-	28 rock.
198	-	-	26	sand	-	30 rock.
218	-	-	25	sand	-	28 rock.
238	-	-	26	rock	-	26 rock.
257	-	-	25	rock	-	25 rock.
277	-	-	18	rock	-	18 rock.
297		to		Low Water.		

Area of section of water course 5,902 feet.

Area of section to hard bottom 7,706 feet.

*On a line taken at right angles from Nixon's Wharf.*

Feet.			Feet.			Feet.
33	-	-	10	mud	-	20 gravel.
66	-	-	12	mud	-	19 gravel.
99	-	-	12	mud	-	21 gravel.
132	-	-	12	mud	-	20 gravel.
165	-	-	12	mud	-	20 gravel.
198	-	-	12	mud	-	19 gravel.
231	-	-	12	mud	-	18 gravel.
264	-	-	11	mud	-	17 rock.
297	-	-	9	mud	-	18 rock.
330	-	-	9	mud	-	17 gravel.
363	-	-	6	mud	-	16 sand.
396	-	-	3	mud	-	15 sand.
416		to		Low Water.		

Area of section of water course 3,744 feet.

Area of section to hard bottom 7,613 feet.

*On a line taken at right angles from Bolton's Wharf.*

Feet.			Feet.			Feet.
33	-	-	8	mud	-	22 sand.
66	-	-	11	mud	-	21 sand.
99	-	-	11	mud	-	21 hard sand.
132	-	-	11	mud	-	21 hard sand.
165	-	-	10	sand	-	18 hard sand.
198	-	-	10	sand	-	18 hard sand.

Fect.		Fect.		Fect.
231	- - -	10 sand	- -	17 hard sand.
264	- - -	10 sand	- -	16 gravel.
297	- - -	10 sand	- -	16 gravel.
330	- - -	10 mud	- -	17 gravel.
363	- - -	9 mud	- -	15 gravel.
396	- - -	6 mud	- -	15 hard sand.
429	- - -	3 mud	- -	13 mud.*
462	- - -	1 mud	- -	11 mud.
480	to	Low Water.		

Area of section of water course 3,840 feet.

Area of section to hard bottom 8,256 feet.

*On a line taken at right angles from Vine Street Wharf.*

Fect.		Fect.		Fect.
33	- - -	13 rocky	- - -	13 rocky.
66	- - -	14 sand	- - -	15 rocky.
99	- - -	16 sand	- - -	23 gravel.
132	- - -	13 sand	- - -	22 gravel.
165	- - -	12 sand	- - -	16 rocky.
198	- - -	11 sand	- - -	19 gravel.
231	- - -	11 sand	- - -	19 gravel.
264	- - -	10 sand	- - -	18 gravel.
297	- - -	9 sand	- - -	17 gravel.
330	- - -	8 mud	- - -	16 mud.
363	- - -	6 mud	- - -	14 mud.
396	- - -	4 mud	- - -	12 mud.
429	- - -	2 mud	- - -	11 mud.
462	- - -	1 mud	- - -	10 mud.
491	to	Low Water.		

Area of section of water course 4,566 feet.

Area of section to hard bottom 7,856 feet.

*On a line taken at right angles from Race Street Wharf.*

Fect.		Fect.		Fect.
33	- - -	11 clay	- - -	15 mud.
66	- - -	12 rock	- - -	12 rock.
99	- - -	12 rock	- - -	12 rock.

\* When the soundings in the third column is mud, it shows the greatest depth that three men could push the rod through the same.



Feet.			Feet.			Feet.
132	-	-	12	rock	-	12
165	-	-	11	rock	-	11
198	-	-	9	rock	-	9
231	-	-	10	sand	-	12
264	-	-	11	sand	-	13
297	-	-	10	sand	-	15
330	-	-	9	sand	-	15
363	-	-	8	sand	-	15
396	-	-	5	sand	-	15
429	-	-	3	mud	-	15
450		to		Low Water.		

Area of section of water course 4,230 feet.

Area of section to hard bottom 5,895 feet.

*On a line taken at right angles from Low Water at Arch Street.*

Feet.			Feet.			Feet.
33	-	-	6	stony	-	6
66	-	-	11	stony	-	11
99	-	-	13	sand	-	15
132	-	-	13	sand	-	16
165	-	-	13	gravel	-	15
198	-	-	13	gravel	-	14
231	-	-	12	sand	-	15
264	-	-	11	sand	-	16
297	-	-	10	sand	-	16
330	-	-	9	sand	-	16
363	-	-	8	sand	-	15
396	-	-	7	mud	-	14
429	-	-	5	mud	-	13
462	-	-	3	mud	-	13
480		to		Low Water.		

Area of section of water course 4,460 feet.

Area of section to hard bottom 6,720 feet.

*Under the Middle Bridge, from East Wharf to First Pier.*

Feet.			Feet.			Feet.
20	-	-	3	mud	-	5
40	-	-	5	mud	-	6

Feet.		Feet.		Feet.
60	- - -	5 stony	- - -	5 stony.
80	- - -	5 stony	- - -	5 stony.
90	to	Pier East.		

*From East to West Pier.*

20	- - -	8 stony	- - -	8 stony.
40	- - -	14 sand	- - -	17 stony.
60	- - -	24 stony	- - -	24 stony.
79	- - -	29 stony	- - -	29 stony.
99	- - -	28 stony	- - -	28 stony.
119	- - -	28 stony	- - -	28 stony.
139	- - -	29 stony	- - -	29 stony.
158	- - -	24 stony	- - -	24 stony.
178	- - -	25 gravel	- - -	25 gravel.
189	to	Pier West.		

*From Pier West to Abutment West.*

20	- - -	28 stony	- - -	28 stony.
40	- - -	22 mud	- - -	28 stony.
60	- - -	14 mud	- - -	25 mud.
79	- - -	5 mud	- - -	18 mud.
99	- - -	3 stony	- - -	3 stony.
125	to	Abutment.		

The whole water space is 405 feet.

Area of section of water course 6,949 feet.

Area of section to hard bottom 8,074 feet.

*In a line with the face of the Old Basin, and north thereof, and at right angles to the first wharf below the Bridge on the West side, 6 feet 7 inches to Low Water.*

Feet.		Feet.		Feet.
33	- - -	7 mud	- - -	9 gravel.
66	- - -	15 stony	- - -	15 stony.
99	- - -	23 stony	- - -	23 stony.
132	- - -	29 stony	- - -	29 stony.
165	- - -	30 stony	- - -	30 stony.
198	- - -	31 stony	- - -	31 stony.
231	- - -	27 mud	- - -	31 gravel.

Feet.		Feet.		Feet.
264	- - -	16 mud	- - -	27 mud.
297	- - -	14 mud	- - -	26 mud.
330	- - -	11 mud	- - -	20 mud.
363	to	Wharf.		

Area of section of water course 7,369 feet.

Area of section to hard bottom 8,748 feet.

*From Wetherill's Wharf, sixteen feet deep on the East, to  
Wetherill's Wharf on the West side of Schuylkill.*

Feet.		Feet.		Feet.
33	- - -	20 mud	- - -	25 stony.
66	- - -	20 sand	- - -	29 gravel.
99	- - -	20 sand	- - -	29 gravel.
132	- - -	20 sand	- - -	29 gravel.
165	- - -	20 sand	- - -	29 gravel.
198	- - -	20 sand	- - -	29 gravel.
231	- - -	13 mud	- - -	28 sand.
264	- - -	10 mud	- - -	27 mud.
297	- - -	7 mud	- - -	26 mud.
330	- - -	6 mud	- - -	20 mud.
363	- - -	5 mud	- - -	18 mud.
367	to	Wharf.		

Area of section of water course 5,358 feet.

Area of section to hard bottom 9,652 feet.

*On a line taken at right angles from Mr. White's Wharf,  
below Walnut Street.*

Feet.		Feet.		Feet.
33	- - -	12 stony	- - -	12 stony.
66	- - -	18 mud	- - -	20 gravel.
99	- - -	18 sand	- - -	22 gravel.
132	- - -	17 sand	- - -	24 gravel.
165	- - -	16 sand	- - -	25 gravel.
198	- - -	15 mud	- - -	25 mud.
231	- - -	15 mud	- - -	25 mud.
264	- - -	14 mud	- - -	25 mud.
297	- - -	11 mud	- - -	25 mud.

Feet.		Feet.		Feet.
330	- - -	7 mud	- - -	22 mud.
363	- - -	2 mud	- - -	15 mud.
396	to	Low Water.		

Area of section of water course 4,871 feet.

Area of section to hard bottom 8,633 feet.

*On a line taken at right angles from the Wharf at the Woollen Factory—which is 10 feet deep.*

Feet.		Feet.		Feet.
33	- - -	12 rock	- - -	12 rock.
66	- - -	15 rock	- - -	15 rock.
99	- - -	17 sand	- - -	22 rock.
132	- - -	18 sand	- - -	23 rock.
165	- - -	18 sand	- - -	26 gravel.
198	- - -	17 sand	- - -	25 rock.
231	- - -	16 sand	- - -	24 gravel.
264	- - -	15 mud	- - -	21 mud.
297	- - -	13 mud	- - -	20 mud.
330	- - -	11 mud	- - -	18 mud.
363	- - -	2 mud	- - -	12 mud.
388	to	Low Water.		

Area of section of water course 5,432 feet.

Area of section to hard bottom 7,682 feet.

*On a line taken at right angles from Lombard Street Wharf—  
—which is 10 feet deep.*

Feet.		Feet.		Feet.
33	- - -	18 mud	- - -	28 mud.
66	- - -	18 sand	- - -	28 gravel.
99	- - -	17 sand	- - -	28 gravel.
132	- - -	16 sand	- - -	26 gravel.
165	- - -	15 sand	- - -	25 gravel.
198	- - -	14 sand	- - -	23 gravel.
232	- - -	13 mud	- - -	22 mud.
264	- - -	11 mud	- - -	19 mud.
297	- - -	9 mud	- - -	17 mud.
330	- - -	7 mud	- - -	14 mud.

Fect.		Fect.		Fect.
363	- - -	5 mud	- - -	13 mud.
396	- - -	2 mud	- - -	11 mud.
420	to	Low Water.		

Area of section of water course 5,040 feet.

Area of section to hard bottom 8,821 feet.

*On a line taken at right angles from South Street Wharf, which is 6 feet deep, to a Wharf opposite.*

Fect.		Fect.		Fect.
33	- - -	11 gravel	- - -	12 stony.
66	- - -	14 stony	- - -	14 stony.
99	- - -	17 stony	- - -	17 stony.
132	- - -	19 sand	- - -	20 stony.
165	- - -	18 sand	- - -	19 gravel.
198	- - -	17 sand	- - -	18 gravel.
231	- - -	14 sand	- - -	20 gravel.
264	- - -	13 mud	- - -	23 mud.
297	- - -	12 mud	- - -	22 mud.
330	- - -	11 mud	- - -	21 mud.
363	- - -	10 mud	- - -	22 mud.
396	- - -	8 mud	- - -	20 mud.
409	to	Wharf—7 feet.		

Area of section of water course 5,562 feet.

Area of section to hard bottom 7,771 feet.

*On a line taken at right angles from the Arsenal Wharf— which is 8 feet deep.*

Fect.		Fect.		Fect.
33	- - -	15 mud	- - -	19 gravel.
66	- - -	18 sand	- - -	20 gravel.
99	- - -	19 sand	- - -	21 gravel.
132	- - -	18 sand	- - -	22 gravel.
165	- - -	18 sand	- - -	23 gravel.
198	- - -	18 sand	- - -	27 gravel.
231	- - -	18 sand	- - -	27 gravel.
264	- - -	17 mud	- - -	25 mud.
297	- - -	17 mud	- - -	25 mud.
330	- - -	16 mud	- - -	24 mud.

Feet.			Feet.			Feet.
363	-	-	15 mud	-	-	23 mud.
396	-	-	14 mud	-	-	23 mud.
429	-	-	12 mud	-	-	23 mud.
462	-	-	10 mud	-	-	23 mud.
480	-	-	6 mud	-	-	20 mud.
492	to		Low Water.			

Area of section of water course 7,577 feet.

Area of section to hard bottom 11,316 feet.

*Soundings taken on Gray's Ferry Bridge, from East to West, and from Low Water to Low Water.*

Feet.			Feet.			Feet.
33	-	-	10 mud	-	-	17 mud.
66	-	-	20 mud	-	-	28 mud.
99	-	-	25 mud	-	-	34 mud.
132	-	-	26 mud	-	-	40 mud.
165	-	-	22 mud	-	-	41 mud.
198	-	-	23 mud	-	-	41 mud.
231	-	-	26 sand	-	-	36 gravel.
264	-	-	20 sand	-	-	29 gravel.
297	-	-	13 gravel	-	-	13 gravel.
330	to		Low Water.			

Area of section of water course 6,765 feet.

Area of section to hard bottom 10,230 feet.

