GEORGETOWN WATER WORKS.

REPORT

OF THE

Water Board of Georgetown, D. C.,

TO

THE COUNCILS,

WITH

THE REPORT OF THE ENGINEER.

FEBRUARY 10, 1860.

HENRY ADDISON, Mayor,
JAS. A. MAGRUDER,
JOHN T. BANGS,
} Water Board.

Capt. M. C. MEIGS, Engineer.
E. T. D. MYERS, Assistant Engineer.

WASHINGTON:
THOMAS McGILL, PRINTER.
1860.

Report of the Water Board.

GEORGETOWN, *February* 10, 1860.

To the Board of Aldermen and Board of Common Council of the Corporation of Georgetown, D. C.:

The Water Board have the honor to present herewith a report which embodies a clear and detailed account of the operations incident to the construction of our city water works, and the expenditures connected therewith, from the organization of this Board, on the 16th day of May, 1859, up to the present time, during which period the system by which the water from the main pipes of the Washington Aqueduct is distributed through the city, has been planned and successfully carried out at a cost somewhat below the estimates submitted to your honorable bodies before the commencement of the undertaking.

It is not easy to realize the fact that but six months ago Georgetown was dependent for her supply of so indispensable a requisite as water upon a system of pumps and cisterns; the one fed from springs rarely affording in this locality other than hard and unpalatable waters, and ever liable to that pollution to which a growing city must sooner or later subject them—the other immediately depending upon the uncertain rainfall of our climate, and least efficacious, when most required, in seasons of long drought; both of them utterly inadequate, not only to that protection against disastrous fires which it is the duty of the guardians of every city to afford its inhabitants, but even failing to satisfy our daily household requirements.

It is, nevertheless, true that within that short space of time our city has taken one of the most important steps which can mark the progress of her prosperity, and if it has been accomplished quietly and unostentatiously, unmarked and unheralded, as is elsewhere almost universally

the case, by public demonstration, it is not the less a theme for abundant thankfulness and rejoicing on the part of this community that the blessing of water, pure, abundant, and drawn from an unfailing source, is now common to all from its highest to its lowest member ; that we have everywhere within our limits the proper provision against the emergency of conflagration, and that all this has been secured to us through the munificence of the General Government of the United States at a cost on our parts so trifling in comparison with the experience of less fortunate cities.

It is hoped and believed by the Board that calm reflection will convince every intelligent property-holder in the town, that the system of taxation through which it has been resolved by your honorable bodies to meet the small outlay incurred in the construction and maintenance of our water distribution is one as little oppressive as it is possible to devise, while it is ample to meet the requirements of the work.

The heavy responsibility encountered by the Water Board in executing the trust committed to them, and the want of the peculiar information and experience necessary to the success of the undertaking, led them at the earliest moment to seek the professional assistance of Captain M. C. Meigs, the distinguished Engineer of the Washington Aqueduct, and it is difficult to estimate the value which the experience and abilities of that gentleman have been to them. The Board has never, in any case, hesitated to follow his advice, and they have never had any cause to regret that unbounded confidence which it gives them pleasure thus publicly to acknowledge.

The Board beg leave to recommend to the careful attention of your honorable bodies, and to our citizens generally, Captain Meigs' report herewith submitted, as it forms a complete record in a succinct form of all that we have accomplished. It would be supererogatory on the part of the Water Board to add to or attempt to elucidate so clear and elaborate a document, and it is only left for them to announce the fact that a journal of their proceedings, as a body, has been preserved, and is at any time open to the investigation of all entitled to an interest in them.

It will be observed that the Board have thought it best to curtail to a considerable degree—about seven-twentieths—the amount of work originally contemplated ; but they are gratified to find that the reduction in outlay is more than proportional to this curtailment, being about eight-twentieths ; thus proving the amplitude of the preliminary estimates of the engineer.

In conclusion, the Water Board beg leave to express their appreciation of your unremitting confidence, and to say that they cannot but regard it, individually, as no ordinary privilege to have their names inseparably associated with the important work now brought to so felicitous a completion.

All of which is respectfully submitted.

HENRY ADDISON,
JAS. A. MAGRUDER,
JNO. T. BANGS,
Water Board.

Report of the Engineer.

WASHINGTON, 9*th February*, 1860.

Hon. H. ADDISON, J. T. BANGS, AND J. A. MAGRUDER,
Water Board of Georgetown.

SIRS: I have the honor to report the effective completion of the works undertaken by the Water Board for distributing water through the city of Georgetown.

The work has been done by the Water Board, under the authority of and in conformity to the ordinance of the Corporation, approved 9th May, 1859.

I congratulate the Water Board, that under the direction of a single Board, and within the official term of the Councils establishing it, this great improvement to the city has been completed.

The law of 9th May is as follows:

AN ORDINANCE

Authorizing the distribution of the Potomac water through the city of Georgetown.

SEC. 1. *Be it ordained by the Board of Aldermen and Board of Common Council of the Corporation of Georgetown*, That immediately after the passage of this ordinance, and annually thereafter on the first Monday of January in each and every year, the two Boards, in joint meeting, shall elect one member of each Board of the Corporation, who, with the Mayor, shall constitute a Water Board, and shall be charged with the management of the water establishment, under such laws as may hereafter be enacted by this Corporation.

SEC. 2. *And be it further ordained*, That the Mayor be, and is hereby, authorized, whenever and as the same may be needed in the prosecution of the work, to issue the stock of this Corporation, bearing interest at the rate of six per cent. per annum, and redeemable, at the pleasure of this Corporation, within ten years, in such sums as may be required, provided the whole amount shall not exceed fifty thousand dollars, for the purpose of introducing water through this city.

SEC. 3. *And be it further ordained*, That to enable this Corporation to redeem said stock, and pay the interest thereon, and to pay other expenses attending the introduction and maintenance of the water establishment, there be, and hereby is, levied a water tax of 60 cents per foot on every front foot on each side of every street, lane, or alley through which the water mains have been or may be laid hereafter, and that said tax shall be collected by the Collector of this Corporation under the laws already passed for the collection of the general tax of this town, as follows, one-fourth annually, commencing the 1st day of July, 1859, viz: He shall collect fifteen cents of the above tax in that year, fifteen cents in the year 1860, fifteen cents in the year 1861, and fifteen cents in the year 1862, and he shall pay over to the Clerk of this Corporation such sums as he collects, retaining three per cent. as his compensation for collecting the same; and the Clerk shall place said funds, as he receives them, to the credit of the water fund, and the same are hereby pledged for the payment of the interest, and the redemption of the principal of all the stock that shall or may be issued under the authority of this ordinance.

SEC. 4. *And be it further ordained*, That the United States Engineer, for the time being, with the Committee to be appointed under the first section of this ordinance, be, and they are hereby authorized and requested to plan such a distribution of the Potomac water as they may deem best, and to enter into a contract or contracts for the entire completion of the work under their direction, subject to the approval of this Corporation.

JOHN T. BANGS,
President Board of Common Council.
J. A. MAGRUDER,
President pro tem., Board of Aldermen.

Approved May 9, 1859.

H. ADDISON,
Mayor.

True copy—Test: WM. LAIRD, *Clerk.*

Upon the passage of this law, advertisements were at once issued by order of the Board inviting proposals for the pipes, hydrants, stop-cocks, and the work necessary to carry out the intentions of the Corporation. Upon my report, a system of distribution was adopted, by which a six-inch main should be laid on High street, and four-inch pipes in all the other streets of the city, except those on which no houses fronted, and in which pipes were not needed to convey water to other streets.

The object of the Board has been to so arrange the distribution of the water that every house in the city should be within a reasonable distance of a street main and of a fire plug, and yet to relieve the property-holders in the sparsely built streets, as much as possible, from the burden of the tax.

At every street crossing, in those parts of the city in which the

Water Board has laid the distributing pipes, a four-way stop-cock and hydrant, or fire plug, having attachments for four fire engines, has been placed. By this means, there are within one half block of every house the means of supplying eight fire engines with water, and at one block distance this number is more than trebled.

The fire plugs and stop-cocks combined are of a new design, prepared by myself in studying the distribution of the Washington Aqueduct, and they give a better control of the water in the mains in case of accident, and a better supply to fire engines in case of fire, than is to be found in any other system of distribution heretofore adopted; at the same time, being below the street surface and concealed in the ordinary stop-cock boxes, they are no obstruction, and are free from all danger of freezing.

This system has also the advantage of economy. I have estimated that an equally good control of the water pipes by the ordinary slide-valves, with the common fire plugs, affording attachments for one, instead of four, fire engines, at each street crossing, would cost about $8,000 more than the better system in operation in Georgetown.

On Bridge street alone, this system could not be carried out, as that street is occupied by the Washington Aqueduct twelve-inch main, which is the artery supplying not only Bridge street, but also all the distributing pipes in all other streets of the city.

On Bridge street, therefore, hydrants, combining drinking fountains and fire plugs of the Washington Aqueduct pattern, have been erected. I had already set up one for the United States, at the corner of Bridge and High streets, where it did good service during the first weeks of its erection, by putting out a fire on High street, without the aid of fire engines, and by supplying the whole neighborhood with water.

Four more have been set up, located at the corners respectively of Bridge and Green, Washington, Congress, and Jefferson streets.

The Water Board, in view of the free gift of water to the city by the United States, and the admirable and economical system upon which the Councils provided the funds for laying the distributing pipes, resolved to place within convenient reach of all the poor of the city free drinking fountains, or service hydrants. They adopted a hydrant which I had designed for such purposes, which combines the elements necessary to secure durability and convenience; and one hundred of these were ordered.

They are intended to be inserted in the gas-light posts at the corners of the streets. They occupy no additional space upon the sidewalk, and

are manœuvred by placing the foot upon a treadle, so that a child has no difficulty in using them. Being supplied with wastes, they will, when properly set up and drained, be entirely safe from frost.

The completion of the pipe-laying being delayed by the remissness of the contractors for pipes, it was not possible to erect any of these hydrants before the cold weather set in.

Solicitude for the comfort of the poor of the city, induced the Board to risk the placing of a few of them, even during this cold weather, in the northeastern part of the city, a portion of the town in which are many families who could not afford the expense of introducing water pipes into their houses.

The work was as well done as the weather permitted, but the proper drainage for these hydrants could not then be provided, and some of them got out of order during the exceeding cold weather.

When it is remembered, however, that the temperature has frequently been below zero during the present winter, and that the work, in order to be done at all, had to be imperfectly done, there is no reason to doubt that all these hydrants, when properly set up in the spring, will give entire satisfaction.

At a great fire in Beekman street, New York, during the present winter, the firemen were obliged to build fires around the Croton fire plugs before they could obtain water for their engines.

Though the weather in Georgetown has been as cold, no fire plug has been found out of order when examined during the winter, and these imperfectly set up drinking fountains or service hydrants have been generally available, and have been a source of great comfort and economy to the laboring population of the portion of the city in which they have been erected.

I believe that none of those which were properly set up and drained have been out of order at any time during the winter.

The distribution of water in Georgetown embraces two separate systems.

A large portion of the city is at such a height that the reservoirs of the Washington Aqueduct, which are at the level of 145 feet above tide, will not supply it.

All that portion of the city, therefore, above the level of about 100 feet above tide is supplied by a system of pipes fed from a pumping main laid by the United States, which leads from a pumping engine in the abutment of the Rock Creek Bridge, at the foot of Aqueduct street,

to the high service reservoir of the Washington Aqueduct, on Lee's Hill, at the corner of High and Road streets, Georgetown.

This reservoir is 120 feet in diameter. It will be covered by a brick dome, and will contain, when filled to the level of 225 feet above tide, 1,800,000 gallons of water—a supply in case of fire or accident.

This reservoir is not yet finished—the failure of an appropriation by the United States for the Washington Aqueduct, of which it is a part, having arrested the work.

The pumping engine which supplies it is a water-pressure engine, capable of supplying, at its ordinary working speed of eleven strokes per minute, ten thousand gallons of water per hour, or two hundred and forty thousand gallons per day.

This rate of supply is much more than sufficient for the present domestic use in the portion of the city above the level of 100 feet, but not sufficient for extinguishing large fires. For these the store to be kept in the reservoir is needed.

As the cost of putting the reservoir in order, to receive the water, however, would be considerable, and there are objections to filling it before it is covered over, among which would be the necessity of employing a watchman to protect the water in it from nuisances, it was determined to depend for the present, and until the United States completes the reservoir, upon the hourly supply which the water-pressure engine gives.

This supply has thus far been satisfactory. The engine works only fast enough to keep up the pressure in the pipes and supply water as fast as it is drawn off for domestic and other uses. While its full speed is eleven strokes per minute, during this winter the supply has been given by the engine working at an average speed of not over one and a half strokes per minute.

Under a resolution of the Councils, certain expenditures necessary in order to put this engine, the pumping main, and parts of the high service reservoir in a condition to supply the upper service of Georgetown, have been made by the Water Board.

These expenditures, amounting thus far to $1,080 16, having been applied to completing work upon pipes and fixtures of the Washington Aqueduct, which are the property of the United States, will form a subject of proper reclamation whenever Congress may decide to complete that work.

The advertisements published in the District papers, on the 19th May,

1859, brought a number of proposals, and contracts were entered into by the Board, with the approval of the Councils, as follows:

For cast-iron pipes, with John Parham & Co.
Laying cast-iron pipes, &c., with Tho's Evans.
Stop-cocks, hydrants, and castings, with Wm. M. Ellis & Bro.
Stop-cocks and hydrants, with A. Sylvester.
Drinking hydrants, with L. H. & G. C. Schneider.
Patent cement and iron pipe, and laying, with Patent Cement and Gas Pipe Company, of Jersey city.

Of all these contracts, copies have been filed in the office of the Water Board.

Arrangements were also made to submit all cast-iron pipes, stop-cocks, and fire plugs to a proof by hydraulic pressure of 300 lbs. to the square inch.

For this purpose, the proof-house and press of the Washington Aqueduct, not being in use by the United States, were placed at the disposal of the Water Board free of expense.

I may remark here, that the wisdom of this determination of the Board has been strikingly proved by the result.

No pipe, stop-cock, or hydrant laid down by the Board has burst, while of the whole number of pipes, stops, and fire-plugs inspected and proved, over one-ninth were rejected as imperfect.

The price of the rejected property is about $2,500, while the cost of proof was $479 54.

Had these imperfect pipes and hydrants been admitted in the distribution, the cost of removing and replacing them, and of repairing the damage to the streets from their bursting, would have been far greater than their original cost.

Of the first cargo of pipes delivered under the contract, over one-half were rejected under inspection and proof; and without proof, probably subsequent cargoes would have consisted of no better material.

The contractors for cast-iron pipes, Messrs. John Parham & Co., appointed Messrs. Traner, Jones & Co., of Philadelphia, attorneys and agents, to receive payment and fulfil their contract.

The first cargo of pipes delivered by these gentlemen were very inferior—over one-half of them failing, as stated above, to pass inspection and proof.

From this cause, and from the great demand for small water and gas

pipes in Philadelphia and elsewhere, the delivery was not so rapid as the contract required and the Water Board desired.

Application was therefore made to Councils for authority to purchase pipes elsewhere, in order that the distribution might be completed before winter set in.

Councils, in view of the great benefit to the city of an early completion of the work, granted the requisite authority; and under the direction of the Water Board, I made arrangements with Messrs. B. S. Benson, of Baltimore, and J. F. & J. W. Starr, of Camden, N. J., which enabled the Board to procure all the pipes needed, so that the last pipe was laid on the 7th December, 1859.

The whole number of water pipes inspected, was	5,144
Rejected	628
The whole number of valves and fire-plugs inspected, was	78
Rejected	9

The whole number of feet of cast-iron six-inch water pipe laid by the Board, is	2,637	
Of cast-iron four-inch pipe	35,931½	
Of patent cement and iron four-inch pipe	2,686	
Total water way laid by the Board	41,254½	ft.

Or, 7.81 miles.

Of the water mains of the Washington Aqueduct laid by and the property of the United States, there are used in the Georgetown distribution	5,108	ft.
Total distributing pipes now in use	46,362½	ft.

Or, 8.78 miles.

The whole number of four-way stops and hydrants, or fire plugs, set, is	68
Yet to be set	3
Total	71

The whole number of slide-stop valves set by the Water Board, is—	
Of four-inch	12
Of six-inch	1
Total	13

The whole number of drinking hydrants and fire plugs combined, set up by the Board, is	4
There is one other, set up by the Washington Aqueduct, which is the property of the United States	1
Total	5
The whole number of drinking fountains and service hydrants in lamp-posts erected to date, is	9
There are on hand, ready to be set up in the spring	91
Total	100

The expenditures have been as follows:

Accounts certified by chief engineer—		
For cast-iron pipes	$14,434 54	
Laying do	6,718 98	
Patent cement and iron pipes and laying	1,190 59	
Fire plugs and stop-cocks	4,614 60	
Hydrants	650 00	
Castings	707 62½	
Small stop-cocks	53 62	
Plastering reservoir	228 95	
Labor, inspection, proof, &c.	1,596 52	
Placing hydrants	270 00	
Wrenches for fire plugs	31 21	
Lumber for drains	30 34	
Miscellaneous	75 03	
Total	30,602 00½	

The Board has also incurred the following expenses:

For six-inch pipe and laying on High street, by Messrs. Thompson & Bro.	$437 56	
Printing, stationery, advertising, &c.	316 00	
For wooden plugs	19 25	
		772 81

To meet outstanding claims and complete the work, I estimate, as required—

For fire plugs	600 00
Drinking hydrants	2,250 00
Castings	167 00

Retained per-centage on contracts	$875 00	
Printing reports	50 00	
		$3,942 00
Total		35,316 81½
Deduct—		
To be repaid by United States	$1,080 16	
Value of materials on hand	300 00	
		1,380 16
Total net cost of work		$33,936 65½
The water-way laid is	46,362½ ft.	
Deduct for street crossings, say	15,662½ "	
Leaves taxable frontage	30,700 "	
Which, at 60 cts. for each side of the street, amounts to		$36,840 00
Leaving a surplus of		$2,903 35½

The average cost of pipe laid per foot of water-way is very closely estimated at 78½ cents for the four-inch, and $1 17¾ for the six-inch pipes, which prices include every expense for all fixtures.

Six and four-tenths per cent. of the pipe laid is six-inch pipe; ninety-three and six-tenths per cent. four-inch.

Assuming the population of the city to be 9,000—which is below the truth, as it was near that number at the time of the last census—we have one free public service hydrant or drinking fountain to every eighty-six inhabitants of the city; one fire plug to every one hundred and seventeen persons.

The total cost per foot of pipe laid, including all fixtures, stop-cocks, fire plugs, hydrants, &c., is eighty-two and a quarter cents; cost per mile, four thousand three hundred and forty-five dollars; cost *per capita* of the population, three dollars and seventy-seven cents.

Experience thus far indicates that the work has been satisfactorily executed by the contractors. The defects and accidents have been few and unimportant, and the work bids fair to prove very permanent, and to require little expense in maintenance.

My report and estimate of the 14th April last, providing for an ultimate distribution through all the streets of the city, below Road street, amounted to about $56,000

The Water Board, in the exercise of a sound discretion, having decided to omit for the present those streets not yet sufficiently built up to require water pipes, have reduced the actual expenditure to about $34,000

Making for the present a saving of $22,000

It will be some years before it will be necessary much to extend the distribution, and I congratulate the Board that under their judicious management every family in the city has now, within a moderate distance, an ample supply of water, obtained at such a reasonable rate.

The total cost of this work being defrayed by a tax of 60 cents per front foot on the lots past which the water is carried, payable in four equal annual instalments, if the law is faithfully executed by the Councils and the citizens, they will, at the expiration of the four years, have water free forever. And even during these four years, the annual tax of fifteen cents per foot front being, for most houses,

Of twenty feet front, only	$3 00
Of thirty feet front	4 50

is less than the ordinary permanent annual rent for water in any other city known to me.

I congratulate the city upon these results. I believe that when the remainder of the drinking fountains, or service hydrants, are erected, Georgetown will be better provided with the means of supplying all domestic and public uses of water, and at a cheaper rate, than any other city in the United States, or perhaps in Europe.

The supply, when the Washington Aqueduct is completed, will be practically unlimited, being all that the people can use, of seventy millions of gallons a day.

The tables and abstracts of expenditures subjoined give a variety of information in regard to the operations of the Water Board.

All bills under the contracts have been examined by myself and certified before being submitted to the Board, on whose order they have been paid by the Clerk of the City Councils, out of funds accruing as provided by the ordinance of 9th May last.

I submit herewith, for preservation and record, a map of the city, showing the location of the water pipes, stop-cocks, fire plugs, hydrants, &c., thus far put down, either by the city or by the Washington Aqueduct.

I also enclose a map of the Washington Aqueduct and drawings of the fire plugs, stop-cocks, hydrants, &c., used in the distribution; a

drawing of the water-pressure pumping engine, with its location in the abutment of the bridge, and a plan of the High Service Reservoir.

These will be useful for future reference, and should be carefully preserved in the office of the Water Board.

Having thus completed the duty assigned to me by the Water Board, it only remains for me to express my appreciation of the zeal and public spirit with which they have discharged their duties, and to tender them my thanks for the uniform and cordial support and confidence which they have given to me during the progress of the work.

Contractors, Mr. Thos. Evans, Messrs. Wm. M. Ellis & Bro., and Messrs. L. H. & G. C. Schneider, have faithfully fulfilled their contracts, and their conduct deserves an official recognition.

Mr. E. T. D. Myers, C. E., assistant engineer, has conducted the details of this work and supervised for me its entire execution. I congratulate the Water Board that, under his recent election as city engineer, they will have his valuable aid in the future maintenance and extension of the work.

I am, very respectfully,

Your obedient servant,

M. C. MEIGS.

GEORGETOWN WATER-WORKS.

Abstract of Expenditures during their construction, per certified vouchers returned to the Water Board by Capt. M. C. Meigs.

No.	Date.	Amount.		To whom paid.	Application.
		Stock.	Cash.		
	1859.				
1	August.....	$2,795 03	.....	John Parham & Co	Cast iron pipes.
2	September.	1,242 16	.....	Thomas Evans.....	Pipe laying.
3	"	.....	$81 50	..... do	do
4	"	2,930 20	.....	W. M. Ellis & Bro.	Fire plugs & cast'gs
5	"	.....	20 00	M. C. Meigs.....	Traveling expenses
6	October	1,234 69	.....	Thomas Evans	Pipe laying.
7	"	.....	371 05	B. S. Benson	Cast iron pipes.
8	"	.....	216 92½	P. Crowley	Plaster'g reservoir.
9	"	.....	12 02½	..... do	do
10	"	.....	18 00	W. Chamberlin ...	Fire-plug wrenches
11	"	.....	226 20	Thomas Evans	Cast iron pipes.
12	November.	1,802 87	.....	..... do	Pipe laying.
13	"	.....	117 50	..... do	Pipe laying pump line.
14	"	3,851 08	.....	John Parham & Co	Cast iron pipes.
15	"	.....	1,834 54	J. W. & J. F. Starr	do
16	"	.....	1,430 80	B. S. Benson.....	do
17	"	.....	650 00	L.H.&G.C.Schneider.....	Hydrants.
18	"	.....	41 25	..... do	Spigot cocks.
19	"	.....	2,061 00	A. Sylvester	Stop cocks and fire plugs.
20	"	.....	11 40	B. S. Benson.....	Cast iron pipes.
21	"	.....	31 65	W. M. Ellis & Bro.	Castings.
22	"	299 37½	.....	..... do	Castings.
23	"	1,212 84	.....	John Parham & Co	Cast iron pipes.
24	"	.....	2,701 60	J. W. & J. F. Starr	Cast iron pipes.
25	December..	1,778 26	.....	Thomas Evans	Pipe laying.
26	"	1,190 59	.....	Patent Cement Pipe Company.	Pipe laying.
27	"	.....	291 00	Thomas Evans	Pipe laying, pumping main.
28	"	.....	12 37	L.H.&G.C.Schneider.....	Spigot cocks.
	1860				
29	January....	.....	147 63	Thomas Evans	Extra work, pipe laying.
30	"	23 37	.....	..... do.	Pipe laying.
31	"	.....	245 25	..... do.	Placing hydrants.
32	"	.....	11 07	M. Garrett	Smith work, pumping main.
33	"	.....	11 45	W. T. Duval	Drilling, &c., do.

ABSTRACT—Continued.

No.	Date.	Amount. Stock.	Amount. Cash.	To whom paid.	Application.
	1860				
34	January....	.....	$52 26	W. T. Duval	Fitting lamp posts, &c.
35	"	.....	5 00	Hiram Gray.....	Smith work, pumping main.
36	"	.....	22 81	E. Pickrell	Lumber for drains.
37	"	.....	7 53	F. Wheatley.....	Lumber for drains.
38	"	.....	13 21	W. H. Chamberlin	Fire-plug wrenches
		18,360 46½	10,645 02		

$29,005 48½ Total cash and stock.

An abstract of Expenditures, as per pay-roll returned by Edm'd T. D. Myers, Assistant Engineer.

No.	Date.	Amount. For the U. S.	Amount. For Georgetown.
39	August, 1859.....	.....	$242 25
40	September, "	$34 50	223 07
41	October, "	144 50	226 50
42	November, "	112 19	235 33
43	December, "	30 50	231 37
44	January, 1860.....	12 00	104 31
		333 69	1,262 83

$333 69
1,262 83

$1,596 52 Total amount of pay-rolls.

Statement of amount expended—

For materials, &c.....	Stock.....	$18,360 46½
	Cash.....	10,645 02
Pay-rolls	For the U. S.....	333 69
	For Georgetown	1,262 83
		$30,602 00½

Abstract of amount expended under the appropriation of $1,500 *to put the High Service United States Apparatus into working order, and partially prepare the H. S. Reservoir.*

Pay-roll account.....	$333 69
Thomas Evans.....	490 00
P. Crowley.....	228 95
W. T. Duval.....	11 45
M. Garrett and H. Harris.....	16 07
Total.....	$1,080 16

Statement of Water Pipes laid by the Water Board of Georgetown for the distribution of Potomac water from the mains of the Washington Aqueduct.

Work begun 4th August, 1859.
Last pipe laid 7th December, 1859.

Street.	Location.	Diameter in inches.	Length in feet.
Montgomery....	From Aqueduct to Road st.....	4	2,776½
Green.....	Ches. and Ohio Canal to Stoddard st.....	4	2,322½
Washington	Water to Dumbarton st.	4	1,837½
"	West to Stoddard st.....	4	455
Jefferson	Water to Bridge st.....	4	956½
Congress	Canal to Gay st.....	4	887½
"	Dumbarton to Road st.....	4	2,119
High	To fire plug on Water street.....	4	17½
"	From H. S. Reservoir gallery to Road st.....	4	220
Potomac.....	Bridge to Prospect st..	4	288½
Market	Canal to First st.....	4	864
"	Third to Seventh st.....	4	1,448
Frederick.....	First to Fourth st.....	4	1,093½
Fayette.....	Prospect to Fourth st.....	4	1,403½
Lingan.....	To fire-plugs.....	4	60
Warren	To fire-plugs.....	4	40
Water.....	From Davidson's Mill to Washington st.....	4	3,084½
Bridge	Montgomery to Rock st.	4	307
Prospect	Lingan to High st.....	4	2,105
Gay.....	High to Washington st.....	4	1,080½
Gay.....	Green to Montgomery st.....	4	497½
First.....	Warren to High st.....	4	2,425
Dumbarton	High to Congress st.....	4	643
"	Washington to 165 ft. beyond Monroe st.	4	1,151½
Second.....	Warren to High st.....	4	2,267
Beall	High to Washington st.....	4	1,330

STATEMENT—Continued.

Street.	Location.	Diameter in inches.	Length in feet.
Third	Frederick to High st.	4	1,069
Fourth, Fifth, Sixth, Seventh	To fire-plugs	4	120
West	From High to Montgomery st.	4	2,053
Stoddard	To fire-plugs	4	60
Road	From High to Montgomery st.		
	Cast-iron 150	4	2,836
	Patent wro't-iron cement pipe... 2,686		
Aqueduct	Waste from pump and main	4	58
Eighth	From Fayette to High st	4	741
	Total 4-inch water way		38,617½
	Of which 2,686 ft. are wrought-iron and cement pipe, and 35,931½ feet cast-iron pipe.		
High	From Water to Fourth st	6	2,637
	Of which six-inch pipe 558 feet were furnished and laid by J. W. Thompson & Bro.		
	Total length of water way laid by Corporation		41,254½
	Equal to 7 81-100 miles.		
Bridge and Aqueduct st.	From Lingan st. to Rock creek bridge, U. S. main	12	3,921
	U. S. pumping main above Fourth st. to High Service Reservoir gallery is also used as a distribution pipe	10—12	1,187
	Total pipe used as distribution pipe in Georgetown		46,362½
	Equal to 8 78-100 miles.		

STATEMENT OF FOUR-WAY STOPCOCKS AND HYDRANTS OR FIRE-PLUGS.

Street.	Location.	Size—inches.	Number.
Bridge	At Rock st	4	1
Munroe	Dumbarton st	4	1
Montgomery	Gay, Dumbarton, West, Stoddard, and Road sts	4	5
Green	Gay, do. do. do.	4	5
Washington	Water, Gay, Dumbarton, Beall, West, Stoddard, and Road sts	4	7
Jefferson	Water st	4	1
Congress	Water, Gay, Dumbarton, Beall, West, Stoddard, between Stoddard and Road, and at Road st	4	8
Valley	Road st	4	1
High	Water and Road sts.	4	2
Alley west of High st	Water st.	4	1
Potomac	Water, Prospect, First, and Second sts	4	4
Market	Water, Prospect, First, Second, Third, Fourth, Fifth, Sixth, and Seventh sts.	4	9
Frederick	Water, Prospect, First, Second, Third, Fourth, and Eighth sts	4	7
Fayette	Water, Prospect, First, Second, Third, Fourth, and Eighth sts	4	7
Lingan	Prospect, First, and Second sts	4	3
Warren	First and Second sts	4	2
High	Cherry, First, Second, and Third sts.	6	4
	Total set		68
	There are three four-inch four way stop-cocks and hydrants to be set at the intersection of Valley with West, Montgomery with Beall, and Beall with Green sts., of which one is on hand		3
	Total set and to be set		71
	FIRE AND DRINKING HYDRANTS COMBINED.		
Bridge	At Green, Washingten, Jefferson, and Congress sts.		4
	One has been set up by the United States, at Bridge and High sts.		1
	Total		5

STATEMENT—Continued.

Street.	Location.	Size—inches.	Number.
	As each of the 71 four-way stop-cocks and hydrants has attachmeuts for four fire engines, and each of the five fire and drinking hydrants has one, there are 289 attachments for fire engines in the city, or one to 160 lineal feet of distribution pipe.		
	FOUR-INCH SLIDE VALVES OR STOPS, (dividing upper and lower service at about 100 feet above tide.)		
Prospect	At 172 feet west of west curb of Market st.	4	1
First	148½ ft. west of west curb of Frederick st.	4	1
Frederick	178 ft. north of north curb of First st.	4	1
Second	Near west building line of Market st.	4	1
Third	At 113 feet east of east curb of Market st.	4	1
West	Near east building line of High st.	4	1
Green	Near south building line of West st.	4	1
Montgomery	Do. do. do.	4	1
Beall	Midway between High and Congress sts.	4	1
Dumbarton	246 feet east of east curb of High st.	4	1
	Total 4-inch stops, dividing upper and lower services	.....	10
Water	On east side of High st. main.	4	1
Aqueduct	Waste to pumping main.	4	1
	Total 4-inch slide stop-valves	.....	12
High	And Water	6	1
	Total slide stop-valves	.....	13
	DRINKING HYDRANTS SET IN LAMP-POSTS.		
Gay	And Green, northeast corner		1
Montgomery	" Gay, southwest corner		1
"	" Dumbarton, northeast corner		1
Munroe	" " southwest corner		1
Montgomery	" Beall, southwest corner		1
"	" West, southeast corner		1
Green	" " southwest corner		1
"	" Beall, northeast corner		1
"	" Dumbarton, southwest corner		1
	Total set	.....	9

STATEMENT—Continued.

Street.	Location.	Size—inches.	Number.
	These were set late, and the freezing of the earth in the severe cold weather prevented their being properly protected from the frost. They will be completed, and the others, which have been delivered by the contractors, will be set up in the spring.		91
	Total set and to be set up	.....	100
	FOUR-INCH T's INSERTED.		
Bridge	At Montgomery street, outlet east.	4	1
Montgomery	South building line of Bridge, outlet east.	4	1
"	Middle of Olive, outlet west	4	1
Green	South building line of Bridge, outlet east.	4	1
"	North building line of Canal, outlet east.	4	1
Washington	South building line of Bridge, outlet east.	4	1
"	South building line of Canal, outlet east.	4	1
Congress	South building line of Bridge, outlet east.	4	1
"	North building line of Canal, outlet east.	4	1
	Total 4-inch T's.	.....	9
	Six by four inch T's inserted—		
High	At Prospect, Gay, Dumbarton, Beall, West, Fourth, and on building line of Gay st.	6×4	7
	Six by four inch crosses inserted—		
High	At Water st.	6×4	1
	MATERIALS ON HAND.		
	80 four-inch pipes, 9 feet long	4	720 ft.
	About 70 feet of broken four-inch pipes	4	70 "
	Crosses	4×4	6
	Do.	6×4	1
	T's	4×4	9
	Do.	6×4	1
	Small well covers of cast-iron for stops	.....	7
	Larger do. do. do.	.....	9
	4-inch four-way stopcock and hydrant.	4	1
	Yet to be furnished—		
	4-inch four-way stopcocks and hydrants.	4	2

The pipes have been delivered as follows:

				Diam.	Gross wt.
From Traner, Jones & Co., under contract of John Parham & Co.	242	pipes, 9 feet	long...	6	2,178
	2,231	" "	...	4	20,079
B. S. Benson	557	" "	...	4	5,013
J. W. & J. F. Starr	1,359	" "	...	4	12,231
Thos. Evans	87	" "	...	4	783
J. W. Thompson & Bro	64	" "	...	6	576

Total number of four-inch pipes	4,234
Do. six-inch do.	306
	4,540