

WATER FOR THE CAPITOL.

LETTER

FROM

Robert Mills to the Chairman of the Committee on the Public Buildings, upon the subject of providing a supply of water for the use of the Capitol.

APRIL 5, 1830.

Printed by order of the House of Representatives.

CITY OF WASHINGTON, *March 30*, 1830.

The Honorable G. C. VERPLANCK,
Chairman of the Committee on Public Buildings.

DEAR SIR: I have given a personal examination to all the main streams contiguous to the city, capable of giving the requisite supply of water, for the purpose of irrigating the public buildings and grounds, together with furnishing the means of guarding against the ravages of fire, and meeting the future demands of the city; and would take the liberty of submitting the following brief exposé on the relative merits of these streams, and the probable expense of conducting them to the Capitol.

FIRST—*The waters of the Tiber.*

This stream is the nearest to the Capitol, and may therefore be brought there at the least expense, but it is necessarily of limited capacity, and doubtful character, with regard to yielding a permanent and full supply. The main head springs, which have been examined and gauged, are found to yield as follows: No. 1. seven gallons per minute: No. 2. three gallons per minute: No. 3. four and a half gallons per minute. The expense of bringing in the whole to the Capitol is estimated to cost \$43,710½, exclusive of purchase of springs. The cost of bringing in the first is about \$32,000, besides the right of the spring. If it should be thought expedient to resort to these waters, then, to avail ourselves of all the advantages furnished by them, I would suggest the following plan of operation. First, To construct a proper reservoir, or basin, (at a point where *all the head springs* fall into the main ravine) capable of collecting and retaining all the flow of the descending streams. Second, To lead these united waters, by a proper channel, to a point where they may be used to the greatest advantage. Third, To create a power by this means, equivalent to raise the necessary supply

for the Capitol into a basin on the top of the adjacent high grounds, from whence it may be conducted by pipes where required. Fourth, To collect the water, used to work the pump engine, after it has been discharged from the wheel, into a proper basin, and lead it by a canal or tunnel, along the edge of the Capitol hill into a reservoir constructed in front of the Capitol to the East, at a corresponding level, which it is presumed, will be of sufficient altitude to command the President's house and offices, Navy Yard, Penitentiary, &c.

There is another stream which may be taken into this last line of supply, as it will be intersected by it, a little to the Northwest of the Capitol; and thus, an additional quantity of water obtained to the reservoir, which will be mostly drawn from.

According to this plan, it will be seen, that none of the available waters of this stream would be lost, but all husbanded and judiciously applied; not only furnishing a supply to the Capitol, but providing an abundant supply for the other public buildings. The expenses of carrying this plan into execution, with a view simply to furnishing the Capitol with water, would probably not exceed \$20,000; if the other public buildings are supplied also, the additional cost would vary from \$10,000 to \$20,000, according to extent of supply.

The position of the upper reservoir would not be much over a mile from the Capitol. The mill seat situate on the Tiber presents a suitable place for the pump engine house; this mill seat has a head and fall of about 30 feet, and works an overshot wheel. It has no head reservoir to collect the waters above, and consequently, works under every disadvantage; yet it runs two pair of stones six months in the year. If it had the addition of a head reservoir, it is believed that it would be capable of running, the year round, one pair at least.

The small quantity of water demanded for the use of the Capitol, could be supplied at little expense, as it would require but a small engine, whilst the other public buildings, demanding a much larger supply, would be able to realize this at the same time (at no expense of power) from the source created by the expended water of the engine. If the waters of the Tiber, therefore, should be preferred, it would be most advisable that they should be introduced in this way, as furnishing the most abundant supply, at the least expense.

SECOND.—*The Waters of Rock Creek.*

The position of this stream, with regard to the city, is very favorable as a source from whence a supply of water may be obtained for all the purposes demanded by the public buildings, not only at present, but looking forward to the increase of the city, for all future demands, as well of a private as of a public nature.

The capacity of this stream to furnish a full supply of water to the city, cannot be doubted, and the nature of the bordering high grounds is peculiarly well adapted for the formation of suitable reservoirs, sufficiently elevated to admit of the water they may contain, to be conducted to the Capitol hill.

The character of country through which this stream flows, is mountainous and rocky; the springs, therefore, are constant, and of a pure quality, running mostly over a rocky bed. The number and power of the mill seats, situate on this stream, prove its importance as a means of answering all the reasonable demands of the city, whether for useful or ornamental

purposes; and its location evidently points it out as a most suitable source from whence to supply the public buildings with water, and at little expense, commensurate with the extent of the objects to be embraced. Lying on the West side of the city, (and of course of the public buildings) the water taken from this stream would pass through the most populous parts of the city, along by the President's house, public offices, post office, &c. before reaching the Capitol; thus every portion of the conduit pipe would or may be profitably employed, and eventually reimbursed the first cost; whereas, bringing the water from the East side of the city, all the length of the pipe, leading from the head reservoir, would benefit no other object than the Capitol; to advantage the other public buildings, so much additional pipe would be requisite, as they are distant from the Capitol, and then there would not be an adequate supply for all purposes. The importance of providing all the public buildings with a *full supply* of water, as a guard against the ravages of fire, cannot be questioned; and as it is of importance that provision be made, also, for the city generally, in this particular, the value of the waters of Rock creek must be manifest. The higher parts of the city are now dependent on wells for a supply of water. The inadequacy of these, in times of fire, need not be shown. The fate of such cities as have had to depend on this precarious source of supply, on these occasions, is well known. The ample supply of water which this stream would furnish will afford the means of introducing all those useful and ornamental water works to the public buildings and squares which are so refreshing and beautiful in the sultry season, and which are so peculiarly grateful in this climate. But it is in the event of a fire that its value would be most sensibly appreciated, and particularly connected with the *offices*, where so many valuable documents are deposited, the loss of which would, perhaps, be irreparable.

The plan of operation associated with this stream as a means of supply to the public buildings, would be as follows: 1st. To purchase the requisite water power and rights on this stream, at a suitable point where a reservoir might be constructed sufficiently elevated to receive the waters of supply for the public buildings, &c. 2d. To construct the necessary basins, and to erect a pump engine, of a sufficient capacity to supply the summit basin with water. 3d. To conduct a main supply pipe from the summit basin, of a proper calibre, first, down to the Pennsylvania Avenue above the Six Buildings, thence along the said avenue, passing the President's House, and public offices, (each of which would receive a branch pipe of supply) and terminating on the Capitol Hill. Lateral pipes may branch off from the main, to answer any other public or private demand which it may be proper to attend to.

There are two or three situations on Rock Creek admirably well calculated for the purposes demanded, and which would admit of the construction of the necessary water works at a moderate cost. The whole expense of conducting the water to the Capitol from this quarter will probably not exceed \$ 50,000, and give a supply also to the President's House and offices. The main pipe will be very little longer than what would be required to bring the springs of the Tiber to the Capitol. The purchase of the water rights, and the erection of a pump engine, would be the chief expense additional incurred.

There is a branch of Rock Creek which, from the circumstance of the hilly character of the country in which it rises, I am inclined to think will be found to give a more ample supply of water than any branch of the Tiber,

and must be considerably more elevated. It rises not very distant from the North boundary of the City. I have annexed a sketch of the relative positions of all the sources of supply proposed, with the Capitol and President's House, by which you can form a judgment of the relative merits of each.

Should the committee think favorably of either of the plans proposed, and desire a more minute examination and estimate of the expense of carrying them into execution, I would devote my attention to the subject farther, and furnish the requisite information as soon as practicable. Having been engaged several years in works of this nature, (particularly in Baltimore, where I was charged with the works for supplying that city with water,) I am induced to believe that I could be serviceable to the committee in suggesting and carrying any plans into execution which they may approve, and therefore would respectfully offer my professional services.

Before closing I would beg leave to make a few general remarks. Both the city of Philadelphia and that of Baltimore are supplied by a *pump engine*, worked by a water power, derived from the same source that irrigates the city. There was more economy, simplicity, and certainty, in this mode of operation, than by steam. Rock Creek is a bolder stream than that which supplies the city of Baltimore with water; and this last has sufficed for the demands of the city to the present time, with a population of 60,000. The waters of *large streams*, particularly running through a hilly, rocky, or mountainous country, are considered as always preferable to *springs*. The longer water is exposed to the air, the *softer and more wholesome* it becomes. Water taken from *wells* is an instance, and springs partake more or less of the nature of well water, in consequence of their confined state. Again, to depend on one or two springs for a *public* supply is very precarious—springs frequently sink, or dry up; they never increase, but, on the contrary, decrease in quantity; there is a natural cause for this in a cultivated country; 1st, the cutting off the trees, (the natural conductors of moisture) and the consequent exposure of the surface of the ground to the action of the sun's rays; 2d, the draining of marshy grounds, &c. A spring (or springs) therefore should never be resorted to for a supply of water for public purposes, except no alternative is left but to use them or be without water. Washington is surrounded with abundant streams, which possess a power within themselves to supply *any quantity* of water which may be demanded. As a large expense must necessarily be incurred, even in resorting to a spring, it would be worthy of consideration whether a more effective supply could not be obtained, and, at the same cost, by resorting to a congregation of springs.

Excuse the liberty I have taken in making these remarks, and permit me to salute you with sentiments of respect.

ROBERT MILLS.