

## REPORT OF THE CITY ENGINEER.

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*To the Honorable City Council of the City of Worcester:—*

Gentlemen:—As required by Chapter 7, of the Ordinances of the city, I respectfully submit the following report for the year ending November 30, 1914.

It is very gratifying that the new 36" high service main has been connected with the general distribution system at Webster Square. Its effect upon the higher elevations was immediate and beneficial and greatly strengthened the entire high service system throughout the city. To obtain the full benefit, however, of this new main, certain sections of the distribution pipes yet remain to be enlarged and extended, notably the old original line through Cambridge Street, which provides for the most part the water supply of College Hill and the heights of Quinsigamond and Providence Hill. The frictional loss at present along this line is greater than it should be for an efficient fire service, and the property values of the territory supplied by it require better protection. I would recommend the replacement of the Cambridge Street pipe with one of larger diameter, at least to its junction with Southbridge Street, as soon as may be.

The main high service line through the westerly side of the city is of ample dimensions, but should be extended northerly from Pleasant Street through Park Avenue to Grove Street, and there connect with the main laid some few years ago in anticipation of being strengthened in this manner. When this is accomplished a goodly supply of water for fire purposes will then obtain in Greendale and Burncoat Plains.

Several localities that are densely built upon are being supplied through the original high service conduits that were put down thirty or forty years ago, and when first laid were none too generous in size, require attention.

The extension of the new 48" and 42" low service conduit to the westerly side of the city at Park Avenue should continue into the heart of the city where its great value can be made use of when occasion requires. Its extension to Lincoln Square, where connection can be made with the

36" conduit from the Parsons Reservoir should be made at the earliest opportunity. Other extensions and imperfections in the older portions of the low service system also require early consideration.

The condition of the reservoirs, and particularly those that furnish the high service part of the water supply, give emphatic evidence of dilatory action in conserving the waters of Lynde and Kettle Brooks. This is due to the fact that the main conduit from the Tatnuck Brook Reservoir has for years been too small to meet the demands upon it, and so it was necessary to draw a certain amount of water from the high service supply through the Parsons Reservoir to augment it. It was not until the weakness of this conduit was manifest in large degree that any action was taken to rectify it and prevent a premature diminution of the high service supply.

Certain localities that are now supplied with high service water should have been placed upon the low service had the capacity of the Tatnuck Brook conduit permitted. This again has been a drain upon the high service system that in a period of dryness is seriously felt. This situation was considered years ago and recommendations were made then to avoid it, and the warnings have been repeated almost annually since the year 1900. It has been observed that failure to anticipate has generally led to large expenditures of money that could have been better and more economically used before the conditions of stress were acute.

The building of the Pine Hill dam, which will conserve the water from the greater part of the newly acquired watershed, should proceed, in order to make use of the supply which the city has purchased at large expense. This reservoir, in conjunction with the new conduit through which the waters of this stream will enter the city, will permit conserving the high service supply to the strict uses of that system, and with care there is no reason why this water cannot be made to meet the demands for some years to come. The high service system of water supply cannot be augmented except at great cost, and in my opinion every means possible should be employed to prevent its too liberal use.

Upon orders of the city council, investigations and estimated costs were reported upon projects to supplement the water supply in the suburb of Tatnuck from reservoirs on Kettle Brook, and also from the proposed reservoir on the Asnebumskit.

Another method to supply with water the above territory and greater extended localities that could not be provided

from either of the above projects was investigated and reported upon, and in such detail that repetition here is not required.

In the settlement of most of the claims for the diversion of a part of the Metropolitan water supply, in co-operation with the Law Department, made necessary the measurements and estimated value of some eight privileges situated upon the Asnebumskit Brook and Quinapoxet River. By the statutes of the years 1897 and 1902 provision was made for the adjustment of the claims of the Commonwealth by the engineer of the Metropolitan Water and Sewerage Board and the engineer appointed by the city. On February 3, 1913, the city council appointed and designated the city engineer as its representative, and after careful consideration the determinations were submitted in a report to the Metropolitan Water and Sewerage Board and the City Council of the city of Worcester.

Preliminary work at the Pine Hill dam has progressed moderately by the installation of a railroad from Dodd Road for the transportation of supplies, and several buildings have been erected and machinery and tools collected for the prosecution of the work.

The determination of sizes, thickness and weights of water pipes, locations for conduits, and other assistance has been extended to the Water Department as requested.

Respectfully submitted,

FRED'K A. McCLURE,

*City Engineer.*