

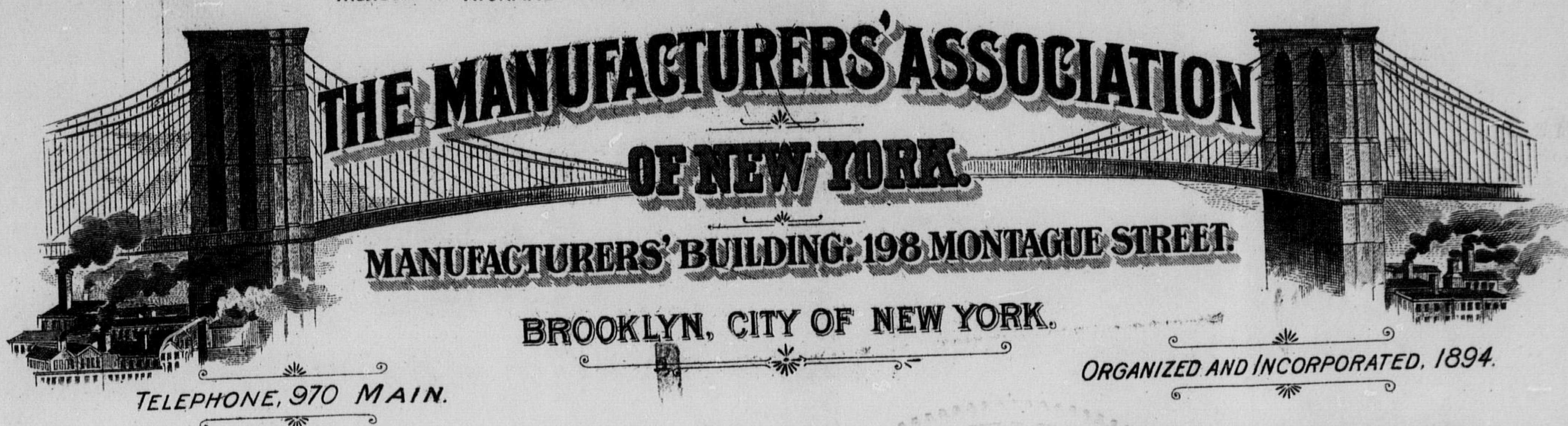
PRESIDENT: GEORGE T. MOON,

FIRST VICE PRESIDENT: HENRY J. VOGEL.

SECOND VICE PRESIDENT: JAMES F. BENDERNAGEL.

TREASURER: RICHARD W. BAINBRIDGE.

SECRETARY: JAMES T. HOILE.



Hon. Geo. B. McClellan, Mayor,
City Hall, N. Y.

Dear Sir:-



January 6, 1905.

The recommendation in your annual message, for the creation of a Commission of three members on Water Supply, is a recognition of the principle that the solution of the Water Problem is a business proposition to be solved by the appointment of a continuous body for that specific purpose. This is the position of the Manufacturers' Association of New York, and is the principle for which it has contended for the last eight years. The report of its Committee on Water Supply of March 15/97, clearly stated this principle and set forth the plan, and the Association has ever since persistently and consistently advocated it.

That report of 1897 made a number of recommendations, three of which are of chief importance, viz:-

The 5th recommendation provided for the separation of the Water debt from the Constitutional Debt Limit of the City. This proposition has been embodied in the proposed amendment to Sec. 10, Art. VIII of the Constitution of the State of New York, and is to be submitted to the people this year on referendum.

The 6th recommendation provided for the appointment of a Commission, and

The 7th recommendation provided for the future supply of the Greater New York for a period of not less than fifty years, so that the

work of construction may be harmonious, intelligent and economical, and always in the direction of the final plan.

This report was unanimously adopted by the Manufacturers' Association, and was made the basis of action in its effort to solve the Water Problem for the Greater New York.

Through its Committee on Water Supply a bill was prepared and introduced in the Legislatures of 1901, 1902, 1903 and 1904, and for a variety of reasons the principles which you recognize were ignored by the Legislature, and the measure failed of passage.

During this entire period of eight years of active investigation and work the Manufacturers' Association has advocated these principles single handed and alone.

In the summer of 1904¹ it finally secured through the City Club a Convention of a number of Civic and Commercial bodies, and to them it submitted its plan of a Commission, recommending in the appointment of the Commission a certified list from the Chamber of Commerce, the Manufacturers' Association and other organizations, for the Mayor to select from. Your recognition of this principle in your recent message and recommendation for the appointment of a Commission from a selected list sets the seal of official approval upon the plan, the only difference being that while we asked for a Commission of nine, six of whom were to be appointed from a selected list, and to include the Mayor, Comptroller and Commissioner of Water, you recommend a Commission of three.

While perhaps a Commission of nine as recommended by our Association is rather large, we feel that a Commission of three is too small for the following reasons:-

1st-- It is not absolutely representative. The Chamber of Commerce practically stands only for the Borough of Manhattan and the Mer-

canile and Banking interests.

2nd-- The Society of American Engineers is essentially professional, but representative.

3rd-- The Borough of Brooklyn and the Manufacturing interests as such, is not recognized. Outside of private consumption the Manufacturing interests in the Water Problem are undoubtedly the greatest.

4th-- The duties of the Commission are not only executive, but judicial, for that reason a greater variety of point of view is desirable. In a Commission of five the judgment of the majority would be preferable and safer than the judgment of a majority of a smaller body, and the action just as effectual.

5th-- The question of expense of two additional Commissioners should not unduly weigh, provided the result attained be commensurate.

Therefore, as a modification of your recommendation, and to meet the situation fully and equitably, we think the Commission should be increased to five members.

For the Borough of Brooklyn in general, and the Manufacturing interests in particular, the Manufacturers' Association of New York is the representative, and we think should be entitled to recognition on this Commission; with the addition of the Mayor as Ex Officio member with voting power, thus increasing the membership of the Commission to five.

And therefore we respectfully urge upon your Honor the wisdom of the representation of other and large interests, and the recognition of the Manufacturers' Association of New York as the representative of those interests, and request that you add this Association to the list of those which you have already selected.

In fuller explanation of the work of the Manufacturers' Asso-

ciation , we submit herewith from its numerous reports that of March 15, 1897, and argument of Feb. 4, 1902.

Respectfully yours,

Geo. T. Moon PRESIDENT,

James T. Hoile SECRETARY,

Charles M. Chadwick
CHAIRMAN COM. ON WATER SUPPLY.

Enclosure.

[Faint handwritten notes and signatures in the bottom left corner]

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Mrs. Assing
in re Walter

Supply?

Jan 1905

M. M. M.



New York Life Building.

PLEASE ADDRESS ALL COMMUNICATIONS TO
THE MERCHANTS' ASSOCIATION.

"TO FOSTER THE TRADE AND WELFARE OF NEW YORK."

The MERCHANTS' ASSOCIATION OF NEW YORK.

346 BROADWAY.

TELEPHONE: 935 FRANKLIN.

CABLE ADDRESS: "MERCHASSON," NEW YORK.

S. C. MEAD, SECRETARY.

H. D. DUMONT, BUS. MGR.

OFFICERS AND DIRECTORS:

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JOHN C. EAMES, 2d VICE-PRES.,
W. A. MARBLE, 3d VICE-PRES.,
GEORGE L. DUVAL, TREASURER,
GEORGE F. CRANE,
J. HAMPDEN DOUGHERTY,
THOS. H. DOWNING,
FRANK SQUIER,
HENRY R. TOWNE,
GEO. FREDK. VIETOR,
CHARLES R. LAMB.

FRANCIS S. HUTCHINS, ATTORNEY
JAMES B. DILL, SPECIAL COUNSEL.

New York,

January 11, 1905

Hon. George B. McClellan, Mayor,
City Hall, City.

Dear Sir:-

In view of your recent action looking towards the immediate increase in the water supply in this City, which action The Merchants' Association cordially endorses, and in view of the related question of the City's financial ability to incur ~~the~~ largely increased outlay in the immediate future, we beg to call your attention to a fact which is directly pertinent, but which we have reason to believe is not yet generally realized.

In 1901 this Association prepared and submitted to the legislature a concurrent resolution, amending Section 10 of Article 8 of the Constitution, providing for the exemption, in the computation of the debt limit of this City, of debt incurred for the purpose of water supply. This resolution was vigorously and effectively supported by this Association, and was adopted by the legislature in 1901. In accordance with the requirements of the Constitution, it was again brought before the legislature in 1903, which likewise adopted it. Therefore, it will now automatically come before the people for approval by popular vote at the next general election in the Fall of this year, and if then ratified, the debt incurring



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FRANCIS S. HUTCHINS, ATTORNEY
JAMES B. DILL, SPECIAL COUNSEL.

(2)

New York,

power of this City will thereby very materially be enlarged.

The proposed amendment to the Constitution, as passed by the legislature, provides

"that debts incurred by the City of New York after the first of January, 1904, to provide for the supply of water, shall not be so included."

The words "so included" refer back to the 3d or 4th preceding lines, which provide that "all X X X X bonds issued to provide for the supply of water X X X X shall be included in ascertaining the power of the City to become otherwise indebted." In other words, after the adoption of the proposed amendment, bonds issued subsequent to January 1, 1904, for the supply of water, need not be included in the determination of the debt limit of the City.

We bring this important fact to your notice for the reason that it appears not to be a matter of general public knowledge, and in the hope that it may assist you in maturing ^{the} plans which you have promulgated. Realizing as we do that even if all expedient haste is made in the solution of this vitally important problem, the City stands in peril of a grave disaster should one or more seasons occur with a rainfall substantially less than the normal mean, The Merchants' Association desires to do what it properly may to promote



New York Life Building.

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GEO. FREDK. VIETOR,
CHARLES R. LAMB.

FRANCIS S. HUTCHINS, ATTORNEY
JAMES B. DILL, SPECIAL COUNSEL.

(3)

New York,

the needed improvements, and to enlist public interest in their
support.

Very respectfully yours,

Henry R. Towne,

Chairman,

E. P. North,

E. E. Olcott,

Prof. Frank J. Goodnow,

Henry W. Goodrich,

J. Hampden Dougherty,

Ernst J. Lederle, Ph.D.

F. B. DeBerard, Secretary,

Committee on Increased Water Supply.

- 2 -

REPORT ON THE PLANS FOR A SUPPLEMENTARY
WATER SUPPLY FOR FIRE PROTECTION IN NEW YORK CITY.

Frank H. Chambers, Esq.,

Chairman Committee on Insurance,

The Merchants Association of New York.

Dear Sir:

In accordance with the terms of your letter of Dec. 14, 1904, I have made examination of the plans of the Water Department for a separate service for fire protection in different districts in their present state of completion and submit the following report.

At the outset I would state that necessary facilities for making the examination have been most kindly and courteously accorded by the Commissioner of Water Supply, Gas and Electricity, Hon. John T. Oakley, and, through him, by the department engineers. In addition to these good offices, Mr. Oakley arranged a conference with representatives of the other city departments concerned, and others, with the view of elucidating a number of points involved in the introduction of the proposed service where joint action may be requisite. This conference which was held Dec. 30, 1904, at Mr. Oakley's office, will be referred to later in this report.

Three districts have been selected by the City Authorities for the installation of the supplementary service, one in Manhattan and two in the Borough of Brooklyn; as the respective plans differ

somewhat in essential features and are in different stages of progress, they will be described separately.

to be acquired for extension of Brooklyn Bridge Terminal,
A.
connecting with (c).

MANHATTAN HIGH PRESSURE SERVICE DISTRICT.

In Manhattan the territory colored red on the accompanying map, lying between Chambers Street on the south, Spring Street on the north, the Bowery on the east, and Hudson Street on the west, has been chosen for the initial installation. With its proposed fire-boat connections it will practically extend to the North River front and cover approximately 400 acres or $5/8$ of one square mile, embracing the "Dry Goods District" with outlying warehouse and manufacturing sections and containing probably the greatest concentration of merchandise values anywhere to be found. This, however, is only a part of the district proposed last year by the Water Department, which extended as far north as Twenty Third Street, and was estimated by the Department to cost \$3,950,400, the amount of the appropriation made subsequently by the Board of Estimate and Apportionment and the Board of Alderman for the Manhattan Installation. There would seem to be no good reason therefore for not vigorously proceeding at once with the plans for the entire district. The plans for the partial district contemplate the following general features :

- (a) A salt-water supply from intake and pumping station at some point on the East River near James Slip with a 36 inch force main thence to (b).
- (b) Electrically driven rotary pumps will be used.
- (c) The system is to be designed for a working-pressure of 300 lbs. per sq. inch at pump and 200 lbs. at nozzle.

(b) A fresh-water supply from a 36 inch Croton Main and Pumping Station at some point, not yet determined, on land to be acquired for extension of Brooklyn Bridge Terminal, connecting with (c).

(c) A 24 inch force main extending west on Chambers Street, north on Hudson Street, on the Bowery and elsewhere, where necessary through the district, with 12 inch laterals and cross-connections to reach all street intersections.

(d) Three or four fire-boat stations with connection and intakes on the North River and presumably one or more on the East River, all so arranged that the pumping power of the fire-boats can be availed of as an auxiliary for portions of the system.

(e) New and improved fire-hydrants two at each street intersection; details not yet decided on but presumably of a capacity of about 2500 gallons per minute each as proposed by the former chief engineer in his report on the subject to Commissioner Oakley.

(f) A telephone system presumably to be installed by the Fire Department as in the Brooklyn system.

(g) Separate hydrants or other special connections for street-washing purposes, for which no provision so far as known has been made but which are contemplated in the Brooklyn system and should be included here also.

(h) Electrically driven rotary pumps will be used.

(k) The system is to be designed for a working-pressure of 300 lbs. per sq. inch at pump and 200 lbs. at nozzle.

there: (1) The gating is to be so arranged that the change from for
fresh to salt water or vice versa can be made instantly, and
are so that any line of pipe between street intersections can be
cut out without crippling the system. Also so that the fire
boats can be utilized for such parts of the system as may be
desired.

(m) No specific provision has yet been made for connect-
ions to outside sprinklers the use of which has been sug-
gested and will be referred to later.

This station thus can draw either salt
or fresh water, and is connected by several mains to (b).

B.

BROOKLYN HIGH PRESSURE SERVICE, COVERING THE
DRY GOODS AND HIGH BUILDINGS DISTRICT
AND GENERAL WATER FRONT.

In Brooklyn the territory colored brown on the accompanying
map, extending for about three miles along the East River from the
Erie Basin on the south to the Navy Yard, having an irregular width
of from half to three-quarters of a mile with a projection to the
eastward through the Brooklyn Dry Goods and High Building District,
also about half a mile wide, about one mile in length to 5th Avenue,
has been selected. For convenience sake it is geographically
divided into three numbered sections having an aggregate approximate
area of 1340 acres or somewhat more than 2 square miles.

The plans for this district have been adopted and bids for
the pipe system have already been asked for. To a certain extent

(r) A telephone system for Fire Department use in connection with the high pressure system, is proposed and necessary but the Water Department are not undertaking to provide it. See

- 5 -

therefore the Brooklyn system may be considered as a precedent for Manhattan where the conditions are similar. Its general features are as follows :

Working purposes are considered in the plans as possibilities

(a) A salt-water supply from intake and pumping station on the East River at the foot of Joralemon Street; also a fresh-water supply at the same station from two directions,

(b) a 30 inch extension from the present Atlantic Avenue 48 inch main and the present 24 inch along the water front from the eastward. This station thus can draw either salt or fresh water, and is connected by several mains to (b).

(b) A fresh-water supply from a 48 inch main of the present Brooklyn system and a pumping station adjacent to Washington Park.

(c) Three lines of 20 inch force mains, one for each section, extend from (a) and two lines of 16 inch from (b) all ramifying into a common system with 12 inch laterals and cross-connections which form a somewhat complicated network extending over the entire district.

(d) Connections for fire-boats are to be provided at seven selected points distributed along the water front. An eighth fire-boat station might with advantage be added near Joralemon Street.

(e) New and improved fire-hydrants are provided on all the mains and laterals: in locating them great care has evidently been exercised to cover the district properly.

capacity of both stations can be delivered with 225 lbs. at base of hydrant.

(f) A telephone system for Fire Department use in connection with the high pressure system, is proposed and necessary but the Water Department are not undertaking to provide it. See "Recommendations," hereinafter.

(g) Separate hydrants or other form of connections for street-washing purposes are considered in the plans as possibilities and short removable sections of pipe are introduced into the line at every fire hydrant to permit of their introduction without interrupting the service.

(h) Electrically driven rotary pumps will be used at both stations, with current furnished from either or both of two sources.

(k) The entire system of mains, laterals and hydrants is designed for a working pressure of 300 lbs. With 300 lbs. at the pumps and an allowable pressure of 220 lbs. at base of hydrant (205 lbs. at the nozzle) the delivery at the Erie Basin, the most distant part of the system, would be 9500 gallons per minute, as calculated by the department engineers. With an allowable hydrant pressure of 165 lbs. the amount of water that would be delivered at the above point would be 12,000 gallons per minute. With an allowable pressure of 220 lbs. at base of hydrant the amount of water that would be delivered on Hamilton Avenue between Carroll and Woodhull, about midway on section 3 would correspondingly be 15,000 gallons per minute. At Water and Bridge Street near the extreme northern end of section 1 it is claimed that the full capacity of both stations, (22,500 gallons per minute) can be delivered. Similarly at any point in the Dry Goods District, the full capacity of both stations can be delivered with 225 lbs. at base of hydrant.

(1) The district is designed to be operated on the "normal full" principle, with all gates open excepting when closed for some particular cause but there is a complete system of gates whereby any section can be isolated or any length of line cut out. Also salt or fresh water can be used at will and the fire-boats can be brought into requisition for practically any part of the system.

(m) No provision has been made for outside sprinklers.

cylinder, single-acting, C.-cycle type gas engines. These

engines. **BROOKLYN HIGH PRESSURE SERVICE COVERING**
by. **THE CONEY ISLAND DISTRICT.**

(a) In the Borough of Brooklyn, at Coney Island, the territory colored green on the map has also been selected for a high pressure salt water fire service. It is located in the 31st Ward, extending along the ocean front from West Third to West Seventeenth Streets, a distance of about $3/4$ of a mile, about $1/4$ of a mile in width with an extension to Neptune Avenue on the north, between 11th Street and Stilwell Avenue covering in all about $1/4$ of one square mile or 160 acres, comprising what is known as the "Amusement Section" together with outlying residential property. Its general features are as follows:

(a) A sea-water supply from Coney Island Creek and a 12 inch fresh-water main from the present system both connected with an engine and pump house located at the Coney Island Sewage Pumping Station and so arranged that either salt or fresh water can be pumped at will. The pumps, three in number, (with space and fittings for an additional unit) are vertical, triplex, double acting pumps with a combined capacity of 3600 gallons per minute with a pressure of 150 lbs. per sq. inch at

the pumps and of 130 lbs. per sq. inch allowable at base of hydrant. These lower pressures, as compared with A and B systems before described, are justified by the moderate height of the buildings in this section. The salt water suction

mains and the fresh water main are cross-connected so that a simple adjustment of stop gates is all that is necessary to change from one supply to the other.

(b) The pumps are to be operated by three vertical three-cylinder, single-acting, four-cycle type gas engines. These engines are to be supplied with gas from a private plant near by.

(c) The pumps deliver to a 16 inch force main leading through West 12th and along Surf Avenue as far as 5th St. and West 17th St. with 12 inch laterals extending towards the ocean on intersecting streets, walks and the New Iron Pier. From the laterals extend 8 inch connections to the fire-hydrants.

(d) No connections for fire-boats are provided in this system for the reason that the fire-boat service does not extend thither. It would be a simple matter however to provide them on the New Iron Pier should they be found desirable at any time.

(e) The plan at present provides for 20 three-nozzle and 30 four-nozzle fire-hydrants distributed through the district; the former have three 2 1/2 inch outlets and the latter have one 4 inch and three 2 1/2 inch outlets.

(f) No provision has yet been made for telephonic communication. It is presumable that this will be required but the short distances involved do not call for an elaborate system.

(g) No separate hydrants for street washing or sprinkling are contemplated and suggestions in regard to same will be found in the "Recommendations."

(h) As stated above, gas engines and reciprocating pumps are to be used. The reasons assigned for this choice of method are the proximity of the gas works and the fact that the engines can be cared for and operated by the employees of the City Sewage Station.

(k) The system is designed for a working pressure of 150 lbs. per sq. inch at the pumps and about 130 at base of hydrant. The ultimate capacity will be about 4,500 gallons per minute or say 3,300 gallons per minute at present at any point on the system at maximum pressure. The pipes are to be tested to 400 lbs. per sq. inch with a line test of not less than 225 lbs. per square inch under specified minimum leakage.

(m) No provision has been made for connections to outside sprinklers which latter have not been contemplated at Coney Island, as far as known to the writer.

SECOND: That the Fire Department should install for its own use a telephone service connecting the Pumping Station with stations at the more important street intersections.

THIRD: That in the event of an outside sprinkler service being deemed advisable in connection with any building or buildings in the "Amusement Section," provision for suitable permanent connections with the supplementary system should be made, said connections to be under the control of the Fire Department.

GENERAL CONCLUSIONS.

BROOKLYN DRY GOODS, HIGH BUILDING

AND WATER FRONT DISTRICT:-

RECOMMENDATIONS.

The general plans and specifications for the Brooklyn sys-

....O....

tem of mains and pipes heretofore described also were furnished

THE CONEY ISLAND DISTRICT.

me. I have not yet been advised of the Water Department's de-

cision. I have been furnished with copies of the plans and specifications for the Coney Island District which work is under contract. I have carefully studied them in conference with the engineers of the Water Department and also with the builders of the pumps and engines. I take pleasure in testifying to the high degree of skill and thoroughness shown in the design and preparation.

The further suggestions I have to make in regard to them are in the nature of possible amplification of usefulness and not of criticism.

I recommend for Coney Island, FIRST: that special, separate hydrants for street-washing and sprinkling be introduced into the system at suitable points. It does not seem desirable to allow the street-cleaning force to use the fire-hydrants. The pumps could be run at reduced pressure when required for street purposes only.

SECOND: That the Fire Department should install for its own use a telephone service connecting the Pumping Station with stations at the more important streets intersections.

THIRD: That in the event of an outside sprinkler service being deemed advisable in connection with any building or buildings in the "Amusement Section," provision for suitable permanent connections with the supplementary system should be made, said connections to be under the control of the Fire Department.

of pressure in the mains. As heretofore stated provision has
BROOKLYN DRY GOODS, HIGH BUILDING
 already been made in the fire-pipes for introducing the necessary
AND WATER FRONT DISTRICT:-

The general plans and specifications for the Brooklyn system of mains and pipes hereinbefore described also were furnished
 me. I have not yet been advised of the Water Department's decision regarding the particular forms or kinds of motors, pumps, sprinklers, arranged to be controlled from the pavement by the hydrants and other appurtenances as I understand these points may not be finally disposed of until after the bids are received which by which the owners of buildings could be permitted in emergencies have been asked for.

So far however as I have been enabled to study the plans I find the design well worked out with due regard to the requirements of the situation and in compliance with the general principles laid down.

I would recommend, as to Brooklyn, **FIRST:** That the Fire Department be urged through the proper municipal authority to provide and install a complete telephone service for its use in operating this system, connecting the Pumping Stations, Fire Boat Stations and Fire Houses with street stations at all important points throughout the district, preferably as near as conveniently possible to the fire hydrants. **SECOND:** that the Water Department be urged to adopt and introduce into the new service suitable

special, separate hydrants or other form of street connection, for street washing purposes, so located as not to interfere or conflict with the use of the fire-hydrants. It is quite possible that some of the present fire-hydrants could be adapted for this purpose. A proper and necessary provision would include some form of reducing valve or throttling device to enable the street cleaners to get water at low pressure without regard to the degree

of pressure in the mains. As hereinbefore stated provision has already been made in the fire-pipes for introducing the necessary hydrant connections for street service if it is decided to use them.

THIRD: that the Water Department be urged to adopt and provide as a part of the pipe system permanent connections for outside sprinklers, arranged to be controlled from the pavement by the Fire Department, with some modification of plan to be worked out by which the owners of buildings could be permitted in emergencies to turn on the water if such an arrangement were considered desirable. Inside sprinklers in my judgment should be connected with the ordinary water supply and not with the high-pressure service.

FOURTH: that the attention of the Municipal Authorities be called forcibly to the highly favorable results from the use of outside sprinklers in other cities, which prove their enormous value and potency in arresting and preventing the spread of conflagrations as well as in affording a high degree of protection to individual buildings. The facts which might be cited make it imperative that New York, in order to have its new system perfected, must amply provide for and encourage the introduction of this most effective and at times invaluable feature of fire-protection.

MANHATTAN HIGH PRESSURE SERVICE.

My recommendations as to Brooklyn as above stated apply equally to Manhattan but on account of the relative backwardness of the plans for the latter I would further recommend that a special appeal to the proper authority be made to secure prompt co-operation between the several departments concerned.

At present there seems to be a lack of co-ordination which though entirely natural under usual conditions in this case requires to be supplied. This comment applies especially to the most important matters of locating and establishing the Manhattan High Service Pumping Stations and intakes, which as now proposed require the definite action of the four departments, of Water, Fire, Docks and Bridges respectively but which have not yet been definitely formulated. Until these points are settled no substantial progress can be made. In fairness to the separate departments I should here state that their representatives have assured me of their cordial readiness to take up relative questions as soon as definitely presented.

THE CONFERENCE AT MR. OAKLEY'S OFFICE.

The conference at Mr. Oakley's office before referred to was held for the purpose of elucidating a number of points requiring joint consideration. The subjects chiefly discussed were the use of sprinklers and the location of intakes and fire-boat stations.

It was stated definitely that the Coney Island system was all under contract and work in active progress; that the Brooklyn plans were completed and bids advertised for, not including the telephone system to be installed by the Fire Department.

It was in a general way understood that the Manhattan plans were well advanced and soon would be ready for the letting so far as the pipe system was concerned. The fact was developed that the co-operation of the Water Department, Fire Department, Dock Department and Building Department, representatives from all of which were present and took part, would be necessary as to various

provided with sprinkler protection. This is true but the simple

matters which were specified, including fire-boat stations, intakes and sprinklers and it was informally agreed that the Water Department would prepare a memorandum of requirements for the information of the others, to be followed by further consultation.

As to the Manhattan Pumping Stations which came first in the order of importance it seemed to be the belief that there was no obstacle in the way of their definite location at the points proposed but search on my part for more exact information has since demonstrated that the matter has not yet been formulated. Hence my recommendation regarding the securing of departmental cooperation. system of fire-mains in the congested district is so

In conclusion a brief reference should be made to the interesting and able communications from Mr. John R. Freeman, Civil Engineer, to Mr. Everett W. Crosby on the subject of special high service mains, which he disapproves of, and from Mr. E. G. Hopson to Mr. Henry Evans, Chairman of the Committee of Twenty of the National Board of Fire Underwriters, in support of their use, which you have referred to me. Mr. Freeman's arguments in favor of a single pipe system under moderately high pressure of say 100 lbs. per square inch serving both domestic and fire supply cannot be gainsaid in common application. His reasoning is eminently sound and convincing as to the general proposition, but unfortunately does not fully apply to New York. As he himself says: "If our large cities, like Boston, New York, Cleveland and many others, had a pressure of from 80 to 100 pounds to the square inch, the problem of controlling the fire hazard in the conflagration districts would be far advanced on the road toward solution, by the facility with which the overwhelming majority of buildings could be

provided with sprinkler protection." This is true but the simple answer to it is (1) that in New York there is no feasible way to provide the required degree of pressure excepting by pumping; (2) that to apply pumps to the entire distribution system would be a work of great magnitude, cost and time and require replacement in large part because much of it could not withstand the higher pressure; (3) 80 to 100 lbs. pressure while it might be ample for many parts of the City in connection with sprinklers would be insufficient for others. Therefore separate systems for special localities become necessities. At the same time they may be more economical, (4), to quote from Mr. Hopson's letter, "the cost of a separate system of fire-mains in the congested district is so much less than any extensive remodeling of a large water-works system that it is liable to be often the most practicable step to take in the direction of obtaining improvements."

This is notably so in this case and would be true even if we only took the fresh water supply into consideration. But in addition, in New York, is the further potential advantage of being able to utilize at need an inexhaustible salt water supply.

In regard to the relative values of high and moderate pressures in a separate system I think experience within my own observations indicates that within the limits of practicability of handling the hose and directing the fire stream the higher the pressure the more effective a given volume of water becomes. The practicable limit without special apparatus not generally applicable, is not far from 200 lbs. per sq. inch as shown by gauge behind the nozzle. A somewhat full discussion on the subject of the superior effectiveness of fire streams under high pressure will be found in my report to the Engineering Committee of The

Merchants' Association of New York on "An Auxiliary Salt Water Supply for Fire Protection, Street Washing, Sewer Cleansing and Other Purposes," published by The Merchants' Association in 1900. x

Finally, I would most strongly urge that the plans for the Manhattan installation be made to cover at the outset the entire district proposed by the Water Department a year ago, extending north to 23rd Street, instead of confining them to the portion hereinbefore described. The Department's estimate, of \$3,950,400., the amount of the appropriation subsequently granted for Manhattan, was based on the whole district and there seems to be no good reason for not proceeding at once with the entire plans as is being done in Brooklyn, there being no experimental features to be considered. On the other hand it is of the utmost importance that there should be no further delay in introducing the system throughout.

Respectfully submitted,

(Signed) FOSTER CROWELL,

January 12, 1905.

Consulting Engineer,
18 Broadway,
New York.

x "The Water Supply of the City of New York."

The Merchants' Association of New York.



New York Life Building.

PLEASE ADDRESS ALL COMMUNICATIONS TO
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FRANCIS S. HUTCHINS, ATTORNEY,
JAMES B. DILL, SPECIAL COUNSEL.

New York, Jan. 20, 1905.



Hon. George B. McClellan, Mayor;
City Hall, City.

Dear Sir:

The Merchants' Association of New York, representing a very great number of property owners and mercantile houses in the so-called business section of The City of New York who are vitally interested in the subject of fire protection, appointed this Committee to co-operate with the City authorities in obtaining the highest possible degree of efficiency in fire protection, particularly as related to an auxiliary high-pressure water supply for fire service, which is a subject of grave import to the business interests of the City, as was fittingly recognized by you in initiating this much needed improvement.

This Committee, in conjunction with the Retail Dry Goods Association, desired thoroughly to examine the plans proposed by your Administration for such a service. With that end in view, the Committee engaged the services of Mr. Foster Crowell, an engineer of high standing, whose experience is particularly valuable in relation to water supply and fire protection. Mr. Crowell, under instructions from the Committee, with the heartiest co-operation of the Commissioner of Water Supply, has made a careful

Hon. Geo. B. McClellan, Mayor;

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detailed study of the plans thus far proposed and worked out, and has rendered us a report thereon. Under instructions from the Commissioner of Water Supply, Gas & Electricity, the Department engineers supplied Mr. Crowell with all available information.

A copy of Mr. Crowell's Report is attached hereto for your information.

The Committee desires to call your attention to several points which are treated more fully in Mr. Crowell's Report. We bring this matter to your attention at this time because it is quite evident that there are certain phases of this subject which must necessarily extend into other departments than the Department of Water Supply. These must be determined as a condition precedent to the prosecution and completion of the system. We would call your attention particularly to the following points:

1: As originally outlined by the Water Department for the Borough of Manhattan, the plan for a high-pressure auxiliary water supply for fire protection contemplated a system which would cover the territory bounded on the north by Twenty-third Street, on the south by Chambers Street, on the east by Broadway from Twenty-third Street to Fourteenth Street, thence through Fourteenth Street to Fourth Avenue, down Fourth Avenue and the Bowery to Chambers Street, extending westerly to the North River. The plan at present under preparation by the Acting Chief Engineer of the Water Department contemplates a system to cover a much more limited territory, namely, between Spring Street, the Bowery, Chambers Street, and Hudson Street.

The plan outlined for the entire district, though not worked out in detail, was the basis of an estimate made by the

Hon. Geo. B. McClellan, Mayor;

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Water Department upon which was asked and obtained the appropriation of \$3,950,400. for the establishment of the high-pressure water service in Manhattan. There is no apparent reason why the district should be circumscribed, as is contemplated in the plans now being prepared, there being no experimental features in either case and no greater difficulties in one than in the other. This Association urges the extension of the plans to the district originally suggested because there are vast business interests included in that area not in the lesser area now under consideration. It is only necessary to refer, for instance, to the large number of great department stores which lie contiguous to and below Twenty-third Street, and to the development of the section lying between 14th and 23rd Streets and Sixth and Fourth Avenues, as a wholesale center.

2: The plans and development of the Brooklyn high-pressure system, begun at the same time as the corresponding work in Manhattan, appear to have been prosecuted with such diligence that the plans for Brooklyn are much further advanced than those for Manhattan. This, too, in spite of the fact that the district in Brooklyn is very much larger than the district covered in the plans under contemplation in the Borough of Manhattan. This Committee submits that the value of the interests to be protected in the Borough of Manhattan being at least as great as those in Brooklyn, Manhattan interests are entitled to as speedy prosecution of the work, with the consequent relief, as is being done in the Borough of Brooklyn. We therefore urge that this work be taken up with renewed vigor and energy by the Department of Water Supply in the Borough of Manhattan and, if necessary, a special engineer be

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assigned thereto.

3: As a result of study given by this Committee to the subject of outside sprinklers as protection against fire, the conclusion has been reached by us that the use of such a system on the part of property owners would be a most valuable adjunct to the fire protection afforded by the municipality. Every facility should be given to property owners to install outside sprinkler systems. You will note that in his Report Mr. Crowell states that neither in the Borough of Manhattan nor in the Borough of Brooklyn has provision been made in the plans prepared by the engineers for the connections which would be necessary to enable private owners to install outside sprinkler service.

We respectfully submit and urge that the plans be immediately amplified to provide for such connections. We need not dwell on the inestimable importance of the introduction of outside sprinklers, in view of the highly favorable results from their use in other cities, which, as Mr. Crowell states in his report, "prove their enormous value and potency in arresting and preventing the spread of conflagrations, as well as in affording a high degree of protection to individual buildings."

4: In the plans as prepared by the Borough of Brooklyn there has been contemplated, though no provision has been made therefor, separate hydrants so devised as to be available for use for street cleaning purposes. In the plans for Manhattan such provision has not even been contemplated. This Association having in mind the condition of the present water supply, and having in mind the vast benefit to health and the consequent decrease in the

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death rate of the city which results from street washing, most earnestly recommends that the plans in both Boroughs be amplified to provide necessary hydrants for this purpose. It further recommends that these hydrants be separate and distinct from the hydrants to be used by the Fire Department for fire-fighting purposes.

5: In order to make this system thoroughly efficient, it is absolutely essential that proper provision should be made in both Boroughs for telephonic or telegraphic communication for fire purposes. In the Borough of Brooklyn it is contemplated by the Water Department that the telephone system will be installed by the Fire Department. The Water Department is therefore making no plans for this phase of the system, nor, as yet, has the Fire Department done anything. In the Borough of Manhattan the plans have not yet reached that stage of development, but it appears that no provision whatever is contemplated. The Committee deems the question of communication so vital to the efficiency of the system that this matter should be decided upon before the actual work of construction begins, particularly in view of the fact that it may be necessary and advisable that small pipes for telephone or telegraph wires should be laid directly over the water mains.

6: The question of communication by telephone or by telegraph involves action by the Fire Department. The location of pumping stations in Manhattan may involve action by the Bridge Department, as it is contemplated that one of the pumping stations shall be placed on property to be acquired by the Bridge Department for a bridge terminal. The erection of a pumping station

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on the dock front may involve action by the Dock Department. Matters pertaining to the private outside sprinkler service may involve action by the Building Department. There may be other departments involved in various phases of this work. We submit, therefore, that it is essential that the basic plans should be prepared immediately in their entirety. In the preparation of the plans, the co-operation of these coordinate departments should be sought by the Water Department, which Department should give them the necessary information and definite data on which they can act so as to co-operate. We understand that in Manhattan, at the request of the Commissioner of Water Supply, Gas & Electricity, a conference was held with the representatives of some, if not all of the Departments referred to, who stated their willingness to co-operate just as soon as detailed data and information could be forthcoming.

In view of the situation to which we have referred, we earnestly appeal to you as the chief executive officer of the City, who has already shown his interest in this ^{momentous} matter, to urge the preparation of comprehensive plans in their entirety and to expedite the immediate co-operation of these various departments in the perfection of the plans and the prosecution of the work, to the end that the finished result may be obtained in both Brooklyn and Manhattan, to the extent as originally planned, at the earliest moment.

RESPECTFULLY SUBMITTED,

Chairman.

Wm. A. Chambers
Insurance Com' Merchant & Assn of N.Y.
Ed. Bloomingdale
President Retail Dry Goods Association
NYC

If the city of New York determines that it will be necessary to take water from lands and streams, in counties outside the city limits, to which lands and streams rights have been secured, or are claimed, by other corporations or persons, and proceeds to condemn those lands and streams, litigation will ensue; pending which there will be uncertainty and delay.

The corporations or persons having or claiming such rights, to the use of water the city may need, intend to use the power of such water for the generation of electricity to be supplied to the public residing in, or adjacent to, the counties in which are situated the lands and streams from which the water is to be taken; that is for the public use.

There is a conflict of rights and interests which, if enforced by either party against the other, must effect an injury to those whose rights are taken or abridged.

These conflicting rights and interests may be adjusted on equitable terms, giving to both parties all that is necessary for either to have, and without inflicting injury upon either.

An agreement may be made that the corporations or persons having the right to so use the power of the water for the generation of electricity shall build the reservoirs and aqueducts required for such use of the water, above the level at which it may be agreed the city shall receive the water; and that the water, having been so used, shall be delivered to the city; the city receiving it in a storage reservoir to be built by the city for that purpose.

By such an agreement the cost of the works above the level of the city's storage reservoir will be born by the corporations or persons who build them, reducing, by that much, the cost of the works to be constructed by the city.

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By such an agreement the cost of the works above the level of the city's storage reservoir will be born by the corporations or persons who build them, reducing, by that much, the cost of the works to be constructed by the city.

The terms and conditions upon which this can be done, may be determined by the parties at interest, if the city authorities will consider the advisability of such agreements as may be necessary to so secure the rights of all concerned without conflict or litigation.

"Public ownership waste exceeds corporate profit"
"There is such a thing as confiscation by taxation"

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There are many good citizens, of all parties, who, while unable to give much time to public affairs, wish to have good and economical government and are willing to give their influence and pay a small membership fee to defray the expenses of organizing and making their combined influence effective. To this end, The Civic Association of New York has been formed, with a Board of Managers, consisting of the officers and one additional member for each one hundred members of the Association.

It will endeavor to focalize public opinion and co-operate with kindred organizations to accomplish the objects of the Association which are briefly expressed in the above heading.

Information must be gathered, printed and persistently disseminated to counteract the influences toward bad government which are ever active, especially in municipal affairs. Individual opinions are like drops of rain—separate they are powerless, but combine them and they make the torrent of public opinion which sweeps all before it.

THE CIVIC ASSOCIATION OF NEW YORK

An Organization to Promote Good Government and Equitable Taxation

OFFICE : 90 WEST BROADWAY, COR. CHAMBERS STREET
(BOROUGH OF MANHATTAN)

New York,.....*March 6, 1905.*.....

Hon. Geo. B. McClellan,

10 North Washington Square, City.

Dear Sir:-

Knowing how much you are interested in the question of an adequate water supply for our City, I thought you might be interested in the enclosed Report of the Committee on City Affairs and the Committee on Forests of the Board of Trade & Transportation.

Yours truly,

F. B. Thurber



INCREASED WATER SUPPLY

—NECESSARY FOR—

Greater New York

A STATE WATER COMMISSION AND A NEW YORK CITY WATER SUPPLY
COMMISSION ADVOCATED BY THE NEW YORK BOARD
OF TRADE AND TRANSPORTATION.

The Joint Committee composed of the Committee on City Affairs and the Committee on Forests, appointed by the New York Board of Trade and Transportation to investigate, consider, and express its conclusions upon the subject-matter of this report—that of an increased supply of pure and wholesome water for household purposes as well as an increased supply for all other purposes for the Greater City of New York—respectfully submits that it will require at least five years to procure water from the water sheds now in view, and that the demands now being made upon the existing sources of water supply of the different boroughs leave such a small reserve to meet the deficiency of dry years that immediate action is necessary to provide against the possibilities of water famine.

In the consideration of this question your Committee has been naturally led, and indeed from the very necessity of the case, to give no little attention to the subject of the population, past and present, of the Metropolis, and, from such facts as it might derive from it, as well as from certain features which the present life of the City reveals, to make some forecasts as to its population in the near and more distant future.

Starting in the year 1800 with 60,000 inhabitants, the increase in New York City proper, including the Bronx, in the century just past has been equal to an average gain every decade of about 43.34 per cent., while in the last five decades Brooklyn has surpassed this in its average growth, having during the last two decades more than doubled its population. But this rate of increase has been surpassed by the Borough of Queens which in the last census decade increased its population by almost 76 per cent. In the

same period the average increase of the population of the City, including all the Boroughs, has been close to 38 per cent.

Assuming, however, that the population is now 4,000,000, and allowing it an increase of 30 per cent. for each decade for the next two, in the year 1925 it will have increased to 6,760,000, and during the next three decades, granting it grows at the lesser rate of 25 per cent. each decade, the inhabitants of the City in the year 1955 will number more than 13,000,000. For such a huge population not only room must be found in which to live, but water in all its multifarious uses must be supplied if the vast and varied interests and necessities of the people are to be properly conserved and protected.

While the aggregation of so many millions of human units in these huge hives of humanity called cities is, in a degree, due to the normal increase of population which has been obtaining in every habitable region of the globe, the fact is that the growth of such cities as London, New York, Paris, Chicago, Berlin, Vienna and Philadelphia, and, for that, of all large cities, has been occasioned by the improved and increased methods of transportation of the living, as well as of all inert material by land and water during the last century.

In the Borough of Manhattan, which has been restricted in its expansion except to the north by being surrounded by water, the evolution from the old lumbering omnibus to the horse-cars, and from these to the existing methods of transportation, has wrought a wonderful transformation in its life; and to this application of improved conveyance is to be attributed so much of its marvellous growth in wealth and population. To this also is due the development of the Borough of the Bronx, a "terra incognita" a few years ago to most of those living in the other boroughs, but which now is giving every promise of rivalling the other sections of the Metropolis by its abnormal increase of population and prosperity, its increase in the former being equal to about 128 per cent. in the last census decade.

The fifty years under consideration, from the year 1905 to that of 1955, in the life of the city is a short span of time. But, brief as it is, it enables your Committee in forecasting

the growth of its population to present in a more definite and intelligible manner some facts bearing upon the all-important problem of its water supply, not only for the immediate but also the more distant future.

The solution of the first problem to provide homes for the city's increasing population is already assured by the extension and expansion of the present subway system with other means of rapid transit north beyond the Borough of Manhattan, and by the completion of the bridges over, and the projected tunnels under the East River, supplemented by some system of rapid transit with the Boroughs of Brooklyn and Queens and other sections of Long Island now but sparsely settled.

The present purpose of the city authorities, as is generally understood, is to procure such an additional water supply as they consider necessary from the Catskill region, having been prohibited from taking the necessary supply from east of the Hudson River.

The estimates of the possibility of water yield of this region vary from about 450,000,000 to 900,000,000 gallons daily. To assume the larger amount as a basis of supply is to assume for the water-sheds under consideration an exceptionally large yield per square mile not supported by actual data; so much so that your Committee prefers to assume a yield of 650,000,000 gallons a day, the same being equal to a yield of about 837,000 gallons per square mile a day, and an average large one for these wooded reliefs.

At the same time it is to be remembered that the heavier the draught for a supply of water made upon that section of the State, the more restricted will become the territory available for recreation and recuperative purposes for the masses at this end of it and now, constituting more than half of its entire population, with the certainty that this difference in its favor will continue to increase. As the population not only of the City but of the State increases and the facilities for transportation to the Catskill region are improved, the demands upon that favorite summer resort, which now counts its visitors in search of health and recreation by many thousands, will grow continually. Thus we are brought to this dangerous situation in connection with drawing upon those water sheds as a source of water supply for the City of New York—that as de-

mands upon them for a water supply are made to meet the necessities of the increasing population, the demands upon the region also as a pleasure and health resort will correspondingly grow, and with these the consequent increasing danger of water pollution and from many also afflicted with disease of various kinds. A constant vigilance therefore, and possibly the filtration of the supply from one or more of the local water sheds in the Catskill region, will be necessary to a use of the waters of this section.

The maximum yield that can be expected from the Croton, Byram and Bronx basins, taken together with the increased storage of the new Croton dam, will not be over 350,000,000 gallons daily. If to this is added that of the Boroughs of Brooklyn, Queens and Richmond, which it is possible may be made to yield 200,000,000 gallons daily, and the estimated yield of the Catskill region of 650,000,000 gallons daily, the total of 1,200,000,000 gallons per diem will express the yield of water of the areas which are to furnish the Greater City of New York its water according to the plans now under consideration by the city authorities.

Notwithstanding it is the greatest manufacturing community in the Union, the City of New York uses less water per capita than any of the large cities of our country; and any doubt that may have arisen as to its retaining this commanding commercial position, owing to the high and increasing values of its real estate or for a lack of sufficient building space, has been dissipated by the projected facilities for opening up the hitherto unoccupied territory of Long Island. For the sections to the north of the Borough of Manhattan the same is true, but not to the same extent.

Referring to the estimated population of the City in the year 1925 as 6,760,000 and that the use of water per capita daily at that time will be but 155 gallons, the daily consumption of the entire city will be 1,047,800,000 gallons, an amount dangerously close to the total yield of the areas now drawn upon and including that which it is proposed to secure in the Catskills and other sources now being developed. It will be noted that no account has been taken of the additional consumption of water each day by transient visitors at the hotels, and also by the thousands doing business in the city but belonging to Connecticut, New Jersey and the sections outlying the city,

all of which will be in rapid transit communication with us, and which without a doubt will enable us in time to expand our present limits and absorb suburban territory which now seems to be beyond our possible reach.

The consumption of water per capita of the city, small as it is compared to other American cities, is very large compared with that of European cities, being more than twice that of Liverpool, London, Berlin, and almost double that of Paris which uses a large volume of water for flushing purposes. But the necessity of preventing this enormous waste will never be properly recognized until the inhabitants of our city are brought to an actual realization by the hardships and suffering attendant upon a continued drought due to natural and unforeseen causes. As to the introduction of a system of water metering into the City of New York, it is the opinion of your Committee that although various circumstances at present existing offer serious difficulties to such a desirable end, they are not insurmountable. The common indifference of the people to the waste of water which apparently costs most of them nothing, and the general suspicion and the unfortunate attitude of public opinion that some motive other than that of municipal economy and advantage lies behind any attempt to oversee and control the use of water by metering may make difficult the work of enforcing proper economy.

It is to be seen that the present and the prospective sources of water supply of the Catskills will in all likelihood be drawn upon for their maximum yield by or before the year 1925, and that other sheds or sources of water must be found to meet the constantly increasing consumption of the City.

It will then remain to choose between taking from the Hudson above Poughkeepsie the water it needs by pumping or to go north for it to the Adirondacks or the Great Lakes.

It is generally conceded that the water of the Hudson has already become polluted, and as time goes on and it continues to receive the drainings of its tributaries and the scourings and filth of the various towns and cities destined to arise upon its banks, and further inland, this noble river and highway of commerce, whose waters are ploughed by the keels of all nations, will be degraded more

and more to the purposes of the common sewer unless this is prohibited, as it can be, by legislation,

While it is true the waters of the Hudson can be filtered as are those of various cities in this country and in Europe, the question at once arises, Will the people of the Greater City of New York prefer these for household purposes to those purer ones to be supplied by the streams and lakes of the Adirondacks or the Great Lakes?

Should, however, the filtered waters of the Hudson be taken in preference to those of the Adirondacks or the Great Lakes, it would be necessary, in order to prevent those of the former from becoming brackish from the inflow of the salt water, owing to the withdrawal of the fresh water for city uses, to build a system of compensating or other reservoirs to impound the surplus waters of the Adirondacks due to heavy rains and freshets. By this means the annual floods that devastate some sections of the State could be prevented, and the flow of the Hudson regulated in seasons of dry weather to meet the water requirements of the city as well as those of navigation.

Whether the city adopts the plan of getting its increased water supply from the Hudson River, or the alternative one of going directly to the Adirondacks or the Great Lakes, and bring its water by an aqueduct line of about 200 or 300 miles long, it will, in the judgment of your Committee, be necessary to have its plans for doing either supplemented by a State Water Commission, or one acting in unison with it to such an end.

A system of water supply carried out on such lines could be made comprehensive and elastic enough to meet all the future requirements of this City for a bountiful supply of water. At the same time it would dissipate forever the periodical apprehensions that accompany the possibility of a water famine. All cities, towns and communities accessible to its conduits and aqueducts could share its common advantages, and contributing by assessments according to the benefits derived from it would assist so far to its maintenance. Such a plan of future water supply for this city would be much cheaper than to procure it otherwise, the cost of constructing a system that would supply it being shared in part by other sections of the Commonwealth. Unless some such system is accepted

to assure for itself a future and adequate supply of water, the city, as its population and its water demands increase, will, in all probability, find itself subject to such restrictive measures as may be inimical, if not fatal, to some of its interests.

This Board has frequently pointed out the importance and commercial necessity of conserving the vast water resources and water sheds of the State for future power and industrial purposes, to mitigate the evils of annual recurring floods and for the manifold uses of our rapidly increasing population in the cities of the state.

Measures to carry into effect the first two of these under state control have been already adopted and a State Commission exists. It is probable that the development of our water powers, now but comparatively little drawn upon, will, within a few years, surpass the present predictions of the most sanguine. The attainment of this very desirable object, however, will carry with it a menace to our cities whose present provision for a water supply for domestic and other uses is inadequate, because if the needs of a water supply for domestic purposes are not provided for contemporaneously with the water power development, the cities will, at no distant time, awaken to the realization that all suitable water sheds have been preempted and have passed beyond their reach. Hence it behooves us to force upon the attention of our city and state authorities the fact that a comprehensive state system of water supply is imperative and must be provided for along with the water power development so that it may be availed of when the present local sources of supply have become inadequate.

The City of Greater New York is now entering upon a stage of progressive activities that marks an epoch in its surprising development. The opening up and operation of the Subway, already taxed beyond its transportation capacities, the construction and extension of the system of tunnels now projected or in process of building under the Hudson and East Rivers, the completion of the bridges conducting to the Boroughs of Long Island and opening up a territory capable of homing a vast population, the improvements now under way at the terminals of the railroads entering or about to enter our city, open up perspectives to a material

advancement hitherto unknown and undreamed of. All other cities it has surpassed in the number of its inhabitants save London. This it is now overtaking, its rate of increase each decade being such that in a few years it will exceed it and stand alone, the Empire City of the world.

While a number of Commissions and other officials have heretofore made investigations, prepared plans and based recommendations thereon for increasing the water supply for the City of New York, all these admirable efforts have gone no further because power has been lacking to carry plans into execution, and changing administrations have again and again gone over the same ground halting at the same point for the same reason.

What is needed is a continuing power to execute as well as to plan, and the Mayor's bill as recently amended appears to meet this necessary condition.

We have indicated considerations which, in our judgment, point to the necessity for a broader and more comprehensive plan than that now contemplated by the City Administration, but there appears to be nothing in present plans incompatible with a broader plan to meet the needs of the Greater City, and we believe that the amended City bill and the State Commission bill should both be passed, looking to the practical intelligence of the City Commission, when appointed, to give due weight to the suggestions herein contained.

EDMUND PHILO MARTIN,
Chairman,

PETER F. SCHOFIELD,
JAMES MACNAUGHTON,
HENRY S. HARPER,
WM. JAY SCHIEFFELIN,
Committee on Forests,

W. H. GIBSON,
Chairman,

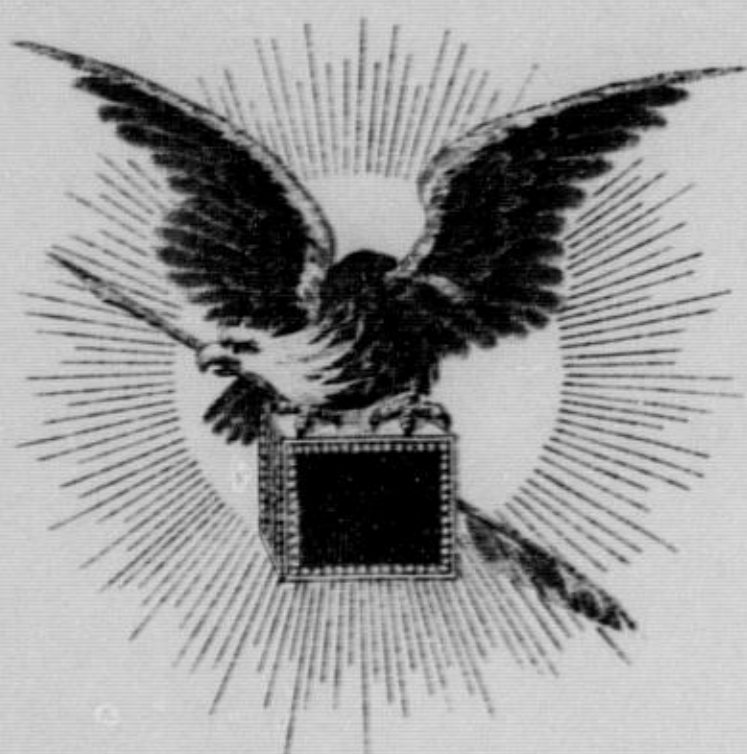
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LUDWIG NISSEN,
JOHN A. SLEICHER,
FRANK B. GREEN,
PHILIP S. TILDEN,
WILLIAM C. REDFIELD,
JAS. R. T. MCCARROLL,
JOHN T. BARRY,
Committee on City Affairs,

JOINT COMMITTEE ON WATER SUPPLY,
New York Board of Trade and Transportation,
203 Broadway.

FRANK S. GARDNER,
Secretary.

WM. MCCARROLL,
President.

NEW YORK, March 30th, 1905.



WILLIAM HALPIN,
PRESIDENT.
LOUIS STERN,
TREASURER.
ARMITAGE MATHEWS,
SECRETARY.

6-27
Republican County Committee

*No. 1 Madison Avenue
Metropolitan Building. Cor. 23^d Street.*

New York, March 25, 1905



Dear Mr. Mayor:-

Yours of the 23rd instant in relation to the matter of legislation pending in regard to additional water supply for this City received. I am in thorough accord with you in your efforts to obtain the legislation necessary to provide for the grave need of the City in this respect and will continue to afford the matter the full support of this Committee and whatever I can do personally. We are, as well, in full sympathy with your position of opposition to the interests which you say for years have been planning to make profit for themselves out of the need of the City for water, as it would be most disastrous to the City's best interests should they succeed and our efforts shall include one to oppose the attitude of the interests you refer to. I have not yet read the bill reported from the Assembly Cities Committee this past week as amended but presume that it comprehends a proper care for all the interests involved which should be conserved. As I view it, the districts from which a supply of water will be taken for this City have interests in the matter which should not be violated, and the City is strong enough, as well as fair enough, to accord to them full consideration for all damages direct or collateral which would ensue as the result of taking a supply of water for the City from such districts.

I feel assured that this view must be yours and with this understanding I am glad to afford you the assurance of the full co-operation of the Republican Organization of New York County to secure for the City of New York the legislation needed for an additional water supply, while I remain,

Sincerely yours,

Hon. George B. McClellan,
Mayor, New York City.

William Halpin

President.



New York Life Building.

PLEASE ADDRESS ALL COMMUNICATIONS TO
THE MERCHANTS' ASSOCIATION.

"TO FOSTER THE TRADE AND WELFARE OF NEW YORK."

The MERCHANTS' ASSOCIATION OF NEW YORK.

346 BROADWAY.

TELEPHONE: 935 FRANKLIN.

CABLE ADDRESS: "MERCHASSON," NEW YORK.

S. C. MEAD, SECRETARY.

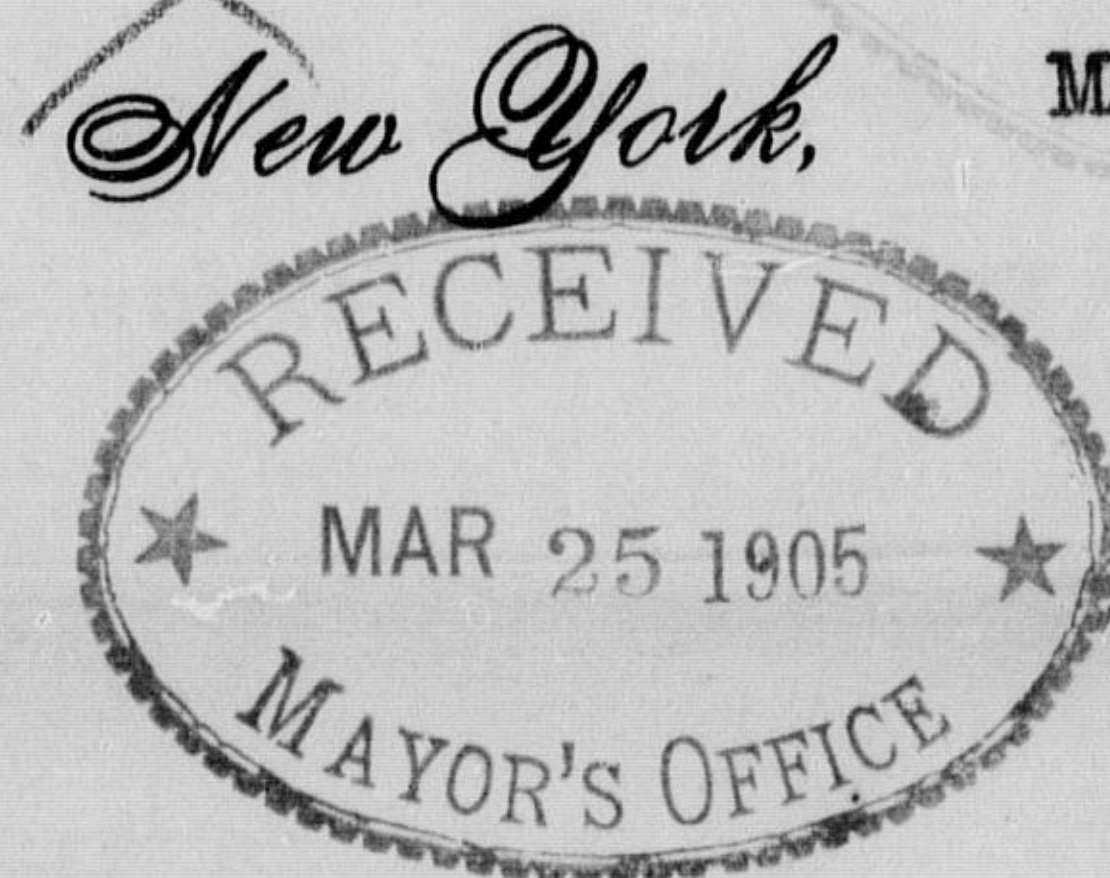
H. D. DUMONT, BUS. MGR.

OFFICERS AND DIRECTORS:

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JOHN C. EAMES, 2d VICE-PRES.,
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HENRY R. TOWNE,
GEO. FREDK. VIETOR,
CHARLES R. LAMB,
HENRY EVANS,
W. H. McCORD,
HERMAN A. METZ,
DANIEL P. MORSE.

FRANCIS S. HUTCHINS, ATTORNEY.
JAMES B. DILL, SPECIAL COUNSEL.

March 25, 1905.



Hon. George B. McClellan, Mayor;
City Hall, New York City.

Dear Sir:

We acknowledge receipt of your letter of the 23rd inst. to The Merchants' Association, and again assure you of the readiness of The Merchants' Association to co-operate with you in all proper ways for the enactment of legislation which will ensure an adequate increase in the water supply of this City.

From the time of its introduction we have favored and supported the Bill introduced in the Legislature at your instance and now pending there, and, with the amendments which we understand have been added, it has our unqualified endorsement.

Throughout the discussion we have taken the ground that all legislation on this subject should safeguard the interests of other communities coequally with those of this City. In our judgment the Agnew Bill now pending, providing for the appointment of a State Commission, with the amendment requiring it to act within ninety days on applications from The City of New York, meets this requirement and the views of those who represent the interests of other parts of the State, without curtailing the just rights of this City and the practical efficacy of the Hawkins-Tompkins Bill,

Hon. George B. McClellan, Mayor;

for which reasons we are also in favor of the passage of the Agnew Bill.

With the enactment of both of these Bills into law, the way will be clear for prompt action in the direction of securing for New York that increase in its water supply which it will surely require by the time the necessary works can be completed, if not before.

Respectfully,

COMMITTEE ON WATER SUPPLY,

THE MERCHANTS' ASSOCIATION OF NEW YORK,

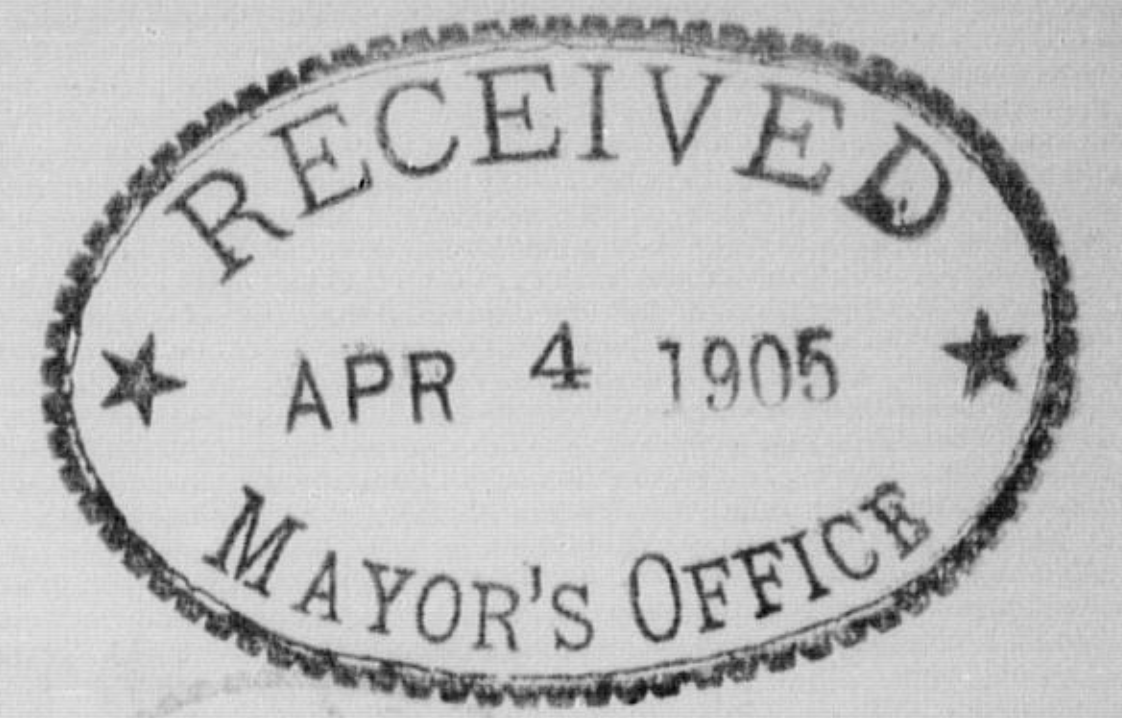
By

Henry R. Towne

Chairman.

Committee on Water Supply:

Henry R. Towne,
E. P. North,
E. E. Olcott,
Frank J. Goodnow,
Henry W. Goodrich,
J. Hampden Dougherty,
Ernst J. Lederle.



New York, April 4, 1905.

Hon. George B. McClellan, Mayor,

Dear Sir:

Various civic organizations of the City have supported you in your attempt to provide for an additional water supply by a bill which should insure, as you said in Albany, three things - Home Rule, Non-Partisanship and Speed - each of which you declared to be essential.

The Charter of the City already provided for two of these essentials - Home Rule and Speed - through Sections 471 and 472, which clothed the City's Water Department with ample power to take whatever steps seemed wise in order to secure an additional water supply; but you publicly announced that so great an enterprise, involving an expenditure of at least one hundred millions of the City's funds and requiring certainly ten and probably fifteen years for its execution, should be absolutely removed from the exigencies and vicissitudes of partisan politics and should not be subject to the varying policies of changing City administrations.

To this end, a bill was drawn in your Corporation Counsel's office, which had for its most marked feature a provision creating a Commission of three on additional water supply,

each member of which was to be selected by the Mayor from lists of nominees chosen by prominent business organizations of New York and Brooklyn. Each Commissioner held his place at the pleasure of the Mayor, but, if removed, the vacancy was to be filled in the same manner as the original appointment.

This provision, you rightly held, insured a non-partisan efficient Commission of business men who would deserve and command the confidence and respect of every citizen.

Because of this provision you have gained since the original introduction of the bill, in early January, one after another, the loyal support in this movement of practically every civic organization of prominence in the City.

We are informed that this non-partisan provision has been or is to be eliminated; and this change, we are told, is due to a doubt as to the constitutionality of the method of appointment you advocated and upon the basis of which you secured the support of these organizations.

We remind you that your bill originated in your office and was drawn under the advice of your Corporation Counsel that your method of appointment was constitutional.

In our opinion, if the non-partisanship provision be thus eliminated from the bill, its chief virtue is lost. No pledge of yours can bind your successor; and if the Commission on Additional Water Supply is to be merely the head of a City Department, appointed and removed at any time at the pleasure of the Mayor, it can and probably will become a political machine.

The bill with the non-partisan provision eliminated simply adds one more City Department, whose personnel and policy may change with every change in the Mayor's office.

We beg to inform you that, if the provision insuring a non-partisan efficient Commission of business men be eliminated from the bill, our organizations withdraw their support.

Respectfully yours,

The City Club,

Horace E. Deming, Chairman,

Committee on Water Supply.

The Merchants Association of New York,

Henry R. Towne,

Chairman, Committee on Water Supply.

The Citizens' Union,

Robert Van Iderstine,

Chairman, Committee on Water Supply.

The New York Board of Fire Underwriters,

Henry Evans,

Delegate to Joint Conference.

East Side Civic Club,

Gregory Weinstein,

Delegate to Joint Conference.

People's Institute,

Charles Sprague Smith,

Director.

6
BASSETT & THOMPSON,
ATTORNEYS & COUNSELLORS AT LAW,
NORTH AMERICAN TRUST COMPANY BUILDING,
135 BROADWAY,
NEW YORK.

EDWARD M. BASSETT.
WILSON W. THOMPSON.
WALTER H. GILPATRIC.
TELEPHONE 2604 CORTLANDT

April 21, 1905.



Hon. George B. Mc Clellan,
Mayor of the City of New York,
City Hall, N. Y. City.

Dear Mayor Mc Clellan,-

It seems to me that you are just right on your point regarding the change of the water bill. I am writing Governor Higgins a letter of which the enclosed is a copy and shall urge others to write him also.

Yours very truly,

Edw Bassett

copy

April 21, 1905.

Hon. Frank M. Higgins,
Albany, N. Y.

Dear Governor Higgins,-

I have talked with a good many about the protest Mayor McClellan has made against the amendment of the water bill. We do not understand that there is any purpose of taking water for power from one locality to another, consequently the riparian owners would not be damaged. The Mayor's point is that, if in the collecting, damming and transmission of potable water for New York there is an opportunity to utilize power instead of allowing it to run to waste, the City of New York should be allowed to do so. Any other plan will compel the City of New York to pay for a large amount of property and then receive only a partial and limited use of it. Speaking both for myself and for many citizens of both parties in the Borough of Brooklyn, I strongly urge that you do what you can to have the bill passed in unaltered form.

Yours very truly,

Edw. Bassett



New York Life Building.

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"TO FOSTER THE TRADE AND WELFARE OF NEW YORK."

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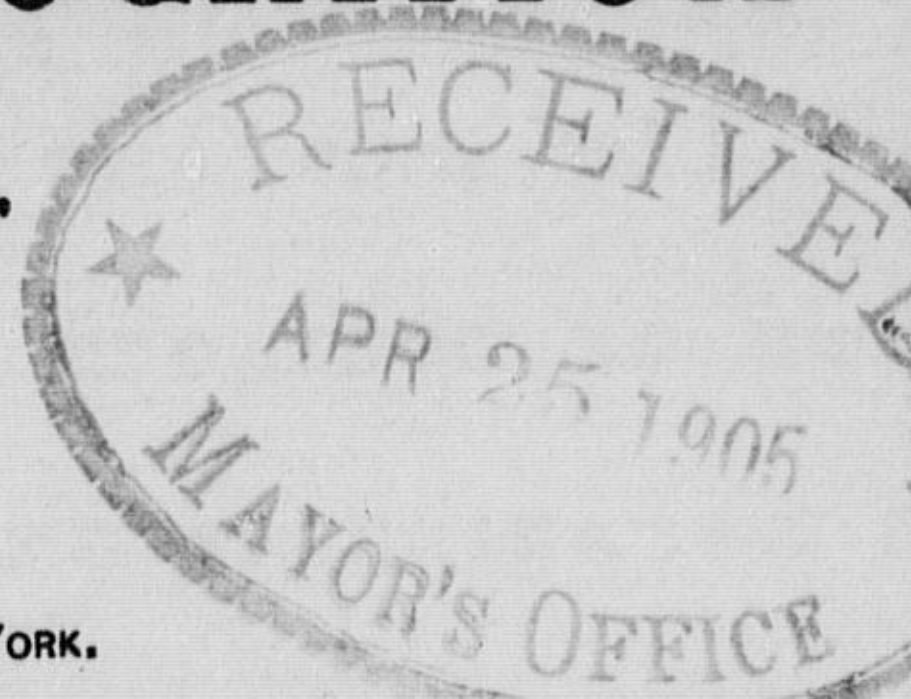
S. C. MEAD, SECRETARY.

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GEORGE FREDK. VIETOR,
CHARLES R. LAMB,
HENRY EVANS,
W. H. McCORD,
HERMAN A. METZ,
DANIEL P. MORSE.

FRANCIS S. HUTCHINS, ATTORNEY,
JAMES B. DILL, SPECIAL COUNSEL.



New York, April 24th, 1905.

Hon. George B. McClellan, Mayor;
City Hall, City.

Dear Sir:

The Merchants' Association of New York, through its Committee on Water Supply, desires to express its approval of your course in advocating the retention in the Bill introduced in the Assembly by Mr. Tompkins, "to provide for an additional supply of pure and wholesome water for The City of New York," of the provision, in Section 26, authorizing the Board of Water Supply, upon the approval of the Board of Estimate & Apportionment, to contract for the use and disposition of by-products and to utilize the fall of water for the production or transmission of power or electricity.

Inasmuch as the City is to expend a large number of millions of dollars in the procurement of additional water supply, it would be uneconomical and wasteful to deprive the City of the right of obtaining revenue from the by-products or superfluous energy which pass to it with the acquisition of title, and it is difficult to understand the reasoning which would debar it from the enjoyment of the ordinary usufruct of its property. The provisions of the bill are not mandatory but permissive, and the Legislature has recently shown its sense of the importance of the Board of Estimate & Apportionment by vesting in that body the power to grant public franchises,

Hon. George B. McClellan, Mayor;

- 2 -

heretofore devolved upon the Board of Aldermen. The Board of Estimate, the paramount authority in City matters, will not, it is to be assumed, unwisely exercise the power proposed to be conferred by your bill. If the city government were emancipated from legislative control to the extent to which it should be, this authority would now, unquestionably, rest with the City's Board.

The objection that these provisions are unconstitutional in permitting the City to enter into business, seems untenable, unless the sale of water is also violative of the State organic law, which no one will contend.

The principle underlying the provisions in question is of such importance that their retention would signalize a distinct step in advance in municipal affairs. The Committee does not wish to be construed as favoring the general principle of municipalization of public utilities, nor does it pin its approval of the pending measure for the improvement of water supply to the maintenance of these particular provisions, although it trusts that your efforts may result in success.

Respectfully yours,

COMMITTEE ON WATER SUPPLY,

THE MERCHANTS' ASSOCIATION OF NEW YORK,

By

Henry R. Towne
Chairman.

Messrs. Henry R. Towne,
J. Hampden Dougherty,
H. W. Goodrich,
F. J. Goodnow,
Ernst J. Lederle,
E. P. North,
E. E. Olcott,
Committee on Water Supply.

To His Excellency The Governor
Executive Chamber
Albany, N.Y.

I have the honor to acknowledge the receipt
of your communication of the 19th inst. regarding
the location of the City Hall and the water
supply for the City of Albany. It is the intention of the
City of Albany to build a new water supply system
which will be operated by the City of Albany and will be
a part of the City of Albany.

Since this letter was written I have seen
a printed copy of the bill with this provision
and I am glad to hear that you have
agreed to the bill.

I am glad to hear that you have
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bill.

as if it were to be available tomorrow

The right to utilize this power will be of incalculable benefit to the city, and if the people of New York whose most prudent and conservative citizens earnestly sustain this position

the chief importance of the provision in the bill at this time is that it will enable a large part of the work to be so planned and constructed as to serve both for supplying water and sewer without more expense than that required to provide for the water alone.

It is discouraging to the local administration to observe that the influences which attempted, without success, to have this provision omitted from the bill as originally drawn

for success.

the City or myself should be a significant

the City or myself should be a significant

the City or myself should be a significant

the City or myself should be a significant

of such far-reaching importance that I ask you to send to the legislature before it adjourns, an emergency measure urging the passage of this bill with the original provision in question retained.

Wm. M. Bull

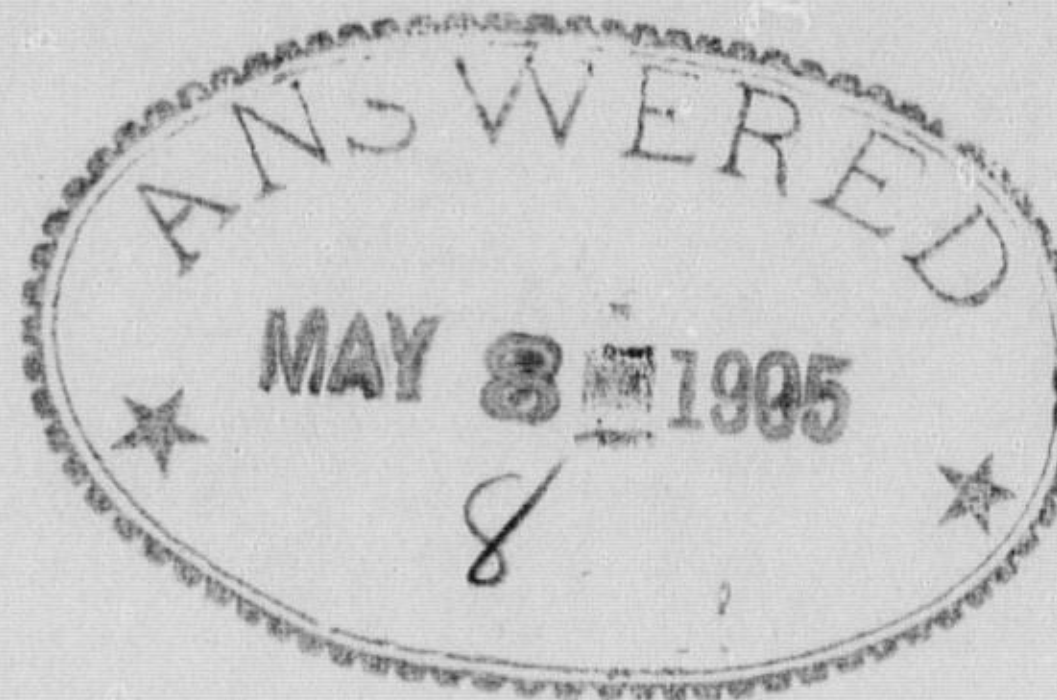
20

NEW YORK FIRE INSURANCE EXCHANGE.
MUTUAL LIFE BUILDING, 32 NASSAU STREET.

HENRY E. HESS,
MANAGER.

NEW YORK.

May 5, 1905.



Hon. George B. McClellan,

Mayor of New York.

Dear Sir:-

In compliance with instructions from the Committees which we represent we have the honor to enclose herewith copy of a final report from our engineers upon the proposed plan for a High Pressure Salt Water Fire Service for Manhattan, which we have to-day transmitted to Hon. John T. Oakley, Commissioner Department of Water Supply, Gas and Electricity, together with copy of letter accompanying the same.

Very respectfully yours,

C. G. Smith

H. E. Hess

Joint Committee for the
NEW YORK BOARD OF FIRE UNDERWRITERS and
the NEW YORK FIRE INSURANCE EXCHANGE.

ME

C O P Y.

May 5, 1908.

Hon. John T. Oakley,

Commissioner, Department of Water Supply
Gas and Electricity.

21 Park Row.

Dear Sir:-

Herewith we beg leave to submit copy of final report of the Committee of Engineers upon the proposed plan for a High Pressure Salt Water Fire Service for Manhattan, forwarded with the approval and under instructions of a Joint Committee representing the New York Board of Fire Underwriters and the New York Fire Insurance Exchange.

May we ask at your hands the favor of copies of all final plans and specifications for the work as same may be ready from time to time?

Thanking you for courtesies extended to us by your Department, we are

Respectfully yours,

(Signed)

C.G. Smith
H.E. Hess

Joint Committee for the
NEW YORK BOARD OF FIRE UNDERWRITERS and
the NEW YORK FIRE INSURANCE EXCHANGE.

CHRYSTIE, BRIGHTMAN & DOUGLAS
COUNSELLORS AT LAW
50 BROADWAY



CABLE ADDRESS "KRISBRIT"

New York May 11, 1905.

C O P Y.

Board of Estimate and Apportionment,
City of New York.

Gentlemen:

The Staten Island Water Supply Company makes the following propositions:

First. That the City of New York purchase the property and franchises of the company at a valuation to be determined by a Commission of Five. Two members of said Commission to be appointed by the City, two members to be appointed by the Staten Island Water Supply Company, and these four Commissioners to select a fifth member.

Second. If the City does not desire to purchase the plant the company offers to enter into a ten year contract with the City to furnish pure and wholesome water at the rate of \$60.00 per million gallons to be measured by meters at the pumping stations. The minimum amount to be five million gallons per day. The company is prepared at present to supply a maximum of six million gallons per day and will increase this maximum if desired by the City. This offer includes the use by the City of the company's mains for the purpose of distribution of the water.

These two offers, unless sooner withdrawn by the company, to expire on June 1st, 1905.

The Staten Island Water Supply Company has been engaged continuously for the past twenty four years in supplying water to the inhabitants of the first and third wards of the Borough of Richmond, and therefore deems itself entitled to have its propositions thoroughly considered by your Honorable Board before any action may be taken upon the proposed contract with a foreign corporation.

Yours very truly,

STATEN ISLAND WATER SUPPLY COMPANY
By

H. Brightman,
President,
H. L. Horton,
Treasurer.

REPORT
ON
THE WATER SUPPLY
FOR
STATEN ISLAND, N. Y.

BY
JAMES B. CAHOON C. C. VERMEULE
HENRY P. MORRISON AND JOHN BOGART
ENGINEERS

MAY 10th, 1905.

STATEN ISLAND WATER SUPPLY COMPANY,
NEW YORK,

GENTLEMEN:—

Conforming to instructions, we have investigated the natural sources of water for domestic and manufacturing uses on Staten Island as at present developed and in use by your Company, together with that used by the Crystal and South Shore Water Companies. We have further investigated the possibilities for future extension and increase of such supply as is likely to be needed in the next generation.

In reaching our conclusions we have been guided not only by our recent examination, but by the results of our personal studies extending over a period of several years in connection with the very important subject.

We have given particular consideration to three points:

1st. The requirements of the Island.

2nd. The sufficiency of the supply.

3rd. The quality of the water.

GENERAL TOPOGRAPHIC AND GEOLOGIC FEATURES OF THE ISLAND.

Topographically the Island may be considered as consisting of a hill region, which includes the area bounded on the south and east by the range of hills, extending from St. George to Richmond, and north and west by the waters of the Kill Von Kull and Staten Island Sound, and a plain region which includes the remainder of the Island. The surface of the former is irregular but the general slope is towards the north and west and the lines of surface drainage follow this direction. The maximum elevation is at the summit of a knoll near the junction of the Toad Hill and Ocean Terrace Road, where an altitude of 413 feet is reached, which is the highest point within the limits of Greater New York. The surface of the plain region is diversified throughout most of its extent by irregularly disposed rounded hills and corresponding depressions. Maximum elevations of about 175 feet are reached at Fox Hills, Clifton and at Huguenot Heights in Westfield. The general uniform drainage, varies from place to place and has no one uniform direction. The most striking topographic feature of this region is the area in the vicinity of New Dorp and Garrettsen, which is an almost uniform level plain, destitute of surface irregularities and raised but little above tide level at any point. Geologically the Island may also be considered from the same standpoint of the two regions above outlined. The ranges of hills extending from St. George to Richmond are composed of serpentine or soapstone and this rock underlies most of the region to the north and west. With the exception of a small exposure of granite near the old Tompkinsville landing, and the low trap ridge extending from Port Richmond to Linoleumville, it is the only hard rock which outcrops on the Island, although the Triassic red shale of the Newark formation is known to lie very near the surface in the vicinity of Mariners Harbor and Old Place.

The plain region is probably underlain throughout with strata of gravel, sand and clay of cretaceous age. These strata outcrop in the vicinity of Kreischerville and their presence near the surface elsewhere is assured from the general trend of the strata in New Jersey and their occurrence on Long Island and also from the fact that fossils recognized as characteristic of the formation have been found at numerous localities, from Tottenville to Clifton.

The surface irregularities of the plain region, and to a certain extent those of the hill region also, are due to deposits of drift, left by the ice sheet of the Glacial Epoch, which reached its furthest southern extension in the eastern United States on Staten Island. The terminal moraine, which marks its former extreme

southern limits, is represented by the range of rolling hills which begin at Fort Wadsworth and follow an irregular line to Toad Hill and thence bending southward to the shore at Great Kills. These hills and similar accumulations to the north consist of "hardpan," sand, gravel and boulders, without any definite arrangement of the materials composing them, and are true superficial deposits, resting upon the former exposed outcrops and exposures of the older underlying formations. Wherever these superficial deposits have been pierced or removed the underlying formations have always been found in their proper theoretical locations.

For the purpose of this report, considering those sub-surface conditions which bear directly upon the occurrence of water bearing strata, we divide the Island into two separate areas, designating one as the hill region and the other as the coastal plain region.

A ridge of gneiss and serpentine traverses the Island from Tompkinsville, southwesterly to Richmond Court House, forming the main ridge or backbone of the Island, which reaches an elevation of from 360 to 413 feet. Northwesterly from this ridge, and about three miles distant, is a parallel low ridge of trap rock extending from Port Richmond to Linoleumville. Between the two is an ancient valley which has been filled by glacial action with sands and gravels overlaid with clay.

The above valley has been fully explored already by your Company and the Crystal Water Company, and its water possibilities are fairly well known.

The coastal plain includes all that part of the Island lying southeast of the above described ridge of serpentine rock, and is larger in extent than the previously described valley. Its water possibilities have only been partially explored. The South Shore Water Company has a plant in this region at New Dorp and the wells at Tottenville are in the same region. Wells are now being driven in this plain near Midland Beach, and at the time of our visit, two wells in that locality were yielding fully 400,000 gallons daily, the prospects being favorable for a larger yield.

We shall consider first the artesian supplies available from the hill region. Your Company has in this district the following pumping stations: West Brighton, which has yielded as high as 4,360,000 gallons daily, although for reasons hereinafter stated we advise that this be reduced to 3,500,000 gallons daily.

The Bull's Head Station recently developed, which has a demonstrated capacity of 2,000,000 gallons daily.

The Springville Station which has a capacity of not less than 1,000,000 gallons daily.

The Bull's Head Station of the Crystal Water Company is also in this region, and is now supplying from 800,000 to 850,000 gallons daily.

Near the easterly rim of this valley is the Clove Pumping Station of the Crystal Water Company now yielding 1,500,000 gallons daily. The present capacity of the plants in this valley is therefore 9,645,000 gallons daily and with the West Brighton Station reduced to the lighter draft, which we recommend, the combined capacity of the five pumping stations will be 8,785,000 gallons daily.

This is the capacity of the plants as naturally demonstrated and it is our opinion that further development in this westerly region is desirable, and this section of the Island alone may be fully depended upon to produce an average of 9,000,000 gallons daily, and a maximum during the times of greatest consumption of 12,000,000 gallons daily.

In addition to the above, the coastal plain to the southeast may be depended upon to furnish an additional large quantity of water. This region, as we have said, is not so fully explored as the hill region, but the South Shore Water Company has two wells at New Dorp from which that village is being supplied. Tottenville also is supplied from wells and the Crystal Water Company is now developing a supply near Midland Beach which promises to be of large volume. The conditions along this plain are similar to those on the north shore of Long Island, where a large amount of water has been developed for the supply of the Borough of Brooklyn. It is our opinion that there are two distinct water bearing strata available, one of large lines generally at a depth not exceeding 100 feet, and the other is much deeper. The conditions for the deeper wells correspond to those in southern New Jersey, where the water bearing strata are of remarkable regularity. From exploration already made we believe it is reasonable to expect that almost as much more water can be obtained in this coastal plain as we have previously determined to be available from the hill regions. There is no reason why the total available artesian well water supplying the Island cannot be developed to at least 16,000,000 gallons daily average supply with a fair possibility that the total may exceed 20,000,000 gallons daily.

We are of the opinion that the present consumption of water on the Island is excessive, being nearly 140 gallons *per capita* daily for domestic consumption alone after deducting water metered for commercial and industrial purposes. The legitimate demands for domestic purposes should not exceed 100 gallons *per capita*, allowing for a very liberal use of water. The well water supply of the Island will, in our opinion, be ample to furnish all of the water needed during the next twenty years or more.

QUALITY OF WATER.

The complaints as to an excess of sodium chloride at certain times have had some justification, but we find that the trouble came from a certain group of wells at the West Brighton Station, which wells it will not be necessary to use in the future, and which should be, in our opinion, permanently disconnected. Omitting this group of wells, we do not find any evidence in the analysis of the waters that the sodium chloride is excessive, or is likely to cause any difficulty. Waters containing between six and seven parts of sodium chloride per one hundred thousand are in common use for city water supply, without causing complaint. With the objectionable wells at West Brighton out of service, the sodium chloride in the artesian water of Staten Island is much below these figures. The waters of the Bull's Head and Springville wells indeed have only from 1.06 to 1.77 parts per one hundred thousand of chlorine, and in general the sodium chloride will not exceed two parts per one hundred thousand. It is a well known fact in the operation of boiler plants that sodium compounds often prevent boiler scale. This is notably the case with some of the waters of western New York.

The hardness of these waters also is not excessive, and not such as to cause any serious trouble. The total hardness of the Springville and Bull's Head waters is from five to five and one-half degrees. The hardness of the water of Skaneateles Lake, used to supply Syracuse and highly esteemed, is about nine degrees. Waters below six degrees of hardness are usually classed as soft. In Jersey City and Newark many manufacturers put down their own artesian wells and use the water for all industrial purposes, although it is several times harder than any of these waters from artesian wells on Staten Island.

From a hygienic standpoint, the artesian well waters of Staten Island are entirely safe and satisfactory, and all that is necessary to keep them so is to pursue the policy already inaugurated by your Company of purchasing a considerable area of land in the immediate vicinity of the wells and controlling the same from pollution. Water which has been drawn through several hundred feet of sand and gravel overlaid by clay, as is the case with these waters, will be found invariably free from pollution through the action of natural filtration on an extensive scale. No instances are known to us in which artesian well water drawn from sand or gravel has disseminated typhoid fever or other water borne diseases. In this respect it is, in our judgment, safer than contaminated surface waters purified by filtration, especially where such filtration is conducted by private corporations and is largely beyond the control of the city authority.

Where the water is obtained by wells sunk to moderate depth

it is, of course, proper to provide for protection of the areas immediately contributory.

The fact that the boundaries of a city have been extended so as to include localities where water is taken from wells, is not evidence that the water is therefore of bad quality. The supply of Brooklyn and of parts of Queen's County comes from wells, and the character of the water would not be effected by an inclusion of those wells within the legal city limits; the character and quality can be as well, or perhaps better, protected if within the municipality.

The increase of population on Staten Island is and will be to a very great extent along the shore lines and their neighborhoods, where industrial establishments and the population following such enterprises will be directed. Drainage from these districts is directly to the shore. The development of the interior of the Island and residential districts will be helped, not hindered, by park like areas preserved for protection of water supplies, and with such protection the character and value of the water drawn from these water bearing sands will equal that which can be procured from any other source.

The water furnished by your Company is delivered from your pumps at a pressure of from 145 to 160 pounds, measured at sea level, whereas we understand it is proposed to provide a gravity supply at only 60 pounds pressure. The greater pressure furnished by you is, in our judgment, a manifest advantage, and the configuration of the Island is such that a proper low service district cannot be formed with only 60 pounds pressure. The compactly built up districts at Port Richmond, West Brighton, New Brighton and Stapleton, reaching up to the base of the hills, should all be in one service district, for the reason that the arrangement of the streets and roads is so irregular that to divide the services would cause an extremely complicated distribution system. To properly serve this district a minimum pressure of 120 pounds is required, and this pressure will provide everywhere 60 pounds at the hydrant, giving a good fire service without the use of engines. Owing to the hilly character of the Island it is highly desirable that the use of fire engines should be eliminated. After due examination, it is our opinion that this matter of pressure in the low service district is of the greatest importance. A supply from the present well pumping stations can be regulated as to pressure to meet these necessities, and an equally good fire service cannot be obtained with the water delivered from New Jersey, except by pumping, even for the low service. The cost of pumping must be added to the purchase price of the water, in order to determine its total cost to the municipality in the latter case.

With the low service provided for with ample pressure, as

above proposed, the high service district should include all of the territory about 130 feet elevation. Two service districts would be much more convenient than three. Owing to the irregular arrangement of streets and roads, an intermediate service district is almost impracticable, or at least would be extremely inconvenient. This entire high service district could be supplied readily and advantageously from wells in the Clove Valley.

To recapitulate the advantages as to pressure, the use of the well stations will make it possible to supply all parts of the Island with an ample fire service, and equal advantages can only be obtained in the case of the proposed supply from New Jersey by pumping as we have stated.

A further point which must be considered in comparing the advantages of a supply from the present well stations and a supply from New Jersey, is that the proposed supply from New Jersey will be delivered through a main about twenty miles in length, and that without ample storage on the Island such a supply would be subject to serious interruption, particularly so since the main traverses several miles of salt marsh with insecure foundations and crosses two considerable navigable channels. The cost of providing on the Island storage equal to several days supply would be considerable and must be added to the purchase price of the water, and would largely increase the cost of the water to the city.

The existing system of pipe distribution has grown up with the extension of service of the Companies, and has doubtless some of the defects which generally exist in pipe distribution thus installed. This existing system, however, can be greatly improved as soon as various streets are open, the lines of which have not yet been available and certain connections and extensions can be made to perfect the supply, particularly to the elevated parts of the Island.

(Since submitting this report on May 12th, 1905, the following has been added:)

In conclusion we are thereof of opinion that an ample supply of excellent water can be obtained on the Island itself and that by the introduction of a high service system all trouble with the distribution on the high levels can be overcome.

Very respectfully,

JOHN BOGART,
C. C. VERMEULE,
JAMES B. CAHOON,
HENRY P. MORRISON,

Engineers.

OFFICERS.

HENRY EVANS, President.
 EDWARD LANNING, Vice-Presidents.
 GEORGE E. KLINE, }
 J. E. LOPEZ, Secretaries.
 E. L. BALLARD, }
 C. R. TUTTLE, Ass't Secretaries.
 J. A. SWINNERTON, }

THE CONTINENTAL INSURANCE CO.

CONTINENTAL BUILDING,

46 CEDAR STREET,

New York City.

ASSETS.

JANUARY 1st, 1904.

Reserve for Insurance in force.....	\$5,646,414.36
Reserve for losses and all claims..	682,334.74
Reserve for Contingencies.....	300,000.00
Capital paid in in cash.....	1,000,000.00
Net Surplus.....	6,563,428.53
Total Gross Assets.....	\$14,192,177.63

May 12, 1905.

Hon. George B. McClellan,
 Mayor of New York.

Dear Sir:

At a meeting of the Executive Committee of the New York Board of Fire Underwriters held this morning I was given special authority to state to the Governor the position of the Board with reference to the advisability of signing Assembly Bill No. 1798, to provide for an additional supply of water for the City of New York.

I have been in consultation with Mr. Horace E. Deming and others interested in this matter, and I do not find myself wholly in accord with the views expressed, at least, by Mr. Deming, to the effect that this bill ought not to be signed by the Governor. Mr. Deming's contention, as I understand it is, that under the Charter you have power, acting through your Water Commissioner, to appoint a Commission practically the same as that provided for in the bill, charged with the duty of securing an additional supply of water as recommended in the Burr Commission report. He contends that, appointing this Commission, you will have the power of removal, and that, therefore, you can be held personally responsible for the faults of your Commission and Water Supply Commissioner; whereas under the bill above referred to the Commission once appointed will practically be in office for life, as its members are only removable for cause, and past experience shows that it is almost if not quite impossible to show removal cause; instance the efforts made to bring about a change in the Acqueduct Commission and to have removed certain Police Justices.

It is further contended that inasmuch as the work of the Commission provided for in bill No. 1798 must have, first, the approval of the Board of Estimate and Control, and, second, the approval of the State Water Commission, an opportunity is given to shift responsibility and open the way for political deals looking to the division of patronage, &c. I must say that to my mind there is a good deal in this contention; but at the same time, having before us always the fact that the City of New York must have an additional water supply in the shortest possible time, and that you, its Mayor, and the Governor of the State, have agreed to give it to us if the bills now under consideration become law; and having in mind further the fact that you have publicly stated that your appointees will be made from men nominated by the Chamber of Commerce, the Board of Fire Underwriters and the Manufacturers' Association, thus assuring that the commissioners will be men of standing and ability and removed from political influence, and the further fact that we have failed heretofore to secure an additional water supply under the provisions of the Charter, I am of opinion, at this writing at least, that the best interests of the City will be served by advocating the signing of the bill by the Governor. I am having a memorandum drawn to this effect, and I hope to be able to submit a copy of it to you this afternoon or tomorrow.

There are some provisions in the bill that have been objected to by those who have had it under consideration, and in order that you may know the facts I will cite them to you:

Hon. George B. McClellan, 2.

Section 13, lines 24, 25 and 26, page 14, and lines 1 to 14, page 15 - "where loss, damage or expense, direct or consequential;" the word "consequential" is objected to as opening up a very broad field for damages by a railroad that has a charter perhaps running for fifty or a hundred years. Personally, I do not see how the City of New York can expect to damage any property in any way without paying for the damage.

Section 32, page 30. The provision for compensation and expenses to the commissioners "as well as special counsel" is taken exception to, especially the provision for special counsel, which, however, is a right that the Corporation Counsel enjoys, if I am correctly informed, under the Charter.

Section 33, lines 17 to 23 inclusive, has been under discussion.

Section 34, page 33, lines 11 to 13 and lines 21 to 26. The question of the advisability of raising the expenditure limit to \$5,000 has been raised. Personally, I feel that this is reasonable, and it seems to me that this is especially true when it is remembered that the purchase of materials is limited to \$1,000, whereas the procuring of work to be done without contract only is increased to \$5,000.

Section 37, page 34, "Nothing contained in this act shall authorize the City of New York, or its representatives, to enter upon lands," &c.

Section 38, page 35, lines 1 to 5, would seem to permit the cutting of ice or fishing on any of the lakes or reservoirs now under the care or supervision of the City of New York.

Page 38, lines 1 to 11 have been under discussion.

The criticism on the ground that certain contracts are permitted to be made by the commission to be appointed to bidders other than the lowest bidder, without revision thereof by the court, has also been made. As a business man, I know that the lowest bidder is not always the cheapest in the end; and assuming that the work will be carried on by efficient and honest commissioners, I believe that this provision is a good one.

I shall be pleased to have you consider all of these points and, if you feel so disposed, to hear from you regarding them. You, of course, understand that my time is at your disposal for such purpose.

Yours very truly,

Henry Erwin

*I would prefer that this letter should
not be made public*

HE

The New York Board of Fire Underwriters,

No. 32 Nassau Street, Room 710,

Mutual Life Building.

New York, May 15, 1905

His Excellency Frank Wayland Higgins,
Governor of the State of New York,
Albany, N.Y.

Sir:

Your letter enclosing memorandum concerning Assembly Bill 1798, Int. 26, received, and on behalf of the New York Board of Fire Underwriters I beg to present the following considerations concerning the same:

The first and principal criticism of the bill is that it is unnecessary for the purpose of securing an additional water supply for this City, because the Greater New York Charter now contains provisions authorizing the acquisition of property and the conduct of the necessary work for producing an adequate water supply. (Charter, Secs. 472, 484 to 510 inclusive.)

An examination of the Charter provisions shows that there are restrictions limiting the property which may be taken (Charter, Sec. 472), and, while these limitations are not such as to prevent the work, they would no doubt impede its performance. The Charter makes all action looking to an increase in the water supply of the City dependent upon the concurrent action of the Commissioner of Water Supply, Gas and Electricity (who is, in turn, dependent upon the Mayor), together with the Board of Estimate and Apportionment and the Board of Aldermen. A failure on the part of any one of these Boards or officers to originate or approve a plan for extension of the water supply system is sufficient to prevent its adoption. The entire matter of securing an extension of the water supply system is incidental to the functions of these officers, and, as the same powers have been vested in them since the year 1897 without resulting in any serious or adequate attempt to secure the improvement, the future must be judged by the past, and there is little hope that an adequate extension of the City's water supply can be effected through action under the existing laws.

The existence of a supreme necessity for an extension of the City's water supply is admitted by all who are familiar with the present conditions, and, although the urgency for action has been apparent for years, the work has not yet been begun.

These facts demonstrate the necessity for a change in the law. It is true that the provisions of the new act, regulating the manner of acquiring necessary property by condemnation or agreement, are substantially the same and in some respects identical with the Charter provisions on the same subject; but in so far as this similarity between the two laws exists, no serious argument against the new act can be founded upon its repetition of the existing statutes. The essential difference between the new act and the Charter provisions is that the duty to conduct the proposed public work is taken from the Commissioner whose primary duty is to administer an existing municipal department and given to a new Board whose sole function will be the accomplishment

of this desired purpose. The responsibility is thus centered upon a body to be appointed with an especial view to fitness for the particular duties to be performed, and their action is freed from the necessity of elaborate references for approval required by the Charter, and made subject only to the approval of the Board of Estimate and Apportionment.

With the necessity for an enlargement of the water supply system increasing from day to day and a present condition of grave danger to the health and comfort of the people of this City, a bill which constitutes a new Board for the sole purpose of accomplishing the required work, and which gives promise that the work will be done successfully, should not be defeated because of the repetition of the statutes regulating the manner of condemning property, or because the Commissioner of Water Supply, acting with the approval of the Board of Estimate and the Aldermen, ought to do more than he has done toward extending the water supply system.

The bill is further criticised upon the ground that certain contracts are permitted to be made by the Board to be appointed thereunder to bidders other than the lowest bidder and without review thereof by the courts. In answer to this proposition it may be said that the right of any board or officer contracting on behalf of the City to accept bids other than the lowest bid for work or services is a right which must in some form be recognized if the officer to whom the conduct of the work is confided shall be able best to serve the municipality. This right is recognized throughout the Charter of the City of New York, and in making contracts under the provisions of the Charter the Board of Estimate and Apportionment may, by a three-fourths vote, accept a bid other than the lowest upon determining that "it is for the public interest that a bid other than the lowest should be accepted." (Charter, Sec. 419.) If it be admitted that the right to accept a bid other than the lowest should exist at all, then the question whether or not it should exist as a provision of this new act depends wholly upon the question of the personal honesty and efficiency of the officers who are to administer that power. There seems every reason to believe that the Commissioners who shall exercise this power under this new law will be appointed, not only independently of partisanship or politics, but solely with a view to ability and efficiency for the proper administration of their duties in directing the new public improvement.

And, upon examination of the new bill, it appears that the right of the Board of Water Supply thereby created to accept bids other than the lowest is limited even more closely than is the power of the Board of Estimate and Apportionment to accept such bids. Section 29 of the new act provides that all bids shall be publicly opened and that the Board of Water Supply shall select the bid "the acceptance of which will, in their judgment, best secure the efficient performance of the work;" or they may reject all bids and re-advertise for new bids. It is further provided in Section 31 of the new act that "no contract shall take effect until the Board of Water Supply, or a majority thereof, shall certify thereon in writing that its acceptance will, in their judgment, best secure the public interest and the efficient performance of the work therein mentioned." Business experience has demonstrated that to require a selection of the lowest bid for work or supplies would prevent public officers, contracting on behalf of a municipality, from securing the best results; and, therefore, not only in the Greater New York Charter, but in the new law, the officers charged with the duty of making contracts are properly required to apply to such proposed

contracts the test of what will "best secure the public interest and the efficient performance of the work." And in applying this test to such contracts the Commissioners to be appointed under the new law can be called to account for their actions precisely the same as could the Board of Estimate and Apportionment under the authority of the Greater New York Charter.

The criticism that the bill is objectionable because it does not contain the clause which is a part of Section 471 of the Greater New York Charter, that

"All proceedings relating to the making or approval of any such contracts may be reviewed by the Appellate Division of the Supreme Court in the first or second department on the application of any resident taxpayer"

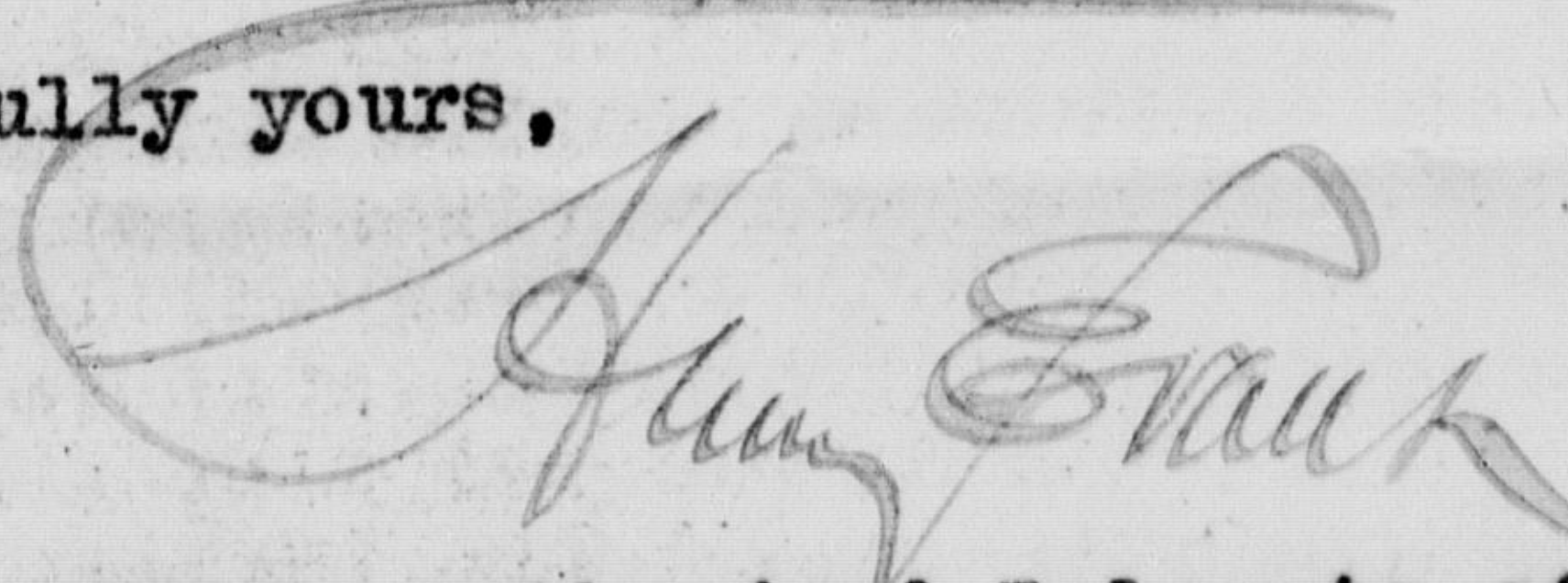
seems unconvincing as a reason for defeating the legislation, because that language is merely an expression additional to the existing right of action by taxpayers accorded by existing law, which will apply to the officers appointed under this act, though the right be not accorded by express terms of the act itself. (Code Civ. Pro., Sec. 1925; Laws of 1892, Chap. 301, (Tax Law, Sec. 264a.) Nor does the clause in Section 26 of the bill, giving to the Board of Water Supply "exclusive authority to determine what provisions shall be embodied in said contracts," oust the courts of jurisdiction to review the action of the Board to prevent waste of property or illegality, for the word "exclusive" is obviously used only to exclude other boards and officers. Moreover, it should be noted that this exclusive power to frame the substantive provisions in the contracts is to be exercised before the receipt of bids for work or material, and presents no serious danger of abuse.

It is stated that the bill "raises the limit of the amount that may be purchased without contract from \$1,000 to \$5,000." (Sec. 34.) This statement is made apparently in criticism, though the reason why it is objectionable is not pointed out. The statement itself appears to be erroneous. The express limitations upon expenditure without contract to \$1,000 or less is contained in the bill (Sec. 34, page 33, lines 22-24), and this general rule is modified by the provision that work (as distinguished from the purchase of supplies) may be ordered to the extent of \$5,000 without contract, but only upon a certificate that it is for the public interest, together with a statement of the reasons of the Board for such action. (Sec. 34, page 34, lines 7-12.)

That the bill is not without defects is conceded; but it is the opinion of the New York Board of Fire Underwriters that the defects are comparatively insignificant; a liberal standard of criticism should now be applied in order that the proposed work should be at once begun; the bill as it stands is sufficient properly to accomplish the desired purposes; all minor considerations should give way to an urgent public interest, and the bill in its present condition should therefore be signed.

I am

Very respectfully yours,



Specially Authorized Delegate of the
New York Board of Fire Underwriters.

Wm H. Burr.
Consulting Engineer.
Boulevard & 117th Street.



New York, N.Y. June 7, 190⁵

Hon. George B. McClellan,
Mayor of New York.

Sir;-

I am pleased to be in receipt of your notification of May 26th of my appointment by you as "a member of a commission to investigate the value of the plants of the existing water companies on Staten Island and the sources of water supply available through them." I am ready at any time to take up the work assigned to this commission and to do my part in completing it at the earliest practicable date.

Permit me to express my appreciation of this evidence of your confidence.

Respectfully,

Wm H. Burr.

New York, November 2nd, 1905.

BULLETIN NO.14: EXEMPTION OF WATER SUPPLY BONDS IN
THE COMPUTATION OF ^{THE} CITY DEBT LIMIT.

To the Members of

The Merchants' Association of New York.

Gentlemen:

We wish to call attention to the proposed Constitutional Amendment to be submitted to the people at the election on the 7th instant, which is Amendment Number One on the official ballot, and reads as follows:

"Shall the Proposed Amendment to Section 10 of Article VIII of the Constitution relating to the limitation of indebtedness of counties, cities, towns and villages by excepting the city of New York from the provisions of said section after the first day of January, 1904, be approved?"

The purpose of this Amendment is to enable the City of New York to acquire the additional water supply which is of immediate necessity. An outlay of \$161,000,000.00 for that purpose, distributed over a number of years, which has been approved by the Board of Estimate and Apportionment, must be begun in the immediate future. If this money is drawn solely from the City's present resources, it will absorb the funds required for Schools, Rapid Transit, Bridges, Tunnels and other public improvements. Under the Constitution as it now stands, the City is not allowed to incur indebtedness for any purpose beyond ten per cent. (10%) of the assessed valuation of the real estate as appears by the assessment rolls prior to the incurring of such indebtedness.

The investigation made by this Association in 1900, demonstrated that the investments by the City in water supply produce a profit instead of cause an expense. The proposed Constitutional

Amendment Number One was prepared by this Association and has passed two sessions of the Legislature. In accordance with the requirements of the Constitution it is now submitted for action by the people on November 7th.

There is no political question involved in this issue, but it is a matter of vital importance that it should be ratified by the popular vote in order that the City may be enabled, without further delay, to provide the additional ^{water} supply so urgently needed and also may have the funds necessary for other public improvements.

You are therefore urged both to cast your ~~xxx~~ personal vote in favor of Amendment Number One, which is an Amendment of Section 10 of Article VIII of the Constitution, and to use your efforts with your friends and acquaintances to induce them to vote likewise.

Yours truly,

EXECUTIVE COMMITTEE,

THE MERCHANTS' ASSOCIATION OF NEW YORK.

Executive Committee,

Clarence Whitman, Chairman;

John C. Eames,

Henry R. Towne.