

Decision No. 13801

ORIGINAL

BEFORE THE RAILROAD COMMISSION OF THE STATE OF CALIFORNIA

In the Matter of the Investigation, )  
upon the Commission's own motion, )  
of the reasonableness and adequacy )  
of facilities and of the reasonable- )  
ness of the rates of the )  
EAST BAY WATER COMPANY )  
in the service of water to munici- )  
palities. )

CASE NO. 1977.

Leon E. Gray, for City of Oakland.  
G. W. Richardson, for City of Piedmont.  
Matthew C. Lynch, City Attorney, and Earl J.  
Sinclair, Assistant City Attorney, for  
City of Berkeley.  
W. J. Locke, City Attorney, for City of  
Alameda.  
J. Allison Bruner, City Attorney, for City  
of San Leandro.  
D. J. Hall, City Attorney, for City of  
Richmond.  
R. S. Hawley, for City of Emeryville.  
E. O. Edgerton, for East Bay Water Company.  
Miss M. A. Ross, in propria persona.  
James E. Todd, in propria persona.

SEAVEY, Commissioner:

SUPPLEMENTAL OPINION

In this proceeding, on the Commission's own motion regard-  
ing the adequacy of the facilities and the reasonableness of the  
rates of the East Bay Water Company in the service of water to muni-  
cipalities for public use, public hearings were held on February 29  
and March 7, 1924, evidence was submitted on behalf of the cities of  
Alameda, Berkeley, Oakland, Richmond, Piedmont, Emeryville and San  
Leandro, and on March 27, 1924, the Commission rendered Decision  
No. 13,331 in which the East Bay Water Company was ordered to install  
certain large size mains or pipes in each of the various municipalities

and reserved for later consideration the determination of the reasonable rate to be paid for public use through the added facilities required by this order. Additional hearings were held on March 27, April 17, April 28 and May 5, 1924, the matter has been submitted, and is now ready for final decision.

In establishing rates to be paid to East Bay Water Company by the municipalities for public service this Commission, in Decision No. 5534, dated July 1, 1918, in Case No. 1008, etc., stated:

"The excess capacity of the water system that may be deemed justified by the necessity of providing for emergency demands such as that in fighting fire can not fairly be charged against regular consumers and paid for under cover of a unit rate for water.

"I have separated out only part of the charge that could reasonably be collected from owners of property as distinguished from water users. The total amount of this charge is slightly more than one tenth of the estimated income to be realized by the utility company. It is certain that the proportion of the public utility water system expense not essential in the delivery of water to individual consumers is much greater than this."

In Decision No. 6755, dated October 11, 1919, in Application No. 4841 and Case No. 1008, the Commission reaffirmed its stand regarding the rates for public service.

In Decision No. 10347, dated April 22, 1922, in Cases Nos. 1620, 1623, 1633, 1634 and 1636, and in Applications Nos. 4841 and 7187, the Commission stated:

"In previous decisions the Commission has pointed

out that in order to furnish adequate protection against fire it is necessary to install facilities of greater capacity than are required to supply the ordinary domestic and industrial demands of consumers; that such protection against fire is a direct benefit to the communities; and that the excess capacity of the water system which may be deemed justified by the necessity of providing for these emergency demands cannot fairly be charged against regular consumers and paid for under cover of an increase in the unit rates for water consumed for domestic and industrial purposes."

In the decisions referred to it is plainly evident that the Commission considered the total revenues which the utility is entitled to receive are to be borne by two distinct classes of consumers who receive benefit from the service rendered. The first class is composed of the users of water for domestic and industrial purposes, and the second class is composed of the general public who derive benefit from the use of water by the municipalities for parks, public buildings, schools, fire protection service, and other uses of like character. The first class of consumers makes payment directly to the utility as individuals, their bills being computed in direct ratio to the amount of water consumed by each. The second class makes payment for the benefits derived through the municipalities, the money being secured through taxes levied upon the entire community. In case of the use of water for parks, public buildings, schools, and other similar uses, the bills can be computed at the regular meter rates. In case of fire protection service the Commission has definitely found that the quantity of water used, which may be

comparatively small, is not an equitable measure of the benefit derived, largely on account of the capacity of the pipe system and other facilities in excess of the capacity required to supply the domestic and industrial users of water.

In regard to this phase of the situation the Commission in Decision No. 6755 stated:

"Admittedly it is difficult to equitably distribute the expense of maintaining and operating a system such as this among the various consumers in proportion to the benefits derived by each. An exact allocation of the cost to the company of rendering a service such as is rendered to the cities is impossible. The amount of water used is not a proper measure, because the demand for fire purposes is wholly unexpected and the company must stand ready to deliver a large quantity of water within a short period at any point where the fire may occur. This has been designated a 'readiness to serve' or 'standby' service. This utility is rendering a valuable service to the municipality and its tax payers which requires an investment and operating expense largely in excess of what would be required if domestic and industrial consumers only were served."

In the present proceeding the same difficulty of an equitable allocation of charges between the domestic and industrial consumers on the one hand, and the municipalities on the other, is encountered. In fact this difficulty is responsible for the only controversy in the entire proceeding, which is the amount of the charge to be levied against the various East Bay cities on account of the pipe installation provided for in Decision No. 13,331.

The claim is advanced by certain of the municipalities that a very large proportion of the capacity of the mains to be installed will be absorbed immediately in the service of domestic and industrial consumers. East Bay Water Company on the other hand contends that its present distribution system is capable, except in some isolated instances, of supplying all demands of domestic and industrial consumers for some time to come and that there is no necessity for enlargement of pipe facilities except for the demands of the municipalities for additional fire protection service.

Pressure tests, at various points on the present distribution system of the utility, taken by William Stava and E. A. Noble, two of the Commission's hydraulic engineers, indicate that pressures are sufficient for adequate service to consumers. Attention is called to the fact that the pressure tests were taken in locations where the most unfavorable results as to adequacy of service were to be expected. Although counsel for the City of Oakland maintained that these pressure tests indicate static conditions and are not therefore correct indications of the pressures prevailing when water is being freely used by consumers, the evidence shows that in practically all cases sprinkling of lawns was in progress in the immediate vicinity at the time the tests were made.

Inquiry at dwellings located on streets where the pressure tests were in progress showed that while there was in some instances a reduction in pressure during the hours of maximum sprinkling of lawns there was practically no complaint against the service rendered.

A careful consideration of the evidence submitted leads to the conclusion that the distribution pipe system of East Bay Water Company as it now exists is generally of sufficient capacity to care for the present demands of domestic and industrial consumers. It is

evident that a portion of the increased facilities provided for in Decision No. 13,331 will with the growth of the utility's business be absorbed and be required for the service of these consumers. This condition will be provided for in the rate to be established herein.

The City of Alameda desires the installation of approximately 34,000 feet of pipe ranging in size from 6 to 20 inches in diameter and estimated to cost about \$149,000. This pipe will replace mains from 1 to 6 inches in diameter having a total length of about 32,000 feet. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased approximately 34 times. East Bay Water Company has completed the installation of a greater part of the pipe desired by the City of Alameda in accordance with the terms of a contract between the two parties which provides for an annual charge against the City of eight per cent. of the actual cost of labor and material plus ten per cent. for overhead charges. The contract also provides for an adjustment of charges at any time by this Commission.

Revised figures show that the City of Berkeley desires the installation of approximately 149,000 feet of pipe ranging in size from 6 to 20 inches in diameter at a total estimated cost of about \$467,000. This pipe will replace mains from ~~1 1/2~~ to 6 inches in diameter having a total length of about 121,000 feet, and will provide for the installation of approximately 28,000 feet of pipe where none exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased 35 times approximately. At the hearing East Bay Water Company desired to substitute 16 and 20 inch riveted

steel mains for certain 6, 8, 10 and 12 inch cast iron pipes desired by the City of Berkeley and provided for in the Order in Decision No. 13,331. The evidence shows that the 16 and 20 inch mains will cost slightly less than those originally proposed by the City. The City of Berkeley has agreed to these changes in the schedule of pipe to be installed, and the following order will provide for such modifications of the Commission's previous order as are necessary to secure the desired results.

The City of Oakland desires the installation of approximately 191,000 feet of pipe ranging in size from 6 to 24 inches in diameter at a total estimated cost of about \$690,000. This pipe will replace mains from 2 to 15 inches in diameter having a total length of about 158,000 feet, and will provide for the installation of approximately 33,000 feet in locations where no pipe exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased 44 times approximately.

Revised figures submitted by the City of Richmond show that the City desires the installation of approximately 86,000 feet of pipe ranging in size from 8 to 16 inches in diameter at a total estimated cost of about \$306,000. This pipe will replace mains from 2 to 6 inches in diameter having a total length of about 56,000 feet and will provide for the installation of approximately 30,000 feet in locations where no pipe exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased approximately 25 times. A portion of the pipe desired by the City of Richmond has been installed by East Bay Water Company in accordance with the terms of a contract between the two parties similar in almost all respects

to the contract mentioned previously between East Bay Water Company and the City of Alameda.

Revised figures submitted by the City of Emeryville show that the City desires the installation of approximately 3,900 feet of pipe of 6 and 8 inch diameter, at a total estimated cost of about \$11,000. This pipe will replace mains of 2 inch diameter having a total length of about 2,000 feet and will provide for the installation of 1,800 feet in locations where no pipe exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased approximately 24 times.

The City of Piedmont desires the installation of approximately 15,600 feet of 6 and 8 inch pipe at a total estimated cost of about \$39,000. This pipe will replace mains from 2 to 6 inches in diameter having a total length of approximately 12,000 feet and will provide for the installation of about 3,600 feet in locations where no pipe exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased approximately 15 times.

The City of San Leandro desires the installation of approximately 19,600 feet of pipe of 6, 8 and 12 inch diameter at a total estimated cost of about \$52,000. This pipe will replace mains ranging from 3/4 inch to 4 inches in diameter having a total length of about 12,600 feet, and will provide for the installation of approximately 7,000 feet in locations where no pipe exists at the present time. Computations of relative carrying capacity of the proposed pipes indicate that the capacity of the pipes replaced will be increased approximately 28 times.

The mains desired by the various municipalities as set out in the preceding paragraphs form part of a general plan for the



enlargement of pipe facilities proposed by East Bay Water Company several years ago in response to a demand by the municipalities for additional fire protection facilities. The general plan was submitted to the officials of the various municipalities and substantial agreement as to the details of sizes and capacities was obtained. The plan also had the endorsement of the chiefs of the various fire departments. Owing to various difficulties affecting the installation of these increased facilities the municipalities, with the exception of the Cities of Alameda and Richmond, did not enter into contracts or agreements providing for the projected construction. East Bay Water Company however proceeded with the installation of mains of large size and capacity in the various municipalities, and as an instance of such installation had constructed approximately 81,800 feet of pipe ranging from 6 to 30 inches in diameter in the City of Oakland as of December 31, 1923. This pipe replaced or paralleled 56,450 feet of pipe ranging in size from 2 to 16 inches in diameter, and in addition an installation of 25,350 feet of 6, 12 and 30 inch pipe was made in localities where no pipe had previously existed. Computations <sup>to</sup> as/the relative carrying capacity of these new mains indicate an increase of approximately 93 times the capacity of the pipes which were replaced or paralleled. The evidence in the proceeding indicates that the large sized mains referred to above were not required in their entirety to furnish adequate service for the present domestic and industrial use.

The total cost of the proposed installation of large sized pipe lines in all municipalities affected is estimated at approximately \$1,714,000. Owing to the fact that various mains in the present distribution system of East Bay Water Company will be replaced by the proposed large sized pipe lines, there will be certain reductions from the investment of the utility which the evidence

shows will total about \$139,000. The replacement of these pipe lines will also result in a reduction of the present annual public use charges to the municipalities amounting to approximately \$1,900.

An investigation by William Stava, one of the Commission's hydraulic engineers, the results of which were placed in evidence in this proceeding, indicates that during the year 1923 the revenues of East Bay Water Company were sufficient to cover maintenance and operation expense, depreciation annuity, and in addition to provide a net revenue which was equivalent to a return of 7.34 per cent. upon a reasonable rate base. Such a rate of return is not excessive.

At the hearing in this matter East Bay Water Company proposed that the annual charges against the municipalities on account of the construction of the increased facilities should be computed upon the following basis:

For the first year following construction the charges against the various municipalities to be 8 per cent. of the actual cost of the necessary labor and material, plus 10 per cent. for general overhead, this charge to be decreased one per cent. for each year thereafter until such time as the total charge becomes equivalent to the present public use charge assessed against these municipalities for mains of sufficient size to afford fire protection service.

A careful consideration of the evidence in this proceeding, including the rate of return earned by this utility during the year 1923, the probable increase in its business, the depreciation to be expected in the extraordinary additional facilities here proposed, the fact that maintenance and operation costs will not be decreased

through the construction of said facilities, the probable normal construction of this nature which might reasonably be expected, and such other and further considerations as were raised during this proceeding which might in any manner affect the rates to be established herein, has led us to the opinion that this suggested method of fixing and assessing rates for such construction is, in general, a proper one, and should be adopted in principle. It is our opinion, however, that the rate to be assessed upon this extraordinary construction should be the "public use charge" that would be assessed were this an ordinary and normal construction, together with an additional factor or surcharge to be added thereto in such amount as to net the utility during the first year after any particular construction a total of eight per cent. of the actual cost of such construction; and it is further our opinion that the amount of this surcharge should be decreased each year following the first in such manner as to be entirely eliminated at the end of six years, leaving thereafter only the ordinary public use charge to be assessed to such construction. We believe that by this surcharge this utility will be properly compensated for the extraordinary factors and expenses connected with the proposed construction, and that the gradual reduction of such surcharge to the level of public use charges upon ordinary and to be expected construction will provide for a proper period during which the total normal construction of this nature will merge with and approximately equal the amount of these extraordinary expenditures.

The schedule of rates fixed herein will, therefore, adopt and continue in full force and effect the present schedule of charges for public or municipal uses, as set forth in our Decision No. 6755, rendered on October 11, 1919. Our order will further provide that the public use charges which under said schedule would normally

apply upon pipe construction of the nature and amount here in question shall be applied to this extraordinary construction, and that in addition thereto, there shall be assessed during the first year after construction a surcharge or additional public use charge equal to the difference between the rate thus computed and a sum equal to eight per cent. of the actual cost of the construction in question. Our order will further provide that this surcharge shall be decreased each year by an amount equal to 16.66 per cent. of the first year surcharge, thus eliminating the surcharge altogether at the end of the sixth year. It will be provided that for the purpose of this order, actual cost shall be taken and understood to mean the cost of all necessary labor and material involved in such construction, plus ten per cent. of such cost for general overhead.

The attention of the Commission has been called to certain inaccuracies in the schedules of pipe to be installed as set out in Decision No. 13,331. The order herein will, therefore, provide such modifications in these schedules as are necessary.

The following form of order is submitted:

#### ORDER

The Commission having made an investigation upon its own motion into the reasonableness and adequacy of facilities and the reasonableness of the rates of East Bay Water Company in the service of water to municipalities, public hearings having been held thereon, the matter having been submitted, and the Commission being now fully informed in the matter,

IT IS HEREBY ORDERED that the schedule of rates entitled "Public Use Charge" established by this Commission in its Decision

No. 6755, rendered on October 11, 1919, in those certain proceedings entitled and numbered as follows:

"In the Matter of the Application of East Bay Water Company to adjust and fix water rates, Application No. 4841."

"In the Matter of the Commission's Investigation into the Rates, Rules and Regulations of People's Water Company. (In re protests of certain East Bay Cities against the re-imposition of charges for municipal service.) Case No. 1008."

be, and the same is hereby ratified, approved and continued in full force and effect, and the public use charges which would be applicable under said schedule for service to be rendered by East Bay Water Company to the cities of Alameda, Berkeley, Oakland, Richmond, Piedmont, Emeryville, and San Leandro, through the pipe lines, or any of them, constructed, or to be constructed in accordance with this Commission's order and Decision No. 13,331, rendered in this proceeding on March 27, 1924, are hereby expressly declared applicable to, and to be charged upon, for and on account of such construction; and

IT IS HEREBY FURTHER ORDERED that during the period of six years next following any of such construction East Bay Water Company shall charge and collect from said municipalities a surcharge to be computed as follows:

During the first year, the difference between said public use charges and a sum equal to eight per cent. of the actual cost of the particular construction in question;

During the second year, a sum equal to 83.33 per cent. of said difference;

During the third year, a sum equal to 66.66 per cent. of said difference;

During the fourth year, a sum equal to 50 per cent.  
of said difference;  
During the fifth year, a sum equal to 33.33 per cent.  
of said difference;  
During the sixth year, a sum equal to 16.66 per cent.  
of said difference,

Provided, that for the purpose of this order such actual cost shall be taken and understood to mean the cost of all necessary labor and material involved in said construction, plus ten per cent. of such cost for general overhead expense.

IT IS HEREBY FURTHER ORDERED that on or before the fifteenth day of each month East Bay Water Company shall furnish a report to this Commission setting forth the length, size, location and actual cost of all pipe installed in each municipality, in compliance with the orders in this proceeding. Copies of such monthly reports shall be furnished by East Bay Water Company to each of the municipalities interested.

IT IS HEREBY FURTHER ORDERED that Exhibits "B", "D" and "F" attached to, and made a part of this Commission's Decision No.13,331, be, and the same are hereby modified to provide for the installation of the pipe lines described in amended Exhibit "B", amended Exhibit "D" and amended Exhibit "F", attached hereto and made a part hereof.

The foregoing Opinion and Order are hereby approved and ordered filed as the Opinion and Order of the Railroad Commission of the State of California.

Dated at San Francisco, California, this 14<sup>th</sup> day of July, 1924.

Al Seary  
W. B. Boudie  
Irving Martin

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AMENDED EXHIBIT "B"

CITY OF BERKELEY

<u>Street</u>	<u>B e t w e e n</u>	<u>Approx. Length Feet</u>	<u>Size &amp; Kind</u>
Harrison	Fourth & Second	680	6" CI
Gilman	" " "	680	6" CI
Page	Sixth & Second	1340	6" CI
Cedar	California & McGee	680	6" CI
Virginia	Fourth & Second	680	8" CI
"	San Pablo & Fourth	2280	8" CI
"	California & San Pablo	3900	16" RS
"	California & Grant	1320	6" CI
"	Milvia & Shattuck	680	6" CI
Berkeley	Grant & Shattuck	2050	10" CI
	Grove & Grant	670	8" CI
Bancroft	Fourth & San Pablo	2280	8" CI
	Sacramento & Calif	660	6" CI
"	Oxford & Telegraph	1660	10" CI
"	Telegraph & Bowditch	660	8" CI
Channing	Milvia & Shattuck	750	8" CI
Parker	Third & San Pablo	2580	8" CI
Parker	Hillegas & Benvenue	380	6" CI
Stuart	Grove & Ellsworth	2800	8" CI
Snyder	Third & Fourth	340	8" CI
Russell	Telegraph & College	1860	8" CI
Ashby	San Pablo & Acton	1600	8" CI
"	Acton & Sacramento	670	6" CI

AMENDED EXHIBIT "B" (Continued)

CITY OF BERKELEY

<u>Street</u>	<u>B e t w e e n</u>	<u>Approx. Length Feet</u>	<u>Size &amp; Kind</u>
Ashby	California & Ellis	1100	6" CI
Folger	Seventh & San Pablo	1330	8" C I
Prince	Adeline & Telegraph	2800	8" CI
Woolsey	California & Adeline	1850	8" CI
"	College & Claremont	1270	6" CI
Thousand Oaks	Peralta & The Alameda	1250	6" CI
Walk	Cabrillo & The Alameda	500	6" CI
Peralta	Solano & Colusa	2100	6" CI
Montrose	Santa Barbara & Spruce	350	6" CI
Santa Barbara Rd.	Montrose to Northampton Ave.	1220	6" CI
San Luis	Montrose to Indian Rock	1340	6" CI
Spruce	Regal to Halkin	1350	8" CI
Solano	Fresno to The Alameda	280	10" CI
Fresno	Sonoma to Solano	2180	10" CI
Sonoma	Josephine to Fresno	370	10" CI
Sonoma	Fresno to Colusa	370	6" CI
Colusa ) and ) Posen )	Sonoma to Posen ) Colusa to Monterey )	1250	6" CI
Hopkins	Rose to The Alameda	5450	6" CI
Milvia	Rose to Hopkins	1980	6" CI
"	Channing to University	2350	8" CI
Eunice	Milvia to Walnut	1000	6" CI
Walnut	Rose to Eunice	1330	16" RS
"	Eunice to Shattuck	850	16" RS
Shattuck	Ter. Walk to Los Angeles	570	6" CI
Cedar	Oxford to Euclid	1700	6" CI
Terrace Walk	Shattuck & Marin	1300	16" RS



AMENDED EXHIBIT "B"- (Continued)

CITY OF BERKELEY

<u>Street</u>	<u>B e t w e e n</u>	<u>Approx. Length Feet.</u>	<u>Size &amp; Kind.</u>
Cedar	Euclid to Leroy	680	8" CI
Hearst	Shattuck to Oxford	670	10" CI
Hearst	Oxford to Spruce	300	12" CI
"	Leroy to La Loma	500	8" CI
Spruce	Hearst and Rose	3000	12" CI
"	Rose and Summer	1000	6" CI
Scenic	Cedar & LeConte	1150	6" CI
Euclid	Buena Vista & Hawthorne	760	6" CI
Vine	Euclid & Hawthorne	320	6" CI
Leroy	Cedar & Hearst	1830	8" CI
Shattuck	Addison & Allston	710	10" CI
Addison	Shattuck & Oxford	450	10" CI
Oxford	Hearst & Allston	1650	10" CI
Atherton	Allston & Bancroft	670	10" CI
Allston	Oxford & Atherton	200	10" CI
Ellsworth	Carlton & Dwight	1020	8" CI
Ellsworth	Prince & Ashby	800	8" CI
Dana	Bancroft & Durant	330	6" CI
Hillegas	Russell & Parker	2000	8" CI
Prospect	Dwight & Canon Rd.	1300	6" CI
Claremont Blvd.	Claremont & Garber	1700	6" CI
Claremont Rd.	Claremont & Garber No. 2	1750	6" CI
"	Claremont Rd. & Claremont	700	6" CI
Walk	The Uplands & Hillcrest Rd.	375	6" CI
Hillcrest Rd.	Walk & Uplands	1100	6" CI
The Uplands	Hillcrest Rd. & Tunnel Rd.	1630	6" CI
Tunnel Rd.	Uplands & Short Cut	1040	6" CI
Adeline	62nd St. & Alcatraz	750	6" CI
"	Alcatraz & Prince	1500	8" CI

AMENDED EXHIBIT "B" - (Continued)

CITY OF BERKELEY

<u>Street</u>	<u>B e t w e e n</u>	<u>Approx. Length Feet.</u>	<u>Size &amp; Kind.</u>
Grant	Rose & Carlton	7600	16" RS
California	Virginia to 62nd St.	10580	16" RS
"	Virginia & Cedar	660	6" CI
Acton	Alcatraz & Ashby	2250	8" CI
"	Ashby & Russell	620	6" CI
Mabel	Carlton & Dwight )	1820	8" CI
Bonar	Dwight Way & Channing )		
"	Channing & University	2300	6" CI
Seventh	Snyder & Parker	1880	6" CI
Fourth	Parker & Dwight Way	650	6" CI
"	Camelia & N. City Limits	1850	6" CI
Third	Snyder & Parker	1900	8" CI
Euclid	Eunice & Keith	1500	6" CI
College	Channing & Bancroft	660	12" CI
Vine	Hawthorne & Scenic	300	6" CI
Bancroft	College & Piedmont	660	12" CI
Piedmont	Back of University	1320	12" CI
Euclid	Marin	10000	6" CI
62nd	California & Grove	1330	20" RS
Channing	California & Acton	1200	6" CI
Chestnut	University & Virginia	1650	6" CI

Note - CI indicates Cast Iron Pipe  
RS indicates Riveted Steel Pipe

AMENDED EXHIBIT "D"

CITY OF RICHMOND

<u>Street</u>	<u>B e t w e e n</u>	<u>Approx. Length Feet</u>	<u>Size and Kind</u>
Morgan Ave.	Richmond Res.	600	8" C.I.
Water	Richmond Res. Santa Fe Ave.	400	8" "
Santa Fe	Water Bishop	300	8" "
Bishop	Santa Fe Washington	500	8" "
Washington	Bishop Richmond	1400	8" "
Richmond	Washington Alvarado	1700	8" "
Alvarado	Richmond Scenic	500	8" "
Scenic	Alvarado A.T. & S.F.Ry.	1600	8" "
Vine	A.T. & S.F.Ry. Washington	700	8" "
Railroad	Richmond Standard	1050	12" C.I.
7th	Lucas Pennsylvania	550	8" C.I.
Pennsylvania	7th Turpin	750	8" C.I.
Turpin & 5th	Pennsylvania Nevin	2200	8" "
4th	Nevin Chanslor	1700	8" "
Chanslor	4th Espel	5100	10" "
Espel	21st 23rd	1000	10" "
23rd	A.T. & S.F. Pullman	200	10" "
3rd	Ohio Main	1000	8" "
Main	3rd 17th	3700	8" "
Main	17th 28th	3200	8" "
28th	S.P.R. of W. Pullman	200	8" "

AMENDED EXHIBIT "D" (Continued)

CITY OF RICHMOND

<u>Street</u>	<u>B e t w e e n</u>		<u>Approx. Length Feet</u>	<u>Size and Kind</u>
Clinton	10th	12th	550	8" CI.
12th	Clinton	Macdonald	2400	8" "
Pine Ave	23d	26th	1100	8" "
26th	Pine	Market	600	8" "
Roosevelt	Portola	23d	2300	8" "
Gaynor	23d	18th	1400	8" "
18th	Gaynor	Roosevelt	1700	8" "
Nevin	21st	23d	600	8" "
Esmond	23d	San Pablo	5300	8" "
Clinton	23d	30th	2600	8" "
30th	Esmond	Grant	1300	8" "
Grant	30th	29th	300	8" "
29th	Grant	Barrett	1500	8" "
Barrett	23d	30th	2300	8" "
Barrett	30th	Wilson	4000	8" "
Barrett	Wilson	San Pablo	300	8" "
MacDonald	23d	32d	2600	12" "
MacDonald	32d	Wilson	4200	12" "
MacDonald	Wilson	San Pablo	300	12" "
37th	MacDonald	Wall	2200	8" "
South	Fullman	Beck	700	8" "
South	Beck	Wall	300	8" "
Wall	South	47th	3200	8" "
Wall	47th	San Pablo	1500	8" "

AMENDED EXHIBIT "D" (Continued)

CITY OF RICHMOND

<u>Street</u>	<u>B e t w e e n</u>		<u>Approx. Length Feet</u>	<u>Size and Kind</u>	
45th	Wall	Willow	2300	8"	C.I.
45th	Willow	Potrero	200	8"	"
Cypress	47th	50th	1200	8"	"
50th	Cypress	Bay View	1600	8"	"
Bay View	50th	San Pablo	3000	8"	"
7th	Nevin	A.T.&.S.F.R.W.	2000	8"	"
A.T.&.S.F.R.W.	7th	Richmond Pump.	2000	8"	"
10th	Nevin	MacDonald	450	16"	R.S.
Barrett	12th	15th	800	10"	C.I.

Note - C.I. indicates cast iron pipe

R.S. indicates riveted steel pipe

AMENDED EXHIBIT "F"

TOWN OF EMERYVILLE

<u>Street</u>	<u>Between</u>	<u>Approximate Length Feet</u>	<u>Size and Kind</u>
Green St.	63rd St. - Berkeley Line	1950	8" C.I.
63rd St.	Doyle St. - Oakland Line	510	6" C.I.
Hollis & Green	South of Powell	700	6" C.I.
47th St.	San Pablo - Adeline	710	6" C.I.

Note - C. I. indicates cast iron pipe