

134
CITY DOCUMENT



ANNUAL REPORT
of the
WATER SUPPLY BOARD
of the
CITY OF PROVIDENCE

For the Year Ended September 30, 1959

CITY DOCUMENT

ANNUAL REPORT

OF THE

WATER SUPPLY BOARD

OF THE

CITY OF PROVIDENCE RHODE ISLAND

For the Year Ended September 30, 1959



REPORT

ADMINISTRATIVE OFFICE
WATER SUPPLY BOARD
CITY OF PROVIDENCE
OCTOBER 1, 1959

TO THE HONORABLE WALTER H. REYNOLDS, MAYOR, AND THE
HONORABLE CITY COUNCIL:

Gentlemen:

In compliance with Chapter XX of the Charter of the City of Providence, enacted by the General Assembly of the State of Rhode Island at its January Session, A. D. 1940, and approved April 26, 1940, we have the honor to present the nineteenth annual report of the Water Supply Board for the year ended September 30, 1959.

On January 5, 1959 Earl H. Ashley was reappointed a member of the Board for the ensuing term ending on the first Monday in January 1963.

At the re-organization meeting held on January 12, 1959, John A. Doherty was reelected Chairman and John J. Deary was reappointed Secretary.

The Board has held regular meetings throughout the year, meeting practically every week, at which careful consideration has been given to the many problems arising in connection with maintenance and operating activities, the Department's financial structure, matters relative to taxes levied on property owned in nearby communities, and other miscellaneous departmental du-

ties which properly come before the Board. Special meetings were held throughout the year for consideration of particular problems which have arisen.

The report of the Chief Engineer with many important tables and statistical data is appended hereto, to which we invite your attention for details and particular information regarding the finances of the Department and conduct of the work during the above period.

Respectfully submitted,

WATER SUPPLY BOARD

JOHN A. DOHERTY, *Chairman*

EARL H. ASHLEY

UGO RICCIO

JOHN J. TIERNEY

MICHAEL N. CARDARELLI, Ex-Officio

John A. Doherty
Chairman

IN CITY COUNCIL

FEB 18 1960

READ:

WHEREUPON IT IS ORDERED THAT
THE SAME BE RECEIVED.

D. Everett Whelan
CLERK

REPORT OF THE CHIEF ENGINEER

Providence, R. I.
October 1, 1959

WATER SUPPLY BOARD
CITY OF PROVIDENCE

Gentlemen:

The following is the report of operations of the Providence Water Works for the fiscal year ended September 30, 1959.

The department, like other municipally owned water utilities, has been plagued in recent years with substantially higher prices for both materials and labor, resulting in rapid increases in operation and maintenance expenses. Up to the last few years, we have been able to absorb all these increases, but it became apparent in 1957 that revenue was not sufficient and was not keeping abreast of the advance in operation and maintenance costs. This was reflected in the Controller's Report in 1957, which showed a deficit in our Sinking Fund Account.

In order to avoid this deficit, a rate study was undertaken by the department to determine the revenue required to meet present-day cost of operation and maintenance, and at the same time provide the necessary funds for continued improvement and expansion of the system. The study showed that under the existing rate structure, our estimated revenue would fall short of meeting the cost of operation by \$337,000.

In establishing a new rate structure, it was important that the various steps provide an equitable charge against the different classifications, and it also was necessary to determine the

cost of supplying the outlying cities and towns as compared to the cost of service within the City limits. The practice of applying a universal rate could not be justified as it would result in the property owners of Providence subsidizing the cost of serving the outside suburban communities.

The following table shows the old rates that had been in effect since 1923 and the new rates that became effective February 1, 1959 for all communities supplied by our distribution system.

OLD AND NEW RATES

Domestic Rate (H.C.F.)			
	Old	New	Increase—%
Providence	\$0.18	\$0.19	5½
Cranston	0.18	0.24	33⅓
Johnston	0.18	0.24	33⅓
North Providence	0.18	0.24	33⅓
Intermediate Rate (H.C.F.)			
	Old	New	Increase—%
Providence	\$0.12	\$0.13	8⅓
Cranston	0.12	0.16	33⅓
Johnston	0.12	0.16	33⅓
North Providence	0.12	0.16	33⅓
Wholesale Rate (H.C.F.)			
	Old	New	Increase—%
Providence	\$0.075	\$0.09	20
Cranston	0.075	0.10	33⅓
Johnston	0.075	0.10	33⅓
North Providence	0.075	0.10	33⅓

The new rate schedule is expected to produce \$344,000 additional revenue annually.

On November 4, 1958, the voters of Providence approved a referendum for the issuance of bonds in the amounts of \$1,100,000 to be expended for water purification works improvements,

and \$2,150,000 for the construction of a water distribution reservoir. These approvals were concurred in by the General Assembly of the State of Rhode Island in its January Session under Chapters 102 and 103 respectively of the Public Laws of 1959. During the same session, the General Assembly under Chapter 142 approved a supplemental bond issue in the amount of \$300,000 for the construction of a forestry and maintenance garage and additional improvements and alterations to the Water Purification Works, subject to approval by the voters of the City of Providence at the next general or special election. These bonds will be the first issued since the year 1932, although since that time the department has completed capital improvements to the system in excess of \$10,000,000, which have been paid for out of revenue. The \$2,150,000 bond issue will be used to finance the construction of the proposed 40 million gallon underground concrete Aqueduct Reservoir for low service distribution storage. Construction plans and contract specifications for this project, which were described in the previous year's report, are now being prepared under a contract agreement with Charles A. Maguire and Associates, Engineers of Providence, and it is anticipated that the project will be ready for competitive bidding at the end of this calendar year. This major improvement is to be constructed on land recently acquired by condemnation and located off Scituate Avenue near the terminus of the present 90-inch Scituate Aqueduct. Numerous preliminary studies were made relative to cost data and comparative design features of the conventional reinforced concrete reservoir construction versus the prestressed reinforced concrete circular tank design, and several conferences were held with the engineers. The conclusions reached, based on the designing engineer's studies and recommendations, quite definitely favored the conventional reinforced concrete construction over the prestressed design, both from an economic viewpoint and in recognition of the proven performance of our similarly constructed Neutaconkanut and Longview Reservoirs, which have been in service over thirty years without any measurable cost of maintenance. The \$1,100,000 bond issue is to be used for construction of Additions, Alterations and Improvements to the Water Purification Works in Scituate as the first phase of a master

plan for long range development. This project, which also was described in the previous year's report, is now in the stage of final plan preparation as a joint venture with Oresto DiSaia, Providence architect, preparing under contract all architectural and building design services, and the engineering personnel of the Water Supply Board preparing the necessary plans and specifications for increased electrical power transmission and distribution facilities, chemical handling and feeding equipment, solution piping, water service piping, elevated storage tank, new centrifugal pumps and miscellaneous. The \$300,000 bond issue, subject to the approval of the voters, will be used to complete another phase of the master plan and includes the construction of a Forestry and Maintenance Garage, New Boilers and Accessories for the Heating System and a Dehumidification System for the Filter Pipe Gallery of the Water Purification Works. Construction plans and specifications for this second phase of construction are now being prepared by the architect, Mr. Oresto DiSaia.

In connection with the 48-inch valve replacement program for the Neutaconkanut Conduit, referred to in our last Annual Report, a series of conferences were held with engineering representatives of the A. P. Smith Manufacturing Company and the Lock Joint Pipe Company, both of East Orange, N. J., concerning the possibility of inserting a 48-inch gate valve in the concrete pipe line of the Neutaconkanut Conduit in Sterling Avenue east of Webster Avenue. There is no alternative to the inserting procedure since this section of the Neutaconkanut Conduit between Webster Avenue and Olneyville Square cannot be removed from service for a sufficient length of time to make a regular valve installation. Inserting gate valves have been successfully installed in steel cylinder concrete pipes of smaller sizes, but up to this time no insertion has yet been made in a steel cylinder concrete pipe of the 48-inch diameter. The Smith Company and the Lock Joint Pipe Company participated in a joint project to work out the necessary details, and a series of test cuttings were made on selected samples of pipe under conditions of full line pressure at the Lock Joint Pipe Company's East Orange plant. The results of this experimental work

proved conclusively that the 48-inch valve insertion could be made successfully using the proper type of tool steel cutters, which were demonstrated as the most satisfactory in several plant experiments. As a result of these tests, witnessed in part by representatives of this department, a purchase order was issued to the A. P. Smith Manufacturing Company in the amount of \$24,898.60, directing them to proceed with the manufacture and insertion of a 48-inch valve. The location selected for the installation is in Sterling Avenue just east of Webster Avenue, Providence, where the Neutaconkanut Conduit connects with the 42-inch Crosstown Main. A section of the pipe was exposed, protective concrete coating was removed, and templates were made of the steel cylinder in the pipe wall at the points where the end bells of the new valve would be jointed with the concrete pipe. This procedure was necessary to correct for any possible eccentricity in the steel cylinder and was completed in the spring of this year, after which the manufacture of the valve began. It is expected that the installation will be made in the spring of the coming year, and an estimate of the cost of the entire project has been set at a figure of approximately \$33,000.

In December, 1958, the second of two 48-inch butterfly valves, purchased under emergency order from the S. Morgan Smith Co., was installed on the south leg of the wye connection of the Neutaconkanut Conduit off Plainfield Street near Farmington Avenue. This installation, along with the one completed in the previous year near Fletcher Avenue in Cranston, provides the needed protection for emergency control of that section of the 60-inch conduit which traverses an easement on private property and crosses under and lies along the shoreline of the Pocasset River just easterly of the village of Thornton. During installation of the valve, the Neutaconkanut Distribution Reservoir was necessarily removed from service, and the entire system load was supplied through the 66-inch steel pipe aqueduct and the 42-inch crosstown connecting main between the 66-inch aqueduct in Budlong Road, Cranston, and its connection with the Neutaconkanut Conduit in Webster Avenue at Sterling Avenue, Providence. The work was done on a week-end period when the system demand was at a minimum, and measure-

ments of storage levels determined by temporary facilities installed at the Siphon Chamber at the easterly terminus of the 90-inch Scituate Aqueduct, were relayed by observers through radio communication to the Purification Works in Scituate. This procedure enabled the plant operators to keep in service, during the shutdown of Neutaconkanut Reservoir, the number of plant filters required to meet the system demand at any time. The work proceeded without particular incident or complaints of low pressure in the system, and full service was restored on Sunday, December 14 at 4:30 A.M. The cost of labor and materials amounted to \$17,191.54.

In the regular inspection and operation of the larger sized gate valves in the distribution system, it was discovered that a 24-inch valve in Smith Street, west of the connection with the 36-inch force main from the Bath Street Pumping Station, was defective and could not be safely operated. This high service line, being one of the main feeders to and from Longview Reservoir, could not be taken out of service without seriously affecting the special fire supply to the downtown area and service to the entire East Side section of Providence. Consequently, it was decided to insert a new valve in the 24-inch main without removing it from service. Because inserting valves are of special design and require the use of a specialized inserting machine, a purchase order under authority of the Board of Contract and Supply was issued to the A. P. Smith Manufacturing Company of East Orange, N. J., to furnish the necessary valve, inserting machine and operator for this work. All preliminary and incidental work was performed by the Water Supply Board maintenance force and the insertion was successfully made without incident. The cost to the department of the entire operation including the valve, equipment rental, operator, Water Supply Board labor, equipment, and incidental costs amounted to \$7,674.91. In comparison, the cost of a regular 24-inch valve replacement, installed with a shut down of the main, would approximate \$2,800.00.

On October 21, 1958, bids were received for furnishing two 24-inch motor operated butterfly type control valves for filter

wash water service. The successful bidder was the B. I. F. Industries of Providence and a contract for this work was awarded to them in the amount of \$4,438.00. Installation of these units was made on Filter No. 1 and placed in service on April 6, 1959. This is the first group of butterfly valves to replace the worn and obsolete gate valves installed in 1926, and observations and tests were immediately begun to determine proper speed of operation consistent with thorough backwashing of the filter sand. Numerous tests were made at varying opening speeds and it was concluded that a speed of eight tenths of a degree of opening per second with a thirty second pause after the first half minute of operation produced the optimum condition of backwash consistent with the volume of water required without danger of upsetting the filter bed. The necessary gearing changes were then made in the operating mechanism to maintain the selected controlled speed of operation. Bids were received on a second group of six 24-inch motor operated butterfly valves for this service on July 14, 1959, with the specifications prepared for valves similar in construction and operation to those previously placed in service. The Henry Pratt Company of Chicago, Illinois, was the successful bidder in the amount of \$13,122.00 and with delivery scheduled for near the end of the 1959 calendar year it is expected that this installation will be completed early in 1960.

The installation of additional pumping equipment at the Neutaconkanut Station was completed and put into operation during the year. New equipment includes a 10 m.g.d. electric motor driven pump and a 10 m.g.d. gasoline engine driven auxiliary unit, together with four new hydraulically operated automatic cone check valves and the necessary piping and power wiring. The new pumps are identical units, manufactured by Warren Pumps, Incorporated, and are the single stage, double suction, horizontal, centrifugal type. The motor driven unit is coupled to a 200 horsepower, Westinghouse Type CSP 882 RPM Life-line motor. The auxiliary unit is powered by a Climax V-80, 8 cylinder gasoline engine drive, rated for 225 brake horsepower at the pump coupling at a speed of 900 rpm. Acceptance tests conducted at the design point of 7000 gpm and at a total head

of 96 feet of water showed pump efficiency slightly in excess of 88% against a guaranteed efficiency of not less than 86%. These results were quite satisfactory, and similar tests run at higher and lower rates of discharge indicated that the pumps would perform satisfactorily above the guarantee points along the full range of the head capacity curve. The R. J. Berke Co. of Newton Centre, Mass. was the general contractor, and the total value of the contract for this work was \$49,734.00, which included \$750.00 paid as an extra to increase the guaranteed pump efficiencies from an original bid figure of 81% to the guaranteed figure of not less than 86%. This installation now brings the Neutaconkanut Station up to a total connected capacity of 20 m.g.d. for electric motor driven units, and to 10 m.g.d. for the gasoline engine driven auxiliary unit.

Under the terms of an agreement signed by Mayor Reynolds, and authorized by City Council Resolution No. 353, approved May 3, 1957, the new pumping station in the Garden Hills Development in Cranston was taken over by this department; and on June 8, 1959, a deed transferring all rights and title to this property to the City of Providence was recorded in the land records of the City of Cranston. This installation which includes land, building and equipment was constructed by and at the full expense of the developers of the Garden Hills Plat and was designed solely for the purpose of increasing water pressure within the plat area, servicing approximately 200 homes which are now partly under construction. The station equipment includes two electric motor driven centrifugal pumps and one gasoline engine driven auxiliary pump, each with a capacity of 400 gallons per minute against a total head of 120 feet. The boosted area will have a static pressure range of 78 p.s.i. at elevation 140, to 54 p.s.i. at elevation 195, which is the highest ground level within the plat. The pumping units installed are of Fairbanks Morse manufacture with the auxiliary unit being driven by a Wisconsin Model VH4 air cooled gasoline engine. The station is provided with a 7500 gallon underground hydro-pneumatic tank, float level and pressure actuated automatic controls, and telemetering equipment which will transmit signals continuously over leased telephone lines to an indicating and

recording receiver located at the Neutaconkanut Pumping Station, where the operating personnel can observe the performance of the automatic station at all times. The pump house superstructure is provided with thermostatically controlled electric wall heaters thereby eliminating the need of operating personnel, other than for periodic inspections or operation of the auxiliary gasoline engine driven pump in the case of a continued power failure. Field performance tests were conducted separately on all three units and results showed that they performed slightly in excess of guarantees for both head capacity and efficiency. It is expected that with the completion and occupation of the several dwelling units under construction, this station will be put into operation in the coming year.

To replace equipment that was purchased originally in the year 1940 and has been in continual use since then, the department obtained through competitive bidding a new portable pneumatic conveyor for handling and transporting chemicals between railroad sidings and the chemical storage silos at the Water Purification Works. This equipment, which has a capacity of 15 tons as compared to the old unit of 5 tons capacity, now permits the transfer of 40-ton carload lots of chemical to storage with a maximum of three trips, resulting in a considerable reduction in handling costs. It consists of a tractor trailer unit with a gross combination weight rating of 60,000 pounds. The trailer unit, which has the unique feature of a hydraulic dump lift for the tank body, and includes the power unit and dust filters for the pneumatic system, was purchased from the Dracco Division of the Fuller Company in Cleveland at a cost of \$26,995.00. The tractor unit, for which bids were solicited locally, is a model R225 International furnished by the International Harvester Company agency in Providence at a cost of \$6,206.96 with due allowance made for trade-in of the old unit. The combined cost of this equipment was \$33,201.96. Distributing this investment over an estimated life of 19 years, and based on the quantity of chemicals previously handled, represents an equipment investment of \$1.25 per ton of material handled.

On April 16, 1959, the department was host to the New England Water Works Association at the Southern New England

meeting. The group, comprising 225 members and guests, met at our Administration and Operations Building and was conducted on guided tours of the several divisions, with descriptions and explanations of the various departmental functions. Morning refreshments of coffee and doughnuts were served, and after the tour the group visited the Providence plant of B. I. F. Industries on Harris Avenue, where an inspection was made of that plant, along with manufacturing processes of water works equipment. Following this a luncheon meeting was held at the Metacomet Country Club in East Providence, with an address by Mayor Walter H. Reynolds welcoming the group to Providence. Papers were read on "A History of the Providence Water Supply and its Treatment Methods" by John J. Collins, Jr., our Superintendent of Filtration, and the "Use of Butterfly Valves on Water Distribution Systems" by A. E. Hatch, Valve Engineer for the B. I. F. Industries. Upon conclusion shortly thereafter, the general opinion of the group was that the meeting was quite successful and particularly gratifying due to the large attendance.

The installation of the new low service mains in Lloyd Avenue, Wayland Avenue and Sessions Street to reinforce portions of the low service distribution system in the east side area of Providence started in May 1958 under a contract with the Fanning and Doorley Construction Company, was completed in November 1958 at a cost of \$138,588.03. The work included the installation of 19.21 feet of 16-inch cast iron pipe and 3,415.32 feet of 20-inch asbestos cement pipe in Lloyd Avenue from an existing 30-inch main in Thayer Street to Wayland Avenue, 2,585.50 feet of 16-inch asbestos cement pipe in Wayland Avenue from Lloyd Avenue to Sessions Street replacing an existing 6-inch main, and 925.39 feet of 12-inch asbestos cement pipe in Sessions Street supplementing the existing 8-inch main from Elmgrove Avenue to Cole Avenue. Connections were made from the new 20-inch main in Lloyd Avenue to the existing distribution system at Arlington Avenue, Taber Avenue and Elmgrove Avenue, and also from the new 16-inch main in Wayland Avenue at all intersecting streets between Lloyd Avenue and Sessions Street. The new 12-inch main in Sessions Street was connected to the new 16-inch main in Wayland Avenue, the exist-

ing 12-inch main in Cole Avenue and the existing 8-inch main in Elmgrove Avenue. The installation of two 20-inch butterfly valves in Lloyd Avenue, one 16-inch gate valve and one 16-inch butterfly valve in Wayland Avenue, a 30-inch by 16-inch tapping sleeve and valve at Thayer Street and various other smaller size gate valves was included, as well as the replacement of existing flush hydrants with post hydrants and the installation of a new post hydrant on Wayland Avenue, reconnecting house services on Wayland Avenue, the replacement of paved surfaces, and other miscellaneous appurtenances pertaining to the work.

The construction of the Huntington Expressway, between its connection with the Dennis J. Roberts Expressway near Olneyville and Reservoir Avenue in Providence, required numerous and extensive changes in the distribution system involving the installation of new connecting mains, change over connections and abandonment of portions of existing mains. While the cost of this construction was borne by the State of Rhode Island and the Federal Government as an incidental part of the traffic facility, the department nevertheless was put to considerable expense in planning and layout assistance, field supervision and inspection of construction, and changing of the numerous office records. The more involved portions of this work included a 36-inch bypass main at the New Depot Avenue crossing and the construction of twin 30-inch bypass mains for Mashapaug Bridge at Reservoir Avenue, where the period of shutdown for the purpose of making the changeover connections was limited to the shortest possible time during the lowest demand on the system. The Mashapaug Bridge bypass mains presented an unusually complicated problem of thrust anchorage and underdrainage since the soil and ground water conditions in this area were quite unfavorable and the alignment of the 30-inch mains was necessarily quite irregular to avoid conflict with bridge foundations and other underground utilities. After numerous conferences with the consulting engineers for the State, it was decided that heavily reinforced concrete slabs faced with sheet steel piling be placed under the pipe bends and be constructed with reinforced vertical piers tied to and trans-

mitting thrust loads to the base slab to resist horizontal movement. This construction is now under way and its completion is expected towards the end of this calendar year which will then permit construction of the bridge structure without further interruption of service in the 30-inch mains.

The installation of new extensions to the distribution system and the replacement and relocation of existing mains required the installation of 60,210 feet of various size and kind of pipe. A part of this footage was installed by contractors under competitive bidding. Four contracts involving 35,641 feet of main extensions and replacements were awarded during the year; one to John Ambrose and Son, Inc. for 10,149 feet, one to the C. Brito Construction Company for 16,953 feet, one to the Capaldi Bros. Construction Company for 4,840 feet and one to the Fanning and Doorley Construction Company for 3,699 feet.

In connection with the construction of the Huntington Expressway in Providence and Cranston, the M. A. Gammino Construction Company installed 5,553 feet of main and appurtenances including 335 feet of 36-inch cast iron pipe with two 36-inch by 36-inch tapping sleeves and valves which were installed under the direction and supervision of the A. P. Smith Manufacturing Company of East Orange, New Jersey.

The Campanella and Cardi Construction Company installed 3,380 feet of main and appurtenances in connection with the development of the West River Development Project in Providence. Included in this work was one 12-inch rotary plug valve.

Other extensions involving the laying of 317 feet of pipe were installed by the Department's forces.

Two hundred and forty six main extensions were laid in various streets with approximately 7,030 feet remaining to be laid at the end of the year.

On January 13, 1959 a contract was awarded to the Fanning and Doorley Construction Company for the installation of 61

post hydrants on the distribution system. Under the terms of the contract the contractor furnished all materials except the hydrants which were furnished by the department. Work started on February 2, 1959 and was completed on March 19, 1959, the final payment amounting to \$22,310.40.

Capital improvements totalled \$879,602.07 during the year, of which \$825,658.12 was for improvements to the distribution system, including the Garden Hills Pumping Station, improvements to Neutaconkanut Pumping Station, Arrow Lakes Dairy land, main extensions, new services, gate valves and hydrants; the remainder being for miscellaneous equipment and other capital items. These improvements were financed out of income without resort to bond issues.

Applications for water service totalled 1008 or 51 greater than in the previous year. Of this number 114 required extensions to the distribution system. A total of 860 new services were installed, 827 general supplies and 33 fire supplies.

Under the terms of Chapter 1525 of the Ordinances and Resolutions of the City of Providence for 1946, this department was charged with the operation of the sewer rental law, which took effect October 1, 1946. During the fiscal year ended September 30, 1959, the net sewer rental collection totalled \$135,787.05.

Automotive and construction equipment owned and in use by the department totalled 25 various trucks, 18 passenger cars including 2 jeeps, 9 compressors, various pumps and other miscellaneous equipment. The records of the department indicate that trucks were operated a total of 37,326 truck hours at a cost of 64.9 cents per hour including depreciation, compressors 4,891 hours at 38.1 cents per hour, and passenger cars were driven a total of 186,925 miles at a cost of 6.1 cents per mile.

SOURCE OF SUPPLY

SCITUATE WATERSHED—RAINFALL AND RUNOFF

The rainfall on the 92.8 square mile Scituate Watershed above Gainer Dam was measured as usual by rain gages at Rocky Hill, Hopkins Mills, North Scituate, Westcott District and Gainer Dam. For the year ended September 30, 1959 a total of 43.14 inches was recorded, which is 5.19 inches less than the 44-year (1916-1959) average of 48.33 inches. The rainfall for the year was 89% of the long term average and 65% of the maximum of 66.28 inches, established during the year ended September 30, 1958.

There were seven long periods when no rainfall was recorded, ranging in duration from seven to fifteen days. The three longest periods occurred from October 2 to 16, 1958, May 2 to 11, 1959, and from September 4 to 14, 1959. There were three equally long periods of eight days of successive rainfall and one period of seven days, with the most productive period occurring during the seven days July 10 to 16, 1959 when a total of 5.03 inches was recorded; with a maximum of 3.22 inches on July 10, and a minimum of 0.006 inches on July 16.

The total rainfall of 43.14 inches was the tenth lowest yearly rainfall experienced during the 44 year period, the lowest being for the year ended September 30, 1957 when a total of 33.43 inches was recorded. During the months of November and December 1958, and January, May, August and September 1959, the monthly rainfall was below the 44-year (1916-1959) averages for these respective months; the minimum monthly rainfall occurring in September when 0.57 inches was measured, which was 3.36 inches below the 44-year average for that month. The maximum monthly rainfall occurred in March 1959, when a total of 7.13 inches was recorded, exceeding the average for that month by 2.63 inches. The maximum day's rainfall for the year occurred on July 10, 1959 when a total of 3.22 inches was recorded, with the station at North Scituate measuring 3.68 inches.

The runoff for the year totalled 24.95 inches, about equal to the 44-year (1916-1959) average of 25.04 inches. During the months of November and December 1958, and January, February, May, August and September, 1959 the monthly runoff was less than the 44-year averages for those respective months; the minimum monthly runoff occurring in September when minus 0.23 inch was recorded. This was the second lowest runoff during September for the 44-year period. During the months of October, 1958 and March, April, June and July, 1959 the monthly runoff exceeded the 44-year averages; the maximum monthly runoff occurring in March when the amount collected totalled 5.86 inches, or 1.11 inches above the long term average for that month.

Statistical rainfall and runoff data for the year ended September 30, 1959, and the years of previous watershed record may be found in Tables 1, 2, 3, and 4 of the Appendix.

SCITUATE WATERSHED STORAGE, DRAFT, AND YIELD

On October 1, 1958 the water in Scituate Reservoir was at elevation 279.27, or 4.74 feet below the spillway level; the total storage then amounting to 31,997,000,000 gallons, or 86.5% of reservoir capacity. At the end of the year, October 1, 1959, the reservoir was at elevation 279.01, or 5.00 feet below the spillway level, with a storage of 31,711,000,000 gallons, or 85.7% of capacity. From October 1, 1958 the elevation rose steadily to 279.92 on October 6 and, following minor fluctuations, decreased to 277.97 on February 4, 1959, or 6.04 feet below the spillway level. The total storage then amounted to 30,670,000,000 gallons, or 82.9% of capacity, the smallest amount in storage during the entire year. The elevation then rose gradually during the remainder of February, and quite rapidly during March, reaching spillway elevation 284.01 on April 3, 1959 and elevation 284.60 on May 4. After decreasing to 283.23 on July 10, 1959 the elevation rose rapidly to again reach spillway elevation 284.01 on July 12 and continued upward to the max-

imum elevation for the year of 284.79 on July 21. At this point the total storage amounted to 37,885,000,000 gallons, or 102.4% of capacity. From that date, the storage decreased in a steady manner to the end of the year.

On October 1, 1958 the combined storage on the watershed, including Regulating, Westconnaug, Barden, Moswansicut, Ponaganset and Scituate Reservoirs amounted to 36,475,000,000 gallons, or 88.4% of combined total capacity; and at the end of year, October 1, 1959 the combined storage was 35,725,000,000 gallons, or 86.6% of capacity. The maximum combined storage was on July 18, when 42,284,000,000 gallons, which is 102.5% of capacity, were impounded. The minimum combined storage was on February 7, when 35,069,000,000 gallons, or 85.0% of capacity, were impounded.

Available storage statistics in detail will be found in Table 5 of the Appendix.

The total draft from the Scituate Watershed for the year was 40,996,620,000 gallons, or an average of 112,320,000 gallons per day. The draft for water supply purposes was 16,994,960,000 gallons, or an average of 46,560,000 gallons per day. The discharge into the north branch of the Pawtuxet River totalled 24,001,660,000 gallons, equal to 65,760,000 gallons per day. The discharge to the river was released at rates and during the hours which were most advantageous to the mills on the Pawtuxet River below Gainer Dam.

The yield from the Scituate Watershed for the year was 40,246,620,000 gallons, or an average of 110,260,000 gallons per day, which was 2,060,000 gallons per day less than the total daily draft, and 300,000 gallons per day less than the average daily yield for the 44-year period 1916 through 1959.

Draft and yield statistics will be found in Table 6 of the Appendix.

SCITUATE WATERSHED

FORESTRY OPERATIONS—1959

Due to the pressing need of maintenance work on the Scituate

reservation, the regular forestry operations were considerably curtailed during the 1959 year. Maintenance work in general, carried on over a large portion of the marginal area included roadside brush control, repairs and replacement of access road barriers, stockpiling of materials and surface repairs to secondary and access roads, a general landscaping treatment to the Dike area between Route 116 and the Gainer Memorial Dam, and repairs and replacement of fencing around Scituate Reservoir and along the Scituate Aqueduct in Cranston. The use of private operators in the thinning out of plantations was quite reduced; and, consequently, the by-product sales of pulpwood was at a negligible minimum.

The discovery of root rot or *Fomes annosus* in several of the red pine plantations presents a serious problem. After extensive research, numerous investigations and tests, the following conclusions have been reached. Inspection of the several plantations reveal many instances of dead and dying red pine *Pinus resinosa*. The causal agent is white stringy root rot or *Fomes annosus* (Fr.) Cke. The disease has a world-wide distribution in the North Temperate Zone and frequently acts as a saprophyte or a parasite of weakened or injured trees. It has been found to attack most coniferous species. The natural range of red pine includes only the northern fringe of New England westward through Northeastern United States and Canada to the Lake States.

In past decades it was a common opinion that red pine was an ideal tree for reforestation purposes in this area. Many acres were planted to this species usually in pure stands. The initial growth habit and resistance to insect or disease attack were superior. Unfortunately, very little attention was given to the seed source and natural range. In its natural habitat red pine frequently occurs in mixtures with white pine and sometimes jack pine. There is always a tendency to establish plantations of one species without regard to how the planted tree occurs in nature. Pure stands are much more susceptible to disease and insect attack than mixed stands. Epidemic proportions can be easily built up by an attacking pathogen. Also, even-aged stands

are more hazardous because fungous parasites are usually virulent during only one stage of the development of a tree.

Fomes annosus has always been present as a saprophyte on dead trees, stumps, and cull logs of conifers. In red pine, the fungus has found a tree that is planted extensively outside its range. This has created a situation whereby the tree is susceptible to attack.

Fomes has been found to enter a stand after a thinning operation. The windborne spores evidently find their way onto the exposed stumps and in that manner travel through the decaying roots into the root system of surrounding trees. Functional root grafts, not uncommon in red pine, serve as a vector for the spread of the root rot. The fungus will also enter a stand through a weakened windthrown tree. The disease has also been noted in stands untouched by man or a calamity of nature.

Foresters have found no way to stop the spread of *Fomes*. Initial spacing, site evaluation, degree of thinning, time of thinning and frequency of thinning are considerations that may have some bearing on the control of the disease. Growing red pine on a short rotation of about 30 years for products such as poles and piling has been suggested. Creosote has been placed on freshly exposed stumps to prevent the entry of the fungus.

In summary: On the Scituate Reservoir Watershed we are particularly liable to disaster for there occur many pure stands of red pine planted outside the natural range of the species. *Fomes annosus* has become well established in some pure plantations and has been found in mixed associations with red pine. Occasional evidence of infected white pine and Norway spruce has been noticed where these species are growing in the immediate vicinity of diseased red pine. An attempt will be made to salvage as much of the infected material as possible. Red pine stands on the watershed will be managed with the silvicultural treatment deemed most desirable from past experience or new developments. Any future planting of red pine will be done on a limited basis.

GAINER DAM—HYDRO-ELECTRIC PLANT

The Hydro-Electric Station at Gainer Dam has been in satisfactory operation throughout the year. The plant was operated on 265 days for a total of 3,296 hours. Power generated from the discharge of 23,831,070,000 gallons of water through the 1875 KVA Hydro-Electric Turbo Generator to the Pawtuxet River amounted to 4,683,600 kilowatt hours, or an average of 5,088 gallons per kilowatt hour. Of the power generated, 4,356,500 kilowatt hours, or 93.0%, was sold to the Narragansett Electric Company, and 299,500 kilowatt hours were used at the Water Purification Works. The rate of discharge through the station, concentrated during the hours of down-stream mill operations, averaged 173.53 million gallons per day.

Hydro-Electric Plant statistics on the basis of the "Contract Year" with the Narragansett Electric Company are shown in Table 8 of the Appendix.

WATER PURIFICATION WORKS

The Water Purification Works, located on the North Scituate-Hope Road about three-fourths of a mile from the Scituate Reservoir, has been in continuous and satisfactory operation throughout the year.

Water was drawn from Scituate Reservoir between elevations 213 and 220 and totalled 16,994,960,000 gallons, or an average of 46,560,000 gallons per day; the maximum for any one day being 80,780,000 gallons on June 10, 1959 and the minimum 28,370,000 gallons on October 12, 1958.

This water was treated with Ferri-Floc, aerated, dosed with slaked lime, mixed in the tangential mixer and coagulated in two concrete basins operated in series. Following a sedimentation period averaging approximately three and one-half days, it was filtered through rapid sand filters, treated with sodium silicofluoride, and finally chlorinated before being delivered into the Scituate Aqueduct leading to the water distribution system.

With the exception of a few short-period shutdowns to examine plant structures and service equipment, influent flow and chemical treatment were carried on 24 hours daily to obtain a constant and unvarying degree of coagulation and filter efficiency. The Ferri-Floc feeders and the quicklime feeders and slakers are the Omega gravimetric type, the automatic operation of each being controlled by an electric signalling device proportional to the rate of flow of water through the influent Venturi.

Water for dissolving Ferri-Floc and for lime slaking was maintained at a temperature of from 90 to 100 degrees Fahrenheit. The Ferri-Floc was dissolved by using a ratio of three pounds of water to each pound of chemical and the quicklime was slaked by using a ratio of four pounds of water to each pound of fine grain lime and five pounds of water to each pound of pebble lime.

Ferri-Floc used totalled 1,528,579 pounds, or an average of 4,188 pounds daily; with a maximum for any one day of 9,071 pounds on June 10, 1959 and a minimum of 1,731 pounds on October 12, 1958. The dosage averaged 0.63 grains per gallon, the maximum for any one day being 0.79 grains per gallon and the minimum 0.45 grains per gallon.

Quicklime used during the year totalled 1,604,004 pounds or an average of 4,395 pounds daily; with a maximum for any one day of 7,971 pounds on June 10, 1959 and a minimum of 2,310 pounds on October 12, 1958. The lime dosage averaged 0.66 grains per gallon, the maximum for any one day being 0.73 grains per gallon and the minimum 0.56 grains per gallon.

Filters were operated a total of 71,359.96 hours during the year, at an average of 195.51 filter hours per day; the average length of filter runs being 76.24 hours which is 3.68 hours, or 4.60 per cent less than the average of 79.92 hours for the previous year. The maximum daily average of filter runs was 155.25 hours on September 24, 1959 as compared to a maximum of 167.58 hours during the previous year; and the minimum was

30.00 hours on June 16, 1959 as compared to a minimum of 37.62 hours during the previous year.

Wash water rates varied from 13 to 33 inches rise per minute, the rate of rise being adjusted inversely to the temperature of the wash water. Filters 1 to 10, exclusive of number 2, were washed at rates which varied from 18 to 29 inches rise per minute and an average sand expansion of 31%. These nine filters have sand with an effective size of 0.52 millimeters. Filter number 2 which has 0.65 millimeter sand was washed at rates varying from 28 to 33 inches per minute rise and an average sand expansion of 29%. Filters 11, 12, 13 and 14 which have 0.46 millimeter sand were washed at rates varying from 13 to 25 inches rise per minute and an average sand expansion of 38%. A total of 254 tests were made during the year to determine the sand expansion and rate of rise. The total wash water used was 121,116,000 gallons, an average of 332,000 gallons per day, or 127,894 gallons per wash. The 121,116,000 gallons of wash water used was 0.007% less than the 121,124,000 gallons for the previous year.

The total water filtered for the year amounted to 15,551,383,000 gallons, an average of 42,607,000 gallons daily; the maximum day being 71,103,000 gallons on June 9, 1959 and the minimum 26,296,000 gallons on July 12, 1959. The average rate of filtration per filter was 5,230,000 gallons per day and the average amount of water filtered per filter per run was 16,610,000 gallons, or 1.40% more than the 16,380,000 gallons for the previous year.

The total plant effluent, or pure water delivered to the Scituate Aqueduct and the Kent County Water Authority, totalled 15,430,267,000 gallons, an average of 42,275,000 gallons per day, with a maximum of 70,525,000 gallons on June 9, 1959 and a minimum of 26,169,000 gallons on July 12, 1959.

With the exception of a few short-period shutdowns to make inspections and adjustments to the fluoridizer and the chlorinators, fluoridation and chlorination of the plant effluent were car-

ried on 24 hours daily. With respect to fluoridation, the City of Providence Water Supply Board is acting solely as the agent of the R. I. State Health Department in carrying out their directives relative to the chemical used, the applied dosage, and the type of feeding equipment. Sodium silicofluoride has been added in amounts sufficient to produce a fluoride ion concentration throughout the distribution system of 1.2 parts per million from October 1, 1958 to May 31, 1959 and 1.0 part per million from June 1, 1959 to September 30, 1959.

Plant effluent delivered to the Scituate Aqueduct and treated with sodium silicofluoride amounted to 15,133,476,000 gallons, an average of 41,462,000 gallons per day. Sodium silicofluoride used during the year totalled 220,603 pounds, or an average of 604 pounds per day; with a maximum for any one day of 914 pounds on May 27, 1959 and a minimum of 331 pounds on July 12, 1959. The actual dosage of fluoride ion averaged 1.04 parts per million, the maximum and minimum dosages being 1.16 and 0.87 parts per million. Water delivered to the Kent County Water Authority is not treated with sodium silicofluoride.

Chlorination of the plant effluent delivered to the Scituate Aqueduct was carried on continuously out of abundant caution. The amount treated with chlorine totalled 15,209,902,000 gallons, an average of 41,671,000 gallons per day. Water delivered to Kent County is chlorinated separately by their facilities.

Chlorine used during the year totalled 41,721 pounds, or an average of 114 pounds per day; with a maximum for any one day of 197 pounds on August 20, 1959 and a minimum of 64 pounds on July 12, 1959. The chlorine dosage averaged 0.33 parts per million, the maximum and minimum dosages being 0.42 and 0.27 parts per million. Chlorine residual of the water at a point adjacent to the main aqueduct averaged 0.013 parts per million, and of the tap water at the Providence City Hall 0.007 parts per million.

The following statistics show that the chemical cost of treatment for the year ended September 30, 1959 was \$4.53 per mil-

lion gallons. This is 6.79% less than the figure of \$4.86 last year. The price per ton of Ferri-Floc increased from a low of \$54.45 per ton last year to a high of \$55.05 this year, an increase of \$0.60 per ton, or 1.10%. The price per ton of quicklime increased from a low of \$21.00 last year to a high of \$21.60 this year, an increase of \$0.60 per ton, or 2.86%. The price per ton of sodium silicofluoride decreased from a high of \$149.80 last year to a low of \$109.40 this year. The price of chlorine has remained the same, \$0.0875 per pound.

Chemicals Used, etc.	Year Ended Sept. 30 1956	Year Ended Sept. 30 1957	Year Ended Sept. 30 1958	Year Ended Sept. 30 1959
Chlorine	0.41 P.P.M.	0.33 P.P.M.	0.32 P.P.M.	0.33 P.P.M.
Ferri-Floc	0.76 G.P.G.	0.59 G.P.G.	0.65 G.P.G.	0.63 G.P.G.
Quicklime	0.70 G.P.G.	0.62 G.P.G.	0.66 G.P.G.	0.66 G.P.G.
Sodium Silicofluoride	1.00*	1.00*	1.04*	1.04*
Length of Filter				
Runs	83.27 Hrs.	72.21 Hrs.	79.92 Hrs.	76.24 Hrs.
Tap Water Color...	7 P.P.M.	5 P.P.M.	5 P.P.M.	6 P.P.M.
Tap Water Iron...	0.02 P.P.M.	0.01 P.P.M.	0.02 P.P.M.	0.00 P.P.M.
Cost of Chemicals per M.G. of Water Treated..	\$5.16	\$4.54	\$4.86	\$4.53

*Dosage expressed as P.P.M. of Fluoride.

Operating figures and statistics relative to chemical use and cost will be found in Tables 9 and 10 of the Appendix.

The Ferri-Floc used as a coagulant was obtained under contract from Faesy & Besthoff, Inc., New York, for the period October 1, 1958 to September 30, 1959 at \$55.05 per ton. Specifications for Ferri-Floc read as follows: "The material furnished shall be ferric sulphate. It shall contain not less than sixty-nine per cent (69%) of water soluble ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$). The content of ferrous iron shall not exceed one and one-half per cent (1.5%) as (Fe). It shall be free of foreign material or material deemed undesirable in water purification processes. The material shall be in granular or lump form. Not more than forty-five percent (45%) shall pass a 20 mesh per inch screen, and no particle shall be larger than will pass a one-inch mesh screen. Deliveries to be made in cars suitably

lined to protect the material from moisture and foreign matter." The specifications contain a provision that allows us to penalize the manufacturer at the end of the contract year in event that the total amount of material received falls below an average of sixty-nine per cent (69%) of water soluble ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$).

Ferri-Floc has been delivered in bulk carload lots to the railroad siding at Washington, R. I., about five and one-half miles from the Water Purification Works. Deliveries to the plant have been made by our force with the use of a Pneumatic Transfer Truck, which removes the Ferri-Floc from the car and delivers it into a storage silo of glazed segment tile masonry. This silo has an inside diameter of 16 feet, a height of 55 feet and a capacity of 180 tons of the material; which, in addition to the 40-tons storage provided in the feeding hopper on the fifth floor of the Purification Works Head House, assures a maximum of approximately 105 average days' supply. The stored Ferri-Floc in the silo is conveyed pneumatically through a 4-inch underground conveyor pipe approximately 600 feet to the concrete feeding hopper within the Purification Works building by means of a motor-driven air blower and control equipment, housed in a single story brick building adjacent to the silo.

Analysis of the Ferri-Floc received has shown an average ferrous iron content of 0.53% which is 0.97% less than the maximum of 1.50% allowed by the specifications. The average water soluble ferric sulphate ($\text{Fe}_2(\text{SO}_4)_3$) content of the eighteen deliveries received was 72.70% or 3.70 more than the minimum of 69% demanded by specification requirements. The average amount of material passing a 20 mesh per inch screen was 33.9% as compared to the permissible maximum of 45.0%. The following table shows the date of delivery, together with the per cent of ferrous iron, per cent of water soluble ferric sulphate, and per cent passing a 20 mesh per inch screen.

Date Received	Percent Ferrous Iron	Per cent water soluble Ferric Sulphate	Percent passing a 20 mesh per inch screen
November 5, 1958.....	0.89	69.92	35.9
November 7, 1958.....	0.46	73.18	36.0
December 15, 1958.....	0.29	73.43	31.4
December 19, 1958.....	0.34	75.22	40.1
December 29, 1958.....	0.27	72.85	28.8
February 9, 1959.....	0.52	70.17	39.8
February 18, 1959.....	0.41	72.10	37.3
March 2, 1959.....	0.26	74.21	33.2
April 24, 1959.....	0.32	74.71	24.3
April 29, 1959.....	0.30	73.39	31.6
May 20, 1959.....	0.27	73.43	33.1
June 10, 1959.....	No Sample Obtained		
June 19, 1959.....	0.30	74.18	30.0
June 26, 1959.....	0.23	73.14	28.7
August 10, 1959.....	0.31	74.14	34.6
September 14, 1959.....	1.15	71.21	47.6
September 25, 1959.....	1.50	71.10	32.4
September 28, 1959.....	1.17	69.60	32.1

The table shows that all deliveries tested met specification requirements on the ferrous iron and ferric sulphate contents, but 1 failed to meet screen test requirements. The manufacturer was notified to this effect and requested to conform to his obligations.

Quicklime was obtained under contract with the Manchester & Hudson Company, Providence, from October 1, 1958 to April 12, 1959 at \$21.60 per ton. Specifications for the quicklime read as follows: "The material furnished shall be granular or fine grain quicklime, of which 100% shall pass a 4 mesh per inch screen and not less than 85% shall be retained on a 100 mesh per inch screen. Insoluble matter shall be less than 2% and magnesium oxide shall be less than 3%. It shall have an available calcium oxide (CaO) content of not less than 90%. The calculation of the available lime shall be on an 'As Received' basis".

Analysis of the quicklime received from the Manchester & Hudson Company showed an average available calcium oxide (CaO) content of 94.8% which is 4.8% greater than specification requirements. The per cent of material passing a 4 mesh per inch screen was 100% on every delivery and the per cent

retained on a 100 mesh per inch screen averaged 99.7%. The following table shows the date of delivery, together with the percent of available calcium oxide and the per cent of material retained on a 100 mesh per inch screen:

Date Received	Percent Available Calcium Oxide	Percent Retained on a 100 mesh per inch screen
November 24, 1958.....	94.2	99.8
November 28, 1958.....	96.6	99.8
December 8, 1958.....	93.9	99.2
January 5, 1959.....	93.7	99.9
January 9, 1959.....	95.1	99.6
January 21, 1959.....	95.5	99.7

The table shows that all six deliveries met specification requirements.

Shipments of quicklime received from April 13 to September 30, 1959 were obtained under contract with the Standard Lime & Cement Company, Baltimore, Maryland, at a price of \$20.92 per ton. Specifications for the quicklime purchased from this company read as follows: "The material furnished shall be rotary kiln pebble quicklime, of which 100% shall pass a $\frac{3}{4}$ -inch screen and not less than 80% shall be retained on a 10 mesh per inch screen. Insoluble matter shall be less than 2% and magnesium oxide shall be less than 3%. It shall have an available calcium oxide (CaO) content of not less than 90%. The calculation of the available lime shall be on an 'As Received' basis".

Analysis of the quicklime received from the Standard Lime & Cement Company showed an average available calcium oxide (CaO) content of 91.9% which is 1.9% greater than specification requirements. The per cent of material passing a $\frac{3}{4}$ -inch screen was 100% on every delivery and the per cent retained on a 10 mesh per inch screen averaged 98.1%. The following table shows the date of delivery, together with the percent of available calcium oxide and the per cent of material retained on a 10 mesh per inch screen:

Date Received	Percent Available Calcium Oxide	Percent Retained on a 10 mesh per inch screen
April 13, 1959.....	92.2	100.0
May 6, 1959.....	91.8	100.0
May 26, 1959.....	91.0	100.0
June 10, 1959.....	89.0	99.2
June 17, 1959.....	90.0	99.6
June 24, 1959.....	92.0	99.5
July 3, 1959.....	93.7	99.1
July 8, 1959.....	94.3	99.6
July 15, 1959.....	92.4	98.6
July 22, 1959.....	92.4	95.3
August 28, 1959.....	93.1	94.0
September 2, 1959.....	91.8	95.2
September 9, 1959.....	90.7	95.4

The table shows that one of the thirteen deliveries failed to meet specifications with respect to the percent of available calcium oxide. The manufacturer was notified to this effect and requested to conform to his obligations.

The quicklime has been delivered in bulk carload lots to the railroad siding at Washington, R. I. Deliveries to the plant have been made by our force with the use of the same Pneumatic Transfer Truck used for transporting the Ferri-Floc. There is a separate storage silo, 4-inch underground conveyor pipe, feeding hopper, motor-driven air blower and control equipment for the pneumatic handling of the quicklime, which is an exact duplicate of the pneumatic handling system for Ferri-Floc. The quicklime storage silo has a capacity for 180 tons of the material; which, in addition to the 40-ton storage provided in the feeding hopper on the fifth floor of the Purification Works Head House, assures a maximum of approximately 100 average days' supply.

The liquid chlorine used to treat the water was obtained under contract with the Fields Point Manufacturing Company, Inc., Providence, for the period October 1, 1958 to September 30, 1959 at \$0.0875 per pound. This material was delivered to the Purification Plant by our force in lots of 14 cylinders, each containing 150 pounds of chlorine.

The sodium silicofluoride was purchased under contract with the General Chemical Division, Allied Chemical Corporation,

New York, from October 1, 1958 to August 31, 1959 at \$109.40 per ton. A delivery received on September 1, 1959 was obtained from the Henry Sundheimer Company, New York, at a contract price of \$139.39 per ton. The specifications covering both contracts were the American Water Works Association Tentative Standard Specifications for Sodium Silicofluoride, AWWA B702-54T, approved as Tentative May 27, 1954. Among other requirements these specifications call for a minimum of 98 percent sodium silicofluoride, which corresponds to approximately 59.4 percent fluoride ion. The following table shows the date of delivery, together with the percent of sodium silicofluoride. The average sodium silicofluoride content was 98.6%.

Date Received	Percent Sodium Silicofluoride
October 14, 1958.....	99.8
December 5, 1958.....	99.6
January 21, 1959.....	98.7
March 18, 1959.....	97.9
May 13, 1959.....	97.8
June 22, 1959.....	98.7
July 13, 1959.....	97.7
September 1, 1959.....	98.8

The table shows that three of the eight deliveries had a sodium silicofluoride content less than the minimum of 98 percent permitted by the specifications. However, the deviation was very slight, the largest amount being 0.3%.

A special pneumatic conveying system operates to transfer the chemical from the drums to the storage collector supplying the fluoridizer hopper. The fluoridizer is an Omega gravimetric type feeder equipped with a non-flooding gate to prevent any possible overtreatment. The feeder is operated automatically by an electric signalling device proportional to the rate of flow of water to the Scituate Aqueduct.

Number 6 fuel oil used for heating the plant from October 1958 to May 1959 and during September 1959 totalled 66,483 gallons, an average of 5,540 gallons per month. Number 2 fuel oil was used during the entire year for heating water and amounted to 6,071 gallons, an average of 506 gallons per month.

WATER PURIFICATION WORKS LABORATORY

The fully equipped and modern laboratory maintained at the Purification Works for control over the quality of the water supply, from the raw water on the watershed to the tap at the consumers' premises, has been in operation throughout the year, with constant vigilance being exercised by the chemists and bacteriologists. Samples of tap water were obtained daily from not less than nine consumers' taps in various parts of the distribution system, the Providence City Hall, and from Longview and Neutaconkanut distribution reservoirs. Also, samples for analysis were obtained from the brooks, streams and reservoirs on the watershed, the raw water from the lower intake of Scituate Reservoir, the reservoir surface water, Gainer Memorial Dam meter chamber, Fiskeville Reservoir, twelve locations on the Pawtuxet River below the Dam, the various stages of the purification process, coincident with the investigation of complaints, from extensions to the distribution system, and selected locations in the distribution system.

The total number of samples obtained from all sources during the year amounted to 12,407 which, based on a forty-hour work week means that one sample or another was obtained every 10.1 minutes. Tests made on these samples included chemical, sanitary chemical and mineral analyses, and bacteriological and microscopical examinations. The total number of tests made amounted to 97,250 which, based on a forty-hour work week, means that the water was receiving one test or another every 77 seconds. Each delivery of Ferri-Floc and of quicklime was tested to determine conformance to specifications and the optimum dosages required for coagulation and pH control. Each delivery of sodium silicofluoride was also tested, not only for conformance to specifications but to assure that the proper concentration of fluoride ion would be maintained throughout the distribution system. Filter washings were regulated by means of tests on the sand expansion and rate of rise of wash water. Samples taken after sterilization of extensions to the distribution system were tested for chlorine residual, B. Coli, 35°C and 20°C bacteria before permitting any extension to be placed in

service. Consumer complaints were serviced and recommendations made to eliminate the source of trouble.

Some idea of the laboratory control over the quality of the water supply may be had by a comparison of our sampling schedule with that recommended by the U. S. Public Health Service Standards. The following table taken from the Standards shows the minimum number of bacteriological samples that should be obtained from the distribution system per month for any given population served:

Population Served	Minimum Number of Samples per Month
2,500 and under.....	1
10,000	7
25,000	25
100,000	100
300,000	180
400,000	200
1,000,000	300
2,000,000	390
5,000,000	500

The population served by the City of Providence water supply is approximately 401,100. From the above table, it may be seen that the minimum number of bacteriological samples that should be obtained from the distribution system per month for this population is 200. The actual number of bacteriological samples obtained in the distribution system for the year amounted to a total of 3,286, or an average of 274 per month, a figure 37% greater than recommended by the Standards and more than is required for a population of 700,000. A sample for chemical and sanitary chemical analysis was also obtained with each bacteriological sample.

Coagulation tests were made on one liter quantities of raw water treated with various amounts of Ferri-Floc and slaked lime, simulating all the operations of the purification processes on a laboratory scale, for the purpose of determining the most economical dosage consistent with good coagulation.

Civil Defense activities were continued on a somewhat greater scale than last year. In addition to the frequent testing of water for radioactivity and the participation in the annual state and nationwide Civil Defense exercise, members of the laboratory staff attended a local radiological monitoring course and the pertinent portion of the Rhode Island Civil Defense Staff College.

The laboratory staff made an extensive study of the performance of the two butterfly valves which replaced the worn wash water gate valves on number 1 filter. This program compared velocities, speeds of opening, filter sand expansion, rate of wash water rise through filters, and general washing efficiency of the new butterfly valves with the old gate-type valves. This study is described elsewhere herein in the report of the Chief Engineer.

Another laboratory program consisted of studies made on the fluoride content of coatings on water mains. Samples were taken from the inner surfaces of any old hydrant or water main which was removed for replacement. Analyses and other studies are now in progress to determine how much fluoride is available on these surfaces to be re-dissolved in the water under any unpredictable conditions. Earlier studies have already established that no conditions known to exist in a water main will extract significant amounts of fluoride from coatings which now exist there.

Rigid laboratory control has resulted in the continuation of economies consistent with an excellent quality of water. Constant vigilance over the chemical treatment machinery and the filter controls has aided greatly in keeping the cost of treatment low despite increased costs of chemicals, the filter runs long, and the quality of water at a high degree of purity.

Tables 11 to 21, inclusive, of the Appendix show statistics relative to the quality of the water and the kind and number of laboratory examinations made during the past year.

TRANSMISSION AND DISTRIBUTION

SCITUATE AQUEDUCT

The Scituate Aqueduct, which conveys the effluent water from the Water Purification Works in Scituate to the distribution system, has been in continuous and satisfactory service throughout the year. Maintenance of the property along this line included cutting and burning brush, repairs to grassed embankments, repairs to fencing, and other miscellaneous work as required.

HIGH SERVICE PUMPING STATIONS

Neutaconkanut and Bath Street Pumping Stations, supplying water to the high service portion of the distribution system generally above elevation 140, and to the special high pressure fire service in the congested area of downtown Providence, have been in satisfactory operation throughout the year. Installation of additional pumping equipment at the Neutaconkanut Pumping Station was completed and is described elsewhere herein in the report of the Chief Engineer.

Water pumped into the high service area totalled 3,829,979,000 gallons, or an average of 10,493,093 gallons per day.

Neutaconkanut station pumped 1,322,144,000 gallons through the east Venturi and 763,625,000 gallons through the west Venturi meter for a total of 2,085,769,000 gallons, or 5,714,436 gallons per day, and Bath Street Station pumped 1,744,210,000 gallons, or 4,778,657 gallons per day.

The total power required for pumping at both stations amounted to 1,499,060 kilowatt-hours. Neutaconkanut Station required 760,700 kilowatt-hours, and Bath Street Station 738,360 kilowatt-hours. The cost of power at both stations was \$24,350.86, or \$6.36 per million gallons pumped.

Test runs of the auxiliary gasoline engine driven pump at Neutaconkanut Pumping Station were made weekly, the pump being operated a total of 40 hours and 15 minutes, pumping 14,670,000 gallons during the year. Weekly test runs of the auxiliary gasoline engine driven pumps at the Bath Street Pumping Station were made throughout the year. These pumps were operated a total of 24 hours and 40 minutes, pumping 3,240,000 gallons for the year.

Operating statistics for the high service pumping stations will be found in Tables 22 and 23 of the Appendix.

DISTRIBUTION RESERVOIRS

The 42 million gallon Neutaconkanut Low Service Distribution Reservoir on Neutaconkanut Hill, Johnston, and the 12 million gallon Longview High Service Distribution Reservoir on Mineral Spring Avenue and Smithfield Road in North Providence have been in continuous and satisfactory operation during the year, with the exception of the period from 7 A.M. December 13 to 4:30 A.M. December 14, 1958. During this period of time the Neutaconkanut Reservoir was completely out of service; this was caused by the installation of a new butterfly valve at the "Y" connection.

Routine maintenance activities were carried on with respect to the care of equipment, grounds, fencing, etc.

Operating statistics for the Distribution Reservoirs will be found in Tables 24 and 25 of the Appendix.

WATER DISTRIBUTION SYSTEM

The water distribution system has been maintained in satisfactory and continuous operation throughout the year. Extensions of mains, the installation of various types of valves, hydrants and services, and necessary repairs and replacement of the system's appurtenances were made when and where required. The construction of new highways and the reconstruc-

tion and repairs to existing highways during the year accounted for the major part of the repairs to and the replacement of the appurtenances.

The amount of pipe laid during the year, all sizes, totalled 60,210.41 feet including 50,615.82 feet of asbestos cement pipe and 9,594.59 feet of cement lined cast iron pipe. Of the total amount laid, 3,174.75 feet replaced existing mains including 265.85 feet of 36-inch, 2,559.58 feet of 16-inch replacing 6-inch, 28.09 feet of 12-inch, 10.79 feet of 8-inch replacing 12-inch, and 310.44 feet of 6-inch.

A total of 10,897.08 feet of pipe was removed or abandoned, resulting in a net increase to the distribution system of 49,313.33 feet. In the City of Providence the net increase amounted to 10,603.00 feet, in the City of Cranston 15,617.35 feet, in the Town of Johnston 11,439.04 and in the Town of North Providence 11,653.94 feet.

At the end of the year the total length of mains in the distribution system aggregated 759.91 miles, including 12.83 miles in the special high service fire system in the City of Providence. Asbestos cement pipe in the system totalled 757,103.46 feet, consisting of 441,080.09 feet of 6-inch, 286,881.35 feet of 8-inch, 17,111.42 feet of 12-inch, 8,615.28 feet of 16-inch and 3,415.32 feet of 20-inch. Prestressed reinforced concrete steel cylinder pipe totalled 54,628.28 feet consisting of 2,380.54 feet of 16-inch, 32,694.08 feet of 24-inch and 19,553.66 feet of 30-inch. Reinforced concrete steel cylinder pipe totalled 36,597.00 feet consisting of 715.00 feet of 36-inch, 15,312.00 feet of 48-inch and 20,570.00 feet of 60-inch. Steel pipe totalled 10,032.00 feet including 1,584.00 feet of 48-inch and 8,448.00 feet of 66-inch. The remaining footage consists of cast iron pipe including 1,931,389.90 feet of 6-inch, 534,822.56 feet of 8-inch, 14,354.15 feet of 10-inch, 357,072.29 feet of 12-inch, 139,433.18 feet of 16-inch, 16,262.24 feet of 20-inch, 66,559.24 feet of 24-inch, 59,383.34 feet of 30-inch, 9,235.80 feet of 36-inch and 25,449.62 feet of 42-inch, totalling 3,153,962.32 feet of cast iron pipe.

Details of pipe laid, removed, replaced, and in use at the end of the year are shown in Tables 26 and 27 of the Appendix.

Stop gates installed during the year, including replacements, totalled 231. In Providence 37 six-inch, 20 eight-inch, 10 twelve-inch, 9 sixteen-inch, 2 twenty-inch, 4 twenty-four-inch and 1 forty-eight-inch; in Cranston 28 six-inch, 35 eight-inch, 3 twelve-inch and 2 thirty-six-inch; in Johnston 15 six-inch and 30 eight-inch; and in North Providence 20 six-inch and 15 eight-inch stop gates were installed. Stop gates removed or abandoned during the year, including replacements, totalled fifty-five; 31 six-inch, 7 eight-inch, 1 twelve-inch, 4 sixteen-inch, 4 twenty-four-inch and 1 forty-eight-inch in Providence; in Cranston 6 six-inch; and in Johnston 1 eight-inch. Stop gates replaced totalled 27; in Providence 9 six-inch, 6 eight-inch, 1 twelve-inch, 4 sixteen-inch, 3 twenty-four-inch and 1 forty-eight-inch; in Cranston 2 six-inch; and in Johnston 1 eight-inch. At the end of the year there was a total of 10,289 stop gates in the system ranging from 6-inch to 48-inch including 4 twelve-inch and 15 sixteen-inch rotary plug valves, and 1 sixteen-inch, 2 twenty-inch and 2 forty-eight-inch butterfly valves.

Hydrant gates installed during the year totalled 134; in Providence 60 six-inch and 2 eight-inch; in Cranston 58 six-inch and 1 eight-inch; in Johnston 8 six-inch, and in North Providence 5 six-inch. Hydrant gates removed or abandoned totalled 20; in Providence 2 six-inch, and 14 eight-inch; in Cranston 1 four-inch and 1 six-inch; and in Johnston 2 six-inch. Hydrant gates in use at the end of the year totalled 3,803.

Gates on un-watering hydrants and on blow-offs remained the same as in the previous year.

The total number of gates in the system, not including service gates, all sizes, in use at the end of the year totalled 14,133.

Details of gates in use on September 30, 1959 are shown in Table 28 of the Appendix.

Private pipes connected to the distribution system at the end of the year totalled 263. In the City of Providence there was a total of 142, in Cranston 72, in Johnston 21 and in North Providence a total of 28.

A total of 860 new services, general and fire supplies, were installed during the year; 254 in Providence, 305 in Cranston, 142 in Johnston and 159 in North Providence. A total of 293 services were removed or abandoned; 214 in Providence, 63 in Cranston, 9 in Johnston and 7 in North Providence. Seventy-five services were repaired during the year. The number of active services in the system at the end of the year totalled 59,709 including both general and fire supplies, consisting of 59,650 metered services and 59 unmetered services. Active metered services at the end of the year constituted 99.9% of the total active services in the system.

Statistics relative to services will be found in Tables 29 and 30 of the Appendix.

Public fire hydrants in use at the end of the year totalled 4,416 which included 2,506 post type and 1,910 flush type hydrants. Post hydrant installations totalled 242 including 127 which replaced flush type hydrants, 30 replacing post type hydrants and 85 new installations including 17 in Providence, 57 in Cranston, 6 in Johnston and 5 in North Providence. Repairs to 19 post hydrants were made during the year.

Statistics relative to public fire hydrants will be found in Tables 31 and 32 of the Appendix.

Leaks in the distribution and transmission mains totalled 117 during the year, 57 occurring at joints and 60 as a result of ruptured mains. Leaks at joints averaged 1 for every 13.33 miles of main, while total leaks averaged 1 for every 6.49 miles of main.

The number of meters repaired and tested in our Meter Repair Shop was 9,107 while those receiving attention in the field

numbered 135, making a total of 9,242 or 84 less than during the previous year. The cost of meter repairs in the shop averaged \$2.16 per meter as against \$2.21 last year. Meters requiring servicing in the field involved an average expenditure of \$1.83 per meter during the current year as compared with \$2.24 the previous year.

The number, make and size of meters on active services at the end of the year are shown in Table 33 of the Appendix.

CONSUMPTION

Water consumption for the year ended September 30, 1959 amounted to 15,429,977,000 gallons or an average of 42,273,910 gallons per day. This average was 1,832,924 gallons per day more than the average for the previous year. The increase occurred during the months of December, 1958, January, February and March, 1959, and May through September, 1959, ranging from 110,000 gallons per day in July to 7,730,000 gallons per day in August. During the months of October and November, 1958, and April, 1959 the average daily consumption was less than the average for the corresponding months of the previous year, ranging from 260,000 gallons daily in November to 1,870,000 gallons daily in October.

The maximum daily consumption occurred on June 9, 1959 when 71,133,000 gallons were consumed, which is 13,567,000 gallons less than the record maximum of 84,700,000 gallons on June 17, 1957.

The maximum month's consumption was in August 1959 when 1,591,231,000 gallons were used, and the minimum month was February 1959 when 1,104,753,000 gallons were consumed.

Water consumption statistics will be found in Tables 34, 35, 36, and 37 of the Appendix.

FINANCIAL SUMMARY

The gross income for the year ended September 30, 1959 totalled \$2,630,358.90, an increase of \$38,022.26 over the previous year. Revenue from the sale of water alone was \$2,255,865.23, a decrease over the previous year of \$17,718.54. The remaining income of \$374,493.67 was received from other sources, including hydrant rentals, sale of power, installation of services, miscellaneous items, and surpluses in the Meter Revolving Fund and Main Extension Account. The receipts for these items show an increase of \$55,740.80.

During the year total payments for water main extensions amounted to \$115,579.31, an increase over the previous year of \$4,609.54. Income from service connection charges amounted to \$76,254.00, an increase over the previous year of \$5,251.00. At the end of the year, unpaid water bills totalled \$211,427.87 as compared with \$201,191.00 at the beginning of the year, or 9.02% of the total net billing. Miscellaneous Accounts Receivable amounted to \$8,116.24 at the end of the year as compared with \$10,269.07 at the beginning of the year.

Operating expenses, including Taxes, Employees' Retirement System and Social Security payments, totalled \$1,749,700.19, an increase over the previous year of \$1,050.94. However, it was necessary to obtain a transfer from the Water Depreciation and Extension Fund of \$60,000.00 to meet outstanding commitments covering water main extensions. Actually, the increase in Operating Expenses jumped \$61,050.94 over the previous year.

Interest on the Bonded Debt, Payment to the Sinking Fund, plus the appropriation to the Water Depreciation and Extension Fund, totalled \$880,658.71. The aggregate of all expenditures of the Board during the year was \$2,419,700.19; which, deducted from the gross revenue of \$2,630,358.90, leaves a net balance of \$210,658.71. According to law this reverts to the Sinking Fund for the retirement of water bonds. As none of

the bonds mature until 1962, at which time the next \$6,500,000.00 principal will be payable, there was no reduction in the gross bonded indebtedness during the year. The net bonded debt at the end of the present year was \$2,558,516.20, and at the end of the previous year \$3,137,916.36, a reduction of \$579,400.16.

Financial accounts of the department, tabulation of water works property, statements of revenues, various funds, outstanding bonds and sinking fund requirements, inventories and other statistics may be found in Tables 38 to 58 of the Appendix.

A summary of statistics of the Providence Water Supply Board for the year ended September 30, 1959 may be found in Table 59 of the Appendix.

Respectfully submitted,

PHILIP J. HOLTON, JR.

Chief Engineer

APPENDIX

LIST OF TABLES

TABLE

1. SCITUATE WATERSHED—Monthly Rainfall in Inches for Year Ended Sept. 30, 1959.
2. SCITUATE WATERSHED—Monthly and Yearly Rainfall in Inches for 44 Years, 1916-1959.
3. SCITUATE WATERSHED—Monthly and Yearly Runoff in Inches for 44 Years, 1916-1959.
4. SCITUATE WATERSHED—Monthly and Yearly Percent of Rainfall Collected for 44 Years, 1916-1959.
5. SCITUATE WATERSHED—Statistics of Storage for Year Ended September 30, 1959.
6. SCITUATE WATERSHED—Statistics of Draft and Yield for Year Ended Sept. 30, 1959.
7. SCITUATE WATERSHED—Reforestation, Number and Kinds of Trees Planted in Various Years.
8. GAINER DAM—Hydro-Electric Power Generation Statistics.
9. WATER PURIFICATION WORKS—Operating Statistics.
10. WATER PURIFICATION WORKS—Chemicals Used and their Cost.
11. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in Process of Filtration.
12. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in Various Brooks and Reservoirs on Scituate Watershed.
13. WATER PURIFICATION WORKS—Chemical and Physical Characteristics of Water in the Distribution System.
14. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—48 Hours on Agar at 20° C.
15. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—24 Hours on Agar at 35° C.
16. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Process of Filtration—B. Coli.
17. WATER PURIFICATION WORKS—Bacteriological Examination of Water in Various Brooks and Reservoirs on Scituate Watershed.
18. WATER PURIFICATION WORKS—Bacteriological Examination of Water in the Distribution System.
19. WATER PURIFICATION WORKS—Mineral Analysis of Water.
20. WATER PURIFICATION WORKS—Sanitary Chemical Analysis of Water.
21. WATER PURIFICATION WORKS—List of Laboratory Tests and Examinations.
22. WATER DISTRIBUTION SYSTEM—Neutaconkanut Pumping Station Operating Statistics.
23. WATER DISTRIBUTION SYSTEM—Bath Street Pumping Station Operating Statistics.
24. WATER DISTRIBUTION SYSTEM—Neutaconkanut Distribution Reservoir Statistics.
25. WATER DISTRIBUTION SYSTEM—Longview Distribution Reservoir Statistics.

TABLE

26. WATER DISTRIBUTION SYSTEM—Water Mains Laid, Removed, Replaced, etc.
27. WATER DISTRIBUTION SYSTEM—Public Water Mains in Use at end of Year.
28. WATER DISTRIBUTION SYSTEM—Gates in Use at End of Year.
29. WATER DISTRIBUTION SYSTEM—Services Installed, Removed, Repaired, etc.
30. WATER DISTRIBUTION SYSTEM—Services in Use on September 30, 1959.
31. WATER DISTRIBUTION SYSTEM—Fire Hydrants Installed, Removed, etc.
32. WATER DISTRIBUTION SYSTEM—Number of Fire Hydrants in System.
33. WATER METERS—Number, Make and Size of Meters in System.
34. WATER CONSUMPTION—Low Service, High Service and Total Consumption for Year.
35. WATER CONSUMPTION—Water Sold to State Institutions and City of Warwick.
36. WATER CONSUMPTION—Water Sold to East Smithfield Water Co. and Kent County Water Authority.
37. WATER CONSUMPTION—Average Daily Consumption for Years 1877-1959.
38. FINANCIAL STATEMENT OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1959.
39. OPERATING EXPENSES OF PROVIDENCE WATER WORKS—Year Ended Sept. 30, 1959.
40. STATEMENT OF REVENUE—Estimated and Actual for Year Ended Sept. 30, 1959.
41. ANNUAL WATER WORKS REVENUES—Summary, 1930-1959.
42. WATER WORKS DEPRECIATION AND EXTENSION FUND.
43. BONDED INDEBTEDNESS AND SINKING FUND REQUIREMENTS.
44. PERSONAL PROPERTY INVENTORIES as of Sept. 30, 1959.
45. STORES REVOLVING FUND.
46. TRANSMISSION AND DISTRIBUTION REVOLVING FUND.
47. RELOCATION OF MAIN—Branch Avenue Railroad Crossing Account.
48. ATWOOD AVENUE REINFORCEMENT MAIN ACCOUNT.
49. EAST SIDE REINFORCEMENT MAIN ACCOUNT.
50. MISCELLANEOUS WATER MAIN EXTENSIONS ACCOUNT.
51. ACCOUNT FOR INSERTING NEW VALVES.
52. ACCOUNT FOR NEW VALVES—Neutaconkanut Conduit.
53. OLNEYVILLE SQUARE REPAIR ACCOUNT.
54. NEUTACONKANUT PUMPING STATION ALTERATIONS ACCOUNT.
55. NEW AQUEDUCT RESERVOIR ACCOUNT.
56. ADDITIONS, ALTERATIONS AND IMPROVEMENTS AT THE WATER PURIFICATION WORKS.
57. NEW 40-MILLION GALLON WATER DISTRIBUTION RESERVOIR.
58. WATER WORKS PROPERTY—Valuations and Taxes.
59. SUMMARY OF WATER WORKS STATISTICS—For Year Ended Sept. 30, 1959.

TABLE 1
MONTHLY RAINFALL IN INCHES ON SCITUATE WATERSHED

STATIONS ON WATERSHED		YEAR ENDED SEPTEMBER 30, 1959												Monthly Avg.	
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.		Total
Rocky Hill....		4.10	3.66	1.95	2.85	4.40	7.29	5.06	1.91	5.37	7.56	2.83	0.69	47.67	3.97
Hopkins Mills..		3.48	2.97	2.16	2.92	4.24	7.94	4.90	0.61	5.45	6.07	1.62	0.55	42.91	3.58
North Scituate.		2.70	2.94	1.64	2.34	4.00	7.09	4.16	1.12	5.58	7.01	2.17	0.52	41.27	3.44
Westcott		4.12	2.91	1.74	2.33	4.06	6.53	3.77	0.97	5.62	5.86	2.17	0.68	40.76	3.40
Gainer Dam ...		4.76	2.68	1.39	2.36	3.89	6.81	4.15	1.15	5.75	7.22	2.56	0.40	43.12	3.59
AVERAGE...		3.83	3.03	1.78	2.56	4.12	7.13	4.41	1.15	5.55	6.74	2.27	0.57	43.14*	3.60

*Total of monthly averages.

***Total of monthly averages.**

TABLE 2
MONTHLY AND YEARLY RAINFALL IN INCHES ON SCITUATE WATERSHED

Year	YEARS ENDED SEPTEMBER 30												Jan.-Dec.	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year
1915-1916.....	2.75(e)	2.88	5.86	1.88	5.88	2.46	3.60	4.83	5.71	7.38	1.33	1.24	45.80	1916
1916-1917.....	2.61	2.34	3.30	3.96	2.18	2.67	2.70	4.15	4.54	1.31	6.13	2.66	43.16	1917
1917-1918.....	6.71	0.48	3.23	3.56	3.73	2.15	4.56	3.12	4.49	5.13	4.14	8.79	50.09	1918
1918-1919.....	1.07	2.60	3.75	4.89	3.42	6.05	4.31	5.99	3.65	5.47	6.65	6.07	53.92	1919
1919-1920.....	2.29	5.05	2.58	3.03	6.10	4.90	6.28	3.95	7.93	4.44	3.86	3.04	53.45	1920
1920-1921.....	1.34	5.85	5.09	3.46	3.06	3.72	5.45	3.73	4.30	6.80	2.97	2.53	48.30	1921
1921-1922.....	1.26	8.02	2.54	1.91	2.67	6.40	1.98	5.22	6.34	8.36	9.09	5.35	59.14	1922
1922-1923.....	2.92	1.41	3.11	6.78	1.82	3.73	5.92	1.48	4.93	2.78	2.35	2.15	39.38	1923
1923-1924.....	5.67	5.68	5.10	4.49	2.92	2.80	6.12	1.48	1.49	1.72	5.85	5.28	50.78	1924
1924-1925.....	0.21	2.23	2.38	4.41	2.22	2.86	2.85	3.66	2.36	6.14	1.70	2.96	34.94	1925
1925-1926.....	4.32	4.83	5.18	3.26	4.41	3.73	2.46	2.72	1.74	3.80	3.94	1.89	43.52	1926
1926-1927.....	5.04	5.55	3.58	2.98	6.10	1.59	2.56	2.27	3.36	3.99	8.55	2.61	46.30	1927
1927-1928.....	5.24	9.22	5.63	2.72	4.32	2.70	5.43	1.45	3.91	5.06	5.93	4.80	55.98	1928
1928-1929.....	3.60	2.50	3.21	5.20	4.89	3.92	2.03	2.74	2.27	2.06	2.30	1.35	43.35	1929
1929-1930.....	3.00	4.15	4.15	2.86	2.88	3.35	2.36	2.19	3.05	3.33	3.00	1.35	34.77	1930
1930-1931.....	3.36	4.05	3.10	3.59	2.97	6.16	3.36	2.74	6.31	3.74	5.96	1.97	49.13	1931
1931-1932.....	2.22	1.03	3.16	2.06	2.38	6.16	1.97	2.57	2.75	2.57	6.44	11.75	49.16	1932
1932-1933.....	9.63	7.13	5.09	2.02	3.81	6.55	6.18	3.76	4.04	2.00	3.60	7.56	55.37	1933
1933-1934.....	3.41	1.48	3.72	3.82	4.53	1.93	5.74	3.98	4.79	2.20	3.89	7.37	48.31	1934
1934-1935.....	3.25	4.46	3.55	7.27	3.02	1.93	4.74	2.27	5.12	4.10	1.42	3.59	44.76	1935
1935-1936.....	1.04	5.86	0.88	8.61	3.02	9.31	3.80	1.98	2.98	2.63	3.28	7.72	52.45	1936
1936-1937.....	2.00	1.25	9.83	5.02	7.45	4.09	5.42	3.05	3.48	1.58	6.47	4.10	48.75	1937
1937-1938.....	3.92	8.10	2.89	3.29	2.91	2.70	2.62	4.17	8.62	11.49	3.10	6.76	62.55	1938
1938-1939.....	2.64	3.91	3.64	3.08	5.06	3.86	4.53	0.94	2.95	1.20	6.52	3.47	43.80	1939
1939-1940.....	5.76	1.40	3.40	2.82	5.97	4.04	6.00	5.76	2.45	4.41	2.01	2.63	46.65	1940
1940-1941.....	2.00	6.81	2.28	3.12	3.37	2.97	1.36	3.16	4.92	5.90	4.00	0.20	40.09	1941
1941-1942.....	1.75	3.35	3.78	4.95	3.30	8.35	0.89	2.80	3.88	5.38	4.32	1.94	44.60	1942
1942-1943.....	4.26	5.32	6.39	3.56	2.95	3.68	2.90	3.95	1.99	3.71	2.15	1.30	41.58	1943
1943-1944.....	6.38	3.43	1.22	1.79	2.50	5.05	4.11	4.35	1.75	2.74	2.01	1.03	41.36	1944
1944-1945.....	2.71	8.43	4.53	3.45	3.79	2.13	3.36	4.89	5.71	2.74	3.00	1.84	48.92	1945
1945-1946.....	2.21	9.03	7.98	3.82	3.81	1.42	2.37	4.92	3.31	2.89	1.48	3.69	56.13	1946
1946-1947.....	0.48	1.32	3.90	2.98	2.60	3.85	5.40	3.37	4.10	4.86	2.91	4.02	39.79	1947
1947-1948.....	3.26	6.42	3.91	7.14	2.57	4.26	3.97	9.36	4.20	3.73	3.14	1.59	53.55	1948
1948-1949.....	4.86	7.43	3.45	4.38	3.62	2.47	4.65	4.03	0.10	1.24	6.07	3.49	45.79	1949
1949-1950.....	2.27	3.47	2.79	3.68	4.62	3.99	3.68	3.51	2.93	1.62	5.04	2.03	39.63	1950
1950-1951.....	2.23	7.21	4.57	4.95	4.48	5.91	3.97	3.20	2.71	3.36	3.08	2.41	50.08	1951
1951-1952.....	4.14	9.64	5.35	4.88	4.81	4.13	4.41	3.97	3.16	1.20	7.33	2.21	55.41	1952
1952-1953.....	1.94	3.02	4.20	7.38	4.64	9.33	7.54	3.24	1.67	4.27	2.94	2.74	52.91	1953
1953-1954.....	5.57	6.22	5.56	2.91	3.16	4.36	4.16	4.91	1.55	2.76	9.10	7.63	59.10	1954
1954-1955.....	3.13	5.65	6.91	1.00	4.96	4.17	4.16	1.78	4.35	2.43	12.75	4.53	56.00	1955
1955-1956.....	11.48	5.23	5.46	5.39	4.39	7.91	3.84	2.42	2.10	4.13	1.56	3.98	53.15	1956
1956-1957.....	2.06	4.92	5.46	2.90	2.46	3.33	5.01	1.55	0.72	0.96	1.38	1.58	33.43	1957
1957-1958.....	3.07	5.50	7.47	8.46	4.50	5.46	7.55	3.84	2.69	7.04	4.58	6.12	66.28	1958
1958-1959.....	3.83	3.03	1.78	2.56	4.12	7.13	4.41	1.15	5.55	6.74	2.27	0.57	43.14	1959
Average.....	3.44	4.70	4.02	4.15	3.73	4.50	4.26	3.50	3.69	3.86	4.55	3.93	48.33*	Avg.
Maximum.....	11.48	9.64	9.83	8.81	6.10	9.33	7.56	9.36	8.62	11.49	12.75	11.75	66.28	Max.
Minimum.....	0.21	0.48	0.72	1.00	1.82	1.42	0.89	0.94	0.10	0.96	1.33	0.20	33.43	Min.

(e) Estimated. *Total of monthly averages.

TABLE 3
MONTHLY AND YEARLY RUNOFF IN INCHES ON SCITUATE WATERSHED (92.8 SQ. MI.)

YEARS ENDED SEPTEMBER 30															Jan.-Dec.	
Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total	
1915-1916.....	0.75(e)	1.24(e)	3.03(e)	2.50	3.70	3.99	4.64	3.69	3.42	2.74	1.09	0.42	31.21	1916	28.25	
1916-1917.....	0.51	0.58	0.97	1.91	1.10	4.29	3.05	2.79	2.18	0.79	0.71	0.63	19.71	1917	22.41	
1917-1918.....	1.70	1.59	1.38	1.83	4.04	3.17	3.40	2.24	1.24	0.47	0.82	1.81	23.78	1918	23.75	
1918-1919.....	1.34	2.37	2.77	3.81	2.27	5.01	4.43	3.86	1.27	1.35	0.91	3.33	30.97	1919	32.65	
1919-1920.....	1.45	2.25	2.71	1.19	1.69	9.60	5.10	3.73	4.15	1.38	0.79	0.34	34.38	1920	33.29	
1920-1921.....	0.37	1.73	3.22	2.79	1.69	4.19	3.68	2.85	0.95	2.56	0.93	0.31	25.27	1921	24.52	
1921-1922.....	0.34	1.65	2.66	1.13	1.80	4.31	3.92	3.50	2.39	3.50	3.59	4.39	33.60	1922	33.32	
1922-1923.....	1.96	1.26	1.37	4.16	2.46	6.10	4.06	2.68	1.15	0.64	0.40	0.25	26.19	1923	29.75	
1923-1924.....	1.27	2.01	4.57	4.52	1.88	3.43	5.70	3.38	1.05	0.50	0.56	0.68	29.25	1924	23.31	
1924-1925.....	0.49	0.45	0.97	0.91	3.65	3.41	2.46	1.46	0.52	0.58	0.39	0.32	15.61	1925	19.04	
1925-1926.....	0.61	1.48	3.25	2.23	3.11	4.38	3.00	1.70	0.62	0.40	0.42	0.17	21.37	1926	21.03	
1926-1927.....	0.76	2.15	2.09	3.34	2.64	3.05	1.71	2.03	1.44	1.32	1.52	0.64	21.76	1927	30.14	
1927-1928.....	1.95	6.73	4.70	2.62	3.76	2.86	3.18	2.05	1.15	1.08	1.17	0.80	32.05	1928	23.03	
1928-1929.....	1.21	1.16	1.99	4.02	3.65	5.56	6.09	3.56	0.48	0.06	0.07	-0.09	27.76	1929	25.18	
1929-1930.....	0.07	0.53	1.18	1.96	2.38	2.74	1.84	0.88	0.42	0.09	0.04	-0.11	12.02	1930	11.82	
1930-1931.....	0.12	0.63	0.83	1.56	2.11	5.05	3.21	3.10	2.97	0.69	0.85	0.10	22.12	1931	21.67	
1931-1932.....	0.07	0.15	0.91	3.35	2.16	4.10	3.08	1.35	0.39	0.07	0.35	3.27	19.25	1932	30.15	
1932-1933.....	0.94	6.29	2.26	2.24	2.70	6.28	6.88	1.93	1.57	0.17	0.25	1.52	35.57	1933	27.13	
1933-1934.....	0.38	0.82	1.82	3.78	1.18	5.48	6.08	2.88	1.47	0.08	0.14	1.40	26.08	1934	28.94	
1934-1935.....	1.33	1.91	3.21	4.78	2.83	4.22	4.05	1.71	1.78	0.62	-0.14	0.26	26.56	1935	21.82	
1935-1936.....	-0.13	1.09	0.75	3.94	1.93	(1.51	4.45	1.59	0.44	0.03	-0.02	0.82	26.40	1936	31.64	
1936-1937.....	0.46	0.43	6.06	4.59	2.77	3.34	3.79	2.52	0.75	0.02	0.60	0.57	25.90	1937	27.16	
1937-1938.....	0.79	4.17	3.25	4.15	2.99	2.29	2.29	1.84	2.85	6.93	1.32	1.66	35.23	1938	33.76	
1938-1939.....	1.22	1.90	3.62	2.11	4.12	5.24	4.90	1.08	0.31	0.84	0.22	-0.04	24.57	1939	21.35	
1939-1940.....	0.63	1.35	1.54	2.03	1.51	4.86	6.89	3.17	1.65	0.24	-0.14	-0.04	24.29	1940	23.98	
1940-1941.....	-0.07	1.63	1.65	1.53	2.88	2.42	1.65	1.16	1.33	0.54	0.10	-0.41	14.41	1941	12.43	
1941-1942.....	-0.15	0.52	0.86	1.87	2.54	7.14	1.75	1.06	0.59	0.86	0.26	-0.17	17.13	1942	22.77	
1942-1943.....	0.45	1.86	4.86	2.45	3.46	4.40	2.68	3.01	0.36	0.02	-0.16	0.22	22.87	1943	17.97	
1943-1944.....	0.60	0.95	0.42	0.73	1.23	3.24	3.53	1.08	0.43	-0.26	-0.31	1.73	13.37	1944	18.61	
1944-1945.....	0.50	3.16	3.55	2.91	2.58	5.61	2.15	3.10	1.26	0.15	-0.12	-0.15	24.70	1945	24.02	
1945-1946.....	0.06	1.88	4.59	3.93	2.98	3.70	1.43	2.50	1.65	0.56	2.35	0.56	25.63	1946	21.08	
1946-1947.....	0.49	0.30	1.19	2.16	1.52	4.01	3.31	2.86	1.09	0.53	0.12	0.31	17.89	1947	20.47	
1947-1948.....	0.23	2.94	1.39	1.55	3.25	7.16	3.76	5.25	3.12	0.56	0.15	-0.21	29.05	1948	29.08	
1948-1949.....	0.35	2.24	2.00	3.57	3.22	2.92	3.20	1.78	-0.02	-0.26	0.02	0.09	19.11	1949	16.40	
1949-1950.....	0.03	0.57	1.26	2.03	2.42	4.16	3.01	2.20	1.00	-0.11	0.22	-0.02	16.79	1950	19.39	
1950-1951.....	0.04	1.85	2.59	3.24	4.95	4.30	4.30	2.70	1.21	0.14	0.07	-0.07	25.38	1951	30.16	
1951-1952.....	0.34	4.82	4.30	4.24	3.30	5.02	2.97	2.46	0.98	-0.35	0.53	-0.20	28.21	1952	20.27	
1952-1953.....	-0.20	0.37	1.13	4.01	4.35	7.24	6.36	3.20	0.20	0.07	-0.05	-0.13	27.17	1953	32.41	
1953-1954.....	0.38	1.86	4.32	2.12	3.66	3.56	4.01	3.71	0.33	-0.01	0.93	3.96	27.83	1954	32.15	
1954-1955.....	1.33	3.65	5.90	2.46	3.61	4.26	2.76	1.62	0.89	-0.02	4.04	1.19	31.73	1955	35.13	
1955-1956.....	7.22	5.56	1.50	3.27	4.09	4.57	6.57	1.98	0.96	0.37	-0.22	0.05	35.92	1956	25.87	
1956-1957.....	0.23	1.10	2.90	2.41	2.10	2.78	4.54	0.88	-0.18	-0.41	-0.38	-0.22	15.45	1957	14.20	
1957-1958.....	0.06	0.52	2.40	6.59	2.69	6.03	6.89	3.88	0.83	0.85	0.86	1.31	32.91	1958	35.65	
1958-1959.....	2.05	1.85	1.83	1.65	2.58	5.86	4.52	1.45	1.23	2.09	0.07	-0.23	24.95	1959	26.29	
Average.....	0.84	1.87	2.48	2.84	2.74	4.75	3.89	2.44	1.22	0.69	0.58	0.70	25.04*	Avg.	25.08	
Maximum.....	7.22	6.73	6.06	6.59	4.95	11.51	6.89	5.25	4.15	6.93	4.04	4.39	35.92	Max.	35.65	
Minimum.....	-0.20	0.15	0.42	0.73	1.18	2.42	1.43	0.58	-0.18	-0.41	-0.38	-0.41	12.02	Min.	11.82	

(e) Estimated; *Total of monthly averages.

TABLE 4
MONTHLY AND YEARLY PERCENT OF RAINFALL COLLECTED ON SCITUATE WATERSHED

YEARS ENDED SEPTEMBER 30															Jan.-Dec.	
Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total	Year	Total	
1915-1916.....	27.3(e)	43.0(e)	51.7(e)	133.0	62.9	162.2	128.9	76.4	59.9	37.1	82.0	33.9	68.1	1916	66.4	
1916-1917.....	19.5	24.8	29.4	48.2	59.6	87.4	113.0	67.2	48.0	52.3	11.6	23.0	48.1	1917	51.9	
1917-1918.....	26.7	33.1	42.7	51.4	108.3	147.4	74.6	71.8	27.6	9.2	19.8	20.6	47.5	1918	50.4	
1918-1919.....	95.3	51.5	63.2	77.9	66.4	82.8	102.8	64.4	34.8	24.7	13.7	34.8	57.4	1919	57.9	
1919-1920.....	63.3	44.6	105.0	39.3	27.7	195.9	81.2	94.4	52.3	31.1	20.5	11.2	64.3	1920	59.6	
1920-1921.....	27.6	29.6	63.3	80.6	55.2	112.6	67.5	76.4	22.1	37.6	31.3	12.2	52.3	1921	51.2	
1921-1922.....	19.0	20.6	105.5	59.2	67.4	75.2	198.0	67.0	37.7	41.9	39.5	82.0	56.8	1922	60.8	
1922-1923.....	56.8	89.4	44.0	61.4	135.2	163.5	68.6	181.1	23.3	17.0	17.0	11.6	66.5	1923	61.5	
1923-1924.....	22.4	35.4	39.6	100.7	64.4	122.5	93.1	92.3	70.5	11.6	9.6	12.9	57.6	1924	59.5	
1924-1925.....	233.3	20.2	40.8	20.6	164.4	71.6	86.3	53.7	22.0	9.4	22.9	10.8	44.7	1925	42.8	
1925-1926.....	14.1	30.6	62.7	68.4	51.0	117.4	122.0	74.9	35.6	10.5	10.6	9.0	49.1	1926	48.5	
1926-1927.....	15.1	38.7	58.9	112.1	79.8	191.8	66.8	59.5	42.8	8.0	18.6	24.5	46.8	1927	57.5	
1927-1928.....	37.2	73.0	83.5	96.3	87.0	105.9	58.6	141.4	29.4	21.3	21.3	16.7	57.2	1928	50.5	
1928-1929.....	30.3	46.4	62.0	77.3	74.6	141.8	80.6	102.6	21.1	2.9	2.4	-6.7	64.0	1929	57.3	
1929-1930.....	2.3	17.3	28.4	68.5	82.6	84.8	90.6	32.1	13.8	2.7	1.3	-8.1	34.6	1930	33.2	
1930-1931.....	3.6	13.5	26.8	43.9	82.1	93.4	95.5	74.0	47.1	18.4	14.3	5.1	45.0	1931	48.8	
1931-1932.....	3.2	14.6	28.8	54.4	90.8	66.6	156.3	52.5	14.2	2.7	5.4	27.8	39.2	1932	51.4	
1932-1933.....	52.5	88.2	108.1	110.9	70.9	95.9	111.3	51.3	38.9	8.5	6.9	20.1	64.2	1933	56.4	
1933-1934.....	27.9	55.4	48.9	97.7	26.0	136.0	116.0	72.4	30.7	3.6	3.6	19.0	53.8	1934	56.6	
1934-1935.....	40.9	43.0	90.4	66.0	91.6	218.6	85.1	75.3	34.8	15.1	-9.8	7.2	59.3	1935	52.8	
1935-1936.....	-12.5	18.6	85.2	44.7	46.4	123.6	117.1	80.3	14.8	1.1	-0.6	10.6	50.3	1936	54.8	
1936-1937.....	23.0	34.4	61.6	91.4	113.1	81.7	69.9	82.6	22.0	1.3	9.3	13.6	53.1	1937	53.7	
1937-1938.....	20.2	51.5	112.5	78.4	102.7	110.7	88.2	114.1	33.1	60.3	42.6	24.6	56.3	1938	58.4	
1938-1939.....	46.2	48.6	99.4	68.5	81.4	89.4	108.2	114.9	10.5	-20.0	3.4	2.6	56.1	1939	48.3	
1939-1940.....	10.9	96.4	45.3	72.0	25.3	120.3	114.8	55.0	67.3	19.0	-7.0	-1.5	52.1	1940	50.8	
1940-1941.....	-3.5	23.9	72.4	49.0	87.4	81.5	121.3	36.7	27.0	9.2	2.5	-205.0	35.9	1941	32.8	
1941-1942.....	-8.6	15.5	22.8	37.8	77.0	85.5	196.6	37.8	15.2	16.0	6.0	-8.8	38.3	1942	43.8	
1942-1943.....	10.6	33.7	71.4	68.8	177.4	119.6	68.7	77.8	18.1	0.6	-7.4	-16.9	54.5	1943	48.8	
1943-1944.....	9.4	27.7	34.4	40.8	49.2	64.2	85.9	80.0	11.5	-14.9	-15.4	15.7	30.1	1944	38.1	
1944-1945.....	18.4	37.4	82.0	84.3	44.6	263.4	64.0	63.4	24.4	5.5	-3.9	-5.3	50.5	1945	46.0	
1945-1946.....	2.7	20.8	60.6	102.9	78.2	260.6	60.3	50.8	49.8	0	20.5	15.2	45.7	1946	49.0	
1946-1947.....	102.1	22.7	30.5	21.7	58.5	104.2	61.3	84.9	26.6	10.9	4.1	7.7	45.0	1947	42.9	
1947-1948.....	7.0	45.8	35.5	21.7	122.6	168.1	94.7	56.1	74.3	15.0	4.8	-13.2	54.2	1948	52.7	
1948-1949.....	7.2	30.1	58.0	81.5	89.0	118.2	68.8	44.2	-20.0	-21.0	0.3	2.6	41.7	1949	47.5	
1949-1950.....	2.2	16.4	45.7	52.2	52.4	104.3	81.8	67.7	34.1	-6.8	4.4	-1.0	42.4	1950	43.0	
1950-1951.....	8.3	25.6	56.7	85.4	110.5	73.8	108.3	51.0	44.6	4.2	7.3	-2.9	50.7	1951	54.5	
1951-1952.....	8.2	47.9	77.8	86.9	68.6	121.5	67.3	61.7	31.0	-20.2	7.2	-6.0	50.9	1952	44.8	
1952-1953.....	-10.3	12.2	77.4	92.5	93.6	77.6	84.4	92.6	12.0	1.6	-1.7	-4.7	51.4	1953	53.0	
1953-1954.....	6.8	29.9	77.7	72.8	84.2	81.6	74.7	75.6	21.3	-0.4	10.2	51.9	47.7	1954	50.0	
1954-1955.....	42.5	64.6	83.4	246.0	72.8	102.2	66.3	91.0	19.6	0.8	32.7	26.3	56.7	1955	60.8	
1955-1956.....	62.9	122.7	208.3	60.7	93.2	57.8	171.1	81.8	45.7	8.9	-14.1	1.7	67.6	1956	52.7	
1956-1957.....	7.8	22.4	53.1	83.1	85.4	83.5	90.6	37.4	-25.0	-42.7	-14.1	-13.9	46.2	1957	39.3	
1957-1958.....	2.0	9.5	32.1	77.9	59.8	110.4	91.3	101.0	30.9	12.1	18.8	21.4	49.7	1958	60.3	
1958-1959.....	53.5	61.1	102.8	64.5	62.6	82.2	102.5	126.1	22.2	31.0	3.1	-40.4	57.8	1959	48.8	
Average.....	24.4	39.8	61.7	68.4	73.5	105.6	91.3	69.7	33.1	17.9	12.7	17.8	51.8	Avg.	51.7	
Maximum.....	233.3	331.2	208.3	246.0	177.4	263.4	198.0	181.1	74.3	60.3	82.0	82.0	68.1	Max.	66.4	
Minimum.....	-12.5	9.5	22.8	20.6	25.3	57.8	58.6	32.1	-25.0	-42.7	-24.1	-205.0	30.1	Min.	32.8	

(e) Estimated.

TABLE 5

SCITUATE WATERSHED
(92.8 Square Miles)

STATISTICS OF STORAGE FOR YEAR ENDED SEPTEMBER 30, 1959

	1 REGULATING RESERVOIR		2 WESTCONNAUG RESERVOIR		3 BARDEN RESERVOIR		4 MOSWANSICUT RESERVOIR		5 PONAGANSET RESERVOIR		6 SCITUATE RESERVOIR		Total 1-6	
	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Elev.	Avail. Storage M. G.	Avail. Storage M. G.	% of Total Avail.
1958- 1959														
Oct.	286.00	462	454.52	473	345.80	909	302.25	751	633.94	761	279.27	31,597	34,953	87.9
Nov.	285.52	423	454.32	461	345.13	855	301.90	715	634.18	780	279.43	31,773	35,007	88.1
Dec.	285.65	433	454.62	478	345.52	887	302.02	727	634.18	780	279.32	31,632	34,957	88.0
Jan.	285.70	437	454.52	473	345.40	877	302.05	730	634.58	811	278.74	31,040	34,368	86.5
Feb.	285.60	429	453.82	433	345.25	865	301.95	720	633.88	757	278.12	30,420	33,624	84.6
Mar.	285.60	429	453.72	427	345.30	869	301.95	720	633.73	745	279.12	31,432	34,622	87.1
Apr.	285.50	421	453.82	433	345.60	893	302.05	730	634.08	772	282.98	35,508	38,737	97.5
May	285.72	439	453.72	427	345.40	877	302.16	742	634.38	796	284.30	36,936	40,217	101.2
June	285.53	423	454.07	447	344.40	797	302.00	725	633.78	749	283.82	36,407	39,548	99.3
July	285.62	431	454.37	464	345.30	869	302.05	730	633.83	753	283.61	36,183	39,430	99.2
Aug.	285.55	425	454.17	453	345.22	863	301.98	723	633.88	757	283.91	36,504	39,725	99.9
Sept.	285.50	421	453.67	424	345.14	856	301.85	710	633.38	718	281.28	33,690	36,819	92.6
Max. For Year	October 1	286.00	November 29 March 21	454.67	March 14	345.85	April 4 April 11	302.30	July 18	634.98	July 21	284.79	40,762	102.6
Min. For Year	September 26	284.80	September 26	452.47	June 1	344.40	September 26	301.40	September 26	633.08	February 4	277.97	33,547	84.4
		367		361		797		665		695		30,270		
1. Regulating	Reservoir—Spillway	Elev.	285.50;	Total Storage	428 M.G.;	Dead Storage	7 M.G.;	Total Available Storage	421 M.G.					
2. Westconnaug	"	"	454.17;	"	453	"	0	"	453	"				
3. Barden	"	"	345.10;	"	853	"	0	"	853	"				
4. Moswansicut	"	"	301.90;	"	1,781	"	1,066	"	715	"				
5. Ponaganset	"	"	633.05;	"	742	"	49	"	693	"				
Total 1-5	Reservoir—Spillway	Elev.	284.01;	Total Storage	4,257 M.G.;	Dead Storage	1,122 M.G.;	Total Available Storage	*3,135 M.G.					
6. Scituate	"	"	453.67	"	37,011	"	400	"	36,611	"				
Total 1-6				Total Storage	41,268 M.G.;	Dead Storage	1,522 M.G.;	Total Available Storage	†39,746 M.G.					

Note: Elevations shown are in feet above mean high water in Providence Harbor.
 Statistics shown are for the first day (7 A.M.) of the month indicated.

TABLE 6
SCITUATE WATERSHED
(92.8 Square Miles)

DRAFT AND YIELD FOR YEAR ENDED SEPTEMBER 30, 1959

DRAFT FROM SCITUATE RESERVOIR					WATERSHED YIELD			
Million Gallons					Million Gallons			
1958- 1959	To River Below Gainer Dam			To Water Purification Works	Total	For Month	Avg. per Day	
	Over Spillway	Through Gatehouse	Total				1958- 1959	44-Year Mean 1916-1959
Oct.	0	1,880.93	1,880.93	1,365.59	3,246.52	104.73	106.47	43.70
Nov.	0	1,757.37	1,757.37	1,281.28	3,038.65	101.29	99.62	100.53
Dec.	0	2,218.75	2,218.75	1,328.73	3,547.48	114.43	95.43	129.02
Jan.	0	2,104.03	2,104.03	1,299.15	3,403.18	109.78	85.78	147.75
Feb.	0	1,997.31	1,997.31	1,172.16	3,169.47	113.20	148.84	157.82
Mar.	0	4,024.67	4,024.67	1,286.97	5,311.64	171.35	304.73	247.11
Apr.	51.17	4,513.22	4,564.39	1,268.69	5,833.08	194.44	243.10	209.12
May	54.29	1,416.65	1,470.94	1,539.11	3,010.05	97.10	75.52	126.94
June	0	591.62	591.62	1,507.69	2,099.31	69.98	66.04	65.59
July	65.13	1,435.67	1,500.80	1,568.34	3,069.14	99.00	108.52	35.90
Aug.	0	1,230.91	1,230.91	1,785.22	3,016.13	97.29	110.13	30.17
Sept.	0	659.94	659.94	1,592.03	2,251.97	75.07	—12.13	37.63
For Yr.	170.59†	23,831.07	24,001.66	16,994.96	40,996.62	112.32	110.26	110.56

†Includes Flashboard Leakage.

TABLE 7
SCITUATE WATERSHED — REFORESTATION
NUMBER AND KINDS OF TREES PLANTED IN VARIOUS YEARS

Planted During Calendar Year	Balsam Fir	Red Pine	White Pine	Douglas Fir	Austrian Pine	Scotch Pine	Jack Pine	White Spruce	Norway Spruce	Hemlock	Larch	Total Number Planted Yearly
1926	0	160,000	40,000	0	0	0	0	0	0	0	0	200,000
1927	0	60,000	150,000	0	0	0	0	0	0	0	0	210,000
1928	0	10,000	10,000	0	0	0	0	0	0	0	0	20,000
1929	0	10,000	75,000	0	0	0	0	0	0	0	0	85,000
1930	0	40,000	40,000	0	0	0	0	0	0	0	0	80,000
1931	0	40,000	50,000	0	0	0	0	9,000	0	0	0	99,000
1932	0	40,000	40,000	0	0	0	0	20,000	0	0	0	100,000
1933	0	0	0	0	0	0	0	0	0	0	0	0
1934 & 1935	0	755,000	255,000	0	36,000	136,000	4,000	503,000	204,000	3,000	0	1,898,000
1936	0	453,700	111,000	0	14,400	0	0	20,000	15,000	26,000	0	640,100
1937	0	481,100	0	0	0	0	0	213,200	0	0	0	694,300
1938	0	229,000	21,693	0	0	0	0	0	0	0	0	250,693
1939	0	8,000	761,000	0	0	0	50,000	0	0	0	0	819,000
1940	0	267,387	618,828	0	45,916	0	67,730	0	0	0	0	999,881
1941	0	51,000	293,650	0	0	0	0	34,350	0	0	0	381,000
1942	0	0	338,120	0	0	0	0	0	0	0	0	308,120
1943	0	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0	0
1951	0	0	1,500	12,000	0	0	0	0	0	0	0	13,500
1952	0	20,000	0	0	0	0	0	10,000	0	0	10,000	40,000
1953	0	10,000	0	0	0	0	0	6,000	0	0	0	16,000
1954	2,000	0	0	2,000	0	0	0	0	0	0	6,000	10,000
1955	0	0	5,000	0	0	0	0	0	0	0	3,000	10,000
1956	0	0	5,000	0	4,500	0	0	0	0	0	0	9,500
1957	0	0	6,000	0	0	0	0	0	0	0	0	6,000
1958	0	2,700	2,000	0	0	0	0	0	0	0	0	4,700
1959	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	2,000	2,637,887	2,795,791	14,000	100,816	136,000	121,750	817,550	219,000	29,000	21,000	6,894,794

TABLE 8

GAINER DAM HYDRO-ELECTRIC PLANT*
POWER STATISTICS ON THE BASIS OF THE "CONTRACT YEAR" WITH THE NARRAGANSETT ELECTRIC COMPANY

Contract Year	KWH Generated at Gainer Dam	KWH Used at Gainer Dam and Water Purification Works	Net KWH Delivered to Narrag. Elec. Co.	Payment Received
(Period June 20-30, 1930)...	87,000	6,470	75,100	\$300.40
July 1930—June 1931.....	3,023,000	152,940	2,758,340	20,000.00
July 1931—June 1932.....	4,201,500	158,070	3,980,570	19,600.00
July 1932—June 1933.....	7,024,900	155,210	6,697,656	26,790.62
July 1933—June 1934.....	5,080,900	152,420	4,837,371	19,349.48
July 1934—June 1935.....	7,102,900	174,710	6,756,101	27,024.40
July 1935—June 1936.....	5,761,200	173,530	5,394,176	21,576.70
July 1936—June 1937.....	5,626,000	174,110	5,262,807	21,051.23
July 1937—June 1938.....	6,438,300	156,710	6,069,927	24,279.71
July 1938—June 1939.....	8,915,000	159,860	8,457,980	33,831.92
July 1939—June 1940.....	4,681,100	231,850	4,329,115	17,316.46
July 1940—June 1941.....	3,291,200	185,540	2,982,991	16,000.00
July 1941—June 1942.....	2,585,300	194,250	2,322,916	15,600.00
July 1942—June 1943.....	4,655,800	170,520	4,372,359	17,489.44
July 1943—June 1944.....	2,290,100	183,250	2,096,811	14,597.25
July 1944—June 1945.....	4,146,200	187,080	3,879,622	15,518.49
July 1945—June 1946.....	4,754,100	200,200	4,460,596	17,343.70
July 1946—June 1947.....	3,494,400	251,270	3,224,049	13,600.00
July 1947—June 1948.....	5,576,900	249,940	5,313,209	21,252.84
July 1948—June 1949.....	3,790,500	264,160	3,521,404	14,085.62
July 1949—June 1950.....	1,972,200	303,460	1,548,000	9,288.00
July 1950—June 1951.....	4,965,900	322,220	4,476,900	26,861.40
July 1951—June 1952.....	6,381,400	329,080	5,836,700	35,020.20
July 1952—June 1953.....	4,993,400	351,080	4,429,900	26,579.40
July 1953—June 1954.....	3,945,700	389,050	3,389,000	20,334.00
July 1954—June 1955.....	6,776,900	422,250	6,111,000	36,666.00
July 1955—June 1956.....	9,521,700	480,300	8,747,900	52,487.40
July 1956—June 1957.....	2,195,400	466,480	1,608,100	9,648.60
July 1957—June 1958.....	4,141,000	541,760	3,432,900	**20,597.40
July 1958—June 1959.....	4,987,600	504,310	4,297,300	25,783.80

*1875 KVA 3 Phase, 60 Cycles, 2300 Volts, 80 Ft. Head Turbo-Generator.

**Involves net exchange for portion of previous year.

TABLE 9
WATER PURIFICATION WORKS
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1958-1959	Influent Aerator Hours Operated	Plant Influent Mil. Gals.		Water Filtered Mil. Gals.		Wash Water Mil. Gals.		Plant Effluent Mil. Gals.		Plant Effluent Flow Hours	Number of Filters In Operation			Avg. Rate of Filtration Per M.G.D.
		Total	Avg. Per Day	Total	Avg. per day	Total	Avg. per Day	Total	Avg. per Day		Max.	Min.	Avg.	
Oct.	742.6	1,365.59	44.05	1,263.532	40.759	12,759	0.412	1,250.773	40.348	745.0	12.5	4.5	8.7	4.68
Nov.	720.0	1,281.28	42.71	1,151.252	38.375	11,692	0.390	1,139.560	37.985	720.0	13.0	5.0	8.2	4.69
Dec.	741.7	1,328.73	42.86	1,231.041	39.711	9,929	0.320	1,221.112	39.391	744.0	11.5	4.0	8.5	4.69
Jan.	744.0	1,299.15	41.91	1,225.632	39.569	8,920	0.288	1,217.712	39.281	744.0	12.0	4.5	8.3	4.75
Feb.	672.0	1,172.16	41.86	1,112.676	39.738	7,483	0.267	1,105.193	39.471	672.0	12.0	5.5	8.4	4.70
Mar.	741.3	1,286.97	41.52	1,207.783	38.961	8,382	0.270	1,199.401	38.690	744.0	12.0	5.0	8.3	4.69
Apr.	719.0	1,268.69	42.29	1,179.003	39.300	8,234	0.274	1,170.769	39.026	719.0	12.0	5.0	8.4	4.70
May	744.0	1,539.11	49.65	1,379.772	44.509	15,165	0.489	1,364.607	44.020	744.0	14.0	3.0	8.2	5.44
June	720.0	1,507.69	50.26	1,363.832	45.461	12,478	0.416	1,351.354	45.045	720.0	14.0	3.0	7.3	6.20
July	744.0	1,568.34	50.59	1,406.589	45.374	7,830	0.253	1,398.759	45.121	744.0	14.0	3.0	6.9	6.54
Aug.	744.0	1,785.22	57.59	1,602.499	51.694	10,398	0.335	1,592.101	51.358	744.0	14.0	3.0	7.9	6.55
Sept.	720.0	1,592.03	53.07	1,426.772	47.559	7,846	0.262	1,418.926	47.298	720.0	14.0	4.0	8.6	5.50
Totals	8,752.5	16,994.96	.....	15,551.383	.....	121,116	.....	15,430.267	.....	8,760.0	.....	.....	.....	.....
Average ...	729.4	.....	46.56	.....	42.607	.....	0.332	.....	42.275	730.0	.....	.....	8.1	5.23

Raw water treated with Ferri-Floc before Influent Aeration.
 Quicklime added to Ferri-Floc treated water in conduit opposite Fluoridation Room.
 Chlorine added to water after filtration all year.
 Sodium Silicofluoride added to water after filtration.
 Raw water drawn from lower intake at Garner Memorial Dam all year.

Table 9 (Continued)
WATER PURIFICATION WORKS
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1958- 1959	Number of Filters Washed			Ferri-Floc Used			Quicklime Used			Chlorine Used			Sodium Silicofluoride Used			Fuel Oil Used for Heating—Gals.	
	Total	Avg. per Day	Hours Run Avg. per Day	Lbs.	Avg. per Day	Gr. per Gal.	Lbs.	Avg. per Day	Gr. per Gal.	Lbs.	Avg. per Day	Parts per Mil.*	Lbs.	Avg. per Day	Parts per Mil.*	No. 2	No. 6
Oct.....	90	2.9	71.24	96,361	3,108	0.49	122,631	3,956	0.63	4,106	132	0.40	19,144	618	1.12	364	5,661
Nov.....	82	2.7	76.16	96,153	3,205	0.53	113,970	3,797	0.62	3,720	124	0.40	17,475	583	1.12	50	8,456
Dec.....	82	2.6	77.71	98,811	3,187	0.52	114,896	3,706	0.61	3,395	110	0.34	18,028	582	1.10	504	11,271
Jan.....	79	2.5	82.12	117,399	3,787	0.63	115,556	3,728	0.62	2,990	96	0.30	18,122	588	1.08	553	12,392
Feb.....	72	2.6	80.47	106,315	3,797	0.63	104,270	3,722	0.62	2,756	98	0.30	16,651	595	1.09	591	11,252
Mar.....	80	2.6	76.61	123,916	3,997	0.67	122,549	3,933	0.67	2,988	96	0.30	18,150	585	1.09	483	10,219
Apr.....	68	2.3	92.22	123,461	4,115	0.68	126,362	4,212	0.70	2,909	97	0.30	17,692	590	1.09	520	6,919
May.....	116	3.7	55.63	154,404	4,984	0.70	149,986	4,838	0.68	3,377	109	0.30	20,400	658	1.08	543	283
June.....	92	3.1	58.09	161,094	5,370	0.75	148,083	4,935	0.69	3,352	112	0.30	17,518	584	0.94	570	0
July.....	57	1.8	86.42	158,075	5,099	0.71	153,893	4,964	0.69	3,498	113	0.30	18,215	588	0.95	648	0
Aug.....	74	2.4	83.19	159,314	5,139	0.63	175,628	5,665	0.35	4,525	146	0.35	20,824	671	0.95	675	0
Sept.....	55	1.8	103.10	133,186	4,440	0.59	156,310	5,210	0.69	4,105	137	0.35	18,384	613	0.95	570	30
Totals.....	947	.....	.....	1,528,579	.....	.....	1,604,004	.....	.....	41,721	.....	.....	220,603	.....	.....	6,071	66,483
Average....	.....	2.6	76.24	.....	4,188	0.63	.....	4,395	0.66	.....	114	0.33	.....	604	1.04	506	5,540

Total filter hours for year, 71,359.96; average per day, 195.51.
Average quantity of water filtered per filter per run, 16.61 m. g.
*Dosage expressed as p.p.m. of Fluoride ion.

TABLE 10
WATER PURIFICATION WORKS
CHEMICALS USED DURING THE FISCAL YEAR ENDED
SEPTEMBER 30, 1959

Chemicals	Pounds of Chemicals Used		Total Gallons of Water Treated	Cost of Chemicals	Pounds of Chemicals Used per 1,000,000 Gals. of Water Treated (Avg.)	Cost of Chemicals Per 1,000,000 Gals. of Water Treated
	Total	Lbs. Per Day (Avg.)				
Ferri-Floc	1,528,579	4,188	16,986,200,000	\$42,074.14	89.99	\$2.48
Quicklime	1,604,004	4,395	16,984,680,000	17,051.88	94.44	1.00
Chlorine	41,721	114	15,209,902,000	3,650.59	2.74	0.24
Sod. Silicofluoride	220,603	604	15,133,476,000	12,227.91	14.58	0.81
Totals	3,394,907	.....	.....	\$75,004.52	.....	\$4.53

Price of Ferri-Floc—From Oct. 1, 1958 to Sept. 30, 1959—\$55.05 per ton.
Price of Quicklime—From Oct. 1, 1958 to April 12, 1959—\$21.60 per ton; from April 13, 1959 to Sept. 30, 1959—\$20.92 per ton.
Price of Chlorine—From Oct. 1, 1958 to Sept. 30, 1959—\$0.0875 per pound.
Price of Sodium Silicofluoride—From Oct. 1, 1958 to Aug. 31, 1959—\$109.40 per ton; from Sept. 1 to 30, 1959—\$139.39 per ton.

TABLE 11
WATER PURIFICATION WORKS
***CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1959

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Alkalinity													
Raw	4.6	4.2	3.8	3.8	4.1	3.9	4.0	4.0	4.1	4.2	4.4	4.1	4.1
**Effluent	17.9	17.1	16.6	15.7	15.9	15.6	16.3	16.1	15.7	16.2	17.6	18.7	16.6
Tap	15.6	15.3	14.7	13.8	13.5	13.3	14.7	14.5	14.3	14.4	15.7	16.6	14.7
Hardness													
Raw	10	9	9	10	10	10	10	10	10	10	10	10	10
**Effluent	27	26	26	27	27	27	28	28	27	27	28	28	27
Tap	27	27	26	27	27	27	28	28	27	28	28	28	27
Hydrogen Ion Concentration													
Raw	6.4	6.5	6.5	6.4	6.5	6.4	6.5	6.5	6.3	6.0	5.9	6.0	6.3
Aerated Influent	4.7	4.5	4.5	4.3	4.3	4.3	4.3	4.3	4.3	4.1	4.2	4.5	4.4
Treated	10.3	10.3	10.3	10.3	10.2	10.3	10.2	10.2	10.0	10.0	10.0	10.2	10.2
Settled	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.0	9.9	9.9	9.9	10.1	10.1
Filtered	10.2	10.2	10.2	10.2	10.2	10.2	10.1	10.0	9.9	9.9	9.9	10.1	10.1
**Effluent	10.1	10.2	10.2	10.2	10.2	10.1	10.1	10.0	9.9	9.9	9.9	10.1	10.1
Tap	9.9	10.0	10.0	10.0	9.9	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Free CO₂													
Raw	3.2	1.7	1.6	1.8	2.0	2.0	1.9	2.2	3.3	4.6	5.6	6.6	3.0
Aerated Influent	4.5	4.8	4.5	5.7	6.1	6.5	6.6	6.6	7.2	7.5	7.6	6.9	6.2
Phenolphthalein Alkalinity													
Treated	12.0	11.3	11.4	10.4	10.4	10.4	11.2	11.0	10.4	11.0	11.2	11.9	11.1
Settled	11.0	10.5	10.6	10.0	10.0	10.0	10.3	10.3	9.8	10.1	10.6	10.9	10.3
Filtered	10.9	10.4	10.5	9.8	9.6	9.7	10.2	10.1	9.7	10.1	10.4	10.9	10.2
**Effluent	10.9	10.5	10.5	9.9	9.6	9.6	10.2	10.1	9.7	10.1	10.4	10.8	10.2
Tap	7.9	7.8	7.5	6.9	6.8	6.6	7.3	7.3	7.2	7.2	7.8	8.3	7.4
Color													
Raw	17	12	12	13	13	13	13	14	13	12	12	14	13
**Effluent	5	6	6	7	7	7	7	6	6	6	6	5	6
Tap	5	6	6	7	7	7	7	7	6	6	5	5	6
Turbidity													
Raw	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2
Settled	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
**Effluent	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Iron													
Raw	0.32	0.06	0.05	0.06	0.06	0.05	0.05	0.04	0.04	0.05	0.12	0.21	0.09
Settled .....	.26	.34	.49	.68	.63	.50	.33	.30	.29	.25	.29	.27	.39
**Effluent .....	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00	.00
Tap .....	.02	.00	.00	.00	.01	.01	.00	.00	.00	.00	.00	.00	.00
Manganese													
Raw	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.02
Settled .....	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
**Effluent .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Tap .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Fluoride													
Raw	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
**Effluent	0.13	0.13	0.13	0.13	0.13	0.12	0.14	0.13	0.13	0.14	0.11	0.10	0.13
Tap	1.11	1.16	1.15	1.15	1.17	1.16	1.15	1.13	1.00	0.99	0.99	1.01	1.10
Temperature (°F.)													
Air (av. of daily max.)	59	52	33	37	36	45	58	71	72	79	81	76	58
Air (av. of daily min.)	40	35	15	18	16	26	42	51	55	64	62	55	40
Raw water	57	50	38	35	35	35	43	50	52	55	54	56	47
Water on filters	57	50	37	34	35	36	45	53	55	60	58	57	48
Tap	63	58	45	40	39	41	48	57	61	64	64	63	54

*Parts per million, except pH and Temperature.
 **Before treatment with chlorine and sodium silicofluoride.

TABLE 12
WATER PURIFICATION WORKS
***CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**
VARIOUS BROOKS AND RESERVOIRS ON SCITUATE WATERSHED
YEAR ENDED SEPTEMBER 30, 1959

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Color													
Coventry Brook	100	25	15	30	30	30	20	23	70	30	50	**	38
Wilbur Brook	150	60	30	35	30	30	40	100	60	125	50	30	62
Westconnaug Res.....	30	15	30	5	10	15	15	24	30	17	20	10	18
Barden Reservoir ...	100	30	30	20	10	30	20	28	22	60	20	25	33
Cork Brook	50	20	20	12	10	15	32	20	40	32	18	**	24
Rush Brook	60	35	25	13	10	28	35	60	50	110	16	35	40
Huntinghouse Brook.	60	35	25	15	10	20	38	25	45	15	30	28	
Harrisdale Brook ...	50	30	25	90	18	20	25	40	22	40	15	25	33
Blanchard Brook ...	60	175	75	90	80	50	160	280	200	320	150	**	149
Moswansicut Pond ...	40	18	35	***	***	40	15	20	30	22	18	22	26
Regulating Reservoir.	100	40	30	35	15	40	40	60	60	92	30	28	48
Quonapaug Brook ...	225	125	70	30	100	50	140	300	150	225	60	**	134
Hemlock Brook	225	115	30	30	20	35	20	36	30	55	30	35	55
Betty Pond Stream.	200	30	70	24	20	20	18	38	35	30	25	30	45
Spruce Brook	200	125	80	15	18	25	38	42	85	68	50	35	65
Brandy Brook	225	125	100	80	60	32	84	150	90	210	100	70	111
Moswansicut—South.	190	25	***	20	60	15	30	60	30	48	30	60	52
Windsor Brook	60	30	25	22	30	20	18	40	84	50	20	25	35
Paine Pond	70	40	12	22	25	20	12	17	10	90	15	24	30
Unnamed Brook—A...	150	60	14	70	30	25	70	84	20	90	10	**	57
Unnamed Brook—B...	70	10	18	12	8	25	20	40	15	**	**	**	24
Turbidity													
Coventry Brook	0.1	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	**	0.2
Wilbur Brook	0.2	0.2	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Westconnaug Res.....	0.1	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.3	0.2
Barden Reservoir ...	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Cork Brook	0.2	0.1	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	**	0.2
Rush Brook	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Huntinghouse Brook.	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2
Harrisdale Brook ...	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2
Blanchard Brook ...	0.2	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.2	**	0.2
Moswansicut Pond ...	0.2	0.1	0.2	***	***	0.2	0.2	0.2	0.2	0.2	0.1	0.3	0.2
Regulating Reservoir.	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.3	0.2
Quonapaug Brook ...	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.2	**	0.2
Hemlock Brook	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.3	0.2
Betty Pond Stream.	0.2	0.1	0.2	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Spruce Brook	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.2
Brandy Brook	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2
Moswansicut—South.	0.3	0.1	***	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.4	0.2
Windsor Brook	0.2	0.1	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2	0.3	0.2
Paine Pond	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.3	0.2
Unnamed Brook—A...	0.1	0.1	0.2	0.4	0.3	0.2	0.2	0.1	0.2	0.2	0.2	**	0.2
Unnamed Brook—B...	0.3	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	**	**	**	0.2
Iron													
Coventry Brook	0.75	0.05	0.00	0.15	0.08	0.05	0.00	0.01	0.70	0.15	0.20	**	0.19
Wilbur Brook .....	.75	.30	.20	.15	.10	.05	.30	.38	.63	1.00	.30	.44	.38
Westconnaug Res.....	.00	.15	.10	.02	.01	.02	.20	.06	.28	.30	.00	.10	.10
Barden Reservoir ...	.38	.18	.15	.12	.00	.01	.04	.00	.24	.40	.30	.40	.19
Cork Brook .....	.12	.70	.03	.00	.00	.00	.03	.00	.18	.20	.00	**	.11
Rush Brook .....	.35	.20	.15	.12	.10	.01	.07	.12	.33	.40	.35	.22	.20
Huntinghouse Brook.	.30	.22	.15	.10	.01	.00	.18	.18	.37	.60	.10	.05	.19

*Parts per million.

**No sample obtained—Brook or Stream was dry.

***No sample obtained—Pond frozen.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is Southwest of the Foster Nike Site.

Table 12 (Continued)

WATER PURIFICATION WORKS

*CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN
VARIOUS BROOKS AND RESERVOIRS ON SCITUATE WATERSHED

YEAR ENDED SEPTEMBER 30, 1959

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Iron													
Harrisdale Brook ...	0.28	0.22	0.15	0.10	0.01	0.12	0.18	0.20	0.39	0.60	0.15	0.15	0.21
Blanchard Brook ...	.80	.42	.30	.24	.12	.00	.32	.20	2.40	2.75	.80	**	.76
Moswansicut Pond ...	.00	.01	.00	***	***	.02	.00	.25	.08	.18	.00	.00	.05
Regulating Reservoir ...	.20	.30	.00	.05	.05	.00	.05	.30	.22	.40	.38	.25	.18
Quonapaug Brook ...	.22	.60	.20	.35	.42	.02	.35	.20	1.20	2.20	.20	**	.54
Hemlock Brook ...	.30	.20	.10	.04	.01	.20	.00	.04	.16	.21	.30	.42	.17
Betty Pond Stream..	.10	.05	.15	.05	.05	.10	.06	.05	.20	.70	.00	.00	.13
Spruce Brook .....	.02	.05	.00	.30	.05	.05	.00	.06	.11	.20	.18	.08	.09
Brandy Brook .....	.60	.20	.32	.02	.20	.00	.12	3.00	1.20	3.50	.30	1.10	.88
Moswansicut—South..	.80	.00	***	.01	.22	.25	.40	1.00	1.40	3.20	.60	1.00	.81
Windsor Brook .....	.08	.25	.07	.05	.10	.00	.02	.22	.25	.20	.10	.12	.12
Paine Pond .....	.20	.15	.20	.30	.05	.04	.02	.18	.00	2.80	.05	.12	.34
Unnamed Brook—A..	.56	.15	.05	.30	.10	.02	.03	.25	.00	3.50	.00	**	.45
Unnamed Brook—B..	.08	.00	.05	.08	.00	.02	.05	.15	.00	**	**	**	.05
Manganese													
Coventry Brook	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**	0.00
Wilbur Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00
Westconnaug Res....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Barden Reservoir ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Cork Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	**	.00
Rush Brook .....	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
Huntinghouse Brook..	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Harrisdale Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
Blanchard Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	**	.00
Moswansicut Pond ...	.00	.00	.00	***	***	.00	.00	.00	.00	.00	.00	.00	.00
Regulating Reservoir ...	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.01	.00
Quonapaug Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	**	.00
Hemlock Brook ...	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Betty Pond Stream..	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Spruce Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Brandy Brook .....	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
Moswansicut—South..	.00	.00	***	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00
Windsor Brook .....	.00	.00	.01	.00	.01	.00	.00	.00	.00	.00	.00	.00	.00
Paine Pond .....	.00	.00	.01	.01	.00	.00	.00	.01	.00	.00	.00	.00	.00
Unnamed Brook—A..	.00	.00	.00	.00	.02	.01	.00	.00	.00	.00	.00	**	.00
Unnamed Brook—B..	.00	.00	.00	.00	.00	.01	.00	.02	.00	**	**	**	.00
Hydrogen Ion Concentration													
Coventry Brook	6.2	6.4	6.1	5.8	5.6	5.7	6.6	6.4	6.3	7.2	6.6	**	6.3
Wilbur Brook	5.9	6.0	5.7	5.8	5.6	5.6	6.1	6.5	6.3	6.2	6.8	6.4	6.1
Westconnaug Res. ...	6.3	6.5	6.2	6.2	6.1	6.0	6.3	6.5	6.6	6.5	7.0	6.8	6.4
Barden Reservoir ...	5.5	6.4	6.2	6.2	6.0	5.6	6.3	6.5	6.8	6.3	6.6	6.8	6.2
Cork Brook	5.3	6.2	6.0	6.1	5.8	6.0	6.3	6.5	6.6	6.4	7.1	**	6.2
Rush Brook	5.8	6.3	6.0	6.0	6.0	6.0	6.2	6.5	6.5	6.5	6.3	6.3	6.2
Huntinghouse Brook..	6.3	6.6	6.5	6.4	6.3	6.3	6.5	6.6	6.7	6.6	6.8	6.8	6.5
Harrisdale Brook ...	6.4	6.8	6.5	6.5	6.5	6.4	6.5	6.8	6.7	6.8	7.0	7.0	6.7
Blanchard Brook ...	5.5	5.7	5.3	5.5	5.2	5.5	5.6	5.7	5.8	5.8	5.6	**	5.6
Moswansicut Pond ...	6.4	6.5	6.3	***	***	6.1	6.2	6.4	6.7	6.4	6.4	7.2	6.5
Regulating Reservoir ...	6.1	6.4	6.1	5.8	5.9	6.0	6.3	6.6	6.7	8.0	6.1	6.2	6.4
Quonapaug Brook ...	5.5	5.7	6.3	5.5	5.4	5.5	5.6	5.8	6.0	6.1	6.3	**	5.8
Hemlock Brook	5.3	5.9	5.8	5.9	5.8	5.4	5.8	6.1	6.5	6.3	6.1	6.6	6.0
Betty Pond Stream..	5.9	6.1	5.8	5.8	5.5	5.8	6.0	6.1	6.0	6.5	5.8	6.1	6.0

*Parts per million, except Hydrogen Ion Concentration.

**No sample obtained—Brook or Stream was dry.

***No sample obtained—Pond frozen.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is South-west of the Foster Nike Site.

Table 12 (Continued)
WATER PURIFICATION WORKS
***CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**
VARIOUS BROOKS AND RESERVOIRS ON SCITUATE WATERSHED
YEAR ENDED SEPTEMBER 30, 1959

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Hydrogen Ion Concentration													
Spruce Brook	5.6	6.0	5.9	5.9	6.2	5.7	6.0	6.6	6.0	6.0	6.1	6.2	6.0
Brandy Brook	5.9	6.1	5.9	6.0	5.8	6.0	6.1	6.2	6.3	6.0	6.1	6.3	6.1
Moswansicut—South.	6.5	6.4	***	6.2	5.1	6.2	6.2	6.1	6.7	6.4	6.5	6.6	6.3
Windsor Brook	6.2	6.5	5.9	6.9	5.8	6.6	6.4	6.4	6.9	6.5	6.6	6.4	6.4
Paine Pond	5.4	5.6	5.7	5.8	5.5	5.6	5.5	6.7	5.2	5.7	5.7	4.8	5.6
Unnamed Brook—A..	5.8	6.1	5.8	5.6	5.5	5.7	5.9	5.7	5.0	6.2	5.6	**	5.7
Unnamed Brook—B..	8.1	6.3	5.8	6.0	5.2	5.6	5.6	6.1	6.4	**	**	**	6.1
Free CO₂													
Coventry Brook	4.0	3.5	3.0	5.0	3.0	4.0	3.0	2.5	5.5	4.0	2.5	**	3.6
Wilbur Brook	6.0	7.0	3.0	5.0	3.0	5.0	3.0	3.0	5.5	5.0	2.5	2.0	4.2
Westconnaug Res.	5.0	6.0	2.0	2.0	2.5	2.5	2.5	3.0	1.5	4.0	2.0	2.0	2.9
Barden Reservoir	6.0	3.0	1.5	3.0	2.5	3.0	3.5	3.0	1.5	4.0	2.0	2.5	3.0
Cork Brook	6.0	4.0	1.5	3.0	3.0	3.0	3.5	2.5	3.0	4.0	2.0	**	3.2
Rush Brook	3.0	4.0	2.0	3.0	2.5	3.5	3.5	2.5	3.5	3.0	1.5	2.0	2.8
Huntinghouse Brook ..	3.0	3.0	1.5	4.0	2.5	4.5	3.0	2.5	4.0	3.5	1.5	2.0	2.9
Harrisdale Brook ...	2.5	3.0	1.5	3.0	3.0	5.0	3.0	3.0	4.0	4.0	1.5	1.5	2.9
Blanchard Brook	4.5	3.0	2.0	3.5	3.5	5.0	6.0	3.5	13.0	6.0	2.0	**	4.7
Moswansicut Pond	5.0	4.0	2.0	***	***	4.0	2.5	4.0	1.5	3.0	1.5	1.5	2.9
Regulating Reservoir ..	3.0	4.0	1.5	4.0	2.0	4.0	2.5	3.0	4.0	4.0	2.0	2.5	3.0
Quonapaug Brook	1.5	10.0	1.5	4.0	2.5	3.5	9.0	5.0	16.0	4.0	2.0	**	5.4
Hemlock Brook	1.5	5.0	1.5	5.0	3.0	3.0	3.5	3.5	2.0	4.0	2.5	3.0	3.1
Betty Pond Stream..	4.0	4.0	1.5	4.0	3.0	3.5	3.0	3.5	6.5	5.0	3.0	3.0	3.7
Spruce Brook	3.0	5.0	1.5	4.0	2.5	3.0	3.5	3.5	4.5	6.0	3.0	3.0	3.5
Brandy Brook	4.0	6.0	1.5	4.5	3.0	3.0	6.0	5.0	8.5	4.0	3.0	3.0	4.3
Moswansicut—South.	3.0	6.0	***	5.0	3.0	3.0	4.5	5.5	7.0	4.0	2.5	3.0	4.2
Windsor Brook	4.0	2.0	1.5	3.0	3.0	3.5	2.5	2.5	4.0	2.0	3.0	6.0	3.1
Paine Pond	4.0	5.0	3.5	3.0	3.0	3.0	3.5	3.5	5.5	9.0	2.5	7.5	4.4
Unnamed Brook—A..	4.0	7.0	4.5	3.5	3.0	3.5	4.0	4.5	4.5	8.0	3.0	**	4.5
Unnamed Brook—B..	0.5	6.0	4.5	3.0	2.5	3.5	4.5	3.5	2.5	**	**	**	3.4
Alkalinity													
Coventry Brook	5.0	4.0	4.0	5.0	4.5	4.0	4.0	5.0	6.5	5.0	12.0	**	5.4
Wilbur Brook	4.0	5.0	3.5	4.5	4.0	3.0	5.0	8.0	8.0	8.0	9.0	10.0	6.0
Westconnaug Res.	4.0	4.0	4.0	4.0	4.0	4.5	5.0	6.0	6.0	6.0	8.0	7.5	5.3
Barden Reservoir	4.0	4.0	3.5	4.0	3.5	3.0	4.5	5.0	5.0	5.0	6.0	6.5	4.5
Cork Brook	3.0	4.0	3.0	4.0	4.0	3.5	4.5	4.0	5.5	6.0	6.0	**	4.3
Rush Brook	4.0	4.0	6.0	6.5	6.0	3.5	5.5	6.0	7.5	9.0	11.0	10.0	6.6
Huntinghouse Brook ..	7.0	8.0	6.5	7.5	6.5	4.5	8.0	9.0	11.0	12.0	13.0	11.0	8.7
Harrisdale Brook ...	8.0	8.0	7.0	7.0	7.0	5.0	9.0	9.0	11.0	10.5	13.0	14.0	9.0
Blanchard Brook	3.0	4.5	2.0	3.0	3.5	3.0	4.5	11.0	6.5	9.0	6.0	**	5.1
Moswansicut Pond	5.0	4.0	5.0	***	***	6.0	6.0	6.0	6.0	7.0	6.5	7.0	5.9
Regulating Reservoir ..	4.0	4.0	6.0	7.0	7.5	4.5	4.5	6.5	7.0	6.0	10.0	10.0	6.4
Quonapaug Brook	4.0	5.0	3.5	4.5	4.0	3.0	6.0	11.0	10.0	12.0	6.0	**	6.3
Hemlock Brook	2.0	5.0	3.0	5.0	4.0	3.0	4.0	4.0	5.0	8.0	6.0	5.5	4.5
Betty Pond Stream..	4.5	4.5	7.0	4.0	4.0	3.5	4.5	5.0	5.0	6.0	6.0	5.5	5.0
Spruce Brook	4.0	4.0	7.0	4.0	6.5	3.0	4.0	4.0	4.5	5.0	5.0	9.0	5.0
Brandy Brook	6.0	7.0	7.0	6.5	4.5	4.5	6.0	9.0	9.0	13.0	15.0	16.0	8.6
Moswansicut—South.	13.0	8.0	***	5.0	4.0	7.5	10.0	15.0	17.5	3.0	17.0	6.5	9.9
Windsor Brook	4.0	4.0	7.0	4.0	4.0	4.0	4.0	5.0	6.5	8.5	6.0	16.0	6.1
Paine Pond	4.0	3.0	7.0	4.0	3.5	4.0	3.0	4.0	3.0	5.5	5.5	3.5	4.2
Unnamed Brook—A..	4.5	4.5	7.0	4.0	3.0	3.5	5.0	7.0	3.0	7.0	5.5	**	4.9
Unnamed Brook—B..	13.5	5.5	7.0	4.0	3.0	3.0	2.0	6.5	4.5	**	**	**	5.4

*Parts per million, except Hydrogen Ion Concentration.
 **No sample obtained—Brook or Stream was dry.
 ***No sample obtained—Pond frozen.
 Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is Southwest of the Foster Nike Site.

TABLE 13
WATER PURIFICATION WORKS
CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN
VARIOUS PARTS OF THE DISTRIBUTION SYSTEM
YEAR ENDED SEPTEMBER 30, 1959

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Hydrogen Ion Concentration													
Neutaconkanut Reservoir..	9.9	9.9	10.0	10.0	9.9	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Phenix Ave., Cranston....	9.9	10.0	10.0	10.0	9.9	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Westminster St., Olneyville	9.9	10.0	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Budlong Road, Cranston..	9.9	10.0	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Reservoir Ave., Cranston..	9.9	9.9	9.9	10.0	10.0	9.8	9.9	9.8	9.8	9.8	9.9	9.8	9.9
T. F. Green Airport, War.	9.9	10.0	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Biltmore Hotel	9.9	10.0	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Crown Hotel	9.9	9.9	9.9	10.0	10.0	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
State Office Bldg.	9.9	10.0	9.9	10.0	9.9	9.9	9.9	9.8	9.8	9.8	9.9	9.8	9.9
*Longview Reservoir	10.0	10.0	10.0	10.0	9.9	10.0	9.9	9.8	9.8	9.8	9.9	9.8	9.9
Narragansett Hotel	9.8	10.0	10.0	10.0	10.0	9.9	9.9	9.8	9.8	9.8	**	**	9.9
Phenolphthalein Alkalinity													
Neutaconkanut Reservoir..	7.7	7.8	7.4	6.8	6.8	6.4	7.1	7.3	7.2	7.4	7.8	8.3	7.3
Phenix Ave., Cranston....	7.9	7.8	7.5	6.9	6.8	6.6	7.2	7.3	7.2	7.2	7.8	8.3	7.4
Westminster St., Olneyville	7.8	7.8	7.5	6.9	6.9	6.6	7.2	7.4	7.2	7.2	8.0	8.3	7.4
Budlong Road, Cranston..	7.8	7.9	7.6	6.9	6.8	6.7	7.2	7.4	7.2	7.3	7.9	8.3	7.4
Reservoir Ave., Cranston..	7.8	7.9	7.6	6.9	6.8	6.5	7.2	7.3	7.2	7.3	8.0	8.4	7.4
T. F. Green Airport, War.	7.8	7.9	7.6	6.8	6.8	6.6	7.3	7.3	7.3	7.3	7.9	8.4	7.4
Biltmore Hotel	7.8	7.9	7.6	6.9	6.8	6.6	7.3	7.3	7.3	7.2	7.9	8.4	7.4
Crown Hotel	7.8	7.9	7.6	7.0	6.9	6.5	7.3	7.5	7.3	7.3	8.0	8.5	7.5
State Office Bldg.	8.0	7.9	7.6	7.0	6.9	6.6	7.4	7.5	7.4	7.3	8.1	8.5	7.5
*Longview Reservoir	8.9	8.6	8.4	7.7	7.3	7.1	7.7	7.9	7.9	7.9	8.4	8.9	8.1
Narragansett Hotel	7.5	7.9	7.6	6.9	6.9	6.6	7.3	7.3	7.2	7.2	**	**	7.2
Methyl Orange Alkalinity													
Neutaconkanut Reservoir..	15.5	15.4	14.6	13.7	13.5	13.0	14.2	14.5	14.3	14.4	15.7	16.6	14.6
Phenix Ave., Cranston....	15.7	15.4	14.7	13.8	13.6	13.2	14.5	14.6	14.4	14.5	15.8	16.6	14.7
Westminster St., Olneyville	15.5	15.4	14.8	13.8	13.7	13.3	14.4	14.8	14.4	14.5	15.9	16.6	14.8
Budlong Road, Cranston..	15.5	15.4	14.8	13.8	13.7	13.5	14.5	14.7	14.4	14.7	15.9	16.6	14.8
Reservoir Ave., Cranston..	15.6	15.4	14.8	13.8	13.6	13.2	14.4	14.7	14.4	14.7	15.9	16.6	14.8
T. F. Green Airport, War.	15.6	15.5	14.9	13.7	13.7	13.3	14.6	14.7	14.5	14.5	15.9	16.6	14.8
Biltmore Hotel	15.6	15.4	14.8	13.7	13.7	13.3	14.6	14.6	14.6	14.4	16.0	16.6	14.8
Crown Hotel	15.7	15.5	14.8	13.9	13.7	13.2	14.6	14.9	14.6	14.5	16.1	16.8	14.9
State Office Bldg.	15.8	15.5	14.9	13.8	13.7	13.3	14.7	14.9	14.7	14.7	16.2	16.8	14.9
*Longview Reservoir	17.1	16.2	15.8	15.3	14.4	14.3	15.4	15.7	15.8	15.8	16.8	17.4	15.8
Narragansett Hotel	15.1	15.5	14.9	13.8	13.7	13.4	14.5	14.7	14.5	14.5	**	**	14.5
Color													
Neutaconkanut Reservoir..	5	6	6	7	7	7	7	6	6	6	5	5	6
Phenix Ave., Cranston....	5	6	6	7	7	7	7	6	6	6	5	5	6
Westminster St., Olneyville	5	5	6	7	7	7	7	6	6	6	5	5	6
Budlong Road, Cranston..	5	5	6	7	7	7	7	6	6	6	5	5	6
Reservoir Ave., Cranston..	5	5	6	7	7	7	7	6	6	6	5	5	6
T. F. Green Airport, War.	5	5	6	7	7	7	7	6	7	6	5	5	6
Biltmore Hotel	5	5	6	7	7	7	7	6	6	6	5	5	6
Crown Hotel	5	5	6	7	7	7	7	6	6	6	5	5	6
State Office Bldg.	5	5	6	7	7	7	7	6	6	6	5	5	6
*Longview Reservoir	6	6	6	7	7	7	7	7	7	7	6	5	7
Narragansett Hotel	5	5	6	7	7	7	7	6	6	6	**	**	6
Iron													
Neutaconkanut Reservoir..	0.00	0.01	0.02	0.02	0.03	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.01
Phenix Ave., Cranston....	.01	.00	.01	.02	.02	.01	.01	.01	.01	.00	.01	.01	.01
Westminster St., Olneyville	.00	.00	.01	.01	.01	.01	.00	.01	.01	.00	.01	.00	.01
Budlong Road, Cranston..	.00	.00	.01	.00	.01	.01	.00	.00	.00	.00	.01	.00	.00
Reservoir Ave., Cranston..	.00	.00	.00	.01	.01	.01	.00	.00	.00	.00	.00	.00	.00
T. F. Green Airport, War.	.10	.07	.08	.10	.02	.04	.05	.08	.09	.06	.06	.04	.07
Biltmore Hotel .....	.01	.00	.01	.02	.02	.02	.00	.01	.00	.00	.01	.00	.01
Crown Hotel .....	.01	.00	.02	.02	.02	.02	.03	.01	.02	.02	.00	.00	.02
State Office Bldg. ....	.00	.00	.00	.01	.01	.02	.00	.01	.01	.01	.01	.00	.01
*Longview Reservoir .....	.05	.04	.05	.08	.06	.07	.05	.05	.07	.06	.07	.06	.06
Narragansett Hotel .....	.00	.00	.01	.01	.02	.03	.01	.01	.01	.00	**	**	.01

*Sample obtained at Our Lady of Fatima Hospital.

**No sample obtained—Hotel terminated operations July 24.

TABLE 13 (Continued)
WATER PURIFICATION WORKS
CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN
VARIOUS PARTS OF THE DISTRIBUTION SYSTEM
YEAR ENDED SEPTEMBER 30, 1959

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Chlorides													
Neutaconkanut Reservoir..	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
Phenix Ave., Cranston....	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5	2.9
Westminster St., Olneyville	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
Budlong Road, Cranston..	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
Reservoir Ave., Cranston..	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
T. F. Green Airport, War.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
Biltmore Hotel	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5	2.9
Crown Hotel	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
State Office Bldg.	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
*Longview Reservoir	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.5	2.5	2.9
Narragansett Hotel	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	**	**	3.0
Nitrites													
Neutaconkanut Reservoir..	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Phenix Ave., Cranston....	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000	.000
Westminster St., Olneyville	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Budlong Road, Cranston..	.000	.000	.000	.000	.000	.000	.000	.001	.001	.002	.001	.001	.001
Reservoir Ave., Cranston..	.001	.000	.000	.000	.000	.000	.000	.001	.001	.001	.001	.000	.000
T. F. Green Airport, War.	.001	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000	.000
Biltmore Hotel .....	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Crown Hotel .....	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.001	.000	.000
State Office Bldg. ....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
*Longview Reservoir .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Narragansett Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	**	**	.000
Taste													
Neutaconkanut Reservoir..	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Ave., Cranston....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster St., Olneyville	0	0	0	0	0	0	0	0	0	0	0	0	0
Budlong Road, Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
Reservoir Ave., Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, War.	0	0	0	0	0	0	0	0	0	0	0	0	0
Biltmore Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
Crown Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
State Office Bldg.	0	0	0	0	0	0	0	0	0	0	0	0	0
*Longview Reservoir	0	0	0	0	0	0	0	0	0	0	0	0	0
Narragansett Hotel	0	0	0	0	0	0	0	0	0	0	**	**	0
Odor													
Neutaconkanut Reservoir..	0	0	0	0	0	0	0	0	0	0	0	0	0
Phenix Ave., Cranston....	0	0	0	0	0	0	0	0	0	0	0	0	0
Westminster St., Olneyville	0	0	0	0	0	0	0	0	0	0	0	0	0
Budlong Road, Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
Reservoir Ave., Cranston..	0	0	0	0	0	0	0	0	0	0	0	0	0
T. F. Green Airport, War.	0	0	0	0	0	0	0	0	0	0	0	0	0
Biltmore Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
Crown Hotel	0	0	0	0	0	0	0	0	0	0	0	0	0
State Office Bldg.	0	0	0	0	0	0	0	0	0	0	0	0	0
*Longview Reservoir	0	0	0	0	0	0	0	0	0	0	0	0	0
Narragansett Hotel	0	0	0	0	0	0	0	0	0	0	**	**	0
Fluoride													
Neutaconkanut Reservoir..	1.13	1.16	1.16	1.15	1.17	1.16	1.16	1.13	1.01	0.96	1.00	1.00	1.10
Phenix Ave., Cranston....	1.15	1.14	1.17	1.15	1.16	1.15	1.15	1.15	0.99	0.95	0.99	0.98	1.09
Westminster St., Olneyville	1.15	1.16	1.15	1.14	1.16	1.15	1.13	1.09	1.00	1.00	0.99	1.01	1.09
Budlong Road, Cranston..	1.15	1.13	1.15	1.14	1.18	1.14	1.10	1.10	0.98	0.93	0.97	0.95	1.08
Reservoir Ave., Cranston..	1.15	1.16	1.17	1.17	1.17	1.14	1.13	1.10	0.99	0.94	0.94	0.95	1.08
T. F. Green Airport, War.	1.17	1.15	1.15	1.18	1.17	1.17	1.15	1.10	1.03	1.01	1.01	1.01	1.11
Biltmore Hotel	1.16	1.16	1.15	1.17	1.19	1.16	1.15	1.13	1.01	0.99	1.00	0.98	1.10
Crown Hotel	1.17	1.16	1.14	1.16	1.17	1.15	1.15	1.12	1.01	0.99	1.00	1.00	1.10
State Office Bldg.	1.17	1.15	1.16	1.17	1.18	1.15	1.14	1.12	1.00	1.00	1.00	1.00	1.10
*Longview Reservoir	1.09	1.15	1.14	1.12	1.15	1.14	1.14	1.13	1.03	0.99	0.99	0.98	1.09
Narragansett Hotel	1.18	1.16	1.16	1.17	1.17	1.16	1.15	1.13	1.00	0.99	**	**	1.13

*Sample obtained at Our Lady of Fatima Hospital.
 **No sample obtained—Hotel terminated operations July 24.

TABLE 14
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1959

1958-59	BACTERIA per ml. (48 HOURS ON AGAR AT 20°C.)											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	75	0	29	130	3	53	65	0	29	3	0	0
Nov.	35	0	16	900	9	251	650	10	145	7	0	1
Dec.	50	0	16	450	1	189	300	15	130	2	0	0
Jan.	80	1	20	5000	2	868	900	0	256	7	0	0
Feb.	350	8	71	2200	0	482	650	9	191	1	0	0
Mar.	180	9	64	750	2	59	450	5	63	190	0	14
Apr.	170	4	40	700	2	164	320	26	128	28	0	7
May	50	2	15	160	6	34	115	10	46	7	0	2
June	1600	3	175	200	0	61	150	0	50	2	0	0
July	600	1	54	90	0	41	55	0	25	10	0	1
Aug.	1200	0	87	50	0	13	35	0	9	7	0	1
Sept.	300	0	31	150	0	29	50	0	19	23	0	2
For Year	1600	0	52	5000	0	187	900	0	91	190	0	2

*Before treatment with chlorine and sodium silicofluoride.

TABLE 15
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1959

1958-59	BACTERIA per ml. (24 HOURS ON AGAR AT 35°C.)											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	20	1	7	250	0	10	9	0	1	1	0	0
Nov.	30	0	3	45	0	3	1	0	0	15	0	1
Dec.	400	0	18	65	0	5	4	0	0	4	0	0
Jan.	6	0	2	110	0	11	11	0	2	10	0	1
Feb.	700	0	35	90	0	9	70	0	7	15	0	1
Mar.	80	3	11	250	0	16	70	0	3	26	0	2
Apr.	120	3	13	180	0	9	13	0	1	15	0	1
May	100	0	11	50	0	4	20	0	2	2	0	0
June	25	0	5	7	0	0	3	0	0	30	0	3
July	150	0	11	350	0	18	3	0	1	8	0	1
Aug.	22	0	4	14	0	1	2	0	0	50	0	2
Sept.	50	0	6	55	0	4	2	0	0	6	0	0
For Year	700	0	11	350	0	8	70	0	1	50	0	1

*Before treatment with chlorine and sodium silicofluoride.

TABLE 16
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
PROCESS OF FILTRATION
YEAR ENDED SEPTEMBER 30, 1959

1958-59	B. COLI											
	Raw Water			Settled Water			*Effluent Water			Tap Water		
	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.	No. of 10 ml. Portions Tested	No. of Tests Confirmed	Index per ml.
Oct.	78	61	.078	52	1	.002	52	1	.002	130	0	.000
Nov.	66	53	.080	44	3	.007	44	0	.000	110	0	.000
Dec.	78	71	.091	52	0	.000	52	0	.000	130	1	.001
Jan.	78	52	.067	52	1	.002	52	0	.000	130	0	.000
Feb.	69	12	.017	46	2	.004	46	0	.000	115	0	.000
Mar.	78	17	.022	52	2	.004	52	2	.004	130	0	.000
Apr.	78	26	.033	52	0	.000	52	1	.002	130	0	.000
May	72	9	.013	48	1	.002	48	0	.000	120	0	.000
June	78	7	.009	52	1	.002	52	0	.000	130	0	.000
July	78	4	.005	52	3	.006	52	3	.006	130	0	.000
Aug.	75	8	.011	50	3	.006	50	1	.002	125	0	.000
Sept.	75	15	.020	50	10	.020	50	2	.004	125	0	.000
For Year	903	335	.037	602	27	.004	602	10	.002	1505	1	.000

*Before treatment with chlorine and sodium silicofluoride.

TABLE 17
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN VARIOUS
BROOKS AND RESERVOIRS ON SCITUATE WATERSHED
YEAR ENDED SEPTEMBER 30, 1959

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Bacteria Per Mi. 48 Hours on Agar at 20° C													
Coventry Brook	1350	22	70	120	70	140	110	110	140	210	500	**	258
Wilbur Brook	1200	170	120	70	80	110	370	630	270	350	550	200	345
Westconnaug Res.	680	50	280	130	130	85	250	360	190	380	300	120	246
Barden Reservoir	600	65	380	280	350	55	45	160	50	250	60	60	196
Cork Brook	760	55	90	120	90	220	160	70	25	130	800	**	229
Rush Brook	400	120	250	600	140	130	220	280	280	500	4000	700	635
Huntinghouse Brook	2200	260	650	4500	1400	140	410	600	170	550	400	350	969
Harrisdale Brook	3500	140	500	4000	700	170	260	220	280	1600	1500	600	1123
Blanchard Brook	420	250	210	450	50	50	800	500	420	1200	700	**	459
Moswansicut Pond	350	310	420	***	***	65	240	280	240	650	500	550	361
Regulating Reservoir	1350	150	130	220	180	180	210	450	300	1500	4500	400	798
Quonapaug Brook	520	75	80	150	55	15	220	750	250	2000	6000	**	970
Hemlock Brook	960	210	450	500	350	95	35	70	60	380	200	110	285
Betty Pond Stream	930	160	350	17	500	85	600	420	260	2400	2000	190	659
Spruce Brook	375	140	160	13	45	80	135	250	450	320	450	180	217
Brandy Brook	1400	250	400	3000	550	190	250	900	700	3800	4000	500	1328
Moswansicut-South	700	500	***	300	70	90	240	6000	2500	5500	8000	3000	2445
Windsor Brook	950	190	230	180	140	420	160	150	150	800	550	4000	660
Paine Pond	1300	80	380	3600	3200	160	185	700	330	4600	600	4500	1636
Unnamed Brook-A	1360	130	150	2500	3600	280	180	420	280	5200	1200	**	1391
Unnamed Brook-B	1100	55	250	800	90	250	400	250	280	**	**	**	386
Bacteria Per Mi. 24 Hours on Agar at 35° C													
Coventry Brook	100	11	10	12	12	16	16	55	210	80	400	**	84
Wilbur Brook	190	18	10	15	11	12	22	1300	120	220	600	190	226
Westconnaug Res.	90	15	9	17	3	11	25	50	170	120	270	40	68
Barden Reservoir	100	14	21	40	37	35	10	30	55	170	160	90	64
Cork Brook	70	5	10	13	5	15	50	60	45	35	1200	**	137
Rush Brook	70	18	13	15	5	20	55	100	250	220	5000	120	491
Huntinghouse Brook	550	12	60	70	45	15	80	55	50	450	1000	160	212
Harrisdale Brook	500	15	55	90	25	22	42	60	110	900	1200	250	272
Blanchard Brook	72	32	180	40	15	13	400	700	160	140	1500	**	296
Moswansicut Pond	76	200	500	***	***	22	35	280	180	110	650	400	245
Regulating Reservoir	110	20	70	28	12	45	55	250	200	150	1800	330	256
Quonapaug Brook	85	30	10	300	4	10	18	1100	290	550	3000	**	491
Hemlock Brook	140	155	9	45	18	9	4	45	2500	180	180	30	276
Betty Pond Stream	120	150	22	30	25	21	150	300	190	600	4000	200	484
Spruce Brook	75	40	15	12	4	12	50	50	45	160	410	80	79
Brandy Brook	520	160	80	90	85	85	350	1300	550	1500	2200	350	606
Moswansicut-South	130	85	***	15	30	30	220	1500	1400	2200	15000	1700	2028
Windsor Brook	70	45	20	35	12	10	70	80	130	350	450	2500	314
Paine Pond	135	47	20	55	45	18	80	450	1200	1100	500	4000	638
Unnamed Brook-A	140	18	14	120	35	19	25	400	800	2500	200	**	388
Unnamed Brook-B	80	50	15	35	1	13	45	190	800	**	**	**	137
B. Coll Index Per 100 Mi.													
Coventry Brook	25	6	0	6	0	0	0	0	0	70	110†	**	.....
Wilbur Brook	25	25	0	25	0	6	0	70	25	110†	110†	70	.....
Westconnaug Res.	110†	0	6	25	0	6	6	70	70	70	110†	25	.....
Barden Reservoir	110†	6	0	70	6	0	25	6	70	25	25	25	.....
Cork Brook	70	0	0	25	6	0	0	0	6	110†	110†	**	.....
Rush Brook	25	0	6	0	25	0	6	110†	25	110†	110†	70	.....
Huntinghouse Brook	110†	13	25	25	6	6	6	110†	6	70	110†	70	.....
Harrisdale Brook	110†	6	25	110†	6	0	6	70	110†	110†	110†	70	.....
Blanchard Brook	110†	110†	25	6	0	0	70	70	70	110†	110†	**	.....
Moswansicut Pond	110†	6	0	***	***	0	6	70	70	25	110†	110†	.....
Regulating Reservoir	110†	6	0	0	6	0	6	110†	70	110†	110†	110†	.....
Quonapaug Brook	70	70	0	25	0	0	6	25	25	70	110†	**	.....
Hemlock Brook	70	6	0	25	25	0	25	25	0	25	110†	13	.....
Betty Pond Stream	70	6	6	25	6	0	6	5	10	110†	110†	110†	.....
Spruce Brook	70	25	0	6	0	6	0	70	25	110†	110†	70	.....
Brandy Brook	110†	6	25	6	0	0	25	13	20	70	110†	110†	.....
Moswansicut-South	70	25	***	0	6	0	70	110†	110†	110†	110†	110†	.....
Windsor Brook	4	4	0	43	23	23	4	43	9	9	1100	430	.....
Paine Pond	110†	25	6	25	25	0	25	110†	110†	110†	70	6	.....
Unnamed Brook-A	70	25	0	70	6	0	70	70	13	110†	70	**	.....
Unnamed Brook-B	70	6	0	25	6	0	0	6	13	**	**	**	.....

†Indicates Index of 110+.

**No sample obtained—Brook or Stream was dry.

***No sample obtained—Pond frozen.

Note: Unnamed Brook A is just North of Scituate Town Dump. Unnamed Brook B is Southwest of the Foster Nike Site.

TABLE 18
WATER PURIFICATION WORKS
BACTERIOLOGICAL EXAMINATION OF WATER IN
VARIOUS PARTS OF THE DISTRIBUTION SYSTEM
YEAR ENDED SEPTEMBER 30, 1959

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
Bacteria Per Ml.													
48 Hours on Agar													
at 20° C													
Neutaconkanut Reservoir ..	0	0	0	0	7	3	3	16	1	0	0	0	3
Phenix Ave., Cranston....	0	1	0	1	1	1	5	2	1	0	0	1	1
Westminster St., Olneyville	0	0	0	0	0	0	1	2	1	0	0	0	0
Budlong Road, Cranston...	0	1	1	1	1	2	1	3	1	1	0	1	1
Reservoir Ave., Cranston...	0	0	2	1	0	0	1	3	0	0	1	0	1
T. F. Green Airport, War...	0	1	0	0	0	0	0	2	0	0	0	0	0
Biltmore Hotel	0	1	1	1	0	0	1	2	0	0	1	0	1
Crown Hotel	1	0	1	0	0	4	1	3	0	0	0	0	1
State Office Bldg.	0	1	1	0	0	0	3	2	0	0	0	0	1
*Longview Reservoir	0	1	0	0	1	1	2	2	1	1	0	0	1
Narragansett Hotel	0	2	1	1	1	5	1	2	1	1	**	**	2
Bacteria Per Ml.													
24 Hours on Agar													
at 35° C													
Neutaconkanut Reservoir ..	0	0	0	0	4	3	29	2	1	1	0	0	3
Phenix Ave., Cranston....	0	0	0	1	2	1	2	3	1	5	0	0	1
Westminster St., Olneyville	0	2	1	0	0	0	1	0	1	1	0	7	1
Budlong Road, Cranston...	0	0	1	2	2	2	2	0	1	4	0	2	1
Reservoir Ave., Cranston...	0	1	1	1	1	1	5	6	2	0	1	0	2
T. F. Green Airport, War...	0	1	1	0	0	1	1	1	1	1	0	2	1
Biltmore Hotel	0	1	1	1	6	0	3	1	2	12	0	2	2
Crown Hotel	0	0	1	0	2	1	3	3	1	3	0	2	1
State Office Bldg.	1	0	0	1	1	0	1	0	0	1	1	15	2
*Longview Reservoir	0	1	0	0	9	1	7	0	2	0	0	1	2
Narragansett Hotel	1	1	0	1	0	1	5	2	3	1	**	**	2
B. Coli													
Index Per Ml.													
Neutaconkanut Reservoir ..	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
Phenix Ave., Cranston....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Westminster St., Olneyville	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.004	.000	.000
Budlong Road, Cranston...	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Reservoir Ave., Cranston...	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
T. F. Green Airport, War...	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Biltmore Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Crown Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
State Office Bldg. ....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
*Longview Reservoir .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.002	.000	.000	.000
Narragansett Hotel .....	.000	.000	.001	.000	.000	.000	.002	.000	.000	.000	**	**	.000

*Sample obtained at Our Lady of Fatima Hospital.

**No sample obtained—Hotel terminated operations July 24.

TABLE 19
WATER PURIFICATION WORKS
MINERAL ANALYSIS OF WATER—YEAR ENDED SEPT. 30, 1959

Parts per Million	RAW WATER*					TAP WATER						
	1958	1959			Avg.	1958	1959			Avg.		
		Oct.-Dec.	Jan.-Mar.	Apr.-June			July-Sept.	Oct.-Dec.	Jan.-Mar.		Apr.-June	July-Sept.
Aluminum	0.00	0.00	0.02	0.03	0.01	0.02	0.03	0.10	0.07	0.06		
Arsenic	0.00	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00
Calcium	2.52	2.35	2.49	2.45	2.45	7.68	8.55	9.58	9.43	8.81		
Chloride	2.97	2.99	2.94	2.57	2.87	3.00	3.00	2.96	2.66	2.91		
Copper	0.05	0.07	0.10	0.09	0.08	0.01	0.03	0.02	0.02	0.02		
Fluoride	0.15	0.15	0.15	0.15	0.15	1.14	1.16	1.09	1.00	1.10		
Hardness	9	10	10	10	10	27	27	28	28	27		
Iron	0.14	0.06	0.04	0.13	0.09	0.01	0.01	0.00	0.00	0.00		
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Magnesium	0.50	0.50	0.48	0.50	0.50	0.30	0.24	0.30	0.28	0.28		
Manganese	0.03	0.00	0.00	0.03	0.02	0.00	0.00	0.00	0.00	0.00		
Phenolic Compounds ..	.....	0.000	.....	0.000	0.000	.....	0.000	.....	0.001	0.001
Selenium .....	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00	0.00
Silica	4.8	5.0	5.2	4.8	5.0	5.0	5.0	5.2	4.6	5.0		
Sulphate	7.0	7.2	7.2	6.9	7.1	12.6	13.2	13.6	15.6	13.8		
Total Solids	30	31	34	36	33	52	52	56	55	54		
Loss On Ignition	11	12	16	18	14	9	13	17	17	14		
Total Alkalinity	4.20	3.93	4.03	4.23	4.10	15.20	13.53	14.50	15.57	14.70		
Phenolphthalein Alk. .	0.00	0.00	0.00	0.00	0.00	7.73	6.77	7.27	7.77	7.39		
Zinc	0.00	.....	0.00	.....	0.00	0.00	.....	0.00	.....	0.00

*Water from bottom of Scituate Reservoir as received at Purification Works.

TABLE 20

WATER PURIFICATION WORKS

SANITARY CHEMICAL ANALYSIS (P.P.M.)—YEAR ENDED SEPT. 30, 1959

1958- 1959	RAW WATER*										TAP WATER								1958- 1959
	Ammonia			Nitrites			Nitrates			Chlorides			Dissolved Oxygen		Total Solids	Loss on Ignition			
	Free	Alb.								P. P. M.	% Sat.								
Oct.	0.032	0.062	0.000	0.000	0.00	2.9	9.7	89.6	27	10	0.002	0.086	0.000	0.01	3.0	54	7		
Nov.	0.008	0.054	0.000	0.000	0.00	3.0	11.6	90.2	30	12	0.024	0.046	0.000	0.00	3.0	52	11		
Dec.	0.003	0.086	0.000	0.01	3.0	12.1	90.5	32	10	8	0.024	0.038	0.000	0.01	3.0	49	9		
Jan.	0.008	0.046	0.000	0.01	3.0	13.8	99.0	28	8		0.016	0.038	0.000	0.02	3.0	49	12		
Feb.	0.008	0.046	0.000	0.01	3.0	13.7	98.3	34	15		0.016	0.038	0.000	0.01	3.0	57	17		
Mar.	0.002	0.070	0.000	0.02	3.0	13.5	96.6	31	12		0.007	0.061	0.000	0.01	3.0	51	11		
Apr.	0.031	0.072	0.001	0.01	2.9	11.1	89.2	29	19		0.013	0.050	0.000	0.02	3.0	53	21		
May	0.016	0.045	0.001	0.01	3.0	9.4	83.0	39	17		0.008	0.037	0.000	0.01	3.0	59	10		
June	0.001	0.061	0.000	0.01	2.9	8.9	80.4	34	13		0.024	0.037	0.000	0.01	2.9	56	19		
July	0.002	0.045	0.000	0.02	2.9	5.8	54.4	35	16		0.016	0.037	0.000	0.01	3.0	56	12		
Aug.	0.003	0.004	0.000	0.03	2.3	4.9	45.4	39	17		0.003	0.001	0.000	0.00	2.5	58	16		
Sept.	0.024	0.069	0.000	0.05	2.5	6.9	65.6	34	21		0.016	0.033	0.000	0.02	2.5	51	23		
Avg.	0.012	0.055	0.000	0.02	2.9	10.1	81.9	33	14		0.014	0.042	0.000	0.01	2.9	54	14		

*Water from bottom of Scluate Reservoir as received at Purification Works.

TABLE 21 (Continued)
WATER PURIFICATION WORKS

LABORATORY EXAMINATIONS MADE DURING THE FISCAL YEAR ENDED SEPTEMBER 30, 1959

SOURCE OF WATER TESTED	Frequency of Test or Examination	Number of Tests or Analyses Made During the Fiscal Year					
		Chemical	Bacteriological	Microscopical	Sanitary Chemical	Mineral	Miscellaneous
VI NEUTAGONAUT DISTRIBUTION RESERVOIR							
Sample from nearby Tap.....	Daily.....	1,506	1,758	26	1,004	...	4,268
Sample from nearby Tap.....	Bi-Weekly.....	..	...	..	...	...	26
VII LONGVIEW DISTRIBUTION RESERVOIR							
Sample from nearby Tap.....	Daily.....	1,506	1,759	26	1,004	...	4,269
Sample from nearby Tap.....	Bi-Weekly.....	..	...	..	...	...	26
VIII DISTRIBUTION SYSTEM							
Water Supply Board Bldg. Tap Water.....	Daily.....	2,405	2,108	26	1,504	...	6,318
Water Supply Board Bldg. Tap Water.....	Bi-Weekly.....	..	...	..	...	...	26
Water Supply Board Bldg. Tap Water.....	Monthly.....	..	...	..	60**	...	60
Water Supply Board Bldg. Tap Water.....	Every 13 Weeks.....	..	...	..	...	36	36
****Water Supply Board Bldg. Tap Water.....	Monthly.....	624	384	288	288	...	1,296
Sectional Tests.....	.....	477	150	165	165	...	792
Consumers' Complaints (47 during the year).....	.....	..	1,194	143	143	...	1,337
Sterilization of Newly Laid Mains.....	.....	11,538	13,469	...	7,692	...	32,699
Sectional Tests.....	Daily.....	..	...	..	...	...	...
IX MISCELLANEOUS TESTS							
Coagulation Tests to Determine Chemical Dosages.....	.....	168	...	...	...	84	252
Analysis of Ferri-Floc used for Treatment.....	.....	31	...	...	...	17	68
Analysis of Quicklime used for Treatment.....	.....	21	...	...	...	40	61
Analysis of Sodium Silicofluoride used for Treatment.....	.....	8	...	...	...	...	8
Water, Filter Sand and Other Materials.....	.....	474	1,246	...	134	...	2,208
Totals		39,367	34,952	182	21,165	72	97,250

**For Oxygen Consumed only.
 ***Exclusive of Oxygen Consumed.
 ****Composite of 13 Weekly Samples.
 *****Samples from 8 Random Dwellings (location changed monthly).
 †Samples obtained after Oct. 13, 1958 were from Providence City Hall.
 ‡Samples from eight fixed locations.

TABLE 22
WATER DISTRIBUTION SYSTEM
NEUTACONKANUT HIGH SERVICE PUMPING STATION
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1958-1959	ELECTRICALLY-DRIVEN PUMPS										GASOLINE ENGINE-DRIVEN PUMP					Total Water Pumped Mil. Gals.	Fuel Oil Used For Heating — Gals.
	No. 1—10" Pump 2700 GPM. TDH 90'			No. 2—12" Pump 3800 GPM. TDH 104'			No. 3—16" Pump 7000 GPM. TDH 96'			No. 4—16" Pump 7000 GPM. TDH 96'			Avg. Per Day				
	Operated		Water Pumped Mil. Gals.	Operated		Water Pumped Mil. Gals.	Operated		Water Pumped Mil. Gals.	Gasoline Used Gals.	Oil Used Qts.						
	Days	Hours and Minutes		Days	Hours and Minutes		Days	Hours and Minutes				Days		Hours and Minutes			
Oct.	18	425-00	80.84	14	315-45	87.94	0	0	0	69,300	\$ 1,163.24	2‡	0-30	38	0	168.98	5.45
Nov.	28	672-00	132.60	2	48-00	13.67	0	0	0	42,600	833.92	0	0	0	0	146.27	4.88
Dec.	1	0-30	.14	31	723-00	209.05	3	8-45	3.08	78,300	1,241.18	2	1-45	91	0	212.80	6.86
Jan.	16	380-00	65.03	15	362-30	101.58	0	0	0	71,400	1,149.58	1	1-00	40	0	166.79	5.38
Feb.	27	617-30	109.43	7	144-30	32.19	0	0	0	64,200	1,057.42	4	4-00	110	0	142.98	5.11
Mar.	28	590-00	107.73	10	193-15	48.52	0	0	0	46,200	904.12	4	5-30	140	0	158.40	5.11
Apr.	30	710-00	128.37	2	24-15	4.86	0	0	0	46,200	904.13	5	5-00	120	0	135.28	4.51
May	27	587-43	114.39	25	331-45	74.94	1	22-00	7.32	67,000	1,137.43	4	4-00	140	0	198.36	6.40
June	27	630-00	119.50	17	210-00	48.97	0	0	0	67,000	1,138.34	2	2-00	43	0	169.30	5.64
July	30	687-50	130.29	17	143-40	31.92	0	0	0	51,000	963.34	5	5-00	144	0	164.01	5.29
Aug.	27	401-15	96.19	15	183-30	47.89	21	218-00	71.25	82,500	1,312.13	5	6-30	183	0	217.67	7.02
Sept.	30	410-30	112.45	0	0	0	20	296-00	91.01	75,000	1,224.90	5	5-00	120	0	204.98	6.83
Totals	289	6,112-20	1,196.96	157	2,683-10	701.53	45	544-45	172.66	760,700	\$13,049.73	39	40-15	1,169	0	2,085.82	5.71
																	4,540

*Narragansett Electric Co. Power Rate G.
†Engine Test Run.
‡Old Gasoline Engine Driven Pump.

TABLE 23

WATER DISTRIBUTION SYSTEM
BATH STREET HIGH SERVICE PUMPING STATION
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1958- 1959	ELECTRICALLY-DRIVEN PUMPS										GASOLINE ENGINE-DRIVEN PUMPS										TOTAL WATER PUMPED Mil. Gals.	Fuel Oil Used for Heating Gals.					
	Pump No. 1 2000 GPM. TDH 98'					Pump No. 2 2000 GPM. TDH 98'					Power Used*					Pump No. 3 2000 GPM. TDH 98'; 150 HP Sterling Engine							Pump No. 4 2000 GPM. TDH 98'; 150 HP Sterling Engine				
	Operated					Operated					KWH					†Operated							†Operated				
	Water Pumped					Water Pumped					Cost					Water Pumped							Water Pumped				
	Days	Hours and Minutes	Mil. Gals.	Days	Hours and Minutes	Mil. Gals.	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes	Days	Hours and Minutes			
Oct.	30	515-45	68.39	54,320	\$ 911.68	28	521-15	68.62	54,320	\$ 911.68	1	1-00	.13	15	2	1	1-00	.13	14	2	137.27	4.43	72				
Nov.	29	593-30	77.64	67,340	1,060.72	29	606-00	79.65	67,340	1,060.72	0	0	0	0	0	0	0	0	0	0	137.29	5.24	207				
Dec.	22	323-00	44.02	41,860	759.20	24	356-10	49.15	41,860	759.20	2	1-40	.22	18	3	2	2-00	.27	18	3	93.66	3.02	144				
Jan.	27	516-30	67.96	51,660	860.77	29	544-30	71.91	51,660	860.77	0	0	0	0	0	0	0	0	0	0	139.87	4.51	219				
Feb.	24	536-15	69.90	65,660	999.10	26	532-05	69.57	65,660	999.10	1	1-00	.14	7	1	1	1-00	.13	7	1	139.75	4.99	237				
Mar.	30	543-00	70.62	60,480	939.72	29	609-30	79.50	60,480	939.72	1	1-00	.13	5	1	1	1-00	.13	5	1	130.38	4.85	208				
Apr.	30	640-45	83.40	68,600	1,006.13	30	638-45	83.11	68,600	1,006.13	1	1-00	.13	8	1	1	1-00	.13	8	1	166.77	5.56	65				
May	31	685-45	91.34	66,920	973.17	21	444-30	57.39	66,920	973.17	1	1-00	.13	6	1	1	1-00	.13	6	1	148.99	4.81	13				
June	30	628-00	81.27	68,740	987.60	29	595-30	77.73	68,740	987.60	2	2-00	.26	5	3	2	2-00	.26	5	3	159.52	5.32	0				
July	31	669-30	86.91	67,480	967.77	31	688-00	80.35	67,480	967.77	1	0-30	.06	5	1	1	0-30	.07	5	1	176.39	5.69	0				
Aug.	31	580-45	75.53	69,580	987.25	30	557-45	72.27	69,580	987.25	1	1-00	.13	9	1	1	1-00	.13	9	1	148.06	4.78	0				
Sept.	30	521-00	69.54	55,720	848.02	30	422-30	56.23	55,720	848.02	2	2-00	.26	14	4	2	2-00	.26	14	4	126.29	4.21	30				
Totals	345	6,753-45	886.52	738,360	\$11,301.13	336	6,516-30	854.48	738,360	\$11,301.13	13	12-10	1.59	92	18	13	12-30	1.65	91	18	1,744.24	4.78	1,195				

*Narragansett Electric Co. Power Rate G.

†Engine Test Run.

TABLE 24
WATER DISTRIBUTION SYSTEM
NEUTACONKANUT DISTRIBUTION RESERVOIR*
OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1938-1939	7 A.M. Statistics on First Day of Month				OPERATING CHARACTERISTICS DURING MONTH									
	Water Level	Storage Mil. Gals.	Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
			Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	226.67	41.32	226.78	223.56	226.48	41.72	36.05	41.18	3.11	1.21	2.08	5.47	2.13	3.65
Nov.	226.49	41.19	226.84	223.57	226.35	41.82	36.06	40.95	2.88	1.09	1.78	5.06	1.92	3.13
Dec.	225.99	40.32	226.88	223.43	226.27	41.90	35.82	40.81	3.09	0.96	1.99	5.44	1.69	3.50
Jan.	226.70	41.57	226.90	223.55	226.36	41.93	36.03	40.97	3.25	0.88	2.06	5.72	1.54	3.63
Feb.	225.82	40.02	226.75	223.59	226.08	41.66	36.10	40.48	2.95	1.06	1.94	5.19	1.87	3.41
Mar.	226.00	40.34	226.87	223.64	226.47	41.88	36.19	41.16	2.90	0.47	2.06	5.11	0.82	3.62
Apr.	226.61	41.41	226.81	223.57	226.47	41.77	36.06	41.16	3.00	0.87	1.94	5.30	1.52	3.41
May	226.49	41.19	226.86	221.42	226.52	41.86	32.28	41.25	5.27	0.99	2.38	9.27	1.73	4.18
June	226.59	41.37	226.93	221.83	226.53	41.99	33.00	41.27	4.85	0.69	1.93	8.54	1.20	3.40
July	226.55	41.30	227.07	222.93	226.50	42.21	34.94	41.21	3.82	0.63	2.07	6.72	1.11	3.64
Aug.	225.81	40.01	227.00	223.05	226.54	42.09	35.15	41.28	3.47	1.33	2.31	6.10	2.33	4.06
Sept.	226.45	41.12	226.80	221.91	226.51	41.75	33.14	41.23	4.00	1.30	2.42	7.98	2.28	4.25
For Year	—	—	227.07	221.42	226.42	42.21	32.28	41.08	5.27	0.47	2.08	9.27	0.82	3.66

*Storage capacity at overflow elevation of 227.00=42,090,000 gallons. †Average of 7 A.M. statistics.
Note:—Water levels are elevations in feet above mean high water in Providence harbor.

TABLE 25

WATER DISTRIBUTION SYSTEM
LONGVIEW DISTRIBUTION RESERVOIR*

OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1959

1958- 1959	OPERATING CHARACTERISTICS DURING MONTH										
	7 A.M. Statistics on First Day of Month		Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.		
	Water Level	Storage Mil. Gals.	Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.†
Oct.	304.25	11.59	305.07	301.87	304.65	11.97	10.49	11.78	2.95	1.10	1.84
Nov.	304.90	11.89	305.14	302.42	304.76	12.00	10.74	11.83	2.11	1.34	1.73
Dec.	304.95	11.92	305.47	302.25	304.67	12.15	10.67	11.78	3.22	0.46	1.75
Jan.	305.06	11.97	305.31	302.40	304.88	12.08	10.73	11.88	2.62	1.23	1.78
Feb.	304.60	11.75	305.19	302.10	304.66	12.03	10.60	11.78	2.70	1.30	1.99
Mar.	304.85	11.87	305.41	301.74	304.66	12.13	10.43	11.78	2.84	0.60	1.71
Apr.	305.23	12.04	305.29	301.52	304.81	12.07	10.32	11.85	2.74	1.19	2.01
May	304.94	11.91	306.34	301.04	305.01	12.54	10.10	11.94	4.16	1.20	2.24
June	304.80	11.85	305.39	299.34	304.91	12.12	9.32	11.90	5.72	1.12	2.40
July	304.85	11.87	305.38	301.83	304.82	12.11	10.47	11.86	3.21	1.21	2.29
Aug.	305.02	11.95	305.41	301.63	304.97	12.13	10.38	11.93	3.66	0.75	1.99
Sept.	304.51	11.71	305.41	302.15	304.83	12.13	10.62	11.86	2.90	0.81	1.66
For Year	—	—	306.34	299.34	304.80	12.54	9.32	11.85	5.72	0.46	1.95
									2.65	0.13	0.88

*Storage capacity at overflow elevation of 306.00=12,400,000 gallons. †Average of 7 A.M. statistics.

Note:—Water levels are elevations in feet above mean high water in Providence harbor.

TABLE 26
WATER PIPE LAID, REMOVED, ADDED AND REPLACED
YEAR ENDED SEPTEMBER 30, 1959

	PIPE LAID IN FEET (Including Pipe Replaced)						PIPE REMOVED IN FEET (Including Pipe Replaced)							
	6"	8"	12"	16"	20"	36"	Totals	6"	8"	12"	16"	20"	36"	Totals
Providence.....	6,188.50	4,178.37	1,800.94	3,141.01	3,415.32	0	18,724.14	7,337.24	262.60	521.30	0	0	0	8,121.14
Cranston.....	3,477.72	13,874.42	706.53	0	0	334.62	18,393.29	2,471.21	0	38.88	0	0	265.85	2,775.94
Johnston.....	2,533.54	8,905.50	0	0	0	0	11,439.04	0	0	0	0	0	0	0
North Providence..	5,282.17	6,371.77	0	0	0	0	11,653.94	0	0	0	0	0	0	0
Totals.....	17,481.93	33,330.06	2,507.47	3,141.01	3,415.32	334.62	60,210.41	9,808.45	262.60	560.18	0	0	265.85	10,897.08

	NET LENGTH IN FEET ADDED TO DISTRIBUTION SYSTEM						PIPE REPLACED IN FEET							
	6"	8"	12"	16"	20"	36"	Totals	6"	8"	12"	16"	20"	36"	Totals
Providence.....	-1,148.74	+3,915.77	1,279.64	+3,141.01	+3,415.32	0	+10,603.00	*2,859.58	0	0	0	0	0	2,859.58
Cranston.....	+1,006.51	+13,874.42	+667.65	0	0	+68.77	+15,617.35	10.44	0	**38.88	0	0	265.85	315.17
Johnston.....	+2,533.54	+8,905.50	0	0	0	0	+11,439.04	0	0	0	0	0	0	0
North Providence..	+5,282.17	+6,371.77	0	0	0	0	+11,653.94	0	0	0	0	0	0	0
Totals.....	+7,673.48	+33,067.46	+1,947.29	+3,141.01	+3,415.32	+68.77	+49,313.33	2,870.02	0	38.88	0	0	265.85	3,174.75

*2,559.58 Feet replaced with 16-inch.
** 10.79 Feet replaced with 8-inch.

TABLE 27

PUBLIC WATER MAINS IN USE ON SEPTEMBER 30, 1959																
Diameter of Pipe	Providence*		Cranston		Johnston		N. Providence		Pawtucket		Smithfield		Total*		Providence	
	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles
6-inch....	1,511,372.81	286.24	603,723.81	114.34	110,558.44	20.94	145,944.18	27.64	870.75	0.16	0	0	2,372,469.99	449.33	82.06	0.02
8-inch....	337,586.23	63.94	268,554.46	50.86	120,135.20	22.75	95,428.02	18.07	0	0	0	0	821,703.91	155.63	1,577.52	0.30
10-inch....	14,354.15	2.72	0	0	0	0	0	0	0	0	0	0	14,354.15	2.72	0	0
12-inch....	236,347.13	44.76	99,888.26	18.92	9,369.86	1.77	28,387.99	5.38	44.47	0.01	146.00	0.03	374,183.71	70.87	6,893.80	1.31
16-inch....	140,523.06	26.61	3,512.31	0.67	6,393.63	1.21	0	0	0	0	0	0	150,429.00	28.49	54,865.59	10.39
20-inch....	19,677.56	3.73	0	0	0	0	0	0	0	0	0	0	19,677.56	3.73	0	0
24-inch....	60,131.20	11.39	5,405.43	1.02	31,347.98	5.94	2,368.71	0.45	0	0	0	0	99,253.32	18.80	4,299.44	0.81
30-inch....	43,576.63	8.25	31,607.31	5.99	0	0	3,753.06	0.71	0	0	0	0	78,937.00	14.95	0	0
36-inch....	4,555.68	0.86	5,395.12	1.02	0	0	0	0	0	0	0	0	9,950.80	1.88	0	0
42-inch....	2,893.25	0.55	22,556.37	4.27	0	0	0	0	0	0	0	0	25,449.62	4.82	0	0
48-inch....	14,918.00	2.83	1,584.00	0.30	394.00	0.07	0	0	0	0	0	0	16,896.00	3.20	0	0
60-inch....	5,559.00	1.05	10,671.00	2.02	4,340.00	0.82	0	0	0	0	0	0	20,570.00	3.90	0	0
66-inch....	0	0	8,448.00	1.60	0	0	0	0	0	0	0	0	8,448.00	1.60	0	0
Totals.....	2,391,494.70	452.93	1,061,346.07	201.01	282,539.11	53.51	275,881.96	52.25	915.22	0.17	146.00	0.03	4,012,323.06	759.91	67,718.41	12.83

*Special High Pressure Fire Service included.

TABLE 28

GATES IN USE ON SEPT. 30, 1959

City or Town	Stop Gates												Gates on Public Fire Hydrants			Gates on Unwatering Hydrants			Gates on Blowoffs				Total Gates in use at end of year
	6"	8"	10"	12"	16"	20"	24"	30"	36"	42"	48"	Total	6"	8"	Total	6"	8"	Total	6"	8"	12"	Total	
Providence	4575	924	20	608	258	25	70	33	7	1	10	6531	676	1832	2508	2	14	16	1	2	1	4	*9059
Cranston	1657	639	0	197	9	0	9	14	12	9	4	2550	782	3	785	3	5	8	0	2	3	5	*3348
Johnston	293	236	1	25	12	0	5	0	0	0	2	574	226	12	238	3	0	3	0	0	2	2	*817
N. Providence ..	375	195	0	62	0	0	2	0	0	0	0	634	272	0	272	0	3	3	0	0	0	0	909
Totals	6900	1994	21	*892	*279	*25	86	47	19	10	*16	*10289	1956	1847	3803	8	22	30	1	4	6	11	*14133

Note: Above table includes all gates in the special high pressure fire system in Providence (129) and gates on Neutaconkanut Conduit and Scituate Aqueduct east of the Siphon Chamber.

*Totals include 4-12" and 5-16" Rotary Plug Valves in Providence, 5-16" Rotary Plug Valves in Cranston, 5-16" Rotary Plug Valves in Johnston, 1-16", 2-20", and 1-48" Butterfly Valves in Providence, and 1-48" Butterfly Valve in Cranston.

TABLE 29

SERVICE PIPES INSTALLED, REMOVED, AND REPAIRED FOR YEAR ENDED SEPT. 30, 1959

City or Town	INSTALLED				REMOVED				REPAIRED			
	General		Fire Supply		General		Fire Supply		General		Fire Supply	
	Copper $\frac{3}{4}$ "-2"	Cast Iron 4"	Cast Iron 4"-8"	Total	Lead or Copper $\frac{1}{2}$ "-2"	Cast Iron 2"-4"	Cast Iron 4"	Total	Lead or Copper $\frac{3}{8}$ "-1"	Cast Iron 2"-4"	Cast Iron 4"-6"	Total
Providence	224	5	25	254	205	8	1	214	25	1	2	28
Cranston	302	1	2	305	62	1	0	63	20	0	0	20
Johnston	137	3	2	142	9	0	0	9	17	1	0	18
North Providence	155	0	4	159	6	1	0	7	9	0	0	9
Totals	818	9	33	860	282	10	1	293	71	2	2	75

Total number of active services in the system as of Sept. 30, 1959—59,709.

TABLE 30
NUMBER AND SIZE OF ACTIVE SERVICES
AS OF SEPTEMBER 30, 1959

	1/2"	5/8"	3/4"	1"	1 1/4"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	24"	30"	Total
Providence	270	26,758	6,923	1,307	589	204	410	6	963	847	57	4	5	2	.	.	38,345
Cranston	5	7,181	6,616	725	50	163	194	.	62	63	17	.	2	.	.	.	15,078
Johnston .....	...	793	1,816	261	10	43	36	.	3	5	2	.	..	.	.	.	2,969
North Providence .....	...	1,116	1,702	333	6	95	41	.	9	6	2	.	..	.	.	.	3,310
Wanwick .....	...	.....	.....	.....	...	...	...	.	.....	1	..	.	2	.	.	1	4
East Smithfield .....	...	.....	.....	.....	...	...	...	.	.....	...	1	.	1	.	.	.	2
Kent County WA .....	...	.....	.....	.....	...	...	...	.	.....	...	..	.	..	.	1	.	1
Totals	275	35,848	17,057	2,626	655	505	681	6	1,037	922	79	4	10	2	1	1	59,709

TABLE 31
PUBLIC FIRE HYDRANTS

HYDRANT ACTIVITIES DURING YEAR ENDED SEPT. 30, 1959					
	Providence	Cranston	Johnston	North Providence	Totals
*Post Hydrant Installations.....	147	68	17	10	242
Post Hydrants Replaced	3	11	11	5	30
Post Hydrants Abandoned.....	2	0	0	0	2
Flush Hydrants Replaced with Post Hydrants....	127	0	0	0	127
Flush Hydrants Abandoned.....	5	0	0	0	5

*Includes Post Hydrants Replaced and Flush Hydrants Replaced with Post Hydrants.

TABLE 32
PUBLIC FIRE HYDRANTS

HYDRANTS IN DISTRIBUTION SYSTEM ON SEPT. 30, 1959**					
	Providence	Cranston	Johnston	North Providence	Totals
Post Hydrants	1,191	791	254	270	2,506
Flush Hydrants	1,906	0	4	0	1,910
Total	*3,097	791	258	270	*4,416

*Includes 109 Post Hydrants and 52 Flush Hydrants in Special High Pressure Fire Service in Providence.
 **Hydrant statistics in the City of Warwick and the East Smithfield Water District are not included, as those distribution systems are not owned or maintained by the Providence Water Works.

TABLE 33
NUMBER, MAKE AND SIZE OF METERS ON ACTIVE SERVICES
AS OF SEPTEMBER 30, 1959

PROVIDENCE

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....	78	35	11	54	15	1	3	1					198
Empire.....	698	33	15	113	43	1	1		2				906
Hersey.....				2	3	2	13	71	6				97
Thomson.....	9,741	920	416	61	132	3	4						11,277
Trident.....	20,747	2,191	660	895	1,130	93	73	57	14	5			25,865
Venturi.....												2	2
TOTALS.....	31,264	3,179	1,102	1,125	1,323	100	94	129	22	5		2	38,345

***CRANSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....	9			5	1								15
Empire.....	106	4		11	6								127
Hersey.....					1			4	4				9
Thomson.....	2,757	75	41	9	12								2,894
Trident.....	10,960	557	216	173	171	2	6	9	2	1	1		12,098
Venturi.....											2		2
TOTALS.....	13,832	635	257	198	191	2	6	13	6	1	3		*15,145

*Includes 1-6" Trident Compound Meter supplying City of Warwick.
2-6" Trident Protectus Meters supplying City of Warwick.
1-10" Trident Protectus Meter supplying City of Warwick.
1-12" Trident Crest Meter supplying Kent County Water Authority.
1-12" Venturi Meter supplying Kent County Water Authority at Water Purification Works.

***JOHNSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....				2									2
Empire.....	2			3									5
Thomson.....	312	15	5		2								334
Trident.....	2,347	191	46	30	19				1				2,634
TOTALS.....	2,661	205	51	35	21				1				*2,975

*Includes 1-8" Trident Crest Meter supplying East Smithfield Water Co.

***NORTH PROVIDENCE**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown.....			1										1
Empire.....	3			4	1								8
Hersey.....								5					5
Thomson.....	481	14	9	1	1								506
Trident.....	2,453	196	105	27	13	1	2	3			1		2,801
TOTALS.....	2,937	210	115	32	15	1	2	8			1		*3,321

*Includes 1-12" Trident Crest Meter supplying East Smithfield Water Co.

TABLE 34
CONSUMPTION OF WATER—MILLION GALLONS
YEAR ENDED SEPTEMBER 30, 1959

1958- 1959	LOW SERVICE*				HIGH SERVICE†				TOTAL SERVICE*†				1958- 1959
	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total	
Oct.	35.65	19.12	30.48	944.86	10.61	8.68	9.87	305.94	45.60	27.80	40.35	1,250.80	Oct.
Nov.	33.35	19.72	27.90	836.88	10.79	9.14	10.12	303.52	44.13	28.90	38.01	1,140.40	Nov.
Dec.	34.74	21.33	29.46	913.40	10.40	8.93	9.88	306.41	44.87	30.26	39.35	1,219.81	Dec.
Jan.	35.59	21.80	29.44	912.60	10.56	8.93	9.90	306.88	45.87	30.94	39.34	1,219.48	Jan.
Feb.	33.82	23.57	29.36	822.16	10.48	9.32	10.09	282.60	43.96	33.04	39.46	1,104.75	Feb.
Mar.	32.99	19.17	28.70	889.56	10.74	8.89	9.96	308.60	43.47	28.06	38.65	1,198.16	Mar.
Apr.	32.93	20.33	28.97	868.94	10.61	9.23	10.07	302.18	43.27	29.63	39.04	1,171.12	Apr.
May	47.01	21.80	32.81	1,017.10	14.26	9.42	11.21	347.38	60.96	31.22	44.02	1,364.49	May
June	55.12	21.88	34.09	1,022.61	15.88	8.81	10.96	328.79	71.13	30.89	45.05	1,351.40	June
July	49.50	18.54	34.18	1,059.66	13.48	8.95	10.98	340.31	62.82	27.49	45.16	1,399.97	July
Aug.	53.99	23.77	39.53	1,225.27	14.90	8.79	11.81	365.96	68.40	32.55	51.33	1,591.23	Aug.
Sept.	47.22	24.57	36.25	1,087.32	12.44	9.79	11.04	331.04	59.52	34.84	47.28	1,418.36	Sept.
For Year	55.12(a)	18.54(b)	31.78	11,600.36	15.88(c)	8.68(d)	10.49	3,829.61	71.13(e)	27.49(f)	42.27	15,429.97	For Year

(a) June 9; (b) July 12

*Includes water supplied to City of Warwick, Kent County Water Authority and to State Institutions.

†Includes water supplied to East Smithfield Water Co.

(c) June 10; (d) October 12

(e) June 9; (f) July 12

TABLE 35
WATER SOLD TO STATE INSTITUTIONS, AND CITY OF WARWICK
YEAR ENDED SEPTEMBER 30, 1959

1958-1959	STATE INSTITUTIONS					CITY OF WARWICK				
	S.S. 50,767 Sociamosset Rd. Cranston	S.S. 24,215A East St. Cranston	12"x5.50" Venturi Meter	8" Tri-Prot. Meter	10" Tri-Protectus Meter	S.S. 47,269 Peta- const Cranston	S.S. 47,475 Pawtuxet Bridge Cranston	S.S. 61,515 Oaklawn Avenue Cranston	S.S. 61,780 Dresden Street Cranston	6" Tri-Protectus Meter
	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month	Gallons per Month
	45,320,000	9,075	45,329,075	1,462,228	66,161,200	1,171,014	4,867,800	5,538,675	77,738,689	2,507,700
	36,172,000	2,830	36,174,830	1,205,828	52,875,900	1,133,240	4,058,100	4,796,400	62,863,640	2,095,455
	34,258,000	8,850	34,266,850	1,105,382	51,238,900	377,746	3,790,700	4,432,700	59,839,046	1,930,292
	40,981,000	35,975	41,017,975	1,323,160	60,038,600	Closed	4,395,825	3,858,925	70,293,350	2,267,527
	28,869,000	30,600	28,899,600	1,032,129	41,449,100	Non	3,019,200	3,828,000	48,296,300	1,724,868
	38,069,000	124,425	38,193,425	1,232,046	56,232,700	Use	4,088,175	5,271,075	65,591,950	2,115,869
	34,641,000	105,300	34,746,300	1,158,210	57,210,700	12/10/58	4,098,900	5,627,175	66,936,775	2,231,226
	35,095,000	95,325	35,190,325	1,135,172	76,462,600	5,954,925	12,621,600	95,039,125	3,065,778
	38,320,000	147,075	38,467,075	1,282,236	88,807,100	7,125,075	14,450,175	110,382,350	3,679,412
	37,530,000	31,650	37,561,650	1,211,666	77,189,500	5,562,750	13,139,625	95,891,875	3,093,286
	51,690,000	189,375	51,879,375	1,673,528	121,014,800	10,872,375	25,308,000	157,195,175	5,070,812
	40,524,000	49,575	40,573,575	1,352,453	76,199,800	4,880,850	11,816,625	92,897,275	3,096,576
For Year	461,469,000	831,075	462,300,075	1,266,576	824,880,900	2,682,000	62,714,175	112,688,475	1,002,965,550	2,747,851

TABLE 36

**WATER SOLD TO EAST SMITHFIELD WATER COMPANY AND
KENT COUNTY WATER AUTHORITY**

FOR YEAR ENDED SEPTEMBER 30, 1959

1958- 1959	EAST SMITHFIELD WATER COMPANY				KENT COUNTY WATER AUTHORITY			
	S.S. 51,198 Waterman Street No. Prov.	S.S. 52,403 Dean Avenue Smithfield	Total Gallons per Month	Average Gallons per Day	S.S. 58,985 Oaklawn Avenue Cranston	S.S. 60,757 Purification Works Scituate	Total Gallons per Month	Average Gallons per Day
	12" Tri-Crest Meter	8" Tri-Crest Meter			12" Tri-Crest Meter	12" Venturi Meter		
	Gallons per Month	Gallons per Month			Gallons per Month	Gallons per Month		
Oct.	6,592,500	3,462,750	10,055,250	324,362	5,270,250	17,781,000	23,051,250	743,588
Nov.	5,767,500	2,376,750	8,144,250	271,475	4,146,000	17,000,000	21,146,000	704,866
Dec.	4,919,250	3,318,000	8,237,250	265,717	4,971,000	17,392,000	22,363,000	721,387
Jan.	4,068,000	3,173,250	7,241,250	233,588	5,805,000	18,549,000	24,354,000	785,612
Feb.	4,468,500	2,425,500	6,894,000	246,214	4,375,500	17,429,000	21,804,500	778,732
Mar.	4,984,282	2,936,250	7,920,532	255,501	5,642,250	14,368,000	20,010,250	645,491
Apr.	5,106,720	2,558,250	7,664,970	255,499	4,906,500	12,028,000	16,934,500	564,483
May	5,466,000	2,619,750	8,085,750	260,830	5,643,750	16,426,000	22,069,750	711,927
June	6,072,750	3,108,750	9,181,500	306,050	6,132,750	15,310,000	21,442,750	714,758
July	4,900,500	2,346,000	7,246,500	233,758	4,970,250	20,932,000	25,902,250	835,556
Aug.	6,116,250	3,825,750	9,942,000	320,709	8,163,500	27,828,000	35,991,500	1,161,016
Sept.	3,930,000	2,973,750	6,903,750	230,125	5,373,750	23,387,000	28,760,750	958,691
For Year	62,392,252	35,124,750	97,517,002	267,170	65,400,500	218,430,000	283,830,500	777,618

TABLE 37
AVERAGE DAILY CONSUMPTION OF WATER PER MONTH IN MILLION GALLONS

Year Ending Sept. 30	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
1877.....	.....	.....	.....	2.27	2.26	1.84	2.25	2.53	2.94	2.91	2.76	3.01	2.53†
1878.....	2.61	2.22	2.30	2.16	2.15	2.20	2.32	2.85	2.89	3.88	3.12	3.17	2.66
1879.....	2.84	2.39	2.38	2.82	2.93	2.59	2.38	3.22	3.48	3.78	3.52	3.32	2.97
1880.....	3.38	2.89	2.97	2.94	2.86	2.90	2.96	3.68	5.05	4.18	3.92	3.82	3.46
1881.....	3.67	3.35	3.22	3.54	4.07	3.13	2.98	3.54	3.81	4.05	4.46	4.16	3.66
1882.....	3.92	3.60	3.38	3.30	3.27	3.06	3.05	3.24	4.02	4.69	5.09	3.84	3.70
1883.....	3.40	3.33	3.65	3.94	3.74	3.91	3.43	3.82	4.64	5.24	5.18	4.70	4.08
1884.....	3.81	3.67	3.58	4.24	3.87	3.90	3.43	3.79	4.70	4.38	4.06	4.82	4.02
1885.....	4.24	3.67	3.99	4.48	4.73	4.80	4.10	4.10	5.44	5.56	5.01	4.92	4.59
1886.....	4.37	4.20	4.71	4.82	4.75	4.83	4.33	4.53	4.93	6.02	4.88	4.94	4.78
1887.....	4.62	4.24	4.94	5.06	4.90	4.84	4.41	4.90	5.16	5.58	5.00	5.08	4.89
1888.....	4.80	4.40	5.10	5.44	5.79	5.39	4.86	4.84	6.17	6.51	5.87	5.32	5.37
1889.....	5.34	5.18	5.51	5.72	7.34	5.80	5.27	5.75	6.14	5.69	5.59	5.52	5.74
1890.....	5.41	5.17	6.14	6.34	6.79	6.28	6.84	6.60	6.90	8.11	7.13	6.72	6.54
1891.....	6.28	6.08	6.83	6.35	6.53	6.72	6.67	7.55	7.75	7.73	7.78	7.57	6.99
1892.....	7.53	7.32	7.69	7.65	7.83	7.62	7.27	6.77	8.37	9.30	9.11	8.63	7.92
1893.....	8.00	7.65	8.48	9.30	8.85	8.74	8.07	8.58	9.92	10.78	10.50	9.48	9.03
1894.....	8.79	7.85	8.61	9.11	9.07	9.09	8.73	9.97	11.28	12.39	10.76	10.22	9.66
1895.....	10.20	8.86	9.08	9.02	9.82	8.60	7.70	8.78	9.49	8.99	9.50	9.10	9.10
1896.....	8.15	8.19	9.56	10.19	8.79	8.74	8.60	9.26	9.64	9.93	9.70	8.83	9.13
1897.....	8.49	8.05	8.98	8.83	8.52	8.44	8.06	8.27	8.90	9.13	8.70	9.07	8.62
1898.....	8.76	8.29	8.63	8.56	9.09	8.68	8.38	8.35	10.04	10.10	9.44	9.84	9.01
1899.....	8.94	8.75	9.64	9.45	9.53	8.91	8.52	9.18	11.18	10.21	10.12	9.70	9.51
1900.....	9.15	9.27	9.53	9.81	9.49	9.66	9.23	8.59	10.48	12.11	10.95	11.71	10.00
1901.....	9.99	9.54	9.95	10.09	10.52	10.20	8.92	10.05	11.50	12.02	11.69	11.15	10.47
1902.....	10.91	10.70	11.02	11.65	11.00	10.92	10.52	10.48	11.85	12.09	11.97	11.66	11.23
1903.....	11.89	11.81	12.85	12.84	12.62	11.92	12.33	13.92	13.02	13.54	12.91	13.76	12.78
1904.....	13.09	13.89	13.49	14.29	14.58	13.42	12.07	12.72	13.94	14.21	13.18	13.85	13.56
1905.....	14.57	14.88	14.60	14.20	14.65	13.88	13.85	14.77	15.06	16.34	14.30	13.99	14.59
1906.....	13.73	14.96	14.63	15.00	15.07	14.77	14.49	15.01	15.69	15.08	15.74	16.06	15.02
1907.....	15.02	14.37	14.25	15.74	16.24	16.26	15.62	16.29	17.18	18.50	18.00	15.02	16.04
1908.....	15.34	15.13	15.34	15.46	16.07	15.21	14.53	14.67	16.63	16.77	15.42	15.62	15.52
1909.....	15.83	15.80	15.44	15.16	14.87	14.88	13.94	14.04	15.54	17.71	16.15	14.80	15.35
1910.....	14.76	14.66	15.28	15.62	15.65	15.22	14.74	14.72	15.53	17.13	15.95	15.61	15.40
1911.....	15.56	14.98	16.11	16.39	16.27	16.00	15.30	16.19	17.09	19.36	17.09	16.08	16.37
1912.....	16.29	16.49	16.44	18.12	18.14	17.16	16.39	16.70	17.32	20.54	17.62	17.06	17.36
1913.....	17.36	16.72	17.17	17.49	17.98	17.59	17.06	17.12	18.95	19.55	18.40	17.12	17.71
1914.....	16.76	16.87	17.27	17.83	18.52	17.60	16.99	17.43	20.24	17.62	17.09	18.51	17.73
1915.....	17.29	16.43	17.27	17.07	17.60	17.44	16.80	16.68	18.04	16.49	16.76	17.80	17.14
1916.....	16.90	17.03	17.79	18.16	18.47	18.57	17.43	17.57	17.82	17.90	16.58	18.76	17.75
1917.....	18.51	18.08	18.50	19.73	20.62	19.31	18.09	17.67	18.28	19.61	20.03	18.76	18.93
1918.....	18.62	18.71	20.64	23.82	22.98	23.07	22.43	22.31	21.85	22.23	21.50	20.63	21.56
1919.....	20.42	20.31	21.04	21.72	20.94	19.35	19.45	19.60	21.77	20.70	20.40	20.68	20.53
1920.....	20.62	20.18	21.64	23.80	23.16	23.03	20.67	20.45	20.98	21.06	21.58	21.89	21.59
1921.....	21.41	20.46	20.97	21.64	21.43	20.77	20.21	20.92	22.84	21.18	21.63	22.86	21.36
1922.....	22.84	22.16	22.18	24.14	23.64	22.01	21.64	21.49	22.18	21.91	22.11	22.53	22.40
1923.....	22.78	23.23	23.08	23.66	24.96	23.84	22.95	24.12	24.49	23.90	24.08	24.31	23.78
1924.....	24.68	24.09	23.33	24.19	24.58	23.44	23.51	23.28	24.10	25.11	22.48	22.51	23.78
1925.....	22.84	23.70	23.76	24.22	23.61	22.70	23.13	23.03	24.82	23.54	23.20	23.81	23.53
1926.....	23.41	22.47	23.29	23.95	24.12	24.25	23.36	22.80	24.16	24.80	23.94	23.53	23.67
1927.....	21.76	22.60	23.24	22.92	22.41	22.57	22.32	22.68	23.62	23.27	22.27	23.27	22.74
1928.....	23.37	22.99	22.39	23.04	22.80	23.21	22.79	23.83	23.05	24.31	26.69	25.38	23.65
1929.....	26.82	25.54	26.17	26.84	27.01	25.42	23.05	22.91	25.73	26.53	24.94	24.24	25.43
1930.....	23.83	24.24	24.29	23.85	24.88	23.34	23.38	25.15	26.85	26.81	25.95	27.45	25.00
1931.....	26.30	24.04	23.80	23.71	24.36	23.64	23.11	23.76	25.35	26.20	26.22	26.31	24.73
1932.....	25.36	23.42	23.82	23.20	23.23	22.99	22.72	23.47	25.27	25.34	25.16	24.59	24.05
1933.....	24.15	23.65	23.51	24.00	24.25	24.01	23.41	25.32	26.92	28.77	27.65	26.00	25.14
1934.....	24.89	24.43	25.04	25.55	28.05	26.38	24.78	25.78	27.95	31.00	28.77	26.39	26.58
1935.....	26.50	25.39	25.16	26.35	27.06	26.31	25.71	27.02	27.47	29.47	31.14	28.23	27.15
1936.....	29.45	28.03	27.42	27.97	28.73	26.44	25.75	27.02	30.27	30.23	30.79	29.23	28.44
1937.....	27.94	26.72	27.06	25.77	26.13	27.16	25.73	25.93	28.45	31.43	31.85	29.18	29.79
1938.....	27.84	26.42	25.57	25.11	24.67	24.38	23.56	24.56	27.13	26.34	28.82	28.34	26.07
1939.....	27.90	27.21	26.85	27.07	27.62	27.16	26.25	27.48	30.84	32.81	33.62	30.31	28.77
1940.....	30.12	28.96	28.26	28.74	28.05	27.23	25.77	26.15	28.49	30.10	31.57	28.96	28.54
1941.....	29.55	27.86	28.36	28.67	29.02	28.78	29.07	29.91	31.74	32.87	32.66	33.78	30.19
1942.....	32.74	31.44	31.84	31.34	31.21	29.84	29.18	29.76	31.34	32.13	32.14	32.11	31.26
1943.....	29.88	29.27	30.40	29.93	30.67	30.35	30.05	29.65	35.13	36.35	35.47	33.71	31.74
1944.....	31.87	31.25	32.35	32.29	32.52	32.95	31.51	34.27	36.80	39.10	40.60	35.43	34.26
1945.....	33.77	32.77	33.33	34.89	34.57	33.78	33.37	33.23	35.44	35.73	36.34	34.67	34.32
1946.....	32.74	32.27	33.21	34.01	33.69	33.80	33.64	33.59	36.70	40.70	35.92	36.69	34.75
1947.....	36.37	35.34	35.58	35.95	35.83	35.01	33.27	33.94	35.72	37.35	39.34	39.21	36.08
1948.....	38.91	36.19	35.55	34.84	37.31	36.92	36.15	33.95	36.90	39.33	41.55	39.76	37.28
1949.....	36.27	35.34	35.11	33.98	34.00	33.88	33.12	35.12	46.65	44.56	40.18	35.77	37.01
1950.....	34.61	35.94	34.51	33.92	34.34	34.71	33.39	34.90	40.27	43.27	41.40	38.24	36.64
1951.....	39.96	36.91	34.80	36.10	35.92	34.81	34.21	37.21	39.31	43.49	39.98	38.20	37.59
1952.....	36.92	34.79	33.63	34.20	34.59	33.98	33.38	34.33	41.21	54.79	40.66	40.11	37.78
1953.....	37.09	35.75	35.27	34.59	33.95	34.20	34.61	35.63	50.68	46.76	43.63	43.95	38.86
1954.....	38.20	35.43	35.03	34.85	35.63	35.31	35.10	35.05	45.09	45.27	40.72	39.22	37.92
1955.....	39.84	37.82	37.17	37.24	38.42	37.85	37.00	41.54	44.52	49.90	47.08	42.25	40.91
1956.....	40.29	38.30	38.18	38.42	39.31	38.37	38.55	40.08	49.50	44.93	48.86	41.70	41.38
1957.....	40.78	38.65	36.74	39.14	38.43	36.98	38.50	44.48	60.45	57.12	48.16	45.16	43.74
1958.....	42.22	38.27	38.42	39.09	38.20	37.40	40.03	38.60	42.57	45.05	43.60	41.63	40.44
1959.....	40.35	38.01	39.35	39.34	39.46	38.65	39.04	44.02	45.05	45.16	51.33	47.28	42.27

†Average for 9 months.

TABLE 38.
FINANCIAL STATEMENT OF THE PROVIDENCE
WATER SUPPLY BOARD FOR THE YEAR
ENDED SEPT. 30, 1959

REVENUE	
Water Rents	\$2,255,865.23
Hydrant Rental	88,189.20
Electric Power	25,315.70
Setting Meters	5,134.50
Repairing Meters	1,682.64
Rents from Non-Operating Property	1,064.69
Repairs to Water Services	3,395.51
Repairs to Distribution Mains	3,363.50
Repairs to Hydrants	2,508.18
Repairs to Gates and Valves	805.75
Installation of New Fire Supplies	10,545.00
Installation of New Water Services	76,254.00
Installation of New Water Mains	115,579.31
Revolving Fund—Water Meters	10,356.77
Revolving Fund—Trans. and Dist.	9,408.67
Sale of Scrap Iron, Brass, Lead, Etc.	8,632.66
Sale of Lumber, Pulpwood, Etc.	998.09
Sale of Obsolete Equipment	180.78
Sale of Material	177.06
Sundries.	10,901.66
Total Revenue	\$2,630,358.90
DISBURSEMENTS	
Operating Expense :	
Salaries	\$765,340.06
Services Other Than Personal	114,280.28
Materials and Supplies	241,288.57
Special Items	17,789.41
Capital Outlay	53,943.95
Other Structures and Improvements (Water Main Extensions)	200,000.00
Taxes.	296,781.18
Employees' Retirement System	43,369.00
Social Security F.O.A.S.I.	16,907.74
Total Operating Expense	*\$1,749,700.19
Interest on Bonds	570,000.00
Depreciation and Extension Fund	100,000.00
Payable to Sinking Fund	** 210,658.71
Total Disbursements	\$2,630,358.90
Gross Water Rents	\$2,346,913.05
Minus Refunds (Current Year)	90,093.04
Minus Refunds (Prior Year) ..	954.78
Net Water Rents	\$2,255,865.23

*See Table 39 for detailed account of Operating Expense.

**Subject to change due to anticipated discounts on Outstanding Commitments.

TABLE 39.
WATER SUPPLY BOARD OPERATING EXPENSES
FOR THE YEAR ENDED SEPT. 30, 1959

ADMINISTRATIVE

Salaries:

001	Officials	\$19,989.35
	Clerical—Chief Engineer's Office.....	3,831.30
	Clerical—Accounting	38,931.81
	Engineering	67,078.29
	Labor—General	10,241.45
008	Sick Leave Payrolls.....	3,083.68
009	Vacation Payrolls	6,337.39

Total \$149,493.27

Services Other Than Personal:

102	Expert Consultant and Other Service Fees \$	5.00
109	Fees Not Otherwise Classified.....	4,273.65
111	Telephone and Telegraph.....	2,071.47
112	Postage, Freight and Express.....	60.00
118	Travel Subsistence—Other	49.25
121	Printing, Binding and Reproduction	
	Services	1,409.60
131	Light and Power.....	1,764.39
141	Repairs—Office Machinery	402.81
142	Repairs—Automobiles	434.16
146	Repairs—Plant Equipment	849.78
150	Repairs—Structures and Improvements..	456.22
151	Maintenance and Servicing.....	209.31
181	Laundry and Cleaning.....	100.00
183	Dues and Subscriptions.....	153.20
199	Miscellaneous Services	8,374.75

Total \$20,613.59

Outstanding Commitments Nil

Total—Services Other Than Personal..... \$ 20,613.59

Materials and Supplies:

201	Stationery and Office Supplies.....	\$ 1,338.63
202	Small Tools and Shop Supplies.....	64.69
204	Wearing Apparel and Personal Supplies..	40.91
211	Motor Fuel	605.70
212	Lubricants	14.06
213	Tires and Tubes	260.71
214	Repair Parts and Supplies—Trucks and	
	Autos	175.87
221	Repair Parts and Supplies—Office Ma-	
	chinery	10.00
231	Medical, Chemical and Laboratory Sup-	
	plies	26.28
241	Fuel	926.13
244	Housekeeping Supplies and Minor Equip-	
	ment	155.31
252	Seeds, Fertilizer, Trees and Shrubs.....	21.23
259	Other Agricultural, Horticultural and	
	Landscaping Supplies	78.89
267	Paint and Painters' Supplies.....	51.31
268	Plumbing and Electrical Supplies.....	8.41
272	Valves and Fittings.....	16.70
299	Miscellaneous Materials and Supplies....	32.71

Total \$ 3,827.54

Outstanding Commitments 18.00

Total—Materials and Supplies..... \$ 3,845.54

Special Items:

350	Blue Cross and Physicians Service.....	\$ 1,447.20
-----	--	-------------

Total \$ 1,447.20

Capital Outlay:

501	Office Furniture, Machinery and Equipment	\$ 355.92
502	Books, Maps and Charts	10.10
571	Agricultural and Landscaping Equipment	109.79
	Total	\$ 475.81
	Outstanding Commitments	494.35
	Total—Capital Outlay	\$ 970.16
	Total—Administrative	\$ 176,369.76

SOURCE OF SUPPLY**Hydro Electric Station:****Salaries:**

001	Labor—Operation	\$ 7,298.66
	Repairs—Machinery and Equipment	607.08
	Total	\$ 7,905.74

Services Other Than Personal:

111	Telephone and Telegraph	\$ 124.26
146	Repairs—Plant Equipment	443.66
151	Repairs—Machinery and Equipment	64.19
199	Miscellaneous Services	1,080.98
	Total	\$ 1,713.09

Materials and Supplies:

201	Stationery and Office Supplies	\$ 89.40
222	Repair Parts and Supplies—Plant Equipment	206.78
241	Fuel	130.42
266	Lumber and Hardware	3.01
268	Plumbing and Electrical Supplies	254.52
272	Valves and Fittings	21.18
	Total	\$ 705.31

Water Purification Plant:**Salaries:**

001	Supervision	\$ 9,824.83
	Labor—Operation	41,058.42
	Technical	22,028.37
	Clerical—Laboratory	1,308.72
	Repairs—Structures and Improvements	301.66
	Repairs—Machinery and Equipment	1,663.96
	Repairs—Care of Grounds	1,994.03
	Total	\$ 78,179.99

Services Other Than Personal:

111	Telephone and Telegraph	\$ 931.73
112	Postage, Freight and Express	167.38
117	Travel Subsistence—Conventions	7.00
141	Repairs—Office Machinery	66.10
142	Repairs—Trucks and Autos	160.63
146	Repairs—Plant Equipment	1,581.95
150	Repairs—Structures and Improvements	2,178.80
151	Maintenance and Servicing	1,069.47
181	Laundry and Cleaning	224.86
183	Dues and Subscriptions	9.25
199	Miscellaneous Services	36.00
	Total	\$ 6,433.19

Materials and Supplies:

201	Stationery and Office Supplies	\$ 534.95
202	Small Tools and Shop Supplies	114.11
204	Wearing Apparel and Personal Supplies	75.36
212	Lubricants	11.50
213	Tires and Tubes	52.16
214	Repair Parts and Supplies—Trucks and Autos	599.88

222	Repair Parts and Supplies—Plant Equip- ment	1,017.54	
229	Repair Parts and Supplies—Other Equip- ment	49.09	
231	Ferric Sulphate	41,147.14	
231	Lime	16,599.36	
231	Chlorine	3,816.75	
231	Sodium Silicofluoride	12,933.70	
231	Miscellaneous Laboratory Supplies	820.45	
241	Fuel	4,682.81	
244	Housekeeping Supplies	462.14	
252	Seeds, Fertilizer, Trees and Shrubs	188.75	
266	Lumber and Hardware	282.30	
267	Paint and Painters' Supplies	172.68	
268	Plumbing and Electrical Supplies	1,032.91	
272	Valves and Fittings	1,181.01	
279	Water System Materials and Supplies Not Otherwise Classified	41.15	
299	Miscellaneous Materials and Supplies	139.14	
	Total		\$ 85,954.88
Special Items:			
302	Liability Insurance	\$ 55.90	
	Total		\$ 55.90
Capital Outlay:			
502	Books, Maps and Charts	\$ 33.58	
561	Shop and Plant Equipment	6,568.22	
591	Equipment Not Otherwise Classified	600.00	
	Total		\$ 7,201.80
Situate Reservoir:			
Salaries:			
001	Labor—Operation	\$ 2,680.66	
	Repairs—Care of Grounds	2,992.44	
	Total		\$ 5,673.10
Services Other Than Personal:			
111	Telephone and Telegraph	\$ 184.09	
142	Repairs—Trucks and Autos	15.00	
	Total		\$ 199.09
Materials and Supplies:			
213	Tires and Tubes	\$ 57.16	
214	Repair Parts and Supplies—Trucks and Autos	65.56	
252	Seeds, Fertilizer, Trees and Shrubs	434.00	
	Total		\$ 556.72
Capital Outlay:			
511	Trucks and Autos	\$ 1,321.76	
	Total		\$ 1,321.76
Other Reservoirs:			
Salaries:			
001	Labor—Operation	\$ 3,224.69	
	Repairs—Structures and Improvements	18.60	
	Repairs—Care of Grounds	254.66	
	Total		\$ 3,497.95
Services Other Than Personal:			
142	Repairs—Trucks and Autos	\$ 21.00	
	Total		\$ 21.00
Materials and Supplies:			
213	Tires and Tubes	\$ 114.32	
214	Repair Parts and Supplies—Trucks and Autos	10.76	
	Total		\$ 125.08

Capital Outlay:

511 Trucks and Autos.....	\$ 1,321.76
Total	\$ 1,321.76

Reforestation:

Salaries:

001 Supervision	\$ 2,239.28
Labor—Operation	2,614.78
Repairs—Care of Grounds.....	14,228.25
Total	\$ 19,082.31

Services Other Than Personal:

102 Expert Consultant and Other Service Fees \$	45.00
109 Fees Not Otherwise Classified.....	1,501.50
117 Travel Subsistence—Conventions	11.85
142 Repairs—Trucks and Autos.....	208.82
146 Repairs—Plant Equipment	32.71
149 Repairs—Other Equipment	199.14
183 Dues and Subscriptions.....	7.50
199 Miscellaneous Services	3.00
Total	\$ 2,009.52

Materials and Supplies:

201 Stationery and Office Supplies.....	\$ 16.11
202 Small Tools and Shop Supplies.....	81.25
204 Wearing Apparel and Personal Supplies..	101.28
213 Tires and Tubes.....	112.96
214 Repair Parts and Supplies—Trucks and Autos	481.82
229 Repair Parts and Supplies—Other Equipment	135.72
231 Medical and Chemical Supplies.....	2.65
241 Fuel	440.00
244 Housekeeping Supplies and Minor Equipment	59.78
259 Other Agricultural, Horticultural and Landscaping Supplies	508.48
262 Cement, Plaster and Related Products..	74.48
266 Lumber and Hardware.....	16.13
267 Paint and Painters' Supplies.....	45.37
Total	\$ 2,076.03

Capital Outlay:

512 Trucks and Tractors.....	\$ 2,124.91
Total	\$ 2,124.91

General:

Salaries:

001 Supervision	\$ 635.40
Clerical	1,295.19
Labor—Operation	1,498.72
Repairs—Structures and Improvements..	504.13
Repairs—Machinery and Equipment....	752.95
Repairs—Care of Grounds.....	4,170.66
Repairs—Gates and Valves.....	684.07
Repairs—Care of Grounds — Rockland Cemetery	698.05
008 Sick Leave Payrolls.....	3,714.30
009 Vacation Payrolls	5,657.43
025 Injured Employees' Payrolls.....	462.08
Total	\$ 20,072.98

Services Other Than Personal:

109 Fees Not Otherwise Classified.....	\$ 39.50
142 Repairs—Trucks and Autos.....	78.80
149 Repairs—Other Equipment	13.72
162 Rental of Equipment.....	324.00
Total	\$ 456.02

Materials and Supplies:		
202	Small Tools and Shop Supplies.....	\$ 249.16
211	Motor Fuel	1,216.50
212	Lubricants	162.92
214	Repair Parts and Supplies—Trucks and Autos	172.76
266	Lumber and Hardware.....	64.05
267	Paint and Painters' Supplies.....	28.86
272	Valves and Fittings.....	455.75
279	Water System Materials and Supplies Not Otherwise Classified	140.70
Total		\$ 2,490.70
Special Items:		
350	Blue Cross and Physicians Service.....	\$ 1,360.10
Total		\$ 1,360.10
Capital Outlay:		
512	Trucks and Tractors.....	\$ 2,124.91
Total		\$ 2,124.91
Land and Buildings:		
601	Purchase of Land.....	\$ 100.00
Total		\$ 100.00
Outstanding Commitments — Services Other Than Personal		764.34
Outstanding Commitments—Materials and Supplies		765.25
Outstanding Commitments—Capital Outlay...		14,227.50
Total—Source of Supply		\$ 268,520.93

TRANSMISSION AND DISTRIBUTION

Pumping Station:		
Salaries:		
001	Labor—Operation	\$16,643.44
	Repairs—Machinery and Equipment....	161.62
Total		\$ 16,805.06
Services Other Than Personal:		
111	Telephone and Telegraph.....	\$ 416.82
131	Light and Power	24,353.32
146	Repairs—Plant Equipment	778.95
150	Repairs—Buildings	119.56
151	Maintenance and Servicing.....	503.04
181	Laundry and Cleaning.....	36.00
199	Miscellaneous Services	248.90
Total		\$ 26,456.59
Materials and Supplies:		
201	Stationery and Office Supplies.....	\$ 322.27
211	Motor Fuel	188.37
212	Lubricants	39.35
222	Repair Parts and Supplies—Plant Equipment	293.88
241	Fuel	614.13
244	Housekeeping Supplies and Minor Equipment	8.28
265	Fabricated Metal Products.....	46.49
266	Lumber and Hardware.....	114.86
267	Paint and Painters' Supplies.....	24.89
271	Pipe	56.72
272	Valves and Fittings.....	10.37
299	Miscellaneous Materials and Supplies...	8.37
Total		\$ 1,727.98
Pipe Lines:		
Salaries:		
001	Supervision	\$ 7,210.56
	Clerical	6,398.39
	Labor—Operation	98,743.26
	Repairs—Trucks and Autos.....	7,410.78

Repairs—Care of Grounds.....	9,752.93
Repairs—Transmission Mains	1,254.68
Repairs—Distribution Mains	14,757.25
Repairs—Gates and Valves.....	16,797.28
Repairs—Hydrants	10,227.70
Repairs—Services	14,212.03
New Work—Distribution Mains.....	3,020.51
New Work—Gates and Valves.....	9,846.78
New Work—Hydrants	12,167.96
New Work—Services	47,288.60
New Work—Meters (Emergency).....	11.64
Retirement Work—Transmission Mains..	363.24
Retirement Work—Gates and Valves....	3,966.99
Retirement Work—Hydrants	6,185.95
Retirement Work—Services	4,430.36
Total	\$274,046.89

Services Other Than Personal:

102 Expert Consultant and Other Service Fees \$	105.00
109 Fees Not Otherwise Classified.....	46.30
111 Telephone and Telegraph.....	435.16
112 Postage, Freight and Express.....	57.11
116 Transportation of Persons—Other.....	12.35
118 Travel Subsistence—Other	5.70
121 Printing and Binding.....	3.50
131 Light and Power.....	536.30
141 Repairs—Office Machinery	27.07
142 Repairs—Trucks and Autos.....	1,057.87
143 Repairs—Construction and Other Auto- motive Equipment	386.19
150 Repairs—Buildings	2,297.00
151 Maintenance and Servicing.....	1,268.76
153 Repairs—Street Openings	9,944.04
162 Rental—Automotive and Construction Equipment	1,503.67
163 Rental—Other Equipment	1,045.48
165 Rental of Land.....	263.00
199 Miscellaneous Services	2,066.73
Total	\$ 21,061.23

Materials and Supplies:

201 Stationery and Office Supplies.....	\$ 356.76
202 Small Tools and Shop Supplies.....	3,718.51
204 Wearing Apparel and Personal Supplies..	713.61
211 Motor Fuel	5,410.49
212 Lubricants	492.57
213 Tires and Tubes.....	691.85
214 Repair Parts and Supplies—Trucks and Autos	2,635.64
229 Repair Parts and Supplies—Other Equip- ment	71.40
231 Medical, Chemical and Laboratory Sup- plies	309.74
241 Fuel	704.33
244 Housekeeping Supplies and Minor Equip- ment	180.25
261 Gravel, Sand and Stone.....	363.24
262 Cement, Plaster and Related Products..	482.97
264 Fabricated Cement Products.....	337.12
265 Fabricated Metal Products.....	55.00
266 Lumber and Hardware.....	1,058.28
267 Paint and Painters' Supplies.....	281.16
268 Plumbing and Electrical Supplies.....	4,597.24
270 Traffic Signs	80.20
271 Pipe—Cast Iron	3,431.32
271 Pipe—Service	4,372.03
271 Pipe—Asbestos Cement	994.64
271 Pipe—Other	62.76
272 Hydrants, Valves and Fittings.....	65,860.92
272 Gates and Valves.....	27,786.30
273 Special Castings	383.85
279 Water System Materials and Supplies Not Otherwise Classified	31.36
299 Miscellaneous Materials and Supplies..	317.71
Total	\$125,781.25

Special Items:

331	Payment of Claims and Damages.....	\$ 9,978.41	
	Total		\$ 9,978.41

Capital Outlay:

512	Trucks and Tractors.....	\$12,979.48	
521	Construction and Engineering Equipment	3,424.90	
591	Equipment Not Otherwise Classified....	645.00	
	Total		\$ 17,049.38

Other Structures and Improvements:

721	New Main Extensions.....	\$164,507.96	
	Total		\$164,507.96

Distribution Reservoirs:**Services Other Than Personal:**

111	Telephone and Telegraph.....	\$ 120.00	
131	Light and Power.....	106.49	
151	Maintenance and Servicing.....	11.00	
	Total		\$ 237.49

Materials and Supplies:

272	Valves and Fittings.....	\$ 2.04	
	Total		\$ 2.04

General:**Salaries:**

001	Labor—Operation	\$12,179.62	
	Repairs—Structures and Improvements..	297.60	
	Repairs—Trucks and Autos.....	2,454.34	
008	Sick Leave Payrolls.....	7,122.48	
009	Vacation Payrolls	10,474.64	
025	Injured Employees' Payroll.....	1,886.76	
	Total		\$ 34,415.44

Services Other Than Personal:

181	Laundry and Cleaning.....	\$ 100.00	
199	Miscellaneous Services	36.00	
	Total		\$ 136.00

Materials and Supplies:

241	Fuel	\$ 276.88	
266	Lumber and Hardware.....	1.49	
	Total		\$ 278.37

Special Items:

350	Blue Cross and Physicians Service.....	\$ 2,988.20	
361	Expenses for Various Ceremonies.....	63.50	
	Total		\$ 3,051.70
	Outstanding Commitments — Services Other Than Personal	1,245.56	
	Outstanding Commitments—Materials and Supplies	2,184.55	
	Outstanding Commitments—New Main Extensions	35,492.04	
	Total—Transmission and Distribution		\$ 734,457.94

METERING**Salaries:**

001	Supervision	\$10,158.53	
	Clerical	51,980.98	
	Labor—Operation	35,739.42	
	Repairing Meters	12,418.77	
	Removing and Setting Meters.....	12,472.84	

Testing Meters	3,978.28	
Inspection—Services	3,535.35	
General Operation	10,180.83	
008 Sick Leave Payrolls	8,770.84	
009 Vacation Payrolls	6,735.14	
025 Injured Employees' Payrolls	196.35	
Total		\$156,167.33
Services Other Than Personal:		
102 Expert Consultant and Other Service Fees \$	35.00	
109 Fees Not Otherwise Classified	20.00	
111 Telephone and Telegraph	1,958.14	
112 Postage, Freight and Express	907.75	
116 Transportation of Persons—Carfares	884.80	
121 Printing, Binding and Reproduction Services	413.00	
131 Light and Power	1,700.00	
141 Repairs—Office Machinery, Furniture and Furnishings	855.94	
142 Repairs—Trucks and Autos	260.62	
149 Repairs—Machinery and Equipment	62.75	
151 Maintenance and Servicing	163.45	
181 Laundry and Cleaning	100.00	
199 Miscellaneous Services	25,091.59	
Total		\$ 32,453.04
Materials and Supplies:		
201 Stationery and Office Supplies	\$ 4,193.15	
202 Small Tools and Shop Supplies	472.30	
204 Wearing Apparel and Personal Supplies	342.39	
211 Motor Fuel	1,752.08	
212 Lubricants	234.49	
213 Tires and Tubes	179.52	
214 Repair Parts and Supplies—Trucks and Autos	748.83	
222 Repair Parts and Supplies—Plant Equipment	96.00	
231 Medical, Chemical and Laboratory Supplies	114.71	
241 Fuel	648.85	
244 Housekeeping Supplies and Minor Equipment	324.26	
259 Other Agricultural, Horticultural and Landscaping Supplies	4.70	
267 Paint and Painters' Supplies	23.52	
268 Plumbing and Electrical Supplies	515.19	
272 Valve and Fittings	441.50	
274 Meter Parts	3,428.89	
299 Miscellaneous Materials and Supplies	11.73	
Total		\$ 13,532.11
Special Items:		
350 Blue Cross and Physicians Service	\$ 1,896.10	
Total		\$ 1,896.10
Capital Outlay:		
501 Office Furniture, Machinery and Equipment	\$ 7,087.45	
Total		\$ 7,087.45
Outstanding Commitments — Services Other Than Personal	480.53	
Outstanding Commitments—Materials and Supplies	1,262.76	
Outstanding Commitments—Capital Outlay	414.32	
Total—Metering	\$ 213,293.64	
Taxes	296,781.18	
Employees' Retirement System	43,369.00	
Social Security F.O.A.S.I.	16,907.74	
TOTAL—OPERATING EXPENSE		\$1,749,700.19

TABLE 40
STATEMENT OF REVENUE—ESTIMATED AND ACTUAL
FOR THE YEAR ENDED SEPTEMBER 30, 1959

Account	Estimated Revenue	Actual Revenue
Water Rents	\$2,263,000.00	\$2,255,865.23
Hydrant Rental	80,000.00	88,189.20
Electricity	15,000.00	25,315.70
Stores Account (Meters).....	14,000.00	10,356.77
Repairing and Setting Meters.....	8,000.00	6,817.14
Fire Supplies and Miscellaneous Repairs	8,600.00	20,617.94
New Service Installations.....	50,000.00	76,254.00
New Main Extensions.....	100,000.00	115,579.31
Rentals	1,000.00	1,064.69
Other Miscellaneous Receipts.....	7,400.00	30,298.92
Total.....	\$2,547,000.00	\$2,630,358.90

TABLE 41
SUMMARY OF ANNUAL WATER WORKS REVENUES
1930-1959

Fiscal Years Ended Sept. 30	Receipts From Sale of Water	Misc. Receipts	Total
1930.....	\$1,384,369.54	\$218,844.87	\$1,603,214.41
1931.....	1,414,836.00	237,172.64	1,652,008.64
1932.....	1,375,450.77	223,058.31	1,598,509.08
1933.....	1,345,444.69	212,066.79	1,557,511.48
1934.....	1,387,876.73	184,133.47	1,572,010.20
1935.....	1,409,269.47	237,518.68	1,646,788.15
1936.....	1,427,881.10	265,357.71	1,693,238.81
1937.....	1,429,107.08	229,317.39	1,721,424.47
1938.....	1,426,986.49	106,359.70	1,533,346.19
1939.....	1,491,918.63	124,901.37	1,616,820.00
1940.....	1,551,917.24	115,540.98	1,667,458.22
1941.....	1,615,351.79	114,960.58	1,730,312.37
1942.....	1,679,058.50	103,368.22	1,782,426.72
1943.....	1,629,268.35	86,580.98	1,715,849.33
1944.....	1,761,016.12	87,946.71	1,848,962.83
1945.....	1,812,311.82	99,271.44	1,911,583.26
1946.....	1,808,993.17	123,247.90	1,932,241.07
1947.....	1,877,471.18	124,372.47	2,001,843.65
1948.....	2,005,242.58	222,419.41	2,227,661.99
1949.....	2,031,633.37	229,317.72	2,260,951.09
1950.....	2,082,814.82	199,061.80	2,281,876.62
1951.....	2,078,209.84	214,868.70	2,293,078.54
1952.....	2,053,427.76	322,761.07	2,376,188.83
1953.....	2,093,625.85	343,477.23	2,437,103.08
1954.....	2,146,947.18	302,707.38	2,449,654.56
1955.....	2,166,180.84	379,010.13	2,545,190.97
1956.....	2,236,331.86	371,715.61	2,608,047.47
1957.....	2,262,879.80	322,948.62	2,585,828.42
1958.....	2,273,583.77	318,752.87	2,592,336.64
1959.....	2,255,865.23	374,493.67	2,630,358.90

TABLE 42
STATEMENT OF WATER WORKS
DEPRECIATION AND EXTENSION FUND

	Investment	Cash	Due From Other Funds	Total
Balance Sept. 30, 1958.....	\$400,000.00	\$373,020.34	\$100,000.00	\$873,020.34
Increase During Year Ended Sept. 30, 1959.....	154,803.35	145,323.77	.....	.....
Disbursements During Year Ended Sept. 30, 1959.....	.....	280,303.35	100,000.00	.....
Accounts Receivable Year End- ed Sept. 30, 1959.....	.....	.....	100,000.00	.....
Balance Sept. 30, 1959.....	\$554,803.35	\$238,040.76	\$100,000.00	\$892,844.11

TABLE 43
STATEMENT OF WATER SUPPLY BOARD BONDS OUTSTANDING
AND SINKING FUND REQUIREMENTS ON A 3% BASIS
AS OF SEPTEMBER 30, 1959

Bonds Payable from Sinking Fund	Rate of Int. %	Year of		Bonds		Sinking Fund Requirements On a 3% Basis
		Issue	Maturity	Issued	Outstanding	
Water Supply.....	4½	1922	1962	\$1,000,000.00	\$1,000,000.00	\$ 895,180.24
" ".....	4	1922	1962	2,000,000.00	2,000,000.00	1,777,196.06
" ".....	4	1932	1962	1,000,000.00	1,000,000.00	862,104.02
" ".....	4	1922	1962	2,500,000.00	2,500,000.00	2,150,423.39
" ".....	4¼	1924	1964	2,000,000.00	2,000,000.00	1,635,817.05
" ".....	4	1924	1964	1,500,000.00	1,500,000.00	1,182,913.09
" ".....	4	1925	1965	2,500,000.00	2,500,000.00	1,928,454.59
" ".....	4	1928	1968	1,500,000.00	1,500,000.00	1,016,942.40
Total Water Supply Debt and Sinking Fund Requirements.....						\$14,000,000.00
Sinking Fund Assets Allocated to Water Supply Debt per City Controller's Report on Sinking Fund Sept. 30, 1959 (Includes \$210,658.71* Water Operating Balance for Year Ended Sept. 30, 1959 plus Prior Year Adjustments of \$646.51 or a total of \$211,305.22).....						\$11,441,483.80
Amount of Deficit of Requirements on 3% Basis.....						\$2,558,516.20

*Subject to change due to anticipated discounts on Outstanding Commitments, see Table No. 39.

TABLE 44

**A SUMMARY OF INVENTORIES OF
PERSONAL PROPERTY
AT SEPTEMBER 30, 1959**

REMOVABLE PROPERTY INVENTORY.....		\$161,405.70
SOURCE OF SUPPLY:		
Hydro-Electric Station	\$ 9,242.60	
Purification Works	33,441.79	
Laboratory	5,375.72	
General	3,085.81	
		<u>51,145.92</u>
TRANSMISSION AND DISTRIBUTION:		
Pipe Lines	\$98,948.91	
Pumping Stations	374.90	
Garage	5,177.10	
		<u>104,500.91</u>
METERING:		35,408.69
SUPPLIES:		4,416.31
		<u>\$356,877.53</u>
Total Personal Property Inventory.....		

TABLE 45

**STATEMENT OF STORES REVOLVING FUND
FOR THE YEAR ENDED SEPT. 30, 1959**

Cash Balance Sept. 30, 1958.....	\$10,000.00
Outstanding Commitments Sept. 30, 1958.....	15,538.20
Receipts—Oct. 1, 1958 to Sept. 30, 1959.....	56,314.55
	<u>\$81,852.75</u>
Total Available	
Disbursements Sept. 30, 1959.....	\$33,774.78
Outstanding Commitments Sept. 30, 1959.....	27,721.20
Transferred as Income to General Fund.....	10,356.77
	<u>71,852.75</u>
Total Disbursements	
Cash Balance Sept. 30, 1959.....	\$10,000.00

TABLE 46

STATEMENT OF THE TRANSMISSION AND
DISTRIBUTION REVOLVING FUND FOR
THE YEAR ENDED SEPT. 30, 1959

Cash Balance September 30, 1958.....	\$9,408.67
Receipts Oct. 1, 1958 to September 30, 1959.....	NIL
Accounts Receivable	NIL
Total Available	\$9,408.67
Disbursements (Transferred as Income to General Fund Sept. 30, 1959)	\$9,408.67
Outstanding Commitments September 30, 1959.....	NIL
Total Disbursements	9,408.67
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 47

RELOCATION OF MAIN-BRANCH AVENUE
RAILROAD CROSSING ACCOUNT FOR THE
YEAR ENDED SEPT. 30, 1959

Transferred from Depreciation and Extension Fund—February 27, 1957.....	\$75,000.00
Transferred from Depreciation and Extension Fund—April 5, 1957.....	15,000.00
Total Available	\$90,000.00
Disbursements September 30, 1959.....	\$85,265.56
Transferred to Depreciation and Extension Fund—Sept. 30, 1959..	4,734.44
Total Disbursements	90,000.00
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 48

STATEMENT OF THE ATWOOD AVENUE
REINFORCEMENT MAIN ACCOUNT

Transferred from Depreciation and Extension Fund—July 12, 1957.....	\$85,000.00
Transferred from Depreciation and Extension Fund—June 6, 1958.....	11,000.00
Total Available	\$96,000.00
Disbursements September 30, 1959.....	\$93,006.57
Transferred to Depreciation and Extension Fund—Sept. 30, 1959..	2,993.43
Total Disbursements	96,000.00
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 49

STATEMENT OF THE EAST SIDE
REINFORCEMENT MAIN ACCOUNT

Transferred from Depreciation and Extension Fund—Feb. 14, 1958.....	\$154,000.00
Disbursements Sept. 30, 1959.....	\$138,588.03
Transferred to Depreciation and Extension Fund Sept. 30, 1959.....	15,411.97
Total Disbursements	154,000.00
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 50

STATEMENT OF THE MISCELLANEOUS WATER
MAIN EXTENSIONS ACCOUNT FOR
THE YEAR ENDED SEPT. 30, 1959

Transferred from Depreciation and Extension Fund—July 29, 1957.....	\$ 15,000.00
Transferred from Depreciation and Extension Fund—July 15, 1958.....	50,000.00
Transferred from Depreciation and Extension Fund—May 21, 1959.....	60,000.00
Total Available	\$125,000.00
Disbursements Sept. 30, 1959.....	\$ 50,322.24
Outstanding Commitments Sept. 30, 1959.....	6,387.46
Total Disbursements	56,709.70
Cash Balance Sept. 30, 1959.....	\$ 68,290.30

TABLE 51

STATEMENT—ACCOUNT FOR
INSERTING NEW VALVES

Transferred from Depreciation and Extension Fund—May 12, 1958.....	\$10,000.00
Transferred from Depreciation and Extension Fund—May 13, 1959.....	30,000.00
Total Available	\$40,000.00
Disbursements Sept. 30, 1959.....	\$ 8,741.79
Outstanding Commitments Sept. 30, 1959.....	24,898.60
Total Disbursements	33,640.39
Cash Balance Sept. 30, 1959.....	\$ 6,359.61

TABLE 52

**STATEMENT OF THE ACCOUNT FOR
NEW VALVES—NEUTACONKANUT CONDUIT**

Transferred from Depreciation and Extension Fund—Feb. 7, 1958.....	\$25,000.00
Disbursements Sept. 30, 1959.....	\$23,484.00
Transferred to Depreciation and Extension Fund—Sept. 30, 1959.....	1,516.00
Total Disbursements	25,000.00
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 53

**STATEMENT—OLNEYVILLE
SQUARE REPAIR ACCOUNT**

Transferred from Depreciation and Extension Fund—June 12, 1958.....	\$85,000.00
Transferred from Depreciation and Extension Fund—May 13, 1959.....	20,000.00
Transferred from Depreciation and Extension Fund—June 11, 1959.....	7,500.00
Total Available	\$112,500.00
Disbursements Sept. 30, 1959.....	\$107,182.54
Transferred to Depreciation and Extension Fund—Sept. 30, 1959.....	5,317.46
Total Disbursements	112,500.00
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 54

**STATEMENT—ALTERATIONS NEUTACONKANUT
PUMPING STATION ACCOUNT**

Transferred from Depreciation and Extension Fund—March 13, 1958.....	\$65,000.00
Disbursements Sept. 30, 1959.....	\$ 49,734.00
Outstanding Commitments Sept. 30, 1959.....	775.00
Total Disbursements	50,509.00
Cash Balance Sept. 30, 1959.....	\$14,491.00

TABLE 55

STATEMENT OF CONSTRUCTION
NEW AQUEDUCT RESERVOIR ACCOUNT

Transferred from Depreciation and Extension Fund—Feb. 17, 1958.....	\$45,000.00
Transferred from Depreciation and Extension Fund—Oct. 8, 1958.....	3,000.00
Transferred from Depreciation and Extension Fund—Feb. 26, 1959.....	5,000.00
Total Available	<u>\$53,000.00</u>
Disbursements Sept. 30, 1959.....	\$49,759.28
Transferred to Depreciation and Extension Fund—Sept. 30, 1959.....	3,240.72
Total Disbursements	<u>53,000.00</u>
Cash Balance Sept. 30, 1959 (Account Closed).....	\$ NIL

TABLE 56

ADDITIONS, ALTERATIONS AND IMPROVEMENTS
AT THE WATER PURIFICATION WORKS

Authorized Bond Issue (Chapter 102, P. L. of R. I. 1959) Approved May 27, 1959	\$1,100,000.00
Disbursements—Sept. 30, 1959.....	\$16,247.34
Outstanding Commitments—Sept. 30, 1959.....	13,250.00
Total Disbursements	<u>29,497.34</u>
Unexpended Balance of Authorized Bond Issue.....	<u>\$1,070,502.66</u>

TABLE 57

NEW 40-MILLION GALLON WATER DISTRIBUTION
RESERVOIR

Authorized Bond Issue (Chapter 103, P. L. of R. I. 1959) Approved May 27, 1959	\$2,150,000.00
Disbursements—Sept. 30, 1959.....	\$15,382.52
Outstanding Commitments—Sept. 30, 1959.....	57,000.00
Total Disbursements	<u>72,382.52</u>
Unexpended Balance of Authorized Bond Issue.....	<u>\$2,077,617.48</u>

TABLE 58

TAXES PAID TO VARIOUS CITIES AND TOWNS
(ASSESSED AS OF DECEMBER 31, 1957)

LOCATION OF PROPERTY	LAND AREA (ACRES)	ASSESSED VALUATIONS			TAX	
		Land	Bldgs. & Imp.	Total	Rate per \$100	Amount Paid
City of Warwick.....	0.06	\$ 160.00	\$ 0	\$ 160.00	\$2.65	\$ 4.24
City of Cranston.....	110.19	26,540.00	941,000.00	967,540.00	3.40	32,896.36
Town of Foster.....	1,936.04	119,900.00	0	119,900.00	2.90	3,477.10
Town of Glocester.....	73.30	13,300.00	0	13,300.00	3.20	425.60
Town of Johnston.....	103.13	38,330.00	292,670.00	331,000.00	3.00	9,930.00
Town of No. Providence.....	8.58	19,920.00	155,080.00	175,000.00	3.20	5,600.00
Town of Scituate.....	13,182.24	607,000.00	6,183,000.00	6,790,000.00	3.60	244,440.00
Total Real Estate.....	15,413.54	\$825,150.00	\$7,571,750.00	\$8,396,900.00	.....	\$296,773.30*

*In addition to this amount, \$7.88 was paid to the Harmony Fire District.

TABLE 59
SUMMARY OF STATISTICS
PROVIDENCE WATER SUPPLY BOARD

FOR THE YEAR ENDED SEPT. 30, 1959

PROVIDENCE*	PROVIDENCE	RHODE ISLAND
(City or Town)	(County)	(State)

GENERAL STATISTICS

Population of Providence.....	237,400
Estimated population supplied in suburbs.....	163,700
Total population supplied.....	401,100
Date of Construction.....	1870-76; 1915-28; 1935; 1938-40; 1954
By whom owned.....	City of Providence
Source of Supply.....	Surface water collected in Scituate Reservoir and five smaller reservoirs on north branch of Pawtuxet River.
Available Storage Capacity of six impounding reservoirs.....	39,746 m.g.
Mode of supply.....	75.2% by gravity; 24.8% by pumping

STATISTICS OF CONSUMPTION OF WATER

1. Estimated population supplied	401,100
2. Total raw water influent for the year, gallons	16,994,960,000
3. Average daily raw water influent, gallons	46,560,000
4. Raw water consumption per capita, gallons daily	116.1
5. Total consumption for the year, gallons	15,429,977,000
6. Total registration on customers' meters, gallons	14,352,489,000
7. Percentage of consumption accounted for on customers' meters	93.02%
8. Average daily consumption, gallons	42,273,910
9. Per capita consumption, gallons daily	105.4
10. Gallons per day to each tap	708
11. Cost of supplying water, per million gallons, based on operating and maintenance expense	\$77.42
12. Cost of supplying water, per million gallons, based on operating and maintenance expense plus fixed charges	\$120.85

FILTRATION

1. Type of filters	Rapid Sand
2. Number of filter units	14
3. Capacity of filter plant	14 units @ 7.5=105 m.g.d.
4. Chemicals used	Ferri-Floc, Quicklime, Chlorine and Sod. Silicofluoride
5. Total water filtered during the year, gallons	15,551,383,000
6. Average quantity filtered per day, gallons	42,607,000
7. Total filtered water delivered to the distribution system during the year, gallons	15,430,267,000

*Supplying Providence, Cranston, Johnston, and portions of North Providence, Warwick, Smithfield, Coventry and West Warwick.

TABLE 59—Continued

SUMMARY OF STATISTICS PROVIDENCE WATER SUPPLY BOARD

FOR THE YEAR ENDED SEPT. 30, 1959

STATISTICS RELATING TO DISTRIBUTING SYSTEM MAINS*

1. Kind of Pipe	Asbestos Cement, Cast Iron, Steel and Concrete
2. Sizes	From 6 to 66 inches
3. Extended during year (net)	49,313.33 feet
4. Discontinued during year	7,722.33 feet
5. Total now in use	747.08 miles
6. Number of leaks per mile	0.16
7. Length of pipes less than 6 inches in diameter	0
8. Number of hydrants added during year	78
9. Number of hydrants now in use	4,255
10. Number of stop gates added during year	176
11. Number of stop gates now in use	10,289
12. Number of stop gates smaller than 6 inches	0
13. Range of pressure on mains	14 to 95 pounds

HIGH PRESSURE FIRE SERVICE

Kind of Pipe	Cast Iron
Sizes	6, 8, 12, 16 and 24 inches
Extended during year (net)	0 feet
Discontinued during year	0 feet
Total now in use	12.83 miles
Hydrants added during year	0
Hydrants now in use	161
Stop gates added	0
Stop gates now in use	129
Number of blow-offs	0
Range of pressure on mains	94 to 130 pounds

SERVICES

14. Kind of pipe	lead, copper and cast iron
15. Size	½ inch to 30 inches
16. Number of service taps added during year	860
17. Number now in use	59,709
18. Number of meters added	1,547
19. Number of meters now in use	59,786
20. Percentage of services metered	99.9

*Not including high pressure fire service.