

CITY DOCUMENT

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**ANNUAL REPORT**  
OF THE  
**WATER SUPPLY BOARD**  
OF THE  
**CITY OF PROVIDENCE**  
**RHODE ISLAND**

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**For the Year Ended September 30, 1953**



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CITY DOCUMENT

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# ANNUAL REPORT

OF THE

# WATER SUPPLY BOARD

OF THE

# CITY OF PROVIDENCE RHODE ISLAND

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For the Year Ended September 30, 1953



# REPORT

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ADMINISTRATIVE OFFICE,  
WATER SUPPLY BOARD  
CITY OF PROVIDENCE  
OCTOBER 1, 1953

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 twelfth annual report of the Water Supply Board for the year ended September 30, 1953.

On January 5, 1953 Thomas H. Driscoll was re-appointed a member of the Water Supply Board for a 4-year term ending on the first Monday in January 1957.

At the re-organization meeting of the Board held on January 6, 1953 Thomas H. Driscoll was re-elected Chairman and John J. Deary was re-appointed 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 duties 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

THOMAS H. DRISCOLL, *Chairman*

JOHN A. DOHERTY

EARL H. ASHLEY

UGO RICCIO

MICHAEL N. CARDARELLI, *Ex-Officio*

*Thomas H. Driscoll*

IN CITY COUNCIL

FEB 4 - 1954

READ:

WHEREAS IT IS ORDERED THAT  
THE SAME BE RECEIVED.

*Everett Whelan*  
CLERK

## REPORT OF THE CHIEF ENGINEER

Providence, R. I.  
October 1, 1953

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, 1953:

The new Southeasterly Trunk Main, installed to relieve a serious pressure deficiency in our distribution system that extended from Mill Street in the City of Cranston to the Fields Point area in Providence, was formally placed into service by Mayor Walter H. Reynolds and the members of the Water Supply Board on November 1, 1952. This important reinforcement to the system, consisting of 19,553.66 feet of 30-inch Lock Joint pre-stressed reinforced concrete steel cylinder pipe and 2,210.50 feet of 24-inch, starts at Dale Avenue in the City of Cranston and terminates at Allens Avenue and Ernest Street in Providence. The installation was completed under a contract with the Campanella and Cardi Construction Company at a total cost of \$495,134.02. The project was financed by a special appropriation from the Water Extension and Depreciation Fund.

Experiments in higher rates of filtration were continued throughout the year on a plant scale basis: Filter No. 2, previously rebuilt with 0.65 millimeter sand, was kept in continuous operation with numerous tests and observations made during each run. All test data has been tabulated and graphical comparisons made with other plant filters operating at comparably high and lower rates. All factual data, beginning with the

experimental filters in 1948 and continuing through 1953 is now being prepared for final analyses and conclusive reports and recommendations.

In June 1953, the Kent County Water Authority, faced with an extreme water shortage within their system, decided to proceed immediately with the construction of a pumping station at our Purification Works in Scituate. Authority for this work was given under City Council Resolution No. 503 approved June 8, 1951, and a subsequent twenty-year contract agreement negotiated with the City. Consequently acting through their engineers, Jenks and Ballou of Providence, the Authority entered into agreements with the Fanning and Doorley Construction Company, Hart Engineering Company, and the Schmidt Electric Company to construct and install the necessary station facilities. Work was started on June 22, and progressed to allow the Authority to obtain water from the Providence system on September 1, 1953. Meanwhile the construction work continued with the pumps operating daily on a reduced basis. Consumption of Providence water for the month of September 1953 amounted to only 10,995,000 gallons, but with the proposed replacement of extremely small feeder mains within the Authorities distribution system, it is estimated that the use of Providence water will be greatly increased.

To centralize the operations of the department in one location, preliminary plans were prepared covering alterations to our service building on Academy Avenue and the construction of a new office addition. On March 30, 1953 authorization was granted to engage the services of an architect to prepare working drawings and specifications. It is proposed to erect a two-story office addition, approximately 27-feet by 143-feet, on the south side of the present building which will provide an entrance lobby, Chief Engineer's office, Board room, and engineering office on the first floor, and on the second floor, a meter office, ledger card room, and a meter and accounting room. The stock room and meter testing shop which now occupies space on the first and second floors of the present building will be relocated in the northwest corner of the building. Record rooms, billing

room, meter readers' office, carpenter shop, janitors' room, toilet facilities and ladies rest room will occupy the space vacated by the stock room and meter repair shop, after extensive alterations. Plans and specifications prepared by the architect, Oresto DiSaia, were approved, and on September 21, 1953 the Agostini Construction Company was awarded a contract to build the addition and make the alterations at a contract price of \$348,855.00. Work will be started soon after the beginning of the next fiscal year.

This fiscal year marked the completion of the first full year of fluoridation, during which only one complaint of taste due to the introduction of Sodium Silicofluoride into the supply was received. This complaint was of a minor nature and was quickly corrected by blowing off the mains in the immediate vicinity of the property affected.

The colored sound film "You Can't Live Without It", describing the various operations of the department, continued to be in demand for showings during the year. In addition to its use by the school departments of Providence, Cranston and Johnston, the film has been shown to more than 26 individual groups representing an estimated audience in excess of 1300 people.

The construction of new extensions to the distribution system and replacement of existing mains required the installation of 59,960.22 feet of various size pipe. The greater part of this footage was installed by private contractors under competitive bidding. Five groups involving a total of 69,742 feet of main extensions and replacements were awarded during the year, four to the Fanning and Doorley Construction Company, Inc., for 59,478 feet and one for 10,264 feet to the Bragger Construction Company. The amount of pipe laid under contract during the year totalled 59,010.84 feet. Due to highway construction work in the City, 949.38 feet of water main was installed, this work being done by our own forces. During the year, main extensions were laid in 209 different streets within the area served by this department and at the end of the year approximately 16,121 feet contracted for during the fiscal year remained to be laid.

The back log on the construction schedule which totalled 17,600 feet at the beginning of the year was reduced to 12,700 feet by the end of January. Applications requiring main extensions increased the schedule to 30,000 feet by the latter part of August. This total was gradually decreased and at the end of the year the amount of pipe to be laid was 25,000 feet.

The 48-inch portion of the Scituate Aqueduct was taken out of service for inspection and repairs to several leaks which had developed due to pitting and corrosion as described elsewhere in this report. The inspection was made by our own engineers and officials of the Koppers Company who manufactured the bitumastic coating applied to the exterior and interior of the pipe. In addition, the 66-inch steel pipe was uncovered at a point between Cranston Street and Oaklawn Avenue for exterior examination. Samples were taken of the soil and enamel coating in the vicinity of the leaks that had developed in the 48-inch pipe, and an analyses of these samples indicated that the soil is acidic in nature and corrosive to unprotected steel. The coating had not changed in its characteristics over the years when compared with the specification for that type of material used in the original coating. The interior coating was found to be in excellent condition and unaffected by the continuous exposure of water and its flow for over nearly thirty years of service. In the area of acidic soil and moisture conditions, this pipe will require some method of protection, and consideration is now being given as to the best method of checking the corrosive deterioration of this pipe to prolong its life.

Numerous complaints of poor pressure in the Greenville Avenue section of Johnston during periods of high consumption emphasizes the need for reinforcing the northwest section of the high service distribution system. Pressure readings taken during the latter part of July and the early part of August confirmed that the system in that area was reaching its ultimate capacity, and studies were immediately started to determine the most economical location and size of a trunk main that would reinforce this area and provide for future expansion in this section.

Because of the increasing cost of labor and materials required in extending our mains and the installation of services, it was necessary to increase the charges for those items in order to avoid an increase in the water rates that have remained unchanged since 1923. Effective January 1, 1953, the new rate for water extensions was raised to \$2.50 per foot, an increase of 50¢ per foot, and the charge for rock excavation from \$8.00 to \$10.00 per cubic yard. The increase in service connection charges was made for services ¾-inch through 2-inch, the ¾-inch from \$40.00 to \$50.00, the 1-inch from \$56.00 to \$70.00, the 1½-inch from \$72.00 to \$90.00, and the 2-inch from \$88.00 to \$110.00.

Applications for water service totalled 1240 or 82 less than in the previous year. Of the 1240 applications 194 required extensions to the distribution system. Installation of new services totalled 1170, a decrease of 181 over the previous year.

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, 1953, the gross sewer rental collection totalled \$157,535.58. Of this amount, however, \$118.50 of the current year's collection, and \$49.80 of the previous year's collection was refunded, making a net total of \$157,367.28 collected.

During the year, there were numerous small maintenance and improvement projects carried out on the various buildings within the department which included the following work. Installation of a new four ply tar and gravel roof on the laboratory at the Purification Works by the W. and W. Roofing Company of Providence in the amount of \$487.00. The chemical laboratory was remodeled with the installation of new glazed terra cotta wall tile, rubber tile flooring, new exterior wooden sash and combination aluminum storm sash. This work was done under contract with the A. C. Beals Company of Providence in the amount of \$7,800.00. Because of the danger of broken slate shingles falling from the roof of the tower at the Purifica-

tion Works, a contract in the amount of \$5,945.00 was awarded to the Porrecca Roofing Company of Providence to remove the slate roofing and replace with giant individual asphalt shingles, cemented down. At the Hydro-Electric Station, a contract was awarded to the Stanley Newman Company of Cambridge, Mass., to repoint all exterior brick and granite masonry at a cost of \$4,787.50. A contract for new metal enclosed electrical switch gear, transformers, and other appurtenances for the operation of both electrical driven pumps at the Bath Street Pumping Station by remote control from the Neutaconkanut Pumping Station, was awarded to the Liberty Electric Company of Providence on March 9, 1953 at a contract price of \$13,252.00. At the end of the year no work had been done on this contract, but it is expected that the installation of this switch gear will be made early in 1954. Several other minor items of repair and maintenance were carried out by the department's maintenance crew.

Real estate owned by this department on the westerly side of Broad Street adjacent to the Pawtuxet River, in the City of Cranston was declared surplus and under authority of City Council Resolution No. 187 approved March 6, 1953 was sold to Thomas Stabile, highest bidder, for the sum of \$8,000.00. This parcel of land contained 6,515 square feet and was designated as Lot No. 21 on the Cranston Assessors Plat No. 1.

At the end of the year, the automotive equipment owned and in use by the department totalled 24 various trucks, 17 passenger cars including 2 jeeps, 1 back hoe shovel, 1 bulldozer, and other miscellaneous pieces of construction equipment. The records of the department indicate that during the year, trucks were operated a total of 36,871 truck hours at a cost of 49.0 cents per hour, including depreciation; passenger cars were driven a total of 213,144 miles at a cost of 6.0 cents per mile.

A new tax agreement was concluded with the Town of North Providence on March 3, 1953 fixing the valuation of property owned by the City in that town at \$175,000.00. This agreement covers all assessments made during a five-year term from December 31, 1952 to December 31, 1956, both inclusive.

The Engineering Staff has been engaged in the preparation of various specifications, preparing estimates and plans for extensions to the distribution system and the usual problems pertaining to the operation and maintenance of water works structures and equipment. Other work included real estate surveys, inventories and appraisals, consumer demands in respect to service requirements and proper size meters, inspection of water pipe installations for the existence of cross connections, observing and conducting flow tests at various points in the distribution system, compiling pertinent data and records, etc.

Other duties included attention to water works property in the various communities served by the system outside the City of Providence, in connection with tax valuations and assessments, which are shown on Table 53 of the appendix.

## SOURCE OF SUPPLY

### SCITUATE WATERSHED—RAINFALL AND RUNOFF

The rainfall on the 92.8 square mile Scituate Watershed above the Gainer Dam was measured as usual by gages at Rocky Hill, Hopkins Mills, North Scituate, Wescott District, and Gainer Dam. The rainfall for the year ending September 30, 1953 totalled 52.91 inches, 5.14 inches above the 38-year (1915-1953) long term average of 47.77 inches, equivalent to 110.8% of the average.

The longest period of rainfall occurred between January 5, and January 13, 1953, both inclusive, when a total of 3.08 inches was recorded, with a maximum of 1.37 inches on January 9, and a minimum of 0.01 inches on January 13. The longest period in which no rainfall was recorded occurred between October 16 and November 2, 1952.

During December, January, February, March, April, and July, rainfall exceeded the 38-year average for their respective months: the maximum monthly rainfall occurring in March, when 9.33 inches was recorded. The March rainfall represents a new maximum for that month during the 38 years of record, and exceeded the average for March by 4.97 inches. The maximum day's rainfall occurred on March 15, when 1.98 inches was recorded, with the station at Wescott reporting a rainfall of 2.06 inches. The minimum monthly rainfall occurred during July 1953, when 1.67 inches was recorded, which is 2.15 inches below the 38-year average for that month.

During October, November and December 1952 and June through September 1953, the monthly runoff was below the 38-year average for their respective months, the maximum deficiency of 1.41 inches occurring during November 1952.

The maximum monthly runoff was in March 1953 when the amount collected totalled 7.24 inches or 2.45 inches above the 38-year average for the month.

Statistical rainfall and runoff data for the current year, and for the 38 years of watershed record, may be found in Tables 1, 2, 3, and 4 of the Appendix.

## SCITUATE WATERSHED

### STORAGE, DRAFT AND YIELD

On October 1, 1952 the water in Scituate Reservoir was at elevation 277.76 or 6.25 feet below the spillway level, the total storage amounting to 30,460,000,000 gallons or 82.3% of the total reservoir capacity. At the end of the year (October 1, 1953) the reservoir level was at elevation 276.08, or 7.93 feet below the spillway level, the total storage amounting to 28,780,000,000 gallons or 77.8% of the total reservoir capacity. From October 1, 1952 and continuing to January 1, 1953 the water level fell gradually to elevation 272.74, the minimum for the year, 9.27 feet below the spillway level with a total storage amounting to 25,655,000,000 gallons or 69.3% of the total reservoir capacity. From this date to January 24, 1953 the level fluctuated normally with a net gain in the level to elevation 274.09 or 26,828,000,000 gallons storage representing 72.5% of capacity. Beginning January 24, 1953 the level rose steadily to the maximum for the year at elevation 285.22 on April 1, 1953 with a storage of 38,362,000,000 gallons or 104.8%. The spillway level was reached on March 15, 1953. The storage level remained above the spillway to June 6, 1953, fluctuating gradually downward to elevation 276.68 at the end of the year.

On October 1, 1952 the combined storage in all reservoirs on the watershed, including Regulating, Westconnaug, Barden, Moswansicut, Ponaganset and Scituate Reservoirs, amounted to 34,377,000,000 gallons or 83.3% of the total capacity; and at the end of the year (October 1, 1953) the storage was 32,-

586,000,000 gallons or 79.0% of combined total capacity. The maximum combined storage during the year was 42,716,000,000 gallons, 103.5% of total capacity, on April 18, 1953. The minimum during the year was 29,967,000,000 gallons, 72.6% of combined total capacity, on January 1, 1953.

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

The total draft from the watershed for the year was 45,548,150,000 gallons, or an average of 124,790,000 gallons per day. The draft for water supply purposes was 15,509,630,000 gallons, or an average of 42,490,000 gallons per day; and the discharge to the river totalled 30,038,520,000 gallons, equal to 82,300,000 gallons per day. The discharge to the river was released during hours and at rates most advantageous for the use of mills on the Pawtuxet River below Gainer Dam.

The yield from the Scituate watershed for the year was 43,827,150,000 gallons, or an average of 120,070,000 gallons per day; 4,720,000 gallons per day less than the total draft and 11,600,000 gallons per day in excess of the 38-year (1916-1953) average.

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

## SCITUATE WATERSHED

### FORESTRY OPERATIONS

During the year 1953, reforestation activities on the marginal watershed areas were necessarily reduced, due to the more urgent need of maintenance work throughout the extensive property holdings of the department.

While the department's Forester was on leave of duty to study forestry operations in Norway, the forestry and maintenance activities were carried on under the direction of the Forestry Foreman.

No pulpwood was cut and the only program held open was the sale of evergreen boughs which resulted in an income of \$184.05.

New plantings included the setting out of 10,000 Red Pine and 6,000 White Spruce transplants on burned out and open field areas.

In the Riverview Fire Lane area, 1,000 crop trees were pruned to heights 16 feet above the ground line. Under this crop tree program, there are selected from 150 to 175 trees per acre of the finest trees in the plantation. The pruning of these trees, at the proper stage of growth, assures the production of knot free, high quality lumber at the earliest opportunity.

In addition to pruning crop-trees we have continued our program of release cuttings which has been described in earlier reports. Six acres of White Spruce and five of Red Pine were released from hard wood suppression and will result in very fine soft wood stands rather than a worthless inferior hard wood stand. This program will be enlarged upon during 1954.

Major reforestation activity centered upon the 15-acre burn on the Riverview Fire Lane. This area was the scene of salvage operations subsequent to the 1952 fire. Extensive clean-up was necessary before planting operations could be undertaken. Hardwood brush and pine slash was cut and burned. One year from the date of this fire, salvage and clean-up operations had been finished and the area was once more placed into wood production with the planting of Red Pine seedlings. It is vitally necessary to reforest any burns we might have in order to minimize the danger of erosion.

The fire control record for the past year was very good. Four fires were discovered and controlled in early stages resulting in a burned area of only three acres. The origin of these fires was not determined, but due to the ready cooperation of the several capable volunteer fire companies in the area, the damage was held to a minimum.

The maintenance activities of the forestry crew were carried on in the winter months and were devoted to cutting, piling and burning of brush which had established itself on the earthen fill covering the Aqueduct and Water Supply Board property surrounding the Aqueduct. It was necessary to cut all brush by hand tools due to its large size. This proved to be a major undertaking and was expensive. We will now attempt annual maintenance of brush on the Aqueduct by means of chemical weed killers. Our experimental chemical weed control plots at the reservoir have proved very satisfactory but the present method of using three-gallon pressure type sprayers is definitely not suitable for a large scale chemical weed control program such as the Aqueduct presents. The Water Supply Board has now purchased a Hardie #99 pump which will be attached to the 300 gallon war-surplus water tank already owned by the department. We expect that annual chemical brush control can be accomplished in an inexpensive and satisfactory manner.

We have erected 1800 linear feet of farm type fence and two gates at the junctions of the Aqueduct and major roads. This fence not only improves the appearance of Water Supply Board property but also serves to eliminate the possibility of trespass.

The 1800 feet of fence erected in 1953 is the first step in a long range plan for fencing in all Water Supply Board property from Budlong Road to the Olney-Arnold Road. This program has been necessitated by the rapid expansion of housing development into the suburban areas. We are experiencing considerable difficulty from trespass and it would appear that the only way to protect the Aqueduct from trespass is by means of fencing. Plans have been prepared which envision a yearly six-week fencing program, resulting in the complete fencing of the Aqueduct property in eight years.

Our program for the reduction of the roadside fire-hazard at the Source of Supply has been enlarged. During 1953, two miles of roadside on Routes 116 from the Purification Plant to North Scituate were treated in a manner to improve its aesthetic appearance and to reduce the fire hazard. With the

addition of this last two miles of roadside, we now have 50% of Water Supply Board property adjoining Route 116 under a program of annual maintenance. This program will eventually extend to all major road networks within the reservation.

#### 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 281 days for a total of 4135.5 hours. Power generated from the discharge of 23,570,610,000 gallons through the 1875 K.V.A. Hydro-Electric Turbo Generator to the Pawtuxet River amounted to 4,798,800 Kilowatt-hours or an average of 4,911.77 gallons per kilowatt hour. Of the power generated, 4,245,400 kilowatt-hours or 88.4%, was sold to the Narragansett Electric Company, and 355,100 kilowatt-hours was used at the Water Purification Works. The rate of discharge through the station, concentrated during the hours of operation, averaged 136.79 million gallons per day.

Power 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. During the year, construction was undertaken and completed on the addition of the Pumping Station for the Kent County Water Authority, and on September 1, the Authority began taking water from the Purification Works through these new facilities.

Water was drawn from Scituate Reservoir between elevations 213 and 220 and totalled 15,509,630,000 gallons, or an average

of 42,490,000 gallons per day; the maximum for any one day being 70,880,000 gallons on August 31, 1953 and the minimum 25,890,000 gallons on April 12, 1953.

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 of from four to five 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 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 lime.

Ferri-Floc used totalled 1,409,307 pounds, or an average of 3,861 pounds daily; with a maximum for any one day of 7,571 pounds on June 19, 1953 and a minimum of 1,948 pounds on October 11, 1952. The dosage averaged 0.64 grains per gallon, the maximum for any one day being 0.79 grains per gallon and the minimum 0.48 grains per gallon.

Quicklime used during the year totalled 1,525,003 pounds, or an average of 4,178 pounds daily; with a maximum for any one day of 7,703 pounds on June 19, 1953 and a minimum of 2,127 pounds on December 20, 1952. The lime dosage averaged 0.69

grains per gallon, the maximum for any one day being 0.80 grains per gallon and the minimum 0.55 grains per gallon.

Filters were operated a total of 70,040.52 hours during the year, at an average of 191.89 filter hours per day; the average length of filter runs being 81.55 hours which is 5.17 hours, or 5.96 per cent less than the average of 86.72 hours for the previous year. The maximum daily average of filter runs was 173.75 hours on September 20, 1953 as compared to a maximum of 186.00 hours during the previous year; and the minimum was 42.00 hours on April 19, 1953 as compared to a minimum of 19.95 hours during the previous year.

Wash water rates varied from 17 inches to 27 inches rise per minute, the rate of rise being adjusted inversely to the temperature of the wash water. Tests made each time the rise was changed showed an average sand expansion of 40%. The total wash water used was 107,241,000 gallons, an average of 294,000 gallons per day, or 120,631 gallons per wash. The 107,241,000 gallons of wash water used was 5.71% more than the 101,448,000 gallons for the previous fiscal year.

The total water filtered for the year amounted to 14,290,671,000 gallons, an average of 39,152,000 gallons daily; the maximum day being 67,182,000 gallons on August 31, 1953 and the minimum 26,101,000 gallons on April 19, 1953. The average rate of filtration per filter was 4,900,000 gallons per day and the average amount of water filtered per filter per run was 16,650,000 gallons, or 1.03% more than the 16,480,000 gallons for the previous year.

The total plant effluent, or pure water delivered to the Scituate Aqueduct and the Kent County Water Authority, totalled 14,183,430,000 gallons, an average of 38,859,000 gallons per day; with a maximum of 66,686,000 gallons on September 2, 1953 and a minimum of 25,810,000 gallons on April 5, 1953.

With the exception of a few short-period shutdowns to make inspections and adjustments to the Fluoridizer and the Chlorina-

tors, Fluoridation and Chlorination of the plant effluent were carried on 24 hours daily. With respect to Fluoridation, the City of Providence Water Supply Board is acting solely as the agents 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, the source of the fluoride ion, has been added in amounts sufficient to produce a concentration throughout the distribution system of 1.2 parts per million from October 1, 1952 to May 31, 1953 and 1.0 part per million from June 1, 1953 to September 30, 1953.

Plant effluent delivered to the Scituate Aqueduct, and treated with Sodium Silicofluoride amounted to 14,109,356,000 gallons, an average of 38,656,000 gallons per day. Sodium Silicofluoride used during the year totalled 208,797 pounds, or an average of 572 pounds per day; with a maximum for any one day of 838 pounds on September 2, 1953 and a minimum of 316 pounds on August 16, 1953. The actual dosage of fluoride ion averaged 1.07 parts per million, the maximum and minimum dosages being 1.22 and 0.87 parts per million. Water delivered to the Kent County Authority is not treated with Sodium Silicofluoride.

Constant chlorination of the plant effluent delivered to the Scituate Aqueduct, was carried on for the purpose of insuring and safeguarding the supply of pure water from any possible contamination. Plant effluent to the Scituate Aqueduct was treated with chlorine amounted to 14,169,773,000 gallons, an average of 38,821,000 gallons per day. Water delivered to Kent County is chlorinated separately by their facilities.

Chlorine used during the year totalled 39,958.5 pounds, or an average of 109.5 pounds per day; with a maximum for any one day of 258.0 pounds on September 2, 1953 and a minimum of 66.5 pounds on November 27, 1952. The chlorine dosage averaged 0.34 parts per million, the maximum and minimum dosages being 0.52 and 0.27 parts per million. Chlorine residual of the water at a point adjacent to the main Aqueduct averaged

0.020 parts per million, and of the tap water at the Water Supply Board Office 0.009 parts per million.

The following statistics show that the chemical cost of treatment for the fiscal year ended September 30, 1953 was \$4.34 per million gallons. This is 36.91% higher than the figure of \$3.17 last year. This was due to a slightly higher dosage of Quicklime, the treatment with Sodium Silicofluoride, and to an increase in the cost of Ferri-Floc and Quicklime. The price of Ferri-Floc was increased from a low of \$44.22 per ton last year to a high of \$49.38 per ton this year, an increase of \$5.16 per ton, or 11.67%; while the price of Quicklime increased from \$17.46 per ton last year to \$18.82 per ton this year, an increase of \$1.36 per ton, or 7.79%. The price of Sodium Silicofluoride, which was \$145.60 per ton from October 1, 1952 to July 16, 1953 decreased to \$136.00 per ton for the period July 17, 1953 to September 30, 1953. The price of chlorine has remained the same for the two years,—\$0.0875 per pound.

<i>Chemicals Used, etc.</i>	<i>Year Ended Sept. 30, 1950</i>	<i>Year Ended Sept. 30, 1951</i>	<i>Year Ended Sept. 30, 1952</i>	<i>Year Ended Sept. 30, 1953</i>
Chlorine .....	0.30 P.P.M.	0.37 P.P.M.	0.30 P.P.M.	0.34 P.P.M.
Ferri-Floc .....	0.67 G.P.G.	0.65 G.P.G.	0.68 G.P.G.	0.64 G.P.G.
Quicklime .....	0.61 G.P.G.	0.62 G.P.G.	0.65 G.P.G.	0.69 G.P.G.
Sodium Silicofluoride ..				1.07*
Length of Filter Runs	85.83 Hrs.	89.82 Hrs.	86.72 Hrs.	81.55 Hrs.
Tap Water—Color ...	5 P.P.M.	5 P.P.M.	6 P.P.M.	6 P.P.M.
Tap Water—Iron ....	0.01 P.P.M.	0.01 P.P.M.	0.01 P.P.M.	0.02 P.P.M.
Cost of Chemicals per M.G. of water treated	\$2.97	\$2.95	\$3.17	\$4.34

\*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 and Besthoff, Inc., New York, for the period October 1, 1952 to October 5, 1952 at \$45.63 per ton; from October 6, 1952 to August 4, 1953 at \$46.38 per ton and from August 5, 1953 to September 30, 1953 at \$49.38 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 thirty-five per cent (35%) 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 the 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 Holly 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 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 116 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 0.777% which is 0.723% less than the maximum of 1.500% allowed by the specifications. The average water soluble Ferric Sulphate ( $\text{Fe}_2(\text{SO}_4)_3$ ) content of the four-

teen deliveries received was 69.732% or 0.732% more than the minimum of 69% demanded by specification requirements. The average amount of material passing a 20 mesh per inch screen was 30.75%, as compared to the permissible maximum of 35%. 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:

<i>Date Received</i>	<i>Percent Ferrous Iron</i>	<i>Percent water soluble Ferric Sulphate</i>	<i>Percent passing a 20 mesh per inch screen</i>
October 6, 1952.....	0.558	69.942	30.00
October 20, 1952.....	0.994	68.901	44.12
December 12, 1952.....	1.005	71.181	21.57
December 16, 1952.....	1.173	72.098	34.21
January 5, 1953.....	1.351	69.502	26.67
February 6, 1953.....	0.223	69.982	12.80
February 18, 1953.....	0.391	70.179	23.60
February 23, 1953.....	0.782	69.978	29.40
May 13, 1953.....	0.793	67.619	42.30
May 22, 1953.....	0.938	68.621	39.40
May 29, 1953.....	0.782	70.379	26.70
June 30, 1953.....	0.836	71.435	22.80
July 8, 1953.....	0.390	68.045	50.00
July 29, 1953.....	0.659	68.381	21.90

The table shows that out of 14 deliveries received, 5 failed to meet specifications on the water soluble Ferric Sulphate content, and 4 failed to meet screen test requirements. Each time a delivery failed to meet specifications, the manufacturer was notified to this effect and requested to conform to his obligations.

Quicklime was obtained under contract with the F. D. McKendall Lumber Company, Providence, for the period October 1, 1952 to March 8, 1953 at \$18.33 per ton. Specifications for the Quicklime purchased from this company 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 Available Lime shall be on an 'As Received' basis."

Analysis of the Quicklime received from the F. D. McKendall Lumber Company showed an average available Calcium Oxide (CaO) content of 92.2% which is 2.2% 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 was 100% on every delivery. The following table shows the date of delivery, together with the per cent of available Calcium Oxide and the per cent of material retained on a 100 mesh per inch screen :

<i>Date Received</i>	<i>Percent Available Calcium Oxide</i>	<i>Percent Retained on a 100 mesh per inch screen</i>
November 20, 1952.....	91.7.....	100.0
November 28, 1952.....	92.4.....	100.0
December 3, 1952.....	92.5.....	100.0
January 19, 1953.....	91.1.....	100.0
January 26, 1953.....	94.2.....	100.0
February 2, 1953.....	91.5.....	100.0

The table shows that every one of the six deliveries received met specification requirements.

A shipment of Quicklime received on April 27, 1953 was obtained from the J. C. Goff Company, Providence, under contract at a price of \$18.33 per ton and shipments received on and after May 4 were at \$18.82 per ton. These deliveries were subject to the same specifications as the Quicklime purchased from the F. D. McKendall Lumber Company.

Analysis of the Quicklime received from the J. C. Goff Company showed an average available Calcium Oxide content of 92.0%, which is 2.0% 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 99.2%. The following table shows the date of delivery, together with the per cent of available Calcium Oxide and the per cent of material retained on a 100 mesh per inch screen :

<i>Date Received</i>	<i>Percent Available Calcium Oxide</i>	<i>Percent Retained on a 100 mesh per inch screen</i>
April 27, 1953.....	89.8.....	100.0
May 4, 1953.....	89.4.....	99.2
May 12, 1953.....	91.9.....	97.0
June 18, 1953.....	94.8.....	99.9
June 24, 1953.....	92.8.....	100.0
June 29, 1953.....	94.2.....	100.0
July 15, 1953.....	90.8.....	97.9
July 21, 1953.....	91.5.....	99.3
July 27, 1953.....	93.0.....	99.3

The table shows that two of the nine deliveries received failed to meet specification requirements, showing available Calcium Oxide contents of 89.8% and 89.4%. However, since these figures were so close to the permissible minimum of 90% no complaint was made to the supplier.

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 Holly 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 used 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 123 average days' supply.

The liquid Chlorine used to treat the water was obtained under contract from the Fields Point Manufacturing Co., Inc., Providence, for the period October 1, 1952 to September 30, 1953 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 from the American Agricultural Chemical Company, New York, at a price of \$145.60 per ton until June 1, 1953 after which the ma-

terial was obtained under contract from the T. H. Baylis Company, Providence, at \$136.00 per ton. The specifications covering both contracts called for a minimum available fluoride ion content of 59.4%. All shipments received showed contents higher than the minimum. The following table shows the date of delivery, together with the per cent of available fluoride ion. All shipments up to and including the May 29, 1953 delivery were received from the American Agricultural Chemical Company. The average available fluoride ion was 60.14%. One shipment received from the T. H. Baylis Company showed an available fluoride ion content of 59.54%.

<i>Date Received</i>	<i>Percent Available Fluoride Ion</i>
October 27, 1952.....	60.32
January 13, 1953.....	59.76
March 18, 1953.....	60.48
May 29, 1953.....	60.02
August 10, 1953.....	59.54

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 through the effluent Venturi.

Number 6 fuel oil was used for heating the plant from October 1952 to May 1953 inclusive and totalled 60,918 gallons, an average of 5,076 gallons per month. Number 2 fuel oil was used during the entire year, with the exception of January for heating water and amounted to 3,809 gallons, an average of 317 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 bac-

teriologicals. Samples of tap water were obtained daily from not less than eight consumers' taps in various parts of the distribution system, the Water Supply Board office building in Providence, 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 newly laid mains, and selected locations in the distribution system.

Research work on filtration was continued throughout the year. This consisted of comparative examinations of four plant filters; filter number 2 having sand of an effective size of 0.65 millimeters; filter number 8 with sand of an effective size of 0.40 millimeters; filter number 13 with sand of an effective size of 0.46 millimeters and filter number 14 with sand of an effective size of 0.46 millimeters. Filters 2 and 14 were operated at a rate of 3 gallons per square foot per minute while filters 8 and 13 were operated at rates varying between 1.76 and 2.40 gallons per square foot per minute. Samples were obtained from the effluents of these filters at the start of each run, each morning after that, and at the completion of each filter run. Filters 2 and 14 were operated until the loss of head reached 8 feet, and filters 8 and 13 until the loss of head reached 7.5 feet. Determinations made on these samples included chemical and sanitary chemical tests in addition to bacteriological examinations. Glass cartridge filters containing absorbent cotton which were placed on the effluents of these filters were examined at the time of sampling to observe whether any coagulated material was passing through the sand. At the end of each filter run, the cotton was removed, ignited and a determination made of the floc content deposited on the cotton throughout the run. The total number of samples obtained from the filters was 4,237, which is 25.6% of the total number of samples obtained from all sources. Tests made on these samples totalled 31,461, or

26.2% of all the determinations made in the laboratory during the past year.

The total number of samples obtained from all sources during the year amounted to 16,549 which, based on a forty-hour work week, means that one sample or another was obtained every 7.5 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 119,858 which, based on a forty-hour work week, means that the water was receiving one test or another every 62 seconds. Each delivery of Ferri-Floc and Quicklime was tested to determine its 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 insure 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 of sand from the filters were tested for cleanliness, mud ball formations, effective size, and uniformity coefficient. Samples taken after sterilization of extensions to the distribution system were tested for chlorine residual, B. Coli, 37°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:

<i>Population Served</i>	<i>Minimum Number of Samples per Month</i>
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, exclusive of the Kent County System, is approximately 372,000. 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 195. The actual number of bacteriological samples obtained in the distribution system for the year amounted to a total of 3,252, or an average of 271 per month, a figure 39.0% greater than recommended by the Standards and more than is required for a population of 500,000. 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.

Rigid laboratory control has resulted in the continuation of economies consistent with an excellent quality of water. Constant vigilance over and technical maintenance of the chemical treatment machinery and the filter controls have 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

Sections of the Scituate Aqueduct, which convey the effluent water from the Purification Works in Scituate to the distribution system, were taken out of service on two different occasions during the year. Evidence of leakage on the 48-inch steel line between Budlong Road and Reservoir Avenue was discovered in February. The line was uncovered and two holes were found in the invert section of the pipe, approximately 400 feet east of Budlong Road where the pipe crosses a swampy section of graphitic soil. Examination of the exterior of the pipe revealed extensive evidence of pitting and corrosion where the exterior coating was either damaged by careless back filling or improperly applied. The pitted spots generally were approximately  $\frac{1}{2}$ -inch in diameter and extended through about half the plate thickness. Other sections were uncovered, one between Oaklawn Avenue and Budlong Road, and one between Cranston Street and Oaklawn Avenue. Examination of the exterior of the pipe in these sections revealed that there was no pitting, and the coating was in excellent condition.

On March 28, 1953 the section between Budlong Road and Reservoir Avenue was isolated and unwatered, and the interior of the line inspected. This revealed that in addition to the two holes found during the exterior examination, one other spot in the same vicinity was found to have pitted through the  $\frac{5}{16}$  inch steel plate. Another leak was discovered under Reservoir Avenue at a plug in the crown of the pipe. The interior coating appeared to be in excellent shape with only a few minor spots where sags or bubbles had been left in the lining.

To expedite the inspection and repairs to this line, a 24-inch manhole was cut into the pipe in the vicinity of the leaks, and the leaks repaired by welding on 6-inch by 6-inch steel plates, shaped to the diameter of the pipe. Repairs to the coating were

made by the Koppers Company who manufacture the Bitumastic enamel used in the original construction. Work was completed, the line sterilized, and placed back in service on March 29, 1953 at approximately 10:00 P. M.

Because of a disturbance in the ground above the tunnel section of the Scituate Aqueduct in the vicinity of Seven Mile Line Road, this section was unwatered for inspection on April 11, 1953. The tunnel was inspected from the Purification Works easterly to a point under the ground disturbance, or about 4500 feet from the works, and found to be in good condition.

Maintenance of the property along the Aqueduct included cutting and burning brush, repairs to grassed embankments, repairs to fencing and other miscellaneous work as required, was done during the year.

#### HIGH SERVICE PUMPING STATIONS

Neutaconkanut and Bath Street Pumping Stations, supplying water to the high service system of the distribution system generally above elevation 140, and to the special high pressure fire service in the congested areas of downtown Providence, have been in satisfactory operation through the year. Water pumped into the high service area totalled 2,318,530,000 gallons, or an average of 6,352,137 gallons per day. Neutaconkanut Station pumped 1,404,990,000 gallons or 3,849,288 gallons per day, and Bath Street Station pumped 913,540,000 gallons or 2,502,849 gallons per day.

The total power required for pumping at both stations amounted to 924,300 kilowatt-hours. Neutaconkanut Station required 556,500 kilowatt-hours, and Bath Street Station 367,800 kilowatt-hours. The cost of power at both stations was \$15,425.44, or \$6.65 per million gallons pumped.

The auxiliary gasoline engine driven pump at Neutaconkanut Pumping Station was not operated during the year, except for

periodic test runs, no water being pumped. At Bath Street Pumping Station the gasoline engine driven pumps were operated a total of 60 hours.

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.

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. Work done included the extensions of mains, the installation of gate valves, hydrants and services, and making necessary repairs and replacement to the various appurtenances of the system when and where required. As was the case during the previous year, the extensive highway repairs and reconstruction program accounted for the greater part of repairs and replacements to the system.

The amount of pipe laid during the year, all sizes, totalled 59,960.22 feet, including 575.85 feet which replaced existing mains, and 343.84 feet of pipe laid in connection with the installation of the Southeasterly Trunk Main.

A total of 2,061.37 feet of pipe were removed or abandoned, resulting in a net increase to the system of 57,898.85 feet. In the City of Providence the net increase amounted to 7,560.49 feet and in the City of Cranston the net increase amounted to 36,318.90 feet, of which 238.41 feet was installed in connection with the Southeasterly Trunk Main. In the Town of North Providence the net increase was 10,209.68 and in the Town of Johnston 3,809.78 feet. Of the 59,960.22 feet installed, 59,174.65 feet was laid with cement-asbestos pipe, and 236.02 feet were pre-stressed concrete pipe, the remaining footage being laid with cast iron pipe.

At the end of the year, the total length of mains in the distribution system, all sizes, aggregated 686.33 miles, not including 12.71 miles in the special high service fire system in the City of Providence. The total amount of cement-asbestos pipe in the system at the end of the year was 443,469.67 feet, which consisted of 296,737.96 feet of 6-inch, 136,448.02 feet of 8-inch, 8,898.22 feet of 12-inch and 1,385.47 feet of 16-inch. With the exception of that portion of the Scituate Aqueduct beginning at the Siphon Chamber, which consists of 1,584 feet of 48-inch, and 8,448 feet of 66-inch steel pipe; the Neutaconkanut Conduit consisting of 715 feet of 36-inch, 15,312 feet of 48-inch, and 20,570 feet of 60-inch reinforced concrete pipe; and portions of the Southeasterly Trunk Main, which consists of 104.38 feet of 16-inch, 2,210.50 feet of 24-inch and 19,553.66 feet of 30-inch pre-stressed concrete pipe, the remaining footage is laid with cast iron pipe.

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

A total of 172 stop gates were added to the system during the year, 103 six-inch, 56 eight-inch, 12 twelve-inch, and 1 twenty-four-inch. Eight stop gates were removed, 3 six-inch, 3 eight-inch and 2 twelve-inch; and 17 stop gates were replaced, 13 six-inch, 2 eight-inch and 2 twelve-inch. At the end of the year there was a total of 9,900 stop gates in the system ranging from 6-inch to 48-inch including 10 sixteen-inch rotary plug valves. A total of 114 six-inch hydrant gates were installed. Twenty-

one 8-inch hydrant gates were removed in conjunction with the replacement of flush hydrants by post hydrants. The number of gates on unwatering hydrants remained the same at twenty-seven. The total number of gates, all sizes, in use at the end of the year totalled 13,184, an increase of 258 over the previous year.

Details of gates in use on September 30, 1953 are shown in Table 28 of the Appendix.

The number of private pipes connected to the system at the end of the year totalled 369, a reduction of 15 over the previous year. In the City of Providence there was a total of 205, in Cranston 104, in Johnston 28, and 32 in North Providence. The number of services connected to these private pipes totalled 629, a decrease of 26 from the previous year. In Providence there were 311, Cranston 218, Johnston 37, and 63 in North Providence.

Statistics relative to private pipes will be found in Table 29 of the Appendix.

A total of 1,170 new services, general and fire supplies, were installed during the year; 405 in Providence, 504 in Cranston, 102 in Johnston, and 159 in North Providence. One hundred eight services no longer required, were removed or abandoned; 77 in Providence, 18 in Cranston, 2 in Johnston, and 11 in North Providence. Eleven services were replaced and 86 services repaired. The number of services in the system at the end of the year was 64,519, including both general and fire supplies.

Statistics relative to service pipes installed, removed, replaced and repaired are shown in Table 30 of the Appendix.

Services in use at the end of the year were 55,694, an increase of 983 from the beginning of the year. The number of metered services in use at the end of the year was 55,246 as compared with 54,197 at the beginning of the year, an increase of 1,049.

Unmetered services in use decreased by 66 from 514 to 448 Metered services at the end of the year constituted 99.19% of total services in use, an increase of 0.13% over the previous year.

Statistics relative to metered and unmetered services will be found in Tables 31 and 32 of the Appendix.

Public fire hydrants in use at the end of the year totalled 4,090. Flush hydrants totalled 2,500, and post hydrants 1,590. In Providence 76 flush hydrants were replaced by post hydrants, and 1 flush hydrant was abandoned. One flush hydrant in Johnston was replaced by a post hydrant. Four hundred forty-nine flush hydrants have been replaced by post hydrants since the adoption in March, 1947 of the New York Pattern Post Hydrant for installation in the system.

The replacement of flush hydrants by the post type and new installations increased the number of post hydrants in Providence from 517 to 622, and reduced the number of flush hydrants to 2,481, one flush hydrant being abandoned during the year. In Cranston the number increased by 24 and in North Providence by 12, and in Johnston by 4.

Statistics relative to public fire hydrants will be found in Tables 33 and 34 of the Appendix.

Leaks in the distribution and transmission mains totalled 94 during the year, 33 occurring at joints, 52 as a result of ruptured mains, and 9 at blow-offs. With the exception of a ruptured main in Broad Street, Cranston, which undermined the roadway, these leaks were of minor nature, causing little or no damage. Leaks at joints averaged 1 for every 21.18 miles of main, while total leaks averaged 1 for every 7.44 miles of main.

The number of meters repaired and tested in our Meter Repair Shop was 6,331, while those receiving attention in the field numbered 192, making a total of 6,523. The number repaired last year in shop and field was 6,729. The cost of meter repairs in the shop averaged \$2.34 per meter as against \$3.15 last year.

Meters requiring servicing in the field involved an average expenditure of \$1.90 per meter during the current year as compared with \$2.14 the previous year.

The number, make and size of meters on active services at the end of the year are shown in Table 35 of the Appendix.

### CONSUMPTION

Water consumption for the year ended September 30, 1953 amounted to 14,182,750,000 gallons or at an average of 38,860,000 gallons per day. This average daily consumption is in excess of the previous year average by 1,080,000 gallons. The increase occurred during each month of the year with the exception of February and July when the average consumption was less than the average for those months of the previous year. In October, the average consumption was 170,000 gallons per day more than for the corresponding month of the previous year and in June it increased over the same month of the previous year by 9,470,000 gallons per day. In February the consumption was 64,000 gallons per day less, and in July 8,030,000 gallons per day less than the corresponding months of the previous year.

The maximum daily consumption occurred on September 2, 1953 when 66,370,000 gallons was consumed, this being 3,630,000 gallons less than the previous maximum of 70,000,000 gallons on July 22, 1952. The maximum hourly rate of consumption on September 2, 1953 was at 100,800,000 gallons per day and occurred between the hours of 3 and 4 P. M.

Water consumption statistics will be found in Tables 36, 37, 38 and 39 of the Appendix.

## FINANCIAL SUMMARY

The gross income for the year ended September 30, 1953 totalled \$2,437,103.08, an increase of \$60,914.25, or 2.56% over the previous year. Revenue from the sale of water alone was \$2,093,625.85, an increase over the previous year of \$40,198.09. The remaining income of \$343,477.23 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 \$20,716.16 or 6.3% over the previous year.

During the year total payments for water main extensions amounted to \$155,528.54, an increase over the previous year of \$8,826.72.

Income from service connection charges amounted to \$60,203.00, an increase over the previous year of \$809.47.

At the end of the year unpaid water bills totalled \$123,671.74 as compared with \$102,618.55 at the beginning of the year or 0.57% of the total net billing.

Miscellaneous accounts receivable was \$2,311.20 at the end of the year as compared with \$2,341.07 at the beginning of the year.

Operating expenses totalled \$1,172,447.35, an increase over the previous year of \$38,180.15. This is due chiefly to the department's expanded Water Main Extension Program, plus the rising cost of materials and labor.

Fixed charges amounted to \$1,156,689.56 or 47.46% of gross revenue. As in previous years, the largest single item continues to be the interest charge on the bonded indebtedness, which amounts to \$610,000.00, equivalent to 25.02 cents per dollar of the gross income.

The aggregate of all expenditures of the Board during the year totaled \$2,329,136.91, which deducted from the gross revenue of \$2,437,103.08 leaves a net balance of \$107,966.17, which according to law reverts to the Sinking Fund for the retirement of Water Bonds.

As none of the bonds will mature until 1956, at which time the next \$1,000,000 principal amount will be payable, there was no reduction in the gross bonded indebtedness during the year. Bonds outstanding in the amount of \$15,000,000 will become due in various amounts periodically between 1956 and 1968. At the end of the year, Sinking Fund balance totalled \$9,527,420.54, or \$121,113.45 in excess of the amortization requirements on that date.

The net bonded debt at the end of the present year was \$9,527,420.54 and at the end of the previous year \$9,247,611.23, showing a reduction of \$279,809.31.

Financial accounts of the department, tabulation of water works property, statement of revenues, various funds, outstanding bonds, and sinking fund requirements, inventories and other statistics may be found in Tables 40 to 52 of the Appendix.

A summary of statistics of the Providence Water Supply Board for the year ended September 30, 1953, as recommended by the New England Water Works Association may be found in Table 54 of the Appendix.

Respectfully submitted,

PHILIP J. HOLTON, JR.  
*Chief Engineer*

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# APPENDIX

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**TABLE 1**  
**MONTHLY RAINFALL IN INCHES ON SCITUATE WATERSHED**

STATIONS ON WATERSHED	YEAR ENDED SEPTEMBER 30, 1953												Monthly Avg.	
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.		Total
Rocky Hill.....	2.00	3.20	4.19	6.97	4.69	9.75	7.60	3.67	3.88	4.30	3.47	2.61	56.33	4.69
Hopkins Mills...	1.93	3.10	5.02	7.75	4.61	9.63	6.98	3.16	0.81	3.64	2.45	2.23	51.31	4.28
North Scituate.	2.32	3.31	3.53	8.04	4.77	9.25	8.17	3.99	1.78	4.84	2.83	2.68	55.51	4.62
Westcott .....	1.83	2.76	3.93	6.47	4.38	8.31	7.23	2.76	1.07	4.61	2.97	2.60	49.42	4.12
Gainer Dam ...	1.61	2.73	4.32	7.68	4.73	9.19	7.71	2.60	0.79	3.94	2.99	3.60	51.89	4.32
<b>AVERAGE..</b>	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*	4.41

\*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	Total
1915-1916	2.75(e)	2.88	5.86	1.88	5.88	2.46	3.60	4.33	5.71	7.38	1.33	1.24	45.80	1916	42.56
1916-1917	2.61	3.20	3.20	3.00	2.18	4.91	2.70	4.15	4.54	1.31	6.13	2.66	50.99	1917	43.16
1917-1918	0.71	0.48	3.22	3.56	3.73	2.13	4.56	3.12	4.49	5.13	4.14	8.79	50.09	1918	47.09
1918-1919	1.07	2.60	3.75	4.89	3.42	6.05	4.31	3.99	3.65	5.47	6.65	6.07	53.92	1919	56.42
1919-1920	2.29	5.05	2.58	3.05	6.10	4.90	6.28	3.95	7.93	4.44	3.86	3.04	53.45	1920	55.81
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	47.84
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	54.76
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	48.39
1923-1924	5.67	5.68	5.10	4.49	2.92	2.80	6.12	3.66	1.49	1.72	5.85	5.28	50.78	1924	39.15
1924-1925	0.21	2.23	2.38	4.41	2.22	2.86	2.85	2.72	2.36	6.14	1.70	2.96	34.94	1925	44.45
1925-1926	4.32	4.83	5.18	3.26	6.10	3.73	2.46	2.27	1.74	3.80	3.94	1.89	43.52	1926	43.33
1926-1927	5.04	5.55	3.55	2.98	3.31	1.59	2.56	3.41	3.36	3.99	8.55	2.61	46.50	1927	52.45
1927-1928	5.24	9.22	5.63	2.72	4.32	2.70	5.43	1.45	3.91	5.06	5.50	4.80	55.98	1928	45.59
1928-1929	3.99	2.50	3.21	5.20	4.89	3.92	7.56	3.47	2.06	1.72	2.93	1.35	43.35	1929	43.95
1929-1930	3.09	3.06	4.15	2.86	2.88	3.23	2.03	2.74	3.05	3.33	3.00	1.35	34.77	1930	35.58
1930-1931	3.36	4.65	3.10	3.55	2.57	6.37	3.36	4.19	6.31	3.74	5.96	1.97	49.13	1931	44.43
1931-1932	2.22	1.03	3.16	6.16	2.38	6.16	1.97	2.57	2.75	2.57	6.44	11.75	49.16	1932	58.60
1932-1933	6.63	7.13	2.09	2.02	3.81	6.35	6.18	3.76	4.04	2.00	3.60	7.56	55.37	1933	48.13
1933-1934	3.41	1.48	3.72	3.87	4.53	4.03	5.24	3.98	4.79	2.20	3.89	7.37	48.51	1934	51.14
1934-1935	3.25	4.44	3.55	7.24	3.09	1.93	4.76	2.27	5.12	4.10	1.42	3.59	44.76	1935	41.30
1935-1936	1.04	5.86	0.88	8.81	4.16	9.31	3.80	1.98	2.98	2.63	3.28	7.72	52.45	1936	57.75
1936-1937	2.00	1.25	9.83	5.03	7.45	4.00	5.42	3.05	3.40	1.38	6.47	4.19	48.75	1937	50.58
1937-1938	3.92	8.10	2.89	3.29	2.91	2.70	2.60	4.17	8.62	11.49	3.10	6.76	62.55	1938	57.85
1938-1939	2.54	3.91	3.64	3.08	5.06	5.86	4.33	0.94	2.95	1.20	6.32	3.47	43.80	1939	44.17
1939-1940	5.76	1.40	3.40	2.82	3.97	4.04	6.00	5.76	2.45	4.41	2.01	2.63	46.65	1940	47.18
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	37.88
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	44.69	1942	51.98
1942-1943	4.26	5.32	6.39	3.56	1.95	3.68	3.90	3.87	1.99	3.41	2.15	1.30	41.98	1943	36.84
1943-1944	6.38	3.43	1.22	1.79	2.50	5.05	4.01	1.35	3.75	1.74	2.01	11.03	44.36	1944	48.82
1944-1945	2.71	8.45	4.33	3.45	5.79	2.13	3.36	4.89	5.17	2.74	3.06	2.84	48.92	1945	52.25
1945-1946	2.21	9.03	7.58	3.82	3.81	1.42	2.37	4.92	3.31	2.49	11.48	3.69	56.13	1946	43.01
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	47.68
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	55.70
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	38.58
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	45.11
1950-1951	2.23	7.21	4.57	4.95	4.48	5.91	3.97	5.20	2.71	3.36	3.08	2.41	50.08	1951	55.38
1951-1952	4.14	9.64	5.53	4.88	4.13	4.13	3.97	3.16	3.16	1.20	7.33	2.21	55.41	1952	45.26
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	45.26
Average	3.19	4.63	3.92	4.19	3.70	4.36	4.14	3.64	3.82	3.84	4.43	3.91	47.77*	Ave.	47.57†
Maximum	6.71	9.64	9.83	8.81	6.10	9.33	7.56	9.36	8.62	11.49	11.48	11.75	62.55	Max.	58.60
Minimum	0.21	0.48	0.88	1.79	1.82	1.42	0.89	0.94	0.10	1.20	1.33	0.20	34.77	Min.	35.58

(e) Estimated; \*Total of monthly averages; †37-year Average.

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

Year	YEARS ENDED SEPTEMBER 30												Total	Year	Total
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.			
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	4.29	4.29	3.05	2.79	2.18	0.79	0.71	0.63	19.71	1917	22.41
1917-1918	1.70	1.39	1.38	1.83	4.04	3.17	3.05	2.24	1.24	0.47	0.82	0.81	23.78	1918	23.75
1918-1919	1.02	1.34	2.37	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	1.43	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	0.24	1.65	2.68	1.13	1.80	4.81	3.92	3.50	3.50	3.50	3.59	4.39	33.60	1922	33.32
1922-1923	1.66	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	20.75
1923-1924	1.27	2.01	4.57	4.52	1.88	3.43	5.70	3.38	1.05	0.20	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	13.61	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	0.32	1.39	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	5.95	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	2.10	4.10	3.68	1.35	0.39	0.07	0.35	3.27	19.25	1932	30.15
1932-1933	3.48	6.29	2.26	2.24	2.70	6.28	6.88	1.93	1.37	0.17	0.25	1.52	35.57	1933	27.13
1933-1934	0.95	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	4.03	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	11.51	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	2.99	2.29	1.84	2.85	6.93	1.32	1.66	33.76	1938	33.76
1938-1939	1.22	1.90	3.62	2.11	4.12	5.24	4.20	1.08	0.31	-0.24	0.22	0.09	24.57	1939	21.35
1939-1940	0.63	1.33	1.54	2.03	1.51	4.86	6.89	3.17	1.65	0.84	-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	4.56	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	3.33	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	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	17.80	1947	20.47
1947-1948	0.23	2.94	1.39	1.55	3.15	7.16	3.76	5.25	3.12	0.56	0.15	-0.21	26.05	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	0.05	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	4.36	4.30	2.70	1.21	0.14	0.07	-0.07	25.38	1951	30.16
1951-1952	0.34	4.62	4.30	4.24	3.30	5.02	2.97	2.46	0.98	-0.35	0.33	-0.20	28.21	1952	20.27
1952-1953	-0.20	0.37	1.15	4.61	4.35	7.24	6.36	3.20	0.20	0.07	-0.05	-0.13	27.17	1953	24.37
Average	0.68	1.78	2.37	2.80	2.71	4.79	3.74	2.47	1.31	0.72	0.53	0.65	24.55*	Avg.	24.37
Maximum	3.48	6.73	6.06	4.78	4.95	11.51	6.89	5.25	4.15	6.93	3.59	4.39	35.57	Max.	33.76
Minimum	-0.20	0.15	0.42	0.73	1.18	2.42	1.43	0.88	-0.02	-0.35	-0.31	-0.41	12.02	Min.	11.82

(e Estimated; \*Total of monthly averages; †37-year Average.

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

Year	YEARS ENDED SEPTEMBER 30												Jan.-Dec.		
	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	23.7	48.1	1917	51.9
1917-1918	26.7	33.2	42.7	51.4	108.3	147.4	102.8	74.6	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	54.8	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	32.4	44.0	61.2	135.2	163.5	68.6	181.1	23.3	23.0	17.0	11.6	66.5	1923	61.5
1923-1924	22.4	35.4	89.6	100.7	64.4	123.5	93.1	92.3	70.5	11.6	9.6	12.9	57.9	1924	50.5
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	38.9	112.1	79.8	191.8	66.6	50.5	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	58.0	147.4	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	34.0	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	3.4	27.8	59.2	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	88.1	44.1	33.1	60.3	42.6	24.6	56.3	1938	58.4
1938-1939	46.2	48.6	95.4	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	34.3	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	72.5	58.5	104.2	61.3	84.9	27.6	10.9	4.1	7.7	45.0	1947	42.9
1947-1948	7.0	45.8	33.5	21.7	122.6	168.1	94.7	56.1	74.3	13.0	4.8	-13.2	54.2	1948	52.2
1948-1949	7.2	30.1	58.0	81.5	89.0	118.3	68.8	44.2	-20.0	-21.0	0.3	2.6	41.7	1949	42.5
1949-1950	2.2	16.4	45.2	55.2	52.4	104.3	51.8	62.7	34.1	-6.8	4.4	-1.0	42.4	1950	43.0
1950-1951	1.8	25.6	56.7	65.4	110.5	73.8	108.3	51.9	44.6	4.2	2.3	-2.9	50.7	1951	54.5
1951-1952	8.2	47.9	77.8	86.9	88.6	121.5	67.3	61.7	44.6	-9.2	7.2	-9.0	50.9	1952	44.8
1952-1953	-10.3	12.2	27.4	62.5	93.8	77.6	84.4	98.8	12.0	1.6	-1.7	4.7	51.4	1953	44.8
Average	21.3	38.4	60.4	66.8	73.2	109.9	90.3	67.8	34.3	18.8	12.0	16.6	51.4	Avg.	51.2†
Maximum	233.3	331.2	112.5	133.0	177.4	263.4	198.0	181.1	74.3	60.3	82.0	82.0	68.1	Max.	66.4
Minimum	-12.5	12.2	22.8	20.6	25.3	64.2	58.6	32.1	-20.0	-29.2	-15.4	-205.0	30.1	Min.	32.8

(e Estimated; †37-year Average.



**TABLE 6**  
**SCITUATE WATERSHED**  
 (92.8 Square Miles)

DRAFT AND YIELD FOR YEAR ENDED SEPTEMBER 30, 1953

1952- 1953	DRAFT FROM SCITUATE RESERVOIR Million Gallons				WATERSHED YIELD Million Gallons			
	To River Below Gainer Dam		To Water Purification Works	Total	For Month	Avg. Per Day	For Month	Avg. per Day 1952- 1953 38-Year Mean 1910-1953
	Over Spillway	Through Gatehouse						
Oct.	0	908.27	1,269.06	2,177.33	70.24	-315.67	35.38	
Nov.	0	935.67	1,236.77	2,172.44	72.41	599.44	95.69	
Dec.	0	999.68	1,198.44	2,198.12	70.91	1,854.12	123.30	
Jan.	0	990.93	1,181.19	2,172.12	70.07	7,440.12	145.67	
Feb.	0	1,653.54	1,049.10	2,702.64	96.52	7,010.64	156.09	
Mar.	2,157.54	3,186.66	1,152.04	8,496.24	274.07	11,681.24	249.20	
Apr.	3,901.81	5,763.20	1,118.91	10,783.92	359.46	10,259.92	201.06	
May	400.39	3,881.96	1,189.77	5,471.62	176.50	5,154.62	128.50	
June	77.78	1,018.91	1,618.41	2,645.10	88.17	322.10	70.42	
July	0	643.65	1,571.81	2,215.46	71.47	109.46	37.46	
Aug.	0	817.70	1,477.48	2,295.18	74.04	-85.82	-2.77	
Sept.	0	770.83	1,447.15	2,217.98	73.93	-212.02	-7.07	
For Yr.	6,467.52	23,571.00	15,509.63	45,548.15	124.79	43,827.15	108.47	

†Flashboard leakage.

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

Planted During Calendar Year	Red Pine	White Pine	Douglas Fir	Austrian Pine	Scotch Pine	Jack Pine	White Spruce	Norway Spruce	Hemlock	Larch	Total Number Planted Yearly
1926	160,000	40,000	0	0	0	0	0	0	0	0	200,000
1927	60,000	150,000	0	0	0	0	0	0	0	0	210,000
1928	10,000	10,000	0	0	0	0	0	0	0	0	20,000
1929	10,000	75,000	0	0	0	0	0	0	0	0	85,000
1930	40,000	40,000	0	0	0	0	0	0	0	0	80,000
1931	40,000	50,000	0	0	0	0	9,000	0	0	0	99,000
1932	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
1934 & 1935	755,000	255,000	0	36,000	136,000	4,000	505,000	204,000	3,000	0	1,898,000
1936	453,700	111,000	0	14,400	0	0	20,000	15,000	26,000	0	640,100
1937	481,100	0	0	0	0	0	213,200	0	0	0	694,300
1938	229,000	21,693	0	0	0	0	0	0	0	0	250,693
1939	8,000	761,000	0	0	0	50,000	0	0	0	0	819,000
1940	267,387	618,828	0	45,916	0	67,750	0	0	0	0	999,881
1941	51,000	295,650	0	0	0	0	34,330	0	0	0	381,000
1942	0	308,120	0	0	0	0	0	0	0	0	308,120
1943	0	0	0	0	0	0	0	0	0	0	0
1944	0	0	0	0	0	0	0	0	0	0	0
1945	0	0	0	0	0	0	0	0	0	0	0
1946	0	0	0	0	0	0	0	0	0	0	0
1947	0	0	0	0	0	0	0	0	0	0	0
1948	0	0	0	0	0	0	0	0	0	0	0
1949	0	0	0	0	0	0	0	0	0	0	0
1950	0	0	0	0	0	0	0	0	0	0	0
1951	0	1,500	12,000	0	0	0	0	0	0	0	13,500
1952	20,000	0	0	0	0	0	10,000	0	0	0	40,000
1953	10,000	0	0	0	0	0	6,000	0	0	10,000	16,000
<b>TOTALS</b>	<b>2,635,187</b>	<b>2,777,791</b>	<b>12,000</b>	<b>96,316</b>	<b>136,000</b>	<b>121,750</b>	<b>817,550</b>	<b>219,000</b>	<b>29,000</b>	<b>10,000</b>	<b>6,854,594</b>

**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

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

**TABLE 9**  
**WATER PURIFICATION WORKS**  
**OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	Influent Aerator		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. Filtration Rate per M.G.D.
	Hours Operated	Avg. per Day	Total	Avg. per day	Total	Avg. per Day	% of Water Filtered	Total	Avg. per Day	Total	Avg. per Day	Max.	Min.	Avg.		
Oct. ....	735.8	40.94	1,269.06	37,388	9,036	0.291	0.8	1,149,999	37,097	744.0	13.0	3.0	8.2	4.56		
Nov. ....	720.0	41.22	1,236.77	36,157	11,183	0.373	1.0	1,073,391	35,780	720.0	12.0	3.5	7.9	4.58		
Dec. ....	744.0	38.66	1,198.44	35,501	8,065	0.260	0.7	1,092,458	35,240	744.0	13.0	4.0	7.6	4.66		
Jan. ....	744.0	38.10	1,181.19	34,851	8,575	0.277	0.8	1,071,794	34,574	744.0	12.0	4.0	7.6	4.58		
Feb. ....	672.0	37.47	1,049.10	34,211	6,589	0.233	0.7	951,361	33,977	672.0	12.5	3.5	7.3	4.67		
Mar. ....	744.0	37.16	1,152.04	34,410	7,069	0.228	0.7	1,059,636	34,182	744.0	12.5	3.5	7.3	4.69		
Apr. ....	712.8	37.30	1,118.91	34,943	8,705	0.290	0.8	1,039,597	34,653	715.3	12.5	2.5	7.4	4.78		
May ....	744.0	38.36	1,189.27	35,914	9,480	0.306	0.8	1,003,855	35,608	744.0	13.0	3.5	7.7	4.65		
June ....	720.0	53.95	1,618.41	51,047	11,011	0.367	0.7	1,520,404	30,680	720.0	14.0	2.0	9.5	5.35		
July ....	742.5	50.70	1,571.81	47,072	8,907	0.287	0.6	1,450,338	46,785	744.0	14.0	1.0	8.4	5.58		
Aug. ....	741.1	47.66	1,477.48	43,924	9,142	0.295	0.7	1,352,520	43,630	744.0	14.0	3.0	8.0	5.32		
Sept. ....	721.0	48.24	1,447.15	44,253	9,559	0.318	0.7	1,318,077	43,936	721.0	14.0	3.0	9.0	4.92		
Totals ....	8,741.2	42.49	15,509.63	442,532	107,241	0.294	0.7	14,183,430	38,859	8,756.3	.....	.....	.....	.....	.....	
Average ....	728.4	42.49	.....	39,132	.....	0.294	0.7	.....	38,859	729.7	.....	.....	.....	8.0	4.90	

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

**Table 9 (Continued)**  
**WATER PURIFICATION WORKS**  
**OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	Number of Filters Washed		Ferri-Floc Used		Quicklime Used		Chlorine Used		Sodium Silicofluoride Used		Fuel Oil Used for Heating—Gals.	
	Total	Avg. Per Day	Lbs.	Avg. Per Day	Lbs.	Avg. Per Day	Lbs.	Avg. Per Day	Lbs.	Avg. Per Day	Parts Per Mil.*	No.
Oct. ....	69	2.2	95,391	3,077	112,505	3,629	3,321.0	107.1	19,252	621	1.71	364
Nov. ....	84	2.8	105,972	3,532	108,289	3,610	2,969.5	99.0	16,857	562	1.15	67
Dec. ....	61	2.0	94,593	3,031	100,632	3,246	2,835.5	91.5	16,265	547	1.13	131
Jan. ....	71	2.3	95,578	3,083	99,450	3,208	2,804.5	90.5	17,698	571	1.14	0
Feb. ....	65	2.3	85,760	3,063	95,730	3,420	2,492.0	89.0	15,534	543	1.15	4
Mar. ....	68	2.2	93,503	3,081	109,101	3,519	2,771.0	89.4	16,991	548	1.15	18
Apr. ....	83	2.8	98,049	3,268	114,429	3,814	2,717.0	90.6	16,513	550	1.15	168
May ....	82	2.6	113,102	3,713	129,527	4,178	2,885.0	93.1	17,621	568	1.16	532
June ....	86	2.9	172,718	5,757	181,298	6,043	3,864.0	129.0	19,906	663	0.95	612
July ....	70	2.2	166,337	5,366	168,065	5,421	3,848.0	124.1	18,221	588	0.91	680
Aug. ....	70	2.2	149,491	4,822	154,780	4,993	4,821.0	155.5	16,997	548	0.90	663
Sept. ....	80	2.7	134,813	4,494	151,177	5,039	4,630.0	154.3	16,522	551	0.90	570
Totals ...	889	.....	1,409,307	.....	1,525,003	.....	39,958.5	.....	208,797	.....	.....	3,809
Average .	.....	2.4	.....	3,861	.....	4,178	.....	109.5	.....	572	1.07	317

Total filter hours for year, 70,040.52; average per day, 191.89.  
Average quantity of water filtered per filter per run, 16.65 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, 1953**

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. . . . .	1,409,307	3,861	15,501,530,000	\$32,669.16	90.91	\$2.11
Quicklime. . . . .	1,525,003	4,178	15,507,300,000	14,147.02	98.34	0.91
Chlorine. . . . .	39,958.5	109.5	14,169,773,000	3,496.37	2.82	0.25
Sod. Silicofluoride.	208,797	572	14,109,356,000	15,085.43	14.80	1.07
Totals. . . . .	3,183,065.5	.....	.....	\$65,397.98	.....	\$4.34

Price of Ferri-Floc—From Oct. 1 to Oct. 5, 1952—\$45.63 per ton; from Oct. 6, 1952 to Aug. 4, 1953—\$46.38 per ton; from Aug. 5 to Sept. 30, 1953—\$49.38 per ton.  
Price of Quicklime—From Oct. 1, 1952 to May 3, 1953—\$18.33 per ton; from May 4 to Sept. 30, 1953—\$18.82 per ton.  
Price of Chlorine—From Oct. 1, 1952 to Sept. 30, 1953—\$0.0875 per pound.  
Price of Sodium Silicofluoride—From Oct. 1, 1952 to July 16, 1953—\$145.60 per ton; from July 17 to Sept. 30, 1953—\$136.00 per ton.

**TABLE 11**  
**WATER PURIFICATION WORKS**  
**\*CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**  
**PROCESS OF FILTRATION**  
**YEAR ENDED SEPTEMBER 30, 1953**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Alkalinity</b>													
Raw .....	5.2	5.3	5.4	5.4	5.2	5.2	4.9	4.7	4.8	5.1	5.3	5.5	5.2
Effluent .....	17.3	15.5	16.0	15.2	16.3	16.4	17.3	18.0	18.0	18.1	18.3	18.7	17.1
Tap .....	15.4	13.9	14.5	13.6	14.3	14.7	15.2	15.9	16.6	16.7	16.5	16.7	15.3
<b>Hardness</b>													
Raw .....	11	10	10	10	10	11	10	10	9	9	9	10	10
Effluent .....	27	27	27	25	27	28	27	28	28	28	28	28	27
Tap .....	28	27	28	26	27	28	27	28	28	29	28	29	28
<b>Hydrogen Ion Concentration</b>													
Raw .....	6.2	6.5	6.4	6.3	6.3	6.3	6.3	6.3	6.1	6.0	5.9	6.0	6.2
Aerated Influent .....	4.2	4.1	4.1	4.2	4.0	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.1
Treated .....	9.7	9.7	9.7	9.7	9.9	9.8	9.9	9.9	9.9	9.8	9.8	9.8	9.8
Settled .....	9.6	9.6	9.6	9.6	9.6	9.7	9.7	9.7	9.8	9.7	9.7	9.7	9.7
Filtered .....	9.6	9.6	9.6	9.6	9.7	9.6	9.6	9.7	9.7	9.6	9.6	9.7	9.6
Effluent .....	9.6	9.6	9.6	9.6	9.6	9.6	9.6	9.7	9.7	9.6	9.6	9.7	9.6
Tap .....	9.3	9.3	9.4	9.3	9.4	9.4	9.4	9.5	9.5	9.5	9.4	9.4	9.4
<b>Free CO<sub>2</sub></b>													
Raw .....	4.7	1.2	1.1	1.2	1.2	1.3	1.6	1.9	2.9	4.0	5.2	5.9	2.7
Aerated Influent .....	5.1	5.4	4.6	5.2	4.8	5.4	6.2	6.9	7.3	8.1	7.6	7.5	6.2
<b>Phenolphthalein Alkalinity</b>													
Treated .....	11.2	10.7	10.5	10.2	11.1	11.7	12.1	12.3	12.4	11.9	11.9	11.3	11.4
Settled .....	10.4	9.7	9.8	9.1	9.8	10.1	10.1	10.7	11.0	10.6	10.8	10.8	10.2
Filtered .....	10.0	9.2	9.5	9.0	9.6	9.9	10.0	10.5	10.6	10.4	10.5	10.6	10.0
Effluent .....	10.1	9.2	9.6	9.1	9.7	9.9	10.0	10.4	10.6	10.3	10.6	10.6	10.0
Tap .....	7.6	6.9	7.4	6.7	7.3	7.4	7.6	8.0	8.6	8.5	8.3	8.3	7.7
<b>Color</b>													
Raw .....	16	11	9	8	10	12	14	13	14	13	13	15	12
Effluent .....	7	7	6	4	4	5	5	6	7	7	6	6	6
Tap .....	7	7	7	5	4	5	5	6	7	7	6	7	6
<b>Turbidity</b>													
Raw .....	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Settled .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Effluent .....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Iron</b>													
Raw .....	.29	.12	.11	.11	.11	.09	.04	.04	.04	.05	.05	.11	.10
Settled .....	.19	.25	.21	.24	.26	.31	.49	.48	.38	.34	.30	.29	.31
Effluent .....	.00	.00	.01	.00	.00	.02	.01	.01	.00	.00	.00	.00	.00
Tap .....	.01	.02	.03	.03	.02	.03	.02	.03	.02	.03	.03	.04	.02
<b>Manganese</b>													
Raw .....	.19	.04	.02	.02	.02	.02	.02	.01	.01	.01	.02	.05	.03
Settled .....	.05	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.01
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
<b>Fluoride</b>													
Raw .....	0.16	0.16	0.17	0.18	0.15	0.15	0.20	0.21	0.20	0.23	0.24	0.26	0.19
Effluent .....	0.13	0.14	0.15	0.16	0.15	0.15	0.17	0.17	0.17	0.16	0.16	0.17	0.16
Tap .....	1.19	1.17	1.18	1.17	1.17	1.17	1.15	1.17	1.02	0.96	0.96	0.97	1.11
<b>Temperature (°F.)</b>													
Air (av. of daily max.)	61	52	42	43	42	47	56	67	78	75	78	71	59
Air (av. of daily min.)	40	34	30	25	24	31	40	49	56	61	58	52	42
Raw water .....	59	51	43	37	36	37	44	49	52	55	55	56	48
Water on filters .....	57	48	40	36	35	38	46	53	58	61	61	60	49
Tap .....	62	51	46	40	37	40	48	54	59	63	64	65	52

\*Parts per million, except pH and Temperature.

**TABLE 12**  
**WATER PURIFICATION WORKS**  
**\*CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**  
**VARIOUS BROOKS AND RESERVOIRS ON SCITUATE WATERSHED**  
**YEAR ENDED SEPTEMBER 30, 1953**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Color</b>													
Coventry Brook	17	28	50	32	17	33	18	27	33	14	21	23	26
Wilbur Brook	48	100	55	64	33	43	40	125	65	65	65	32	61
Westconnaug Res.	23	23	35	30	12	27	25	20	27	15	16	14	22
Barden Reservoir	20	23	35	32	23	27	23	36	21	18	23	15	25
Cork Brook	8	23	38	32	12	33	15	14	11	8	**	**	19
Rush Brook	15	80	30	32	18	35	35	70	48	20	21	14	35
Huntinghouse Brook	15	24	21	30	16	25	24	33	42	22	24	18	24
Harrisdale Brook	14	22	22	28	17	25	24	38	18	20	24	13	22
Blanchard Brook	**	160	120	70	75	85	100	300	250	**	**	**	145
Moswansicut Pond	13	23	20	28	16	18	11	34	48	48	12	**	25
Regulating Reservoir	13	65	30	30	25	25	17	67	56	22	20	13	32
Quonapaug Brook	**	200	80	70	45	35	65	180	165	**	**	**	105
Hemlock Brook	25	25	38	32	27	40	20	36	23	16	22	17	27
Betty Pond Stream	**	30	22	18	13	17	8	22	15	20	**	**	18
Spruce Brook	35	35	32	38	23	40	32	45	44	50	28	28	36
<b>Turbidity</b>													
Coventry Brook	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wilbur Brook	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.2	0.1
Westconnaug Res.	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Barden Reservoir	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Cork Brook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	**	0.0
Rush Brook	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Huntinghouse Brook	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.0
Harrisdale Brook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0
Blanchard Brook	**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	**	**	0.0
Moswansicut Pond	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	0.0
Regulating Reservoir	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Quonapaug Brook	**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	**	**	0.0
Hemlock Brook	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.1
Betty Pond Stream	**	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**	**	0.0
Spruce Brook	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1
<b>Iron</b>													
Coventry Brook	0.07	0.09	0.12	0.04	0.02	0.02	0.02	0.03	0.06	0.02	0.03	0.03	0.05
Wilbur Brook	.56	.34	.08	.14	.05	.03	.12	.70	.30	.31	.23	.11	.25
Westconnaug Res.	.25	.34	.11	.10	.04	.02	.07	.22	.12	.12	.15	.13	.14
Barden Reservoir	.15	.34	.12	.08	.02	.03	.06	.21	.12	.21	.18	.22	.14
Cork Brook	.01	.32	.12	.11	.00	.02	.01	.10	.03	.01	**	**	.07
Rush Brook	.12	.14	.07	.07	.02	.02	.04	.25	.16	.50	.22	.22	.15
Huntinghouse Brook	.05	.21	.08	.13	.01	.02	.04	.20	.02	.31	.30	.22	.13
Harrisdale Brook	.10	.21	.05	.08	.03	.02	.11	.45	.15	.28	.32	.10	.16
Blanchard Brook	**	.55	.28	.14	.15	.08	.20	.90	.75	**	**	**	.38
Moswansicut Pond	.05	.21	.08	.12	.05	.04	.12	.75	.75	1.00	.01	**	.29
Regulating Reservoir	.05	.13	.05	.11	.01	.09	.03	.25	.20	.54	.20	.19	.15
Quonapaug Brook	**	.38	.05	.12	.08	.08	.08	.60	.60	**	**	**	.25
Hemlock Brook	.33	.35	.15	.11	.01	.32	.04	.18	.15	.10	.30	.23	.19
Betty Pond Stream	**	.11	.07	.05	.03	.11	.05	.18	.05	.09	**	**	.08
Spruce Brook	.11	.09	.05	.05	.05	.05	.02	.09	.07	.21	.13	.15	.09
<b>Manganese</b>													
Coventry Brook	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wilbur Brook	.00	.04	.00	.01	.00	.00	.00	.01	.00	.00	.01	.00	.01
Westconnaug Res.	.00	.00	.00	.03	.00	.01	.02	.00	.00	.00	.00	.00	.00
Barden Reservoir	.00	.00	.00	.04	.00	.01	.02	.01	.00	.00	.00	.00	.01
Cork Brook	.00	.00	.00	.05	.00	.01	.00	.01	.00	.00	**	**	.01
Rush Brook	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.00	.01	.00
Huntinghouse Brook	.00	.01	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00
Harrisdale Brook	.00	.00	.00	.02	.00	.00	.00	.00	.00	.01	.00	.00	.00
Blanchard Brook	**	.07	.02	.03	.01	.02	.00	.01	.00	**	**	**	.02
Moswansicut Pond	.00	.01	.00	.02	.00	.00	.00	.00	.01	.08	.02	**	.01
Regulating Reservoir	.00	.03	.00	.04	.00	.00	.00	.01	.00	.00	.00	.00	.01
Quonapaug Brook	**	.04	.00	.01	.00	.00	.00	.00	.00	**	**	**	.01
Hemlock Brook	.00	.02	.00	.04	.00	.03	.01	.01	.00	.00	.00	.00	.01
Betty Pond Stream	**	.00	.00	.01	.00	.00	.00	.00	.00	.02	**	**	.00
Spruce Brook	.00	.00	.01	.02	.00	.00	.00	.01	.00	.00	.00	.00	.00

\*Parts per million.  
\*\*No Sample Obtained—Brook Dry.

Table 12 (Continued)

WATER PURIFICATION WORKS

\*CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN  
VARIOUS BROOKS AND RESERVOIRS ON SCITUATE WATERSHED  
YEAR ENDED SEPTEMBER 30, 1953

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Hydrogen Ion Concentration</b>													
Coventry Brook	6.2	6.1	6.0	6.0	6.7	6.1	6.1	6.3	6.0	6.3	6.3	6.3	6.2
Wilbur Brook	6.1	5.8	6.0	5.9	6.3	5.9	5.9	6.0	6.0	6.2	6.3	6.1	6.0
Westconnaug Res.	6.7	6.5	6.1	6.0	7.0	6.3	6.1	6.7	6.3	6.9	6.6	6.6	6.5
Barden Reservoir	6.7	6.6	6.1	6.0	6.4	6.1	6.1	6.5	6.2	6.5	6.3	6.3	6.3
Cork Brook	6.5	6.5	6.1	6.1	6.8	5.9	6.3	6.1	6.2	6.4	**	**	6.3
Rush Brook	6.2	6.1	6.2	6.1	6.5	6.1	7.3	6.7	6.0	6.1	6.1	6.1	6.3
Huntinghouse Brook	6.7	6.7	6.3	6.1	6.9	6.1	6.3	6.5	6.0	6.6	6.5	6.7	6.4
Harrisdale Brook	6.7	6.7	6.3	6.1	6.9	6.3	6.3	6.7	6.2	6.5	6.5	6.5	6.3
Blanchard Brook	**	5.4	5.3	5.5	5.8	5.8	5.8	5.9	5.8	**	**	**	5.7
Moswansicut Pond	6.7	6.5	6.3	6.1	7.0	6.6	6.3	6.0	6.1	6.2	6.3	**	6.4
Regulating Reservoir	6.2	6.1	6.2	6.0	6.9	6.4	6.3	5.9	6.0	6.1	6.0	6.1	6.2
Quonapaug Brook	**	5.6	5.7	5.8	6.5	5.9	5.9	5.9	5.9	**	**	**	5.9
Hemlock Brook	6.7	6.4	6.1	5.9	6.4	5.9	6.1	6.7	6.0	6.5	6.2	6.3	6.3
Betty Pond Stream	**	6.2	6.0	5.9	6.7	6.1	5.9	6.1	5.8	5.9	**	**	6.1
Spruce Brook	6.2	6.2	5.9	5.9	6.1	6.1	5.9	6.3	6.1	6.3	6.1	6.3	6.1
<b>Free CO<sub>2</sub></b>													
Coventry Brook	5.0	4.0	7.5	3.5	1.5	2.5	3.0	3.0	5.0	4.5	2.0	3.0	3.7
Wilbur Brook	7.5	13.0	8.0	5.5	1.5	2.5	4.5	9.0	6.0	4.5	3.0	4.0	5.7
Westconnaug Res.	1.0	2.0	2.5	4.0	1.0	1.5	3.0	2.0	2.5	1.5	1.5	1.5	2.0
Barden Reservoir	1.5	2.0	3.5	4.0	1.5	1.5	3.0	2.0	2.5	1.5	1.5	1.0	2.1
Cork Brook	2.0	2.0	3.5	4.0	1.0	2.0	1.5	3.5	2.0	1.5	**	**	2.3
Rush Brook	3.5	4.0	3.5	4.0	1.5	2.0	0.5	2.0	7.0	8.0	7.5	6.5	4.2
Huntinghouse Brook	2.0	2.0	3.5	3.5	1.0	1.5	1.5	3.0	5.0	3.0	2.5	2.0	2.5
Harrisdale Brook	2.0	3.0	4.0	3.5	1.0	1.0	2.0	2.5	4.0	3.0	3.0	2.0	2.6
Blanchard Brook	**	10.0	11.0	7.5	4.5	5.5	4.5	11.0	12.0	**	**	**	8.2
Moswansicut Pond	2.5	3.0	4.0	4.0	1.0	1.0	2.0	10.5	8.0	9.5	3.0	**	4.4
Regulating Reservoir	4.5	3.0	3.5	3.5	1.5	1.0	2.0	7.5	6.0	9.5	8.0	6.0	4.7
Quonapaug Brook	**	10.0	10.5	7.0	1.5	5.0	4.0	12.0	11.5	**	**	**	7.7
Hemlock Brook	1.5	2.0	3.5	4.0	1.5	2.5	3.0	2.0	3.0	1.5	1.0	1.5	2.2
Betty Pond Stream	**	3.0	6.0	6.0	1.5	1.5	4.5	4.0	8.0	9.0	**	**	4.8
Spruce Brook	4.5	2.5	5.0	5.0	2.0	3.0	4.5	3.0	3.0	3.5	4.5	3.0	3.6
<b>Alkalinity</b>													
Coventry Brook	6.5	5.0	5.0	5.0	5.0	4.5	4.0	5.0	7.5	8.0	8.0	7.0	5.9
Wilbur Brook	8.5	5.0	5.5	4.0	4.0	3.5	5.0	7.0	9.0	8.0	8.0	7.5	6.2
Westconnaug Res.	5.5	5.0	4.5	3.5	5.0	4.5	3.5	6.0	7.0	9.0	10.0	5.0	5.7
Barden Reservoir	5.0	6.0	4.5	3.5	4.5	3.5	4.0	3.5	6.5	6.5	5.5	10.0	5.2
Cork Brook	7.0	5.5	4.5	5.0	4.5	3.5	6.0	3.5	5.5	6.0	**	**	5.1
Rush Brook	9.5	5.0	5.5	4.0	5.0	3.5	10.0	7.5	8.5	10.5	10.0	10.0	7.4
Huntinghouse Brook	11.0	10.5	9.5	5.5	5.5	5.0	5.5	8.0	7.0	12.0	12.0	10.5	8.5
Harrisdale Brook	11.0	10.5	9.0	5.0	6.5	2.0	6.5	7.5	12.5	12.5	11.0	11.0	8.7
Blanchard Brook	**	3.5	3.0	3.5	4.5	4.5	3.5	4.5	6.0	**	**	**	4.1
Moswansicut Pond	11.0	10.5	10.0	4.5	7.0	3.0	7.0	8.0	14.5	20.0	7.5	**	9.4
Regulating Reservoir	9.5	5.5	6.0	4.0	6.0	4.5	5.0	2.0	7.0	10.5	10.0	10.0	6.7
Quonapaug Brook	**	5.0	3.5	4.5	5.5	4.5	5.5	7.0	10.0	**	**	**	5.7
Hemlock Brook	5.0	5.0	4.0	4.0	3.5	3.5	3.5	5.0	5.0	6.0	6.0	6.0	4.7
Betty Pond Stream	**	6.5	6.0	5.0	5.0	4.0	4.5	4.5	5.5	6.0	**	**	5.2
Spruce Brook	7.0	5.0	4.0	3.5	4.0	3.0	4.5	4.0	6.5	7.5	9.5	9.0	5.6

\*Parts per million, except pH.  
\*\*No Sample Obtained—Brook Dry.

**TABLE 13**  
**WATER PURIFICATION WORKS**  
**CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN**  
**VARIOUS PARTS OF THE DISTRIBUTION SYSTEM**  
**YEAR ENDED SEPTEMBER 30, 1953**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Hydrogen Ion Concentration</b>													
Neutaconkanut Reservoir..	9.3	9.3	9.4	9.4	9.4	9.4	9.4	9.4	9.5	9.5	9.4	9.5	9.4
Wayland Ave., Cranston...	9.3	9.3	9.4	9.3	9.4	9.4	9.4	9.4	9.6	9.5	9.4	9.4	9.4
Westminster St., Olneyville	9.3	9.3	9.4	9.3	9.4	9.4	9.4	9.5	9.5	9.4	9.5	9.4	9.4
Budlong Road, Cranston...	9.3	9.3	9.4	9.4	9.4	9.4	9.4	9.5	9.5	9.5	9.5	9.5	9.4
Reservoir Ave., Cranston...	9.3	9.3	9.4	9.3	9.4	9.4	9.4	9.5	9.5	9.5	9.4	9.5	9.4
Post Road, Warwick.....	9.5	9.5	9.5	9.5	9.6	9.5	9.6	9.5	9.5	9.5	9.4	9.4	9.5
Biltmore Hotel .....	9.3	9.3	9.4	9.4	9.4	9.4	9.4	9.5	9.5	9.5	9.5	9.5	9.4
Crown Hotel .....	9.3	9.4	9.4	9.3	9.4	9.4	9.4	9.5	9.5	9.5	9.5	9.5	9.4
Sewer Maintenance Bldg...	9.3	9.3	9.4	9.4	9.4	9.5	9.5	9.6	9.7	9.7	9.7	9.7	9.5
Longview Reservoir .....	9.3	9.4	9.4	9.3	9.4	9.3	9.4	9.4	9.5	9.5	9.5	9.5	9.4
<b>Phenolphthalein Alkalinity</b>													
Neutaconkanut Reservoir..	7.6	7.0	7.4	7.4	7.1	7.3	7.5	7.9	8.4	8.6	8.3	8.5	7.7
Wayland Ave., Cranston...	7.7	6.8	7.5	6.8	7.7	7.4	7.6	8.1	8.7	8.5	8.3	8.4	7.8
Westminster St., Olneyville	7.7	6.9	7.5	6.8	7.1	7.5	7.6	8.1	8.6	8.5	8.4	8.5	7.8
Budlong Road, Cranston...	7.7	6.8	7.5	6.8	7.4	7.6	7.7	8.2	8.6	8.4	8.3	8.5	7.8
Reservoir Ave., Cranston...	7.7	6.9	7.5	6.9	7.3	7.5	7.6	8.1	8.7	8.4	8.4	8.4	7.8
Post Road, Warwick.....	10.1	9.2	9.4	8.3	9.0	9.3	9.9	8.6	8.3	8.1	8.2	8.1	8.9
Biltmore Hotel .....	7.7	7.0	7.5	6.9	7.3	7.4	7.7	8.1	8.7	8.5	8.5	8.5	7.8
Crown Hotel .....	7.7	6.9	7.6	6.9	7.4	7.6	7.7	8.2	8.6	8.5	8.7	8.7	7.9
Sewer Maintenance Bldg...	7.7	7.5	7.6	6.9	8.1	8.8	9.2	10.1	11.3	11.3	10.9	11.2	9.2
Longview Reservoir .....	7.7	7.0	7.5	6.8	7.3	7.1	7.4	7.8	8.5	9.0	8.8	8.9	7.8
<b>Methyl Orange Alkalinity</b>													
Neutaconkanut Reservoir..	15.5	13.8	14.5	13.6	14.0	14.5	15.1	16.0	16.4	16.9	16.6	17.0	15.3
Wayland Ave., Cranston...	15.3	13.5	14.7	13.6	14.3	14.6	15.3	16.1	16.9	16.6	16.7	16.9	15.4
Westminster St., Olneyville	15.4	13.6	14.9	13.7	14.1	14.7	15.3	16.1	16.7	16.7	16.8	17.0	15.4
Budlong Road, Cranston...	15.4	13.5	14.7	13.8	14.8	14.8	15.4	16.2	16.6	16.7	16.8	17.0	15.4
Reservoir Ave., Cranston...	15.4	13.7	14.9	13.8	14.5	14.8	15.2	16.1	16.8	16.7	16.9	17.1	15.5
Post Road, Warwick.....	18.2	16.2	16.7	15.4	16.4	16.6	18.0	17.0	16.6	16.7	16.7	16.9	16.8
Biltmore Hotel .....	15.5	13.8	14.7	13.6	14.4	14.7	15.5	16.3	16.8	16.8	17.0	17.1	15.5
Crown Hotel .....	15.5	13.9	15.0	13.9	14.7	14.9	15.4	16.5	17.1	16.9	17.2	17.5	15.7
Sewer Maintenance Bldg...	15.4	14.0	14.8	13.8	15.5	16.0	17.3	18.3	19.6	19.8	19.8	19.6	17.0
Longview Reservoir .....	15.4	13.9	14.7	14.6	14.9	15.2	15.6	16.2	16.9	17.5	17.6	18.1	15.9
<b>Color</b>													
Neutaconkanut Reservoir..	7	7	7	4	4	5	5	6	6	6	6	6	6
Wayland Ave., Cranston...	7	7	7	4	4	5	5	5	6	5	6	6	6
Westminster St., Olneyville	8	7	7	5	4	5	5	6	6	6	6	6	6
Budlong Road, Cranston...	8	7	7	5	6	5	5	6	7	6	6	6	6
Reservoir Ave., Cranston...	8	7	7	5	5	5	5	7	6	5	6	6	6
Post Road, Warwick.....	7	7	6	4	4	5	5	5	7	6	5	6	6
Biltmore Hotel .....	7	7	6	5	4	5	5	7	6	6	6	6	6
Crown Hotel .....	8	8	8	5	5	6	7	6	8	7	6	8	7
Sewer Maintenance Bldg...	7	7	6	4	4	5	5	7	6	5	6	6	6
Longview Reservoir .....	7	7	6	5	4	5	5	7	6	6	6	6	6
<b>Iron</b>													
Neutaconkanut Reservoir..	0.01	0.01	0.02	0.02	0.01	0.03	0.01	0.02	0.00	0.00	0.01	0.01	0.01
Wayland Ave., Cranston...	.04	.02	.05	.02	.01	.03	.01	.01	.01	.01	.01	.01	.02
Westminster St., Olneyville	.05	.02	.08	.07	.01	.02	.02	.01	.01	.01	.01	.01	.03
Budlong Road, Cranston...	.04	.03	.06	.07	.07	.06	.04	.03	.01	.03	.02	.01	.04
Reservoir Ave., Cranston...	.05	.03	.06	.07	.04	.02	.02	.02	.01	.01	.01	.02	.03
Post Road, Warwick.....	.01	.02	.03	.02	.01	.02	.02	.01	.01	.01	.01	.01	.01
Biltmore Hotel .....	.02	.04	.03	.02	.01	.02	.02	.02	.00	.01	.01	.02	.02
Crown Hotel .....	.05	.06	.09	.10	.06	.06	.09	.06	.06	.03	.03	.05	.06
Sewer Maintenance Bldg...	.02	.04	.04	.03	.01	.02	.01	.01	.01	.01	.00	.01	.02
Longview Reservoir .....	.02	.04	.04	.02	.01	.02	.01	.01	.01	.01	.01	.01	.02

**TABLE 13 (Continued)**

**WATER PURIFICATION WORKS**

**CHEMICAL AND PHYSICAL CHARACTERISTICS OF WATER IN  
VARIOUS PARTS OF THE DISTRIBUTION SYSTEM  
YEAR ENDED SEPTEMBER 30, 1953**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Chlorides</b>													
Neutaconkanut Reservoir...	3.5	3.6	3.6	3.8	3.9	3.9	3.5	3.3	3.5	3.2	3.3	3.6	3.6
Wayland Ave., Cranston...	3.4	3.4	3.4	3.8	3.9	3.9	3.7	3.4	3.5	3.2	3.3	3.6	3.5
Westminster St., Olneyville	3.5	3.5	3.5	3.8	3.9	3.8	3.5	3.3	3.5	3.3	3.3	3.5	3.5
Budlong Road, Cranston...	3.7	3.4	3.5	3.8	3.9	3.9	3.5	3.3	3.5	3.2	3.3	3.7	3.6
Reservoir Ave., Cranston...	3.6	3.5	3.5	3.8	3.9	3.9	3.6	3.4	3.5	3.2	3.3	3.6	3.6
Post Road, Warwick.....	3.5	3.5	3.6	3.7	3.9	3.9	3.5	3.4	3.5	3.2	3.3	3.6	3.5
Biltmore Hotel .....	3.6	3.4	3.5	3.8	3.9	3.8	3.6	3.4	3.6	3.3	3.3	3.5	3.6
Crown Hotel .....	3.6	3.5	3.5	3.9	3.9	4.0	3.7	3.4	3.5	3.3	3.3	3.6	3.6
Sewer Maintenance Bldg...	3.6	3.5	3.5	3.9	3.9	4.0	3.5	3.5	3.5	3.3	3.3	3.6	3.6
Longview Reservoir .....	3.6	3.5	3.6	3.8	4.0	3.9	3.6	3.4	3.6	3.3	3.3	3.6	3.6
<b>Nitrites</b>													
Neutaconkanut Reservoir...	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Wayland Ave., Cranston...	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Westminster St., Olneyville	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Budlong Road, Cranston...	.001	.001	.001	.001	.001	.001	.002	.001	.001	.001	.001	.001	.001
Reservoir Ave., Cranston...	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Post Road, Warwick.....	.001	.001	.001	.001	.001	.001	.002	.001	.001	.001	.001	.001	.001
Biltmore Hotel .....	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Crown Hotel .....	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001	.001
Sewer Maintenance Bldg...	.001	.001	.001	.001	.001	.001	.002	.001	.001	.001	.001	.001	.001
Longview Reservoir .....	.001	.001	.001	.001	.001	.001	.002	.002	.001	.001	.001	.001	.001
<b>Taste</b>													
Neutaconkanut Reservoir...	0	0	0	0	0	0	0	0	0	0	0	0	0
Wayland 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
Post Road, Warwick.....	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
Sewer Maintenance 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
<b>Odor</b>													
Neutaconkanut Reservoir...	0	0	0	0	0	0	0	0	0	0	0	0	0
Wayland 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
Post Road, Warwick.....	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
Sewer Maintenance 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
<b>Fluoride</b>													
Neutaconkanut Reservoir...	1.16	1.20	1.18	1.17	1.15	1.17	1.16	1.18	1.07	0.95	0.95	0.96	1.11
Wayland Ave., Cranston...	1.19	1.20	1.12	1.17	1.18	1.16	1.16	1.18	1.00	0.93	0.95	0.95	1.10
Westminster St., Olneyville	1.18	1.21	1.12	1.16	1.17	1.16	1.16	1.20	1.01	0.95	0.94	0.93	1.10
Budlong Road, Cranston...	1.18	1.20	1.11	1.16	1.15	1.16	1.16	1.18	1.00	0.93	0.95	0.94	1.09
Reservoir Ave., Cranston...	1.19	1.20	1.11	1.16	1.17	1.17	1.16	1.19	1.01	0.96	0.94	0.94	1.10
Post Road, Warwick.....	1.19	1.18	1.10	1.16	1.16	1.16	1.15	1.18	1.03	0.96	0.95	0.95	1.10
Biltmore Hotel .....	1.21	1.19	1.14	1.18	1.17	1.17	1.17	1.19	1.03	0.96	0.96	0.96	1.11
Crown Hotel .....	1.19	1.20	1.11	1.16	1.13	1.16	1.15	1.16	1.02	0.95	0.95	0.96	1.09
Sewer Maintenance Bldg...	1.22	1.21	1.15	1.18	1.15	1.18	1.18	1.19	1.03	0.96	0.98	0.98	1.12
Longview Reservoir .....	1.21	1.21	1.14	1.18	1.11	1.15	1.15	1.16	1.07	0.97	0.96	0.96	1.11

**TABLE 14**

**WATER PURIFICATION WORKS  
BACTERIOLOGICAL EXAMINATION OF WATER IN  
PROCESS OF FILTRATION  
YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	BACTERIA per ml. (48 HOURS ON AGAR AT 20°C.)											
	Raw Water			Settled Water			Filtered Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct. ....	44	0	11	24,000	1	2862	92	0	25	5	0	0
Nov. ....	30	0	9	1200	0	295	300	0	87	50	0	3
Dec. ....	400	0	29	1500	0	380	400	0	116	7	0	0
Jan. ....	300	4	25	800	2	167	200	0	40	2	0	0
Feb. ....	700	2	47	1200	3	172	400	0	48	2	0	0
Mar. ....	200	2	16	1500	1	251	110	0	40	12	0	1
Apr. ....	25	1	11	2000	1	488	400	1	127	9	0	1
May ....	20	1	8	3000	9	544	300	2	68	20	0	1
June ....	300	0	17	800	0	59	35	0	12	120	0	6
July ....	35	0	18	1500	25	333	250	2	71	30	0	3
Aug. ....	200	6	30	1500	30	230	90	0	21	5	0	1
Sept. ....	90	0	23	260	0	76	50	0	19	5	0	0
<b>For Year .....</b>	<b>700</b>	<b>0</b>	<b>20</b>	<b>24,000</b>	<b>0</b>	<b>488</b>	<b>400</b>	<b>0</b>	<b>56</b>	<b>120</b>	<b>0</b>	<b>1</b>

**TABLE 15**  
**WATER PURIFICATION WORKS**  
**BACTERIOLOGICAL EXAMINATION OF WATER IN**  
**PROCESS OF FILTRATION**  
**YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	BACTERIA per ml. (24 HOURS ON AGAR AT 37°C.)											
	Raw Water			Settled Water			Filtered Water			Tap Water		
	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct. ....	9	0	2	45,000	0	3541	6	0	0	10	0	0
Nov. ....	21	0	2	30	0	2	60	0	3	75	0	4
Dec. ....	100	0	9	450	0	27	130	0	9	3	0	0
Jan. ....	40	0	3	150	0	7	2	0	0	1	0	0
Feb. ....	150	1	14	3000	0	134	40	0	3	150	0	7
Mar. ....	15	1	5	12	0	2	4	0	0	3	0	0
Apr. ....	300	1	22	450	0	19	90	0	4	1	0	0
May ....	20	0	3	200	0	14	5	0	0	15	0	1
June ....	300	0	16	10	0	1	1	0	0	1	0	0
July ....	40	0	8	60	0	8	20	0	1	21	0	1
Aug. ....	30	0	6	150	0	17	8	0	1	4	0	0
Sept. ....	75	0	8	160	0	18	6	0	1	0	0	0
For Year .....	300	0	8	45,000	0	316	130	0	2	150	0	1

**TABLE 16**  
**WATER PURIFICATION WORKS**  
**BACTERIOLOGICAL EXAMINATION OF WATER IN**  
**PROCESS OF FILTRATION**  
**YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	B. COLI											
	Raw Water			Settled Water			Filtered 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. ....	52	25	.048	52	4	.008	52	0	.000	130	0	.000
Nov. ....	44	32	.073	44	1	.002	44	0	.000	110	1	.001
Dec. ....	52	47	.090	52	1	.002	52	0	.000	130	0	.000
Jan. ....	52	47	.090	52	0	.000	52	0	.000	130	0	.000
Feb. ....	46	11	.024	46	0	.000	46	0	.000	115	0	.000
Mar. ....	52	6	.011	52	0	.000	52	0	.000	130	0	.000
Apr. ....	52	5	.010	52	1	.002	52	0	.000	130	0	.000
May ....	48	2	.004	48	1	.002	48	1	.002	120	0	.000
June ....	52	0	.000	52	0	.000	52	0	.000	130	0	.000
July ....	52	1	.002	52	0	.000	52	0	.000	130	0	.000
Aug. ....	50	2	.004	50	0	.000	50	0	.000	125	0	.000
Sept. ....	50	5	.010	50	5	.010	50	3	.006	125	0	.000
<b>For Year .....</b>	<b>602</b>	<b>183</b>	<b>.030</b>	<b>602</b>	<b>13</b>	<b>.002</b>	<b>602</b>	<b>4</b>	<b>.001</b>	<b>1505</b>	<b>1</b>	<b>.000</b>

**TABLE 17**  
**WATER PURIFICATION WORKS**  
**BACTERIOLOGICAL EXAMINATION OF WATER IN VARIOUS**  
**BROOKS AND RESERVOIRS ON SCITUATE WATERSHED**  
**YEAR ENDED SEPTEMBER 30, 1953**

Monthly Analyses	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. Year
<b>Bacteria Per MI. 48 Hours on Agar at 20°C</b>													
Coventry Brook	20	900	120	70	55	50	12	60	2500	15	850	1400	504
Wilbur Brook	400	2200	28	100	40	350	90	90	1500	190	950	700	553
Westconnaug Res.	550	500	15	210	70	400	15	130	75	250	220	250	224
Barden Reservoir	70	800	60	220	40	50	30	30	100	35	28	3000	373
Cork Brook	35	900	35	450	30	500	70	75	200	380	**	**	267
Rush Brook	16	2000	40	150	100	1400	250	60	2500	450	1800	1100	822
Huntinghouse Brook	50	7000	55	1000	160	700	120	65	9000	350	320	290	1592
Harrisdale Brook	30	5500	35	1200	130	1200	30	25	8000	400	180	65	1400
Blanchard Brook	**	2400	70	1400	45	1600	80	70	5000	**	**	**	1333
Moswansicut Pond	80	4000	60	600	90	120	10	25	2000	1700	1100	**	889
Regulating Reservoir	600	1200	85	140	170	300	60	250	10,000	5000	1400	160	1614
Quonapaug Brook	**	1500	30	40	220	100	150	300	5000	**	**	**	917
Hemlock Brook	60	1200	50	400	300	250	50	55	150	70	60	420	255
Betty Pond Stream	**	1300	20	250	130	140	70	250	800	4000	**	**	773
Spruce Brook	400	1700	40	120	80	250	50	90	3000	2000	900	470	758
<b>Bacteria Per MI. 24 Hours on Agar at 37°C</b>													
Coventry Brook	11	25	17	14	1	14	200	20	1500	8	15	370	183
Wilbur Brook	15	15	7	7	7	16	60	30	1200	250	480	220	192
Westconnaug Res.	35	60	9	8	5	10	500	60	40	160	25	75	82
Barden Reservoir	50	15	20	16	9	7	500	15	60	12	14	450	97
Cork Brook	6	50	15	6	50	9	35	50	100	70	**	**	39
Rush Brook	200	10	8	12	7	18	15	6	1000	1200	500	160	261
Huntinghouse Brook	2	300	60	28	3	15	500	10	300	600	70	120	167
Harrisdale Brook	60	400	30	6	9	25	200	6	5000	550	600	85	581
Blanchard Brook	**	70	12	8	40	400	300	120	4000	**	**	**	619
Moswansicut Pond	7	450	10	12	6	6	30	12	800	400	530	**	206
Regulating Reservoir	70	15	15	4	19	17	50	8	1500	3500	125	70	449
Quonapaug Brook	**	20	2	0	20	10	20	10	1000	**	**	**	135
Hemlock Brook	85	25	1	17	7	9	100	50	30	30	140	20	43
Betty Pond Stream	**	20	0	3	60	11	25	70	1000	320	**	**	168
Spruce Brook	10	35	0	1	3	10	10	15	100	450	60	17	59
<b>B. Coli Index Per 100 MI.</b>													
Coventry Brook	110†	110†	110†	25	6	6	6	13	70	110†	70	70	.....
Wilbur Brook	13	110†	13	13	0	110†	13	25	110†	6	25	70	.....
Westconnaug Res.	0	110†	0	70	0	13	6	70	13	13	110†	13	.....
Barden Reservoir	6	110†	110†	70	6	6	0	0	0	0	0	70	.....
Cork Brook	25	110†	110†	25	6	70	25	0	0	0	**	**	.....
Rush Brook	25	110†	110†	25	6	70	25	70	110†	70	70	25	.....
Huntinghouse Brook	0	110†	0	70	6	110†	25	13	110†	6	110†	70	.....
Harrisdale Brook	0	110†	0	25	13	70	25	70	110†	0	13	70	.....
Blanchard Brook	**	110†	13	70	6	70	6	25	110†	**	**	**	.....
Moswansicut Pond	0	110†	0	70	6	70	0	13	110†	0	110†	**	.....
Regulating Reservoir	110†	70	110†	25	0	70	25	110†	110†	110†	110†	70	.....
Quonapaug Brook	**	110†	110†	6	0	13	13	6	110†	**	**	**	.....
Hemlock Brook	6	110†	110†	25	0	70	0	6	0	0	13	110†	.....
Betty Pond Stream	**	70	0	25	6	70	0	6	25	110†	**	**	.....
Spruce Brook	110†	110†	110†	70	25	25	0	6	110†	13	70	70	.....

†Indicates Index of 110+  
 \*\*No Sample Obtained—Brook Dry.

**TABLE 18**  
**WATER PURIFICATION WORKS**  
**BACTERIOLOGICAL EXAMINATION OF WATER IN**  
**VARIOUS PARTS OF THE DISTRIBUTION SYSTEM**  
**YEAR ENDED SEPTEMBER 30, 1953**

Monthly Averages	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Avg. for Year
<b>Bacteria Per Mi. 48 Hours on Agar at 20°C</b>													
Neutaconkanut Reservoir..	7	8	1	0	0	0	1	0	1	0	0	0	1
Wayland Ave., Cranston...	0	1	0	0	42	1	0	0	1	1	0	1	4
Westminster St., Olneyville	0	0	0	0	0	1	0	1	0	0	0	0	0
Budlong Road, Cranston..	0	0	0	0	0	1	0	1	1	2	0	0	0
Reservoir Ave., Cranston..	0	0	0	0	0	1	1	1	0	0	0	0	0
Post Road, Warwick.....	1	1	0	0	2	12	5	1	0	0	1	0	2
Biltmore Hotel .....	7	0	0	0	0	2	1	0	0	0	1	0	1
Crown Hotel .....	1	0	0	0	2	3	0	0	0	1	0	0	1
Sewer Maintenance Bldg...	0	0	0	2	1	14	2	12	1	1	0	4	3
Longview Reservoir .....	2	0	0	1	0	1	4	4	0	0	0	1	1
<b>Bacteria Per Mi. 24 Hours on Agar at 37°C</b>													
Neutaconkanut Reservoir..	12	5	1	4	1	3	2	0	0	5	0	0	3
Wayland Ave., Cranston...	0	0	2	5	228	1	0	5	1	0	0	2	20
Westminster St., Olneyville	0	3	2	5	4	3	0	0	0	1	2	0	2
Budlong Road, Cranston..	0	0	9	1	3	1	0	1	4	1	0	3	2
Reservoir Ave., Cranston..	0	1	1	0	44	2	2	2	1	0	1	0	4
Post Road, Warwick.....	0	0	0	0	1	8	5	0	0	2	4	20	3
Biltmore Hotel .....	8	0	1	0	0	3	7	0	0	0	0	2	2
Crown Hotel .....	0	27	1	1	67	5	1	0	0	0	2	0	9
Sewer Maintenance Bldg...	0	0	1	2	40	11	8	15	0	1	15	10	9
Longview Reservoir .....	0	2	0	2	11	0	6	0	0	0	0	0	2
<b>B. Coli Index Per Mi.</b>													
Neutaconkanut Reservoir..	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000
Wayland Ave., Cranston...	.001	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Westminster St., Olneyville	.000	.001	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000
Budlong Road, Cranston..	.000	.000	.000	.004	.000	.000	.000	.000	.000	.000	.000	.000	.000
Reservoir Ave., Cranston..	.000	.000	.000	.003	.000	.000	.000	.000	.000	.000	.000	.000	.000
Post Road, Warwick.....	.000	.000	.000	.000	.001	.002	.020	.000	.000	.000	.000	.004	.002
Biltmore Hotel .....	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Crown Hotel .....	.000	.000	.000	.003	.001	.000	.000	.000	.000	.000	.000	.000	.000
Sewer Maintenance Bldg...	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
Longview Reservoir .....	.002	.000	.000	.000	.000	.000	.002	.000	.000	.000	.000	.000	.000

**TABLE 19**  
**WATER PURIFICATION WORKS**  
 MINERAL ANALYSIS OF WATER—YEAR ENDED SEPT. 30, 1953

Parts per Million	RAW WATER*					TAP WATER				
	1952		1953			1952		1953		
	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Avg.	Oct.-Dec.	Jan.-Mar.	Apr.-June	July-Sept.	Avg.
Aluminaum. . . . .	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.07	0.04	0.04
Arsenic. . . . .	0.00	2.61	0.00	2.50	0.00	0.00	0.00	8.83	10.08	8.94
Calcium. . . . .	2.35	3.52	3.13	2.97	3.19	3.36	3.58	3.08	3.01	3.26
Chloride. . . . .	3.13	0.03	0.03	0.03	0.03	0.00	0.02	0.02	0.01	0.01
Copper. . . . .	0.01	0.16	0.20	0.24	0.19	1.18	1.17	1.11	0.96	1.10.
Fluoride. . . . .	0.16	10	10	9	10	28	27	28	29	28
Hardness. . . . .	0.17	0.10	0.04	0.07	0.09	0.02	0.03	0.02	0.03	0.02
Iron. . . . .	0.000	0.000	0.000	0.000	0.000	0.007	0.002	0.002	0.003	0.003
Lead. . . . .	0.76	0.54	0.55	0.60	0.61	0.84	0.54	0.60	0.56	0.63
Magnesium. . . . .	0.08	0.02	0.01	0.03	0.03	0.00	0.00	0.00	0.00	0.00
Manganese. . . . .	0.00	..	0.00	..	0.00	0.00	..	0.00	..	0.00
Phenolic Compounds. . . . .	0.00	..	0.00	..	0.00	0.00	..	0.00	..	0.00
Selenium. . . . .	4.00	4.50	4.50	4.50	4.37	4.00	4.50	4.50	4.00	4.25
Silica. . . . .	6.12	6.39	6.25	6.59	6.34	14.28	13.46	13.64	12.72	13.52
Sulphate. . . . .	36	32	30	30	32	47	46	50	49	48
Total Solids. . . . .	14	13	20	18	16	18	17	19	17	17
Loss On Ignition. . . . .	5	5.27	4.80	5.30	5.17	14.60	14.20	15.90	16.63	15.33
Total Alkalinity. . . . .	0.00	0.00	0.00	0.00	0.00	7.30	7.13	8.07	8.37	7.72
Phenolphthalein Alk. . . . .	0.00	..	0.00	..	0.00	0.00	..	0.00	..	0.00
Zinc. . . . .	..	..	..	..	..	..	..	..	..	..

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

TABLE 20

WATER PURIFICATION WORKS

SANITARY CHEMICAL ANALYSIS (P.P.M.)—YEAR ENDED SEPT. 30, 1953

1952-1953	RAW WATER*										TAP WATER									
	Ammonia		Nitrites	Nitrates	Chlorides	Dissolved Oxygen		Total Solids	Loss on Ignition	Ammonia		Nitrites	Nitrates	Chlorides	Dissolved Oxygen		Total Solids	Loss on Ignition		
Free	Alb.	P.P.M.				% Sat.	Free			Alb.	P.P.M.				% Sat.					
Oct.	..	0.000	0.00	3.5	..	..	..	10	..	..	0.000	0.02	3.5	..	..	45	12			
Nov.	0.068	0.074	0.001	3.0	11.6	94.5	39	17	0.064	0.036	0.001	0.05	3.5	..	..	44	17			
Dec.	0.064	0.028	0.000	4.0	13.0	94.5	40	15	0.058	0.035	0.001	0.02	3.5	..	..	52	26			
Jan.	..	..	0.000	3.5	..	..	31	9	..	..	0.001	0.15	4.0	..	..	45	15			
Feb.	0.105	0.035	0.000	3.5	13.2	95.9	34	17	0.055	0.060	0.001	0.02	4.0	..	..	48	19			
Mar.	0.120	0.053	0.000	3.0	11.5	93.8	..	..	0.056	0.063	0.001	0.09	3.5	..	..	..	..			
Apr.	..	..	0.000	3.0	..	..	..	..	..	..	0.001	0.15	3.5	..	..	..	..			
May	..	..	0.000	3.0	9.4	83.9	..	..	..	..	0.001	0.22	3.5	..	..	..	..			
June	0.100	0.055	0.000	3.0	..	..	30	20	0.065	0.055	0.001	0.06	3.0	..	..	50	19			
July	0.080	0.060	0.000	3.0	7.5	71.2	32	22	0.072	0.048	0.000	0.10	3.5	..	..	54	19			
Aug.	0.132	0.120	0.000	3.0	5.5	52.5	30	18	0.080	0.030	0.001	0.11	3.5	..	..	49	17			
Sept.	..	..	0.000	3.0	..	..	28	14	..	..	0.000	0.10	3.0	..	..	45	16			
Avg.	0.095	0.061	0.000	3.2	10.2	83.7	33	16	0.064	0.047	0.001	0.09	3.5	..	..	48	18			

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

TABLE 21

WATER PURIFICATION WORKS

LABORATORY EXAMINATIONS MADE DURING THE FISCAL YEAR ENDED SEPTEMBER 30, 1953

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	Total
I BROOKS AND STREAMS ON WATERSHED Eleven Brooks and Two Streams.....	Monthly.....	924	1,119	..	..	..	..	2,043
II SMALLER STORAGE RESERVOIRS ON WATERSHED								
Regulating Reservoir.....	Monthly.....	84	110	..	..	..	..	194
Westonang Reservoir.....	Monthly.....	84	95	..	..	..	..	179
Barden Reservoir.....	Monthly.....	84	93	..	..	..	..	177
Moswansicut Pond.....	Monthly.....	77	91	..	..	..	..	168
III SCITUATE RESERVOIR								
Surface Water.....	Bi-Weekly.....	208	..	20	154	..	..	382
Subsurface Water (See Purif. Wks.—Raw Water).....	..	..	..	..	..	..	..	..
IV PAWTUCKET RIVER—BELOW SCITUATE DAM								
Scituate Dam Meter Chamber.....	Bi-Weekly.....	182	..	..	154	..	..	336
Fiskeville, R. I.....	Bi-Weekly.....	182	..	..	154	..	..	336
Twelve other locations on Pawtuxet River.....	Bi-Weekly.....	2,340	..	..	1,956	..	..	4,296
V WATER PURIFICATION WORKS								
Raw Water (from Bottom of Scit. Res.).....	Daily.....	3,327	1,397	20	1,432	..	..	6,156
Raw Water (from Bottom of Scit. Res.).....	Weekly.....	..	..	..	52*	..	..	72
Raw Water (from Bottom of Scit. Res.).....	Monthly.....	..	..	..	70**	..	..	70
***Raw Water (from Bottom of Scit. Res.).....	Every 13 weeks.....	..	..	..	..	36	..	36
Aerated Influent.....	Daily.....	716	..	..	..	..	..	716
Mixer.....	Daily.....	1,836	..	..	..	..	..	1,836
Settled.....	Daily.....	2,808	1,222	..	..	..	..	4,030
Settled.....	Weekly.....	..	..	20	52**	..	..	72
Filtered.....	Monthly.....	..	..	..	43**	..	..	43
Filtered.....	Daily.....	1,074	..	..	..	..	..	1,074
Unchlorinated Effluent.....	Monthly.....	..	..	..	43**	..	..	43
Unchlorinated Effluent.....	Daily.....	3,166	1,212	..	1,432	..	..	5,810
Unchlorinated Effluent.....	Weekly.....	..	..	20	52**	..	..	72
Chlorinated Effluent.....	Monthly.....	..	..	..	43**	..	..	43
Raw Water (from Bottom of Scituate Reservoir).....	Daily.....	1,500	1,750	..	1,249	..	..	4,499
Raw Water (from Bottom of Scituate Reservoir).....	Daily at 3:00 P.M.....	996	1,150	..	994	..	..	3,140
Unchlorinated Effluent.....	Daily at 3:00 P.M.....	994	999	..	992	..	..	2,985

**Table 21 (Continued)**  
**WATER PURIFICATION WORKS**  
**LABORATORY EXAMINATIONS MADE DURING THE FISCAL YEAR ENDED SEPTEMBER 30, 1953**

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	Total
<b>VI NEUTAGONKANUT DISTRIBUTION RESERVOIR</b>								
Sample from nearby Tap.....	Daily.....	1,500	1,731	20	1,000	..	..	4,251
Sample from nearby Tap.....	Bi-Weekly.....	..	..	..	..	..	..	20
<b>VII LONGVIEW DISTRIBUTION RESERVOIR</b>								
Sample from nearby Tap.....	Daily.....	1,494	1,741	20	996	..	..	4,231
Sample from nearby Tap.....	Bi-Weekly.....	..	..	..	..	..	..	20
<b>VIII DISTRIBUTION SYSTEM</b>								
Water Supply Board Building Tap Water.....	Daily.....	2,406	2,108	20	903	..	..	5,417
Water Supply Board Building Tap Water.....	Bi-Weekly.....	..	..	..	..	..	..	20
Water Supply Board Building Tap Water.....	Monthly.....	..	..	..	68**	..	..	68
***Water Supply Board Building Tap Water.....	Every 13 Weeks.....	..	..	..	..	36	..	36
****Sectional Tests.....	Monthly.....	528	384	..	288	..	..	1,200
Consumers' Complaints (60 during the year).....	..	338	134	..	291	..	..	1,063
Sterilization of Newly Laid Mains.....	..	331	1,352	..	..	..	..	1,683
†Sectional Tests.....	Daily.....	10,374	12,156	..	6,916	..	..	29,446
<b>IX MISCELLANEOUS TESTS</b>								
Coagulation Tests to Determine Chemical Dosages.....	..	..	..	..	..	..	159	159
Analysis of Ferri-Floc used for Treatment.....	..	..	..	..	..	..	76	76
Analysis of Quicklime used for Treatment.....	..	..	..	..	..	..	48	48
Analysis of Sodium Silicofluoride used for Treatment.....	..	..	..	..	..	..	21	21
Samples from Plant Filters.....	..	12,374	8,491	..	8,323	..	2,073	31,461
Water, Filter Sand and Other Materials.....	..	353	873	..	314	..	390	1,930
<b>Totals.....</b>		<b>50,680</b>	<b>38,228</b>	<b>140</b>	<b>27,971</b>	<b>72</b>	<b>2,767</b>	<b>119,858</b>

\*\*For Oxygen Consumed only.  
 \*\*\*Exclusive of Oxygen Consumed.  
 \*\*\*\*Composite of 13 Weekly Samples.  
 \*\*\*\*\*Samples from 8 Random Dwellings (location changed monthly).  
 †Samples from seven fixed locations.

TABLE 22

WATER DISTRIBUTION SYSTEM

NEUTACONKANUT HIGH SERVICE PUMPING STATION

OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1953

1952-1953	ELECTRICALLY-DRIVEN PUMPS										GASOLINE ENGINE-DRIVEN PUMP					Total Water Pumped Mil. Gals.	Avg. Per Day	Fuel Oil Used For Heating Gals.	
	No. 1-10" Pump 2700 GPM. TDH 90'			No. 2-12" Pump 3800 GPM. TDH 104'			Power Used*				No. 3-16" Pump 7500 GPM. TDH 80'								
	Operated			Operated			Water Pumped Mil. Gals.	KWH	Cost	Days	Hours and Minutes	Water Pumped Mil. Gals.	Oil Used Qts.	Gasoline Used Gals.	Water Pumped Mil. Gals.				For Month
	Days	Hours and Minutes	Water Pumped Mil. Gals.	Days	Hours and Minutes	Days													
Oct.	31	601-00	95.11	0	0	0	33,600	\$609.53	0	0-45†	0	0	0	0	95.11	3.07	350		
Nov.	30	381-15	91.73	0	0	0	37,200	641.14	0	1-00†	0	0	8	0	91.73	3.06	623		
Dec.	31	398-05	94.39	0	0	0	32,100	539.36	1	0-00†	0	0	10	0	94.39	3.04	893		
Jan.	31	607-45	95.38	1	0-45†	0	39,600	663.54	1	0-45†	0	0	6	0	95.38	3.08	985		
Feb.	21	395-15	61.91	9	158-15	39.03	42,900	752.68	0	0	0	0	0	0	100.94	3.60	838		
Mar.	31	607-30	95.63	0	0	0	32,700	648.98	1	0-30†	0	0	8	0	95.63	3.08	806		
Apr.	30	599-15	94.48	0	0	0	35,400	618.89	1	0-30†	0	0	8	0	94.48	3.15	591		
May	31	639-00	101.22	0	0	0	37,800	639.74	1	0-45†	0	0	0	0	101.22	3.20	243		
June	6	118-45	19.03	25	557-30	139.53	43,500	764.88	0	0	0	0	0	0	138.56	3.29	17		
July	0	0	0	31	652-00	162.35	82,800	1,134.13	0	0	0	0	0	0	162.35	5.24	0		
Aug.	0	0	0	31	646-15	161.25	69,300	1,005.00	1	0-30†	0	0	8	0	161.45	5.21	0		
Sept.	0	0	0	31	617-00	153.75	69,600	1,023.22	1	0-30†	0	0	8	0	153.75	5.12	0		
Totals	242	4,747-50	748.88	128	2,631-45	656.11	356,500	\$9,041.99	8	5-15	0	64	2.1	1404.99	3.85	5346			

\*Naragansett Electric Co. Power Rate †Test Run.

**TABLE 23**  
**WATER DISTRIBUTION SYSTEM**  
**BATH STREET HIGH SERVICE PUMPING STATION**  
**OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1953**

1952-1953	ELECTRICALLY-DRIVEN PUMPS										GASOLINE ENGINE-DRIVEN PUMPS										TOTAL WATER PUMPED		Fuel Oil Used for Heating Gals.
	Pump No. 1 2000 GPM. TDH 98'					Pump No. 2 2000 GPM. TDH 98'					Pump No. 3 2000 GPM. TDH 98'; 150 HP Sterling Engine					Pump No. 4 2000 GPM. TDH 98'; 150 HP Sterling Engine					Mil. Gals.		
	Operated		Water Pumped			KWH	Power Used*	Operated		Water Pumped			KWH	Power Used*	Operated		Water Pumped			Avg. Per Day	For Month		
	Days	Hours and Minutes	Mil. Gals.	Water Pumped	Days			Hours and Minutes	Mil. Gals.	Water Pumped	Days	Hours and Minutes			Mil. Gals.	Water Pumped	Days	Hours and Minutes	Mil. Gals.			Water Pumped	
Oct. ...	31	581-30	81.42	0.31	30,750	\$542.19	1	3-00	0	0	0	0	0	2	4-00	0.50	32	2.0	2.0	82.77	2.67	110	
Nov. ...	30	588-30	79.59	0	34,350	580.67	0	0	0	0	0	0	0	2	4-00	0.50	32	2.0	2.0	80.63	2.60	185	
Dec. ...	31	581-30	81.63	0	29,350	521.92	0	0	0	0	0	0	0	1	2-00	0.23	16	1.0	1.0	82.13	2.65	305	
Jan. ...	31	574-00	80.03	0	35,100	588.70	0	0	0	0	0	0	0	2	3-30	0.44	28	1.5	1.5	80.94	2.61	417	
Feb. ...	28	421-30	58.90	0	25,800	477.46	0	0	0	0	0	0	0	1	3-30	0.47	28	1.5	1.5	59.37	2.12	208	
Mar. ...	31	591-15	83.12	0	29,850	525.09	0	0	0	0	0	0	0	1	2-00	0.25	16	1.0	1.0	83.66	2.70	186	
Apr. ...	30	565-30	78.58	0	31,500	541.90	0	0	0	0	0	0	0	2	4-00	0.50	32	2.0	2.0	79.62	2.65	205	
May ...	31	590-30	82.76	0	32,850	555.03	0	0	0	0	0	0	0	2	3-30	0.44	28	1.5	1.5	83.67	2.70	0	
June ...	30	589-45	80.83	10.53	26,550	480.26	8	87-45	0	0	0	0	0	1	3-00	0.71	24	1.4	1.4	92.07	3.07	0	
July ...	31	503-15	69.87	8.67	44,400	685.83	9	80-45	0	0	0	0	0	1	1-30	0.19	12	0.8	0.8	79.00	2.55	0	
Aug. ...	26	395-45	54.77	1.99	21,000	412.04	2	17-45	0	0	0	0	0	0	0	0	0	0	0	56.76	1.83	0	
Sept. ...	26	352-00	48.68	3.73	26,100	472.36	4	34-00	0	0	0	0	0	1	2-00	0.23	16	1.0	1.0	52.90	1.76	0	
Totals	356	6315-00	880.18	25.23	367,800	\$6,383.45	24	223-15	0	0	0	0	0	15	30-30	4.12	244	14.5	14.2	913.54	2.50	1616	

\*Naragansett Electric Co. Power Rate H.

**TABLE 24**  
**WATER DISTRIBUTION SYSTEM**  
**NEUTACONKANUT DISTRIBUTION RESERVOIR\***  
**OPERATING STATISTICS FOR YEAR ENDED SEPTEMBER 30, 1953**

1952- 1953	OPERATING CHARACTERISTICS DURING MONTH														
	7 A.M. Statistics on First Day of Month			Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
	Water Level	Storage Mil. Gals.		Max.	Min.	Avg.†	Max.	Min.	Avg.†	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	225.73	39.86		226.31	221.80	225.84	40.88	32.95	40.06	4.51	1.76	2.82	7.93	3.10	4.95
Nov.	225.66	39.74		226.30	222.37	225.81	40.86	33.95	40.01	3.89	1.72	2.86	6.84	3.03	5.00
Dec.	226.09	40.50		226.14	222.49	225.71	40.58	34.16	39.83	3.60	1.61	2.31	6.34	2.11	3.96
Jan.	225.60	39.64		226.19	222.35	225.67	40.67	33.92	39.76	3.84	1.54	2.42	6.75	2.71	4.26
Feb.	225.37	39.23		226.14	222.76	225.65	40.58	34.64	39.72	3.27	1.66	2.52	5.75	2.92	4.40
Mar.	225.76	39.92		226.31	222.60	225.78	40.88	34.36	39.95	3.13	1.79	2.53	5.50	3.15	4.48
Apr.	225.51	39.48		226.46	221.96	225.92	41.14	33.23	40.20	4.50	1.61	2.71	7.91	2.66	4.73
May	226.17	40.64		226.42	222.63	225.99	41.07	34.41	40.32	3.69	1.70	2.65	6.49	3.15	4.67
June	225.92	40.20		226.60	222.49	226.13	41.39	34.16	40.57	3.80	1.16	2.45	6.68	2.03	4.22
July	225.90	40.16		226.39	223.65	225.98	41.02	36.20	40.30	2.62	1.06	1.78	4.61	1.86	3.15
Aug.	226.20	40.69		226.47	221.88	226.13	41.16	33.09	40.57	4.55	0.90	1.79	8.00	1.58	3.11
Sept.	226.36	40.97		226.49	222.45	226.11	41.19	34.09	40.53	3.81	1.38	2.50	6.70	2.43	4.43
For Year	—	—		226.60	221.80	225.89	41.39	32.95	40.15	4.55	0.90	2.45	8.00	1.58	4.28

\*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, 1953**

1952-1953	OPERATING CHARACTERISTICS DURING MONTH														
	7 A.M. Statistics on First Day of Month			Water Level			Storage—Mil. Gals.			Daily Water Level Fluctuation—Ft.			Daily Storage Fluctuation—M. G.		
	Water Level	Storage, Mil. Gals.		Max.	Min.	Avg. †	Max.	Min.	Avg. †	Max.	Min.	Avg.	Max.	Min.	Avg.
Oct.	304.04	11.49		305.04	303.07	304.36	11.96	11.04	11.64	1.89	1.24	1.49	0.88	0.58	0.69
Nov.	304.55	11.73		304.98	303.07	304.41	11.93	11.04	11.66	1.75	1.14	1.38	0.82	0.57	0.64
Dec.	304.71	11.80		305.03	302.70	304.54	11.95	10.87	11.72	1.92	1.14	1.41	0.89	0.53	0.65
Jan.	304.40	11.66		305.03	302.65	304.43	11.95	10.85	11.67	2.07	1.09	1.43	0.96	0.51	0.66
Feb.	304.39	11.65		304.99	302.62	304.36	11.94	10.84	11.64	2.33	1.10	1.48	1.08	0.52	0.69
Mar.	304.41	11.66		304.94	302.98	304.44	11.91	11.00	11.68	1.90	1.05	1.41	0.89	0.49	0.65
Apr.	304.32	11.62		305.02	303.10	304.42	11.95	11.06	11.67	1.93	1.18	1.47	0.90	0.58	0.69
May	304.44	11.68		305.00	302.16	304.49	11.94	10.62	11.70	2.77	1.12	1.55	1.29	0.50	0.72
June	304.20	11.56		305.41	299.12	304.35	12.13	9.22	11.63	5.84	1.43	3.19	2.70	0.66	1.48
July	304.39	11.65		305.42	301.15	304.68	12.13	10.15	11.79	3.38	0.96	2.08	1.57	0.55	1.00
Aug.	305.05	11.96		305.42	301.21	304.65	12.13	10.18	11.78	4.38	0.67	2.10	2.03	0.37	0.96
Sept.	304.20	11.56		305.70	301.82	304.53	12.26	10.47	11.72	2.76	1.31	1.72	1.28	0.62	0.80
For Year	—	—		305.70	299.12	304.47	12.26	9.22	11.69	5.84	0.67	1.73	2.70	0.37	0.80

\*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, 1953**

	PIPE LAID IN FEET (Including Pipe Replaced)						PIPE REMOVED IN FEET (Including Pipe Replaced)					
	6"	8"	12"	30"	42"	Totals	6"	8"	12"	30"	42"	Totals
Providence .....	8,285.36	232.32	122.87	0	0	8,640.55	372.75	300.02	407.29	0	0	1,080.06
Cranston .....	15,161.97	18,476.06	3,426.16	236.02	0	37,300.21	808.74	5.55	93.52	0	73.50	981.31
Johnston .....	3,220.77	589.01	0	0	0	3,809.78	0	0	0	0	0	0
No. Providence ..	6,544.46	3,636.77	28.45	0	0	10,209.68	0	0	0	0	0	0
Pawtucket .....	0	0	0	0	0	0	0	0	0	0	0	0
Totals .....	33,212.56	22,934.16	3,577.48	236.02	0	59,960.22	1,181.49	305.57	500.81	0	73.50	2,061.37

  

	NET LENGTH IN FEET ADDED TO DISTRIBUTION SYSTEM						PIPE REPLACED IN FEET					
	6"	8"	12"	30"	42"	Totals	6"	8"	12"	30"	42"	Totals
Providence .....	+ 7,912.61	-67.70	-284.42	0	0	+ 7,560.49	369.85	0	0	0	0	369.85
Cranston .....	+14,353.23	+18,470.51	+3,332.64	+236.02	-73.50	+36,318.90	132.50	0	0	0	*73.50	206.00
Johnston .....	+ 3,220.77	+ 589.01	0	0	0	+ 3,809.78	0	0	0	0	0	0
No. Providence ..	+ 6,544.46	+ 3,636.77	+ 28.45	0	0	+10,209.68	0	0	0	0	0	0
Pawtucket .....	0	0	0	0	0	0	0	0	0	0	0	0
Totals .....	+32,031.07	+22,628.59	+3,076.67	+236.02	-73.50	+57,898.85	502.35	0	0	0	73.50	575.85

\*Replaced with 6.47 feet of 8-inch, and 67.03 feet of 12-inch Pipe.

TABLE 27

PUBLIC WATER MAINS IN USE ON SEPT. 30, 1953

Diameter of Pipe	Providence*		Cranston		Johnston		N. Providence		Pawtucket		Total*		SPECIAL HIGH PRESSURE FIRE SERVICE	
	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles	Feet	Miles
6-inch.....	1,509,578.25	285.90	552,387.34	104.62	88,839.15	16.83	112,962.43	21.39	870.98	0.16	2,264,638.15	428.91	82.06	0.02
8-inch.....	318,629.57	60.35	195,531.69	37.03	83,534.42	15.82	62,231.13	11.79	0	0	659,926.81	124.99	1,577.52	0.30
10-inch.....	14,083.03	2.67	0	0	0	0	0	0	0	0	14,083.03	2.67	0	0
12-inch.....	231,899.38	43.92	90,897.40	17.22	8,804.40	1.67	28,387.77	5.38	44.88	0.01	360,033.83	68.19	6,893.80	1.31
16-inch.....	83,160.73	15.75	3,511.86	0.67	1,487.09	0.28	0	0	0	0	88,159.68	16.70	54,248.24	10.27
20-inch.....	16,261.89	3.08	5,235.73	0.99	561.79	0.11	2,383.39	0.45	0	0	16,261.89	3.08	0	0
24-inch.....	52,205.87	9.89	29,415.62	5.57	0	0	3,733.40	0.71	0	0	60,386.78	11.44	4,299.94	0.81
30-inch.....	46,120.89	8.74	0	0	0	0	0	0	0	0	79,269.91	15.01	0	0
36-inch.....	4,556.20	0.86	5,157.50	0.98	0	0	0	0	0	0	9,713.70	1.84	0	0
42-inch.....	2,902.94	0.55	22,510.12	4.26	0	0	0	0	0	0	25,413.06	4.81	0	0
48-inch.....	14,918.00	2.83	1,584.00	0.30	394.00	0.07	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	20,570.00	3.90	0	0
66-inch.....	0	0	8,448.00	1.60	0	0	0	0	0	0	8,448.00	1.60	0	0
Totals.....	2,299,875.75	435.58	925,350.26	175.26	187,960.85	35.60	209,698.12	39.72	915.86	0.17	3,623,800.84	686.33	67,101.06	12.71

\*High Pressure Fire Service in Providence not included.

**TABLE 28**

GATES IN USE ON SEPT. 30, 1953

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"	4"	6"	8"	6"	8"	6"	8"		12"	
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total		Total	
Providence .....	4820	1030	24	661	262	23	68	34	8	1	10	0	399	1880	2	14	1	2	1	4	*9240
Cranston .....	1444	467	0	180	10	0	11	14	6	10	3	1	549	0	3	5	0	2	3	5	*2708
Johnston .....	225	138	0	19	3	0	0	0	0	0	1	0	177	12	0	0	0	0	2	2	577
N. Providence .....	254	108	0	64	0	0	2	0	0	0	0	0	228	0	0	3	0	0	0	0	659
Totals .....	6743	1743	24	924	275	23	81	48	14	11	14	1	1353	1892	5	22	1	4	6	11	*13184

Note: Above table includes all gates in the special high pressure fire system in Providence (126) and gates on Neutaconkanut Conduit and Situate Aqueduct east of the Siphon Chamber.

\*Totals include 5-16" Rotary Plug Valves in Providence and 5-16" Rotary Plug Valves in Cranston.

**TABLE 29**

STATISTICS RELATIVE TO PRIVATE WATER PIPES  
FOR YEAR ENDED SEPT. 30, 1953

CITY OR TOWN	Number of Private Pipes in the Ground				Number of Services on Private Pipes			
	At the Begin- ning of the Year	Installed During the Year	Discon- nected During the Year	At the End of the Year	At the Begin- ning of the Year	Installed During the Year	Trans- ferred from Private Pipes to Public Mains	At the End of the Year
Providence	209	0	4	205	321	4	14	311
Cranston	110	0	6	104	222	0	4	218
Johnston	28	0	0	28	38	0	1	37
N. Providence	37	0	5	32	74	0	11	63
Totals	384	0	15	369	655	4	30	629

TABLE 30

SERVICE PIPES INSTALLED, REMOVED, ETC., FOR YEAR ENDED SEPT. 30, 1953

City or Town	INSTALLED			CUT-OFF OR REMOVED			REPLACED			REPAIRED		
	General		Fire Supply	General		Fire Supply	General		Fire Supply	General		Fire Supply
	Copper 3/4"-2"	Cast Iron 4"-8"	Cast Iron 4"-6"	Lead or Copper 1/2"-1 1/2"	Cast Iron 6"-8"	Cast Iron 4"	Lead or Copper 1/2"-2"	Cast Iron	Lead or Copper 1/2"-2"	Cast Iron 4"-16"	Cast Iron 4"-6"	
Providence .....	380	14	11	71	3	3	6	0	43	7	0	
Cranston .....	502	1	1	18	0	0	3	0	28	0	0	
Johnston .....	102	0	0	2	0	0	0	0	2	0	0	
North Providence	158	1	0	11	0	0	0	0	6	0	0	
Pawtucket, . . . . .	0	0	0	0	0	0	0	0	0	0	0	
Totals .....	1142	16	12	102	3	3	11	0	79	7	0	

Total number of services in the System as of Sept. 30, 1953—64,519.

**TABLE 31**  
**METERED SERVICES INSTALLED, REOPENED, CLOSED AND IN USE AT END OF FISCAL YEAR**

City or Town	METERED SERVICES PUT INTO USE FOR THE FIRST TIME				REOPENED OR RECONNECTED				CLOSED, CUT OFF OR REMOVED				NET CHANGE FOR THE YEAR IN TOTAL NUMBER OF METERED SERVICES IN USE				Total Number of Metered Services in Use on Sept. 30, 1953			
	General Supply		Fire Supply		General Supply		Fire Supply		General Supply		Fire Supply		General Supply		Fire Supply		General and Fire Supplies Combined			
	Copper 3/4"-2"	Cast Iron 2"-8"	Cast Iron 4"-8"		Lead or Copper 1/2"-2"	Cast Iron 2"-8"	Cast Iron 4"-8"		Lead or Copper 1/2"-2"	Cast Iron 2"-6"	Cast Iron 4"-8"		Lead or Copper 1/2"-2"	Cast Iron 2"-6"	Cast Iron 4"-8"		Lead or Copper 1/2"-2"	Cast Iron 2"-16"	Cast Iron 4"-8"	
Providence .....	281	23	67	16	269	24	16	341	26	17	+209	+21	+66	+296	36,224	1,022	616	37,802		
Cranston .....	504	6	1	0	79	1	0	89	2	1	+494	+5	0	+499	12,594	140(a)	59	12,793		
Johnston .....	103	0	0	0	16	0	0	8	0	0	+111	0	0	+111	2,123	18	5	2,146		
North Providence .....	151	1	0	0	12	0	0	22	0	0	+141	+1	0	+142	2,400	32(b)	7	2,439		
Pawtucket.....	0	0	0	0	0	1	0	0	0	0	0	+1	0	+1	5	1	0	6		
<b>Totals .....</b>	<b>1039</b>	<b>30</b>	<b>68</b>	<b>16</b>	<b>376</b>	<b>26</b>	<b>16</b>	<b>460</b>	<b>28</b>	<b>18</b>	<b>+935</b>	<b>+28</b>	<b>+66</b>	<b>+1049</b>	<b>53,346</b>	<b>1213</b>	<b>687</b>	<b>55,246</b>		

(a) Includes 12" service with 12" protectus meter supplying part of City of Warwick, 12" service with 12" x 4" venturi meter to State Institutions, and 12" crest meter supplying Kent County Water Authority.

(b) Includes 12" service with 12" crest meter supplying East Smithfield Water Company.  
Total Number of Services in Use on Sept. 30, 1953—55,694 (35,246 Metered; 448 Unmetered).

**TABLE 32**  
**UNMETERED SERVICES, CLOSED AND IN USE**  
**AT END OF FISCAL YEAR**

CITY OR TOWN	CLOSED, CUT OFF REMOVED OR METERED				Total Number of Unmetered Services in Use on September 30, 1953			
	General Supply		Fire Supply	General and Fire Supplies Com- bined	General Supply		Fire Supply	General and Fire Supplies Combined
	Lead or Copper ½"- 1¼"	Cast Iron 2"-8"	Cast Iron 4"-8"		Lead or Copper ½"- 1¼"	Cast Iron 2"-8"	Cast Iron 4"-10"	
Providence .....	1	2	59	62	136	11	289	436
Cranston .....	1	0	3	4	3	0	6	9
Johnston .....	0	0	0	0	2	0	1	3
North Providence	0	0	0	0	0	0	0	0
<b>Totals .....</b>	<b>2</b>	<b>2</b>	<b>62</b>	<b>66</b>	<b>141</b>	<b>11</b>	<b>296</b>	<b>448</b>

Total number of Services in Use on Sept. 30, 1953—55,694 (55,246 Metered; 448 Unmetered).

**TABLE 33**  
**PUBLIC FIRE HYDRANTS**

HYDRANT ACTIVITIES DURING YEAR ENDED SEPT. 30, 1953

CITY OR TOWN	Providence			Cranston	Johnston	No. Prov.	Totals
	Flush	Post	No. Prov.				
New Post Hydrant Installations.....	29		24	3	12	68	
Flush Hydrants replaced with Post Hydrants.....	*76		0	1	0	*77	
Post Hydrants replaced.....	1		12	1	8	22	
Flush Hydrants removed or abandoned.....	1		0	0	0	1	

\*Includes 13 Hydrants in Special High Service Fire System.

**TABLE 34**

TOTAL PUBLIC HYDRANTS IN DISTRIBUTION SYSTEM ON SEPT. 30, 1953\*\*

CITY OR TOWN	Providence*		Cranston		Johnston		No. Prov.		Totals in Providence, Cranston, Johnston & No. Prov.	
	Flush	Post	Post	Post	Flush	Post	Flush	Post	Flush	Post & Post Combined
Number in System.....	2471	622	549	224	20	194	2491	1589	4080*	

\*Includes 93 Flush Hydrants and 66 Post 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 35**

**NUMBER, MAKE AND SIZE OF METERS ON ACTIVE SERVICES  
AS OF SEPTEMBER 30, 1953**

**PROVIDENCE**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown .....	316	238	66	154	52	11	6	.....	.....	.....	.....	.....	843
Empire .....	2447	167	18	138	47	2	1	.....	2	.....	.....	.....	2,822
Hersey .....	.....	.....	.....	3	4	3	15	74	9	.....	.....	.....	108
Thomson .....	11,431	1134	465	43	149	.....	.....	.....	.....	.....	.....	.....	13,222
Trident .....	17,022	1549	460	536	819	107	75	46	6	5	.....	.....	20,625
Venturi .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	2
<b>TOTALS</b> .....	<b>31,216</b>	<b>3088</b>	<b>1009</b>	<b>874</b>	<b>1071</b>	<b>123</b>	<b>97</b>	<b>120</b>	<b>17</b>	<b>5</b>	<b>.....</b>	<b>2</b>	<b>37,622</b>

**CRANSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown .....	19	3	4	5	.....	.....	.....	.....	.....	.....	.....	.....	31
Empire .....	260	7	4	10	5	.....	.....	.....	.....	.....	.....	.....	286
Hersey .....	.....	.....	.....	.....	.....	.....	.....	4	4	.....	.....	.....	8
Thomson .....	3,082	94	51	1	14	.....	.....	.....	.....	.....	.....	.....	3,242
Trident .....	8,647	284	77	78	67	3	9	10	3	*1	2	.....	9,181
Venturi .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1
<b>TOTALS</b> .....	<b>12,008</b>	<b>388</b>	<b>136</b>	<b>94</b>	<b>86</b>	<b>3</b>	<b>9</b>	<b>14</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>.....</b>	<b>12,749</b>

\*10" Protectus supplying City of Warwick.

**JOHNSTON**

MAKE	5/8"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"	Total
Crown .....	.....	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	2
Empire .....	1	.....	.....	2	.....	.....	.....	.....	.....	.....	.....	.....	3
Thomson .....	354	20	9	.....	2	.....	.....	.....	.....	.....	.....	.....	385
Trident .....	1,440	60	17	13	8	.....	.....	.....	*1	.....	.....	.....	1,539
<b>TOTALS</b> .....	<b>1,795</b>	<b>80</b>	<b>26</b>	<b>17</b>	<b>10</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>1</b>	<b>.....</b>	<b>.....</b>	<b>.....</b>	<b>1,929</b>

\*8" Crest Meter in Dean Ave., Smithfield, 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 .....	6	.....	6	.....	1	.....	.....	.....	.....	.....	.....	.....	13
Hersey .....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	.....	.....	5
Thomson .....	520	19	10	1	1	.....	.....	.....	.....	.....	.....	.....	551
Trident .....	*1,718	84	16	12	7	2	2	1	.....	.....	**1	.....	1,843
<b>TOTALS</b> .....	<b>2,244</b>	<b>103</b>	<b>33</b>	<b>13</b>	<b>9</b>	<b>2</b>	<b>2</b>	<b>6</b>	<b>.....</b>	<b>.....</b>	<b>1</b>	<b>.....</b>	<b>2,413</b>

\*Six in Pawtucket, just over North Providence line.

\*\*12" Crest Meter in Waterman St., (N. Prov.), supplying East Smithfield Water Co.

TABLE 36

CONSUMPTION OF WATER — MILLION GALLONS

YEAR ENDED SEPTEMBER 30, 1953

1953 1952—	LOW SERVICE*				HIGH SERVICE†				TOTAL SERVICE*†				1952— 1953
	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total	Max. Day	Min. Day	Avg. Day	Total	
Oct.	37.11	22.44	31.36	972.24	6.16	5.38	5.73	177.64	43.06	27.82	37.09	1,149.88	Oct.
Nov.	34.68	23.16	30.91	900.27	6.05	5.41	5.74	172.29	40.59	28.80	35.75	1,072.56	Nov.
Dec.	33.90	22.55	29.57	916.78	6.00	5.25	5.70	176.68	39.72	27.69	35.27	1,093.46	Dec.
Jan.	33.73	22.19	28.90	895.88	6.04	5.17	5.69	176.33	39.50	27.69	34.59	1,072.21	Jan.
Feb.	31.62	21.24	28.23	790.36	6.03	5.46	5.72	160.30	37.32	26.73	33.95	950.66	Feb.
Mar.	33.25	20.34	28.41	880.79	6.16	5.42	5.79	179.33	39.09	25.76	34.20	1,060.12	Mar.
Apr.	32.71	20.16	28.81	864.34	6.12	5.27	5.80	174.04	38.55	25.43	34.61	1,038.38	Apr.
May	35.52	21.02	29.66	919.41	6.75	5.30	5.97	185.01	42.26	26.48	35.63	1,104.42	May
June	55.28	24.45	42.33	1,269.81	11.46	5.82	8.35	250.54	66.09	30.26	50.68	1,520.35	June
July	50.63	23.35	38.98	1,208.46	10.28	5.77	7.78	241.04	60.33	29.12	46.76	1,449.50	July
Aug.	55.04	22.34	36.58	1,134.04	10.77	5.14	7.05	218.60	65.81	27.47	43.63	1,352.64	Aug.
Sept.	56.65	24.08	37.07	1,112.24	9.98	5.56	6.88	206.33	66.37	29.89	43.95	1,318.57	Sept.
For Year	56.65(a)	20.16(b)	32.51	11,864.62	11.46(c)	5.14(d)	6.35	2,318.13	66.37(e)	25.43(f)	38.86	14,182.75	For Year

(a) Sept. 2; (b) April 5

\*Includes water supplied to City of Warwick and to State Institutions.

†Includes water supplied to East Smithfield Water Co.

(c) June 20; (d) August 2

(e) Sept. 2; (f) April 15

TABLE 37

WATER SOLD TO STATE INSTITUTIONS, AND CITY OF WARWICK

YEAR ENDED SEPTEMBER 30, 1953

1952-1953	STATE INSTITUTIONS				CITY OF WARWICK			
	S.S. 50,767 Socanosset Rd. Cranston 12"x4" Venturi Meter Gallons per Month	S.S. 10,197 Pontiac Ave. Cranston 8" Tri-Comp Meter Gallons per Month	SS24,215A East St. Cranston 8" Tri-Prot. Meter Gallons per Month	Avg. Gallons per Day	S.S. 47,269 Fetta- consett Cranston 10" Tri- Protectus Meter Gallons per Month	S.S. 47,475 Pawtuxet Bridge Warwick 6" Tri-Comp Meter Gallons per Month	Total Gallons per Month	Avg. Gallons per Day
Oct. . .	33,727,600	0	0	1,152,503	48,467,200	0	48,467,200	1,563,458
Nov. . .	29,840,400	0	0	994,680	41,196,100	0	41,196,100	1,373,203
Dec. . .	31,016,000	0	0	1,000,516	74,516,900	0	74,516,900	2,403,771
Jan. . .	37,077,000	0	0	1,196,032	44,622,400	0	44,622,400	1,439,432
Feb. . .	30,340,000	0	0	1,083,571	38,616,300	0	38,616,300	1,379,153
Mar. . .	36,380,000	0	0	1,173,548	46,758,700	0	46,758,700	1,508,345
Apr. . .	34,997,000	0	0	1,166,567	43,322,300	0	43,322,300	1,444,077
May. . .	36,713,000	0	0	1,184,290	50,141,400	0	50,141,400	1,617,464
June. . .	40,408,000	0	0	1,346,933	114,344,300	0	114,344,300	3,811,477
July. . .	40,234,000	0	0	1,298,516	101,457,300	0	101,457,300	3,272,816
Aug. . .	38,564,000	0	0	1,244,000	74,930,000	0	74,930,000	2,417,097
Sept. . .	43,761,000	0	0	1,458,700	85,752,000	0	85,752,000	2,858,400
For Year	435,078,000	0	0	1,191,994	764,124,900	0	764,124,900	2,093,493

**TABLE 38**

**WATER SOLD TO EAST SMITHFIELD WATER COMPANY AND  
KENT COUNTY WATER AUTHORITY  
FOR YEAR ENDED SEPT. 30, 1953**

1952- 1953	EAST SMITHFIELD WATER CO.				KENT COUNTY WATER AUTH.			
	S.S. 51,198 Waterman St. No. Prov.	S.S. 52,403 Dean Ave. Smithfield	Total Gallons per Month	Avg. Gallons per Day	S.S. 58,935 *Oaklawn Ave. Cranston	S.S. 60,757 Purification Works Scituate	Total Gallons per Month	Avg. 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. ..	5,405,250	727,500	6,132,750	197,831	2,680,500	0	2,680,500	86,468
Nov. ..	5,083,500	698,250	5,781,750	192,725	2,685,750	0	2,685,750	89,525
Dec. ..	5,983,500	812,250	6,795,750	219,218	3,129,000	0	3,129,000	100,935
Jan. ..	5,562,000	209,250	5,771,250	186,169	2,294,250	0	2,294,250	74,008
Feb. ..	4,068,750	701,250	4,770,000	170,357	1,644,750	0	1,644,750	58,741
Mar. ..	5,990,250	687,000	6,677,250	215,395	1,916,250	0	1,916,250	61,814
Apr. ..	5,679,750	588,750	6,268,500	208,950	1,925,250	0	1,925,250	64,175
May ..	6,047,250	503,250	6,550,500	211,306	2,223,000	0	2,223,000	71,710
June ..	5,847,000	888,000	6,735,000	224,500	4,159,500	0	4,159,500	138,650
July ..	6,977,250	828,000	7,805,250	251,782	3,696,750	0	3,696,750	119,250
Aug. ..	6,192,750	601,500	6,794,250	219,169	2,930,250	0	2,930,250	94,524
Sept. ..	6,890,250	714,000	7,604,250	253,475	5,962,500	10,995,000	16,957,500	565,250
For Year	69,727,500	7,959,000	77,686,500	212,840	35,247,750	10,995,000	46,242,750	126,692

\*Temporary Supply opened on August 3, 1952.

**TABLE 39**  
**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	25.05
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	28.06	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	33.98	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

†Average for 9 months

**TABLE 40**  
**FINANCIAL STATEMENT OF THE PROVIDENCE**  
**WATER SUPPLY BOARD FOR THE YEAR**  
**ENDED SEPT. 30, 1953**

**REVENUE**

Water Rents .....	†\$2,093,625.85
Hydrant Rental .....	70,258.69
Electric Power .....	25,988.60
Setting Meters .....	6,457.00
Repairing Meters .....	485.26
Rents from Non-Operating Property.....	1,272.84
Repairs to Water Services.....	743.75
Repairs to Distribution Mains.....	395.72
Repairs to Hydrants .....	750.86
Repairs to Gates and Valves.....	200.85
Installation of New Fire Supplies.....	3,466.00
Installation of New Water Services.....	56,737.00
Installation of New Water Mains.....	155,528.54
Revolving Fund—Water Meters.....	4,293.10
Sale of Scrap Iron, Brass, Lead, Etc.....	15,054.46
Sale of Lumber, Pulpwood, Etc.....	570.43
Sale of Obsolete Equipment.....	129.05
Sundries.....	1,145.08
<b>Total Revenue .....</b>	<b>\$2,437,103.08</b>

**DISBURSEMENTS**

<b>Operating Expense:</b>	
Salaries.....	\$607,961.09
Services Other Than Personal.....	110,208.17
Materials and Supplies.....	209,143.27
Special Items .....	1,360.16
Capital Outlay .....	22,294.92
Other Structures and Improvements (Water Main Extensions).....	221,479.74
<b>Total Operating Expense.....</b>	<b>*\$1,172,447.35</b>
Taxes.....	205,508.43
Interest on Bonds.....	610,000.00
Employees' Retirement System.....	41,181.13
Depreciation and Extension Fund.....	300,000.00
Payable to Sinking Fund.....	** 107,966.17
<b>Total Disbursements .....</b>	<b>\$2,437,103.08</b>
Gross Water Rents.....	†\$2,164,439.53
Minus Refunds (Current Year).....	70,585.82
Minus Refunds (Prior Year).....	227.86
<b>Net Water Rents.....</b>	<b>†\$2,093,625.85</b>

\*See Table 41 for detailed account of Operating Expense.

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

**TABLE 41**  
**WATER SUPPLY BOARD OPERATING EXPENSES**  
**FOR THE YEAR ENDED SEPT. 30, 1953**

**ADMINISTRATIVE**

Salaries:	
001	Officials..... \$17,225.88
	Clerical—Chief Engineer's Office..... 5,905.10
	Clerical—Accounting..... 27,437.91
	Engineering..... 41,348.52
	Labor—General..... 12,886.34
008	Sick Leave Payrolls..... 2,518.19
009	Vacation Payrolls..... 4,258.29
	Total..... \$111,580.23
Services Other Than Personal:	
102	Expert Consultant and Other Service Fees... \$ 9.00
109	Fees Not Otherwise Classified..... 14.95
111	Telephone and Telegraph..... 1,682.65
112	Postage, Freight and Express..... 176.67
118	Travel Subsistence—Other..... 15.40
121	Printing, Binding and Reproduction Services..... 1,862.72
122	Advertising..... 147.50
131	Light and Power..... 613.04
141	Repairs—Office Machinery..... 179.12
142	Repairs—Automobiles..... 145.27
149	Repairs—Other Equipment..... 42.00
150	Repairs—Structures and Improvements..... 165.00
163	Rental of Other Equipment..... 80.00
166	Rent..... 9,000.00
183	Dues and Subscriptions..... 36.00
199	Miscellaneous Services..... 7,323.70
	Total..... \$21,493.02
	Outstanding Commitments..... 86.13
	Total—Services Other Than Personal..... \$ 21,579.15
Materials and Supplies:	
201	Stationery and Office Supplies..... \$ 851.97
211	Motor Fuel..... 1,024.19
212	Lubricants..... 52.05
214	Repair Parts and Supplies—Trucks and Autos..... 251.57
231	Medical, Chemical and Laboratory Supplies..... 4.00
241	Fuel..... 2,133.60
244	Housekeeping Supplies..... 152.20
266	Lumber and Hardware..... 3.33
268	Plumbing and Electrical Supplies..... 13.96
272	Valves and Fittings..... 16.24
299	Miscellaneous Materials and Supplies..... 140.00
	Total..... \$ 4,643.11
	Outstanding Commitments..... NIL
	Total—Materials and Supplies..... \$ 4,643.11
Capital Outlay:	
501	Office Furniture, Machinery and Equipment \$ 519.45
502	Books, Maps and Charts..... 90.93
	Total..... \$ 610.38
	Outstanding Commitments..... 25.00
	Total—Capital Outlay..... \$ 635.38
	Total—Administrative..... \$138,437.87

**SOURCE OF SUPPLY**

**Hydro Electric Station:**

Salaries:	
001 Labor—Operation . . . . .	\$ 3,864.29
Repairs—Machinery and Equipment . . . . .	76.34
Total . . . . .	\$ 3,940.63
Services Other Than Personal:	
111 Telephone and Telegraph . . . . .	\$ 149.47
142 Repairs—Trucks and Autos . . . . .	46.22
150 Repairs—Structures and Improvements . . . . .	130.57
151 Repairs—Machinery and Equipment . . . . .	112.66
199 Miscellaneous Services . . . . .	827.65
Total . . . . .	\$ 1,266.57
Materials and Supplies:	
201 Stationery and Office Supplies . . . . .	\$ 28.76
202 Small Tools and Shop Supplies . . . . .	34.98
212 Lubricants . . . . .	20.00
214 Repair Parts and Supplies—Trucks and Autos . . . . .	39.47
222 Repair Parts and Supplies—Plant Equipment . . . . .	940.16
241 Fuel . . . . .	224.20
266 Lumber and Hardware . . . . .	44.41
268 Plumbing and Electrical Supplies . . . . .	297.69
272 Valves and Fittings . . . . .	10.29
299 Miscellaneous Materials and Supplies . . . . .	15.50
Total . . . . .	\$ 1,655.46
Capital Outlay:	
501 Office Furniture, Machinery and Equipment . . . . .	\$ 96.04
Total . . . . .	\$ 96.04

**Water Purification Plant:**

Salaries:	
001 Supervision . . . . .	\$13,149.99
Labor—Operation . . . . .	25,683.24
Technical . . . . .	15,733.62
Clerical—Laboratory . . . . .	839.90
Repairs—Structures and Improvements . . . . .	1,433.20
Repairs—Machinery and Equipment . . . . .	2,874.14
Repairs—Care of Grounds . . . . .	630.39
Repairs—Highways . . . . .	399.19
Total . . . . .	\$ 60,743.67
Services Other Than Personal:	
102 Expert Consultant and Other Service Fees . . . . .	\$ 33.00
111 Telephone and Telegraph . . . . .	907.49
112 Postage, Freight and Express . . . . .	73.95
141 Repairs—Office Machinery . . . . .	29.59
142 Repairs—Trucks and Autos . . . . .	83.95
146 Repairs—Plant Equipment . . . . .	598.40
150 Repairs—Structures and Improvements . . . . .	14,569.51
151 Maintenance and Servicing . . . . .	483.86
181 Laundry and Cleaning . . . . .	45.02
199 Miscellaneous Services . . . . .	340.64
Total . . . . .	\$ 17,165.41
Materials and Supplies:	
201 Stationery and Office Supplies . . . . .	\$ 412.90
202 Small Tools and Shop Supplies . . . . .	477.30
204 Wearing Apparel and Personal Supplies . . . . .	231.18
211 Motor Fuel . . . . .	1,112.72
212 Lubricants . . . . .	89.85
213 Tires and Tubes . . . . .	100.64
214 Repair Parts and Supplies—Trucks and Autos . . . . .	251.60

221	Repair Parts and Supplies—Office Machinery and Furnishings	112.68
222	Repair Parts and Supplies—Plant Equipment	1,306.51
229	Repair Parts and Supplies—Other Equipment	340.15
231	Ferric Sulphate	36,252.79
231	Lime	13,565.57
231	Chlorine	3,307.50
231	Sodium Silico Fluoride	11,608.32
231	Miscellaneous Chemical Supplies	108.22
231	Miscellaneous Laboratory Supplies	843.63
241	Fuel	3,328.89
244	Housekeeping Supplies	356.39
259	Other Agricultural, Horticultural, and Landscaping Supplies	260.00
262	Cement, Plaster and Related Products	6.62
264	Fabricated Cement Products	11.87
265	Fabricated Metal Products	161.79
266	Lumber and Hardware	246.88
267	Paint and Painters' Supplies	185.59
268	Plumbing and Electrical Supplies	1,223.70
271	Pipe	50.30
272	Valves and Fittings	511.81
299	Miscellaneous Materials and Supplies	3.53

Total . . . . . \$ 76,468.93

Special Items:

302	Liability Insurance	\$ 62.12
Total . . . . .		\$ 62.12

Capital Outlay:

501	Office Furniture, Machinery and Equipment	\$ 388.97
502	Books, Maps and Charts	8.90
541	Medical, Surgical and Laboratory Equipment	784.58
561	Shop and Plant Equipment	772.00
591	Equipment Not Otherwise Classified	165.00
Total . . . . .		\$ 2,119.45

Scituate Reservoir:

Salaries:

001	Labor—Operation	\$ 2,649.00
	Repairs—Care of Grounds	1,877.42
	Repairs—Highways	133.70
Total . . . . .		\$ 4,660.12

Services Other Than Personal:

111	Telephone and Telegraph	\$ 167.86
142	Repairs—Trucks and Autos	35.43
Total . . . . .		\$ 203.29

Materials and Supplies:

213	Tires and Tubes	\$ 91.32
214	Repair Parts and Supplies—Trucks and Autos	3.38
266	Lumber and Hardware	57.62
Total . . . . .		\$ 152.32

Other Reservoirs:

Salaries:

001	Labor—Operation	\$ 2,712.06
	Repairs—Care of Grounds	586.10
Total . . . . .		\$ 3,298.16

Services Other Than Personal:	
142 Repairs—Trucks and Autos.....	\$ 75.00
Total.....	\$ 75.00
Materials and Supplies:	
213 Tires and Tubes.....	\$ 182.64
Total.....	\$ 182.64

**Reforestation:**

Salaries:	
001 Labor—Operation.....	\$ 1,850.31
Repairs—Machinery and Equipment.....	122.50
Repairs—Care of Grounds.....	10,035.61
Total.....	\$ 12,008.42
Services Other Than Personal:	
109 Fees Not Otherwise Classified.....	\$ 2.00
115 Transportation of Persons—Conventions.....	21.53
117 Travel Subsistence—Conventions.....	17.00
142 Repairs—Trucks and Autos.....	57.43
Total.....	\$ 97.96
Materials and Supplies:	
202 Small Tools and Shop Supplies.....	\$ 91.76
213 Tires and Tubes.....	90.68
214 Repair Parts and Supplies—Trucks and Autos.....	40.95
252 Seeds, Fertilizer, Trees and Shrubs.....	592.40
259 Other Agricultural, Horticultural and Land-scaping Supplies.....	327.19
Total.....	\$ 1,142.98
Capital Outlay:	
502 Books, Maps and Charts.....	\$ 41.30
511 Trucks and Autos.....	1,349.00
Total.....	\$ 1,390.30

**Real Estate:**

Salaries:	
001 Repairs—Machinery and Equipment.....	\$ 12.60
Repairs—Care of Grounds.....	10.50
Total.....	\$ 23.10
Materials and Supplies:	
267 Paint and Painters' Supplies.....	\$ 28.96
Total.....	\$ 28.96

**General:**

Salaries:	
001 Clerical.....	\$ 653.30
Labor—Operation.....	6,680.39
Repairs—Structures and Improvements.....	79.49
Repairs—Machinery and Equipment.....	637.18
Repairs—Care of Grounds.....	1,958.44
Repairs—Highways.....	48.60
Repairs—Care of Grounds—Rockland Cemetery.....	536.00
Total.....	\$ 10,593.40

008	Sick Leave Payrolls.....	2,988.31
009	Vacation Payrolls.....	3,624.85
Services Other Than Personal:		
102	Expert Consultant and Other Service Fees... \$	15.00
109	Fees Not Otherwise Classified.....	22.00
112	Postage, Freight and Express.....	13.94
142	Repairs—Trucks and Autos.....	327.50
143	Repairs—Other Automotive Equipment.....	246.95
184	Hospitalization.....	10.00
Total.....		\$ 635.39
Materials and Supplies:		
201	Stationery and Office Supplies..... \$	103.56
204	Wearing Apparel and Personal Supplies.....	180.53
212	Lubricants.....	76.80
213	Tires and Tubes.....	489.41
214	Repair Parts and Supplies—Trucks and Autos	516.84
241	Fuel.....	343.36
261	Gravel, Sand and Stone.....	376.30
266	Lumber and Hardware.....	42.77
268	Plumbing and Electrical Supplies.....	19.64
299	Miscellaneous Materials and Supplies.....	63.00
Total.....		\$ 2,212.41
Outstanding Commitments—Services Other than Personal.....		4,854.67
Outstanding Commitments—Materials and Supplies.....		6,379.56
Outstanding Commitments—Capital Outlay.....		1,703.25
Total—Source of Supply.....		\$219,773.37

#### TRANSMISSION AND DISTRIBUTION

##### Pumping Station:

Salaries:		
001	Labor—Operation.....	\$12,803.99
Total.....		\$ 12,803.99
Services Other Than Personal:		
111	Telephone and Telegraph..... \$	303.13
112	Postage, Freight and Express.....	3.97
131	Light and Power.....	15,425.44
146	Repairs—Plant Equipment.....	94.56
149	Repairs—Other Equipment.....	4.00
151	Maintenance and Servicing.....	63.95
199	Miscellaneous Services.....	12.00
Total.....		\$ 15,907.05
Materials and Supplies:		
201	Stationery and Office Supplies..... \$	111.86
211	Motor Fuel.....	88.16
222	Repair Parts and Supplies—Plant Equipment	142.61
229	Repair Parts and Supplies—Other Equipment	25.48
241	Fuel.....	743.69
244	Housekeeping Supplies.....	2.35
265	Fabricated Metal Products.....	60.00
266	Lumber and Hardware.....	24.56
267	Paint and Painters' Supplies.....	6.43
268	Plumbing and Electrical Supplies.....	120.10
271	Pipe.....	42.71
272	Valves and Fittings.....	759.96
Total.....		\$ 2,127.91

**Pipe Lines:**

Salaries:

001 Supervision . . . . .	\$10,208.97
Clerical . . . . .	5,085.85
Labor—Operation . . . . .	78,188.71
Repairs—Structures and Improvements . . . . .	2,328.44
Repairs—Trucks and Autos . . . . .	17,398.88
Repairs—Care of Grounds . . . . .	4,646.28
Repairs—Highway Construction . . . . .	19,323.00
Repairs—Transmission Mains . . . . .	3,828.71
Repairs—Distribution Mains . . . . .	6,360.03
Repairs—Gates and Valves . . . . .	2,970.18
Repairs—Hydrants . . . . .	11,284.69
Repairs—Services . . . . .	9,442.54
Repairs—Meters (Emergency) . . . . .	1,441.61
Repairs—Fountains and Basins . . . . .	65.05
New Work—Distribution Mains . . . . .	396.73
New Work—Gates and Valves . . . . .	112.91
New Work—Hydrants . . . . .	6,043.07
New Work—Services . . . . .	41,246.86
New Work—Meters (Emergency) . . . . .	70.02
<b>Total . . . . .</b>	<b>\$220,442.53</b>

Services Other Than Personal:

102 Expert Consultant and Other Service Fees . . . . .	\$ 107.00
106 Examination of Titles . . . . .	75.00
109 Fees Not Otherwise Classified . . . . .	40.00
111 Telephone and Telegraph . . . . .	2,141.05
112 Postage, Freight and Express . . . . .	65.26
121 Printing, Binding and Reproduction Services . . . . .	106.36
131 Light and Power . . . . .	1,641.78
141 Repairs—Office Machinery . . . . .	16.91
142 Repairs—Trucks and Autos . . . . .	890.31
143 Repairs—Construction and Other Automotive Equipment . . . . .	1,408.67
146 Repairs—Plant Equipment . . . . .	6.25
151 Maintenance and Servicing . . . . .	35.85
153 Repairs—Street Openings . . . . .	4,549.40
162 Rental—Automotive and Construction Equip- ment . . . . .	147.98
163 Rental of Other Equipment . . . . .	180.00
165 Rental of Land . . . . .	10.00
166 Rent . . . . .	2,000.00
199 Miscellaneous Services . . . . .	1,779.35
<b>Total . . . . .</b>	<b>\$ 15,201.17</b>

Materials and Supplies:

201 Stationery and Office Supplies . . . . .	\$ 334.57
202 Small Tools and Shop Supplies . . . . .	1,444.33
204 Wearing Apparel and Personal Supplies . . . . .	203.15
211 Motor Fuel . . . . .	3,607.36
212 Lubricants . . . . .	299.36
213 Tires and Tubes . . . . .	907.06
214 Repair Parts and Supplies—Trucks and Autos . . . . .	2,750.19
229 Repair Parts and Supplies—Other Equipment . . . . .	18.52
231 Medical, Chemical and Laboratory Supplies . . . . .	134.15
241 Fuel . . . . .	3,569.42
244 Housekeeping Supplies and Minor Equipment . . . . .	438.54
261 Gravel, Sand and Stone . . . . .	683.38
262 Cement, Plaster and Related Products . . . . .	301.35
266 Fabricated Metal Products . . . . .	128.00
266 Lumber and Hardware . . . . .	1,126.09
267 Paint and Painters' Supplies . . . . .	304.72
268 Plumbing and Electrical Supplies . . . . .	1,911.73
271 Pipe—Cast Iron . . . . .	366.40
271 Pipe—Service . . . . .	7,213.91
271 Pipe—Other . . . . .	77.05
272 Hydrants, Valves and Fittings . . . . .	55,293.68
272 Gates and Valves . . . . .	11,060.51
273 Special Castings . . . . .	351.50

279	Water System and Materials Not Otherwise Classified . . . . .	19.89	
299	Miscellaneous Materials and Supplies . . . . .	135.74	
	Total . . . . .		\$ 92,680.60
Special Items:			
331	Claims and Damages . . . . .	\$ 1,200.00	
	Total . . . . .		\$ 1,200.00
Capital Outlay:			
501	Office Furniture—Machinery and Equipment \$	603.40	
521	Construction and Engineering Equipment . . . . .	352.80	
	Total . . . . .		\$ 956.20
Other Structures and Improvements:			
721	New Main Extensions . . . . .	\$157,100.69	
	Total . . . . .		\$157,100.69

**Distribution Reservoirs:**

Services Other Than Personal:			
111	Telephone and Telegraph . . . . .	\$ 213.00	
131	Light and Power . . . . .	25.00	
	Total . . . . .		\$ 238.00

**General:**

Salaries:			
001	Labor—Operation . . . . .	\$ 7,566.84	
008	Sick Leave Payroll . . . . .	9,066.49	
009	Vacation Payroll . . . . .	7,817.59	
Services Other Than Personal:			
146	Repairs—Plant Equipment . . . . .	\$ 17.75	
199	Miscellaneous Services . . . . .	108.00	
	Total . . . . .		\$ 125.75
Materials and Supplies:			
202	Small Tools and Shop Supplies . . . . .	\$ 1.27	
214	Repair Parts and Supplies—Trucks and Autos . . . . .	2.82	
244	Housekeeping Supplies and Minor Equipment . . . . .	16.00	
268	Plumbing and Electrical Supplies . . . . .	54.13	
	Total . . . . .		\$ 74.22
Outstanding Commitments—Services Other Than Personal . . . . .			
			19.61
Outstanding Commitments—Materials and Supplies . . . . .			
			6,322.66
Outstanding Commitments—Capital Outlay . . . . .			
			14,417.50
Outstanding Commitments—New Main Extensions . . . . .			
			64,379.05
<b>Total—Transmission and Distribution . . . . .</b>			<b>\$628,447.85</b>

**METERING**

Salaries:			
001	Supervision . . . . .	\$ 7,405.69	
	Clerical . . . . .	50,405.42	
	Labor—Operation . . . . .	30,383.24	
	Repairing Meters . . . . .	9,043.53	
	Removing and Setting Meters . . . . .	11,937.86	
	Testing Meters . . . . .	2,856.69	

	General Operation .....	13,221.45
008	Sick Leave Payrolls.....	6,873.13
009	Vacation Payrolls .....	4,675.75
	<u>Total .....</u>	<u>\$136,802.76</u>
Services	Oter Than Personal:	
102	Expert Consultant and Other Service Fees..\$	47.40
109	Fees Not Otherwise Classified.....	18.00
111	Telephone and Telegraph.....	1,272.05
112	Postage, Freight and Express.....	117.25
116	Transportation of Persons—Carfares.....	637.66
121	Printing, Binding and Reproduction Services.....	102.10
131	Light and Power.....	613.08
141	Repairs—Office Machinery, Furniture and Furnishings.....	685.70
142	Repairs—Trucks and Autos.....	263.63
146	Repairs—Plant Equipment.....	81.68
150	Repairs—Structures and Improvements.....	267.24
151	Maintenance and Servicing.....	214.68
163	Rental of Other Equipment.....	80.00
166	Rent.....	9,000.00
199	Miscellaneous Services .....	19,438.68
	<u>Total .....</u>	<u>\$ 32,839.15</u>
Materials	and Supplies:	
201	Stationery and Office Supplies.....	\$ 2,419.54
202	Small Tools and Shop Supplies.....	356.69
204	Wearing Apparel and Personal Supplies.....	89.05
211	Motor Fuel .....	1,351.79
212	Lubricants.....	159.39
213	Tires and Tubes.....	543.66
214	Repair Parts and Supplies—Trucks and Autos.....	501.30
231	Medical, Chemical and Laboratory Supplies.....	119.60
241	Fuel.....	819.00
244	Housekeeping Supplies and Minor Equipment.....	229.48
268	Plumbng and Electrical Supplies.....	502.17
272	Valves and Fittings.....	1,297.91
274	Meter Parts .....	4,791.14
299	Miscellaneous Materials and Supplies.....	21.18
	<u>Total .....</u>	<u>\$ 13,201.90</u>
Special	Items:	
331	Claims and Damages.....	\$ 98.04
	<u>Total .....</u>	<u>\$ 98.04</u>
Capital	Outlay:	
501	Office Furniture, Machinery and Equipment.....	\$ 976.80
	<u>Total .....</u>	<u>\$ 976.80</u>
	Outstanding Commitments—Materials and Supplies..	1,869.61
	<u>Total—Metering .....</u>	<u>\$ 185,788.26</u>
	<b>TOTAL—OPERATING EXPENSE .....</b>	<b>\$1,172,447.35</b>

**TABLE 42**  
**STATEMENT OF REVENUE--ESTIMATED AND ACTUAL**  
**FOR THE YEAR ENDED SEPTEMBER 30, 1953**

Account	Estimated Revenue	Actual Revenue
Water Rents .....	\$2,070,000.00	\$2,093,625.85
Hydrant Rental .....	62,000.00	70,258.69
Electricity . . . . .	15,000.00	25,988.60
Stores Account (Meters).....	2,500.00	4,293.10
Repairing and Setting Meters.....	6,000.00	6,942.26
Fire Supplies and Miscellaneous Repair	4,500.00	2,091.18
New Service Installations.....	60,000.00	60,203.00
New Main Extensions.....	160,000.00	155,528.54
Rentals . . . . .	1,500.00	1,272.84
Other miscellaneous Receipts.....	8,000.00	16,899.02
Total.....	\$2,389,500.00	\$2,437,103.08

**TABLE 43**  
**SUMMARY OF ANNUAL WATER WORKS REVENUES**  
**1930-1953**

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

**TABLE 44**

STATEMENT OF WATER WORKS  
DEPRECIATION AND EXTENSION FUND

	Investment	Cash	Due From Other Funds	Total
Balance Sept. 30, 1952.....	\$890,000.00	\$61,213.03	\$100,000.00	\$1,051,213.03
Increase during Year Ended Sept. 30, 1953.....		382,335.62		
Disbursements During Year End- ed Sept. 30, 1953.....	103,000.00	350,000.00	100,000.00	
Accounts Receivable Year End- ed Sept. 30, 1953.....			300,000.00	
Balance Sept. 30, 1953.....	\$787,000.00	\$93,548.65	\$300,000.00	\$1,180,548.65

**TABLE 45**

STATEMENT OF WATER WORKS  
DEPOSIT AND REFUND ACCOUNT

Cash Balance Sept. 30, 1953.....	\$67,459.99
Receipts for Year Ended Sept. 30, 1953.....	NIL
<b>Total Available</b> .....	<b>\$67,459.99</b>
Disbursements for Year Ended Sept. 30, 1953.....	\$8,452.02
Accounts Payable for Year Ended Sept. 30, 1953.....	NIL
<b>Total Deductions</b> .....	<b>8,452.02</b>
Cash Balance Sept. 30, 1953.....	\$59,007.97

**TABLE 46**

**STATEMENT OF WATER SUPPLY BOARD BONDS OUTSTANDING  
AND SINKING FUND REQUIREMENTS ON A 3% BASIS  
AS OF SEPTEMBER 30, 1953**

Bonds Payable from Sinking Fund	Rate of Int. %	Year of		Bonds		Sinking Fund Requirements On a 3% Basis
		Issue	Maturity	Issued	Outstanding	
Water Supply .....	4	1916	1956	\$1,000,000.00	\$1,000,000.00	\$ 884,209.90
" " .....	4½	1922	1962	1,000,000.00	1,000,000.00	676,417.61
" " .....	4	1922	1962	2,000,000.00	2,000,000.00	1,342,887.90
" " .....	4	1932	1962	1,000,000.00	1,000,000.00	607,279.20
" " .....	4	1922	1962	2,500,000.00	2,500,000.00	1,616,843.30
" " .....	4½	1924	1964	2,000,000.00	2,000,000.00	1,223,407.53
" " .....	4	1924	1964	1,500,000.00	1,500,000.00	879,670.79
" " .....	4	1925	1965	2,500,000.00	2,500,000.00	1,434,091.14
" " .....	4	1928	1968	1,500,000.00	1,500,000.00	741,499.72
<b>Total Water Supply Debt and Sinking Fund Requirement .....</b>					<b>\$15,000,000.00</b>	<b>\$9,406,307.09</b>
Sinking Fund Assets Allocated to Water Supply debt per City Controller's Report on Sinking Fund Sept. 30, 1953 (Includes \$107,966.17* Water Operating Balance for Year Ended Sept. 30, 1953 plus Prior Year Adjustments of \$1,139.34 or a Total of \$109,105.51).....						\$9,527,420.54
Amount in Excess of Requirements on 3% Basis.....						\$ 121,113.45

\*Subject to change due to anticipated discounts on Outstanding Commitments, see Table No. 41.

**TABLE 47**

**A SUMMARY OF INVENTORIES OF PERSONAL PROPERTY  
AT SEPTEMBER 30, 1953**

ADMINISTRATIVE: .....	\$ 22,759.38
SOURCE OF SUPPLY:	
Hydro Electric Station.....	\$ 8,199.49
Purification Works .....	32,205.87
Laboratory .....	12,000.70
General .....	8,958.29
	61,364.35
TRANSMISSION AND DISTRIBUTION:	
Pipe Lines .....	\$202,049.72
Pumping Stations .....	788.05
Distribution Reservoirs .....	170.12
Garage .....	11,057.00
	214,064.89
METERING: .....	66,496.32
SUPPLIES: .....	2,398.44
Total Personal Property Inventory.....	\$367,083.38

**TABLE 48**

**STATEMENT OF SOUTH EASTERLY TRUNK MAIN  
CONSTRUCTION ACCOUNT**

FOR THE YEAR ENDED SEPT. 30, 1953

Transferred from Depreciation and Extension Fund.....	\$600,000.00
Disbursements Sept. 30, 1953.....	\$497,760.75
Outstanding Commitments Sept. 30, 1953.....	NIL
Transferred to the Depreciation and Extension Fund Sept. 30, 1953.....	102,239.25
<hr/>	
Total Disbursements .....	\$600,000.00
<hr/>	
Cash Balance Sept. 30, 1953 (Account Closed).....	\$ NIL

**TABLE 49**

**STATEMENT OF STORES REVOLVING FUND**

FOR THE YEAR ENDED SEPT. 30, 1953

Cash Balance Sept. 30, 1952.....	\$ 10,000.00
Outstanding Commitments Sept. 30, 1952.....	44,366.60
Receipts—Oct. 1, 1952 to Sept. 30, 1953.....	70,336.20
<hr/>	
Total Available .....	\$124,702.80
<hr/>	
Disbursements Sept. 30, 1953.....	\$ 81,584.50
Outstanding Commitments Sept. 30, 1953.....	28,825.20
Transferred as Income to General Fund.....	4,293.10
<hr/>	
Total Disbursements .....	114,702.80
<hr/>	
Cash Balance Sept. 30, 1953.....	\$ 10,000.00

**TABLE 50**

**STATEMENT OF EXTENSION AND  
CONSTRUCTION ACCOUNT**

FOR THE YEAR ENDED SEPT. 30, 1953

Transferred from Depreciation and Extension Fund.....	\$135,000.00
Disbursements Sept. 30, 1953.....	\$116,954.80
Outstanding Commitments Sept. 30, 1953.....	NIL
Transferred to the Depreciation and Extension Fund.....	18,045.20
<hr/>	
Total Disbursements .....	135,000.00
<hr/>	
Cash Balance Sept. 30, 1953 (Account Closed).....	\$ NIL

**TABLE 51**  
**STATEMENT OF FLUORINE EQUIPMENT**  
**ACCOUNT**

Transferred from Depreciation and Extension Fund.....		\$ 23,700.00
Disbursements Sept. 30, 1953.....	\$ 20,153.70	
Outstanding Commitments Sept. 30, 1953.....	NIL	
Transferred to the Depreciation and Extension Fund.....	3,546.30	
Total Disbursements .....		23,700.00
Cash Balance Sept. 30, 1953 (Account Closed).....		\$ NIL

**TABLE 52**  
**STATEMENT OF DENNIS J. ROBERTS**  
**EXPRESSWAY ACCOUNT**

FOR THE YEAR ENDED SEPT. 30, 1953

Transferred from Depreciation and Extension Fund.....		\$ 70,000.00
Disbursements Sept. 30, 1953.....	\$ 34,992.57	
Transferred to the Depreciation and Extension Fund.....	35,007.43	
Total Disbursements .....		70,000.00
Cash Balance Sept. 30, 1953 (Account Closed).....		\$ NIL

TABLE 53

WATER WORKS PROPERTY IN THE VARIOUS CITIES AND TOWNS  
(VALUATION AS OF DECEMBER 31, 1952)

LOCATION OF PROPERTY	LAND AREA (ACRES)	VALUATIONS						Tax
		DECLARED			*Assessed			
		Land	Bldgs. & Imp.	Total	Land	Bldgs. & Imp.	Total	
City of Providence.....	3.03	\$ 19,840.00	\$ 84,200.00	\$ 104,040.00	\$ 19,840.00	\$ 84,200.00	\$ 104,040.00	..... \$ 5.30
City of Warwick.....	0.06	160.00	0	160.00	200.00	0	200.00	\$ 26,992.20
City of Cranston.....	79.58	14,580.00	885,000.00	899,580.00	14,740.00	885,000.00	899,740.00	2,180.00
Town of Foster.....	1,936.04	30,560.00	2,600.00	33,160.00	109,000.00	0	109,000.00	253.46
Town of Gloucester.....	73.30	11,020.00	0	11,020.00	11,020.00	0	11,020.00	7,782.38
Town of Johnston.....	103.13	35,310.00	268,500.00	303,810.00	38,495.00	292,670.00	331,165.00	4,375.00
Town of North Providence.....	8.58	20,720.00	154,280.00	175,000.00	175,000.00	0	175,000.00	166,355.00
Town of Scituate.....	13,182.24	577,150.00	6,212,850.00	6,790,000.00	607,000.00	6,183,000.00	6,790,000.00	
<b>Total Real Estate.....</b>	<b>15,385.96</b>	<b>\$709,340.00</b>	<b>\$ 7,607,430.00</b>	<b>\$ 8,316,770.00</b>	<b>\$975,295.00</b>	<b>\$7,444,870.00</b>	<b>\$8,420,165.00</b>	<b>\$207,943.54</b>
Water Distribution System.....			7,378,003.28	7,378,003.28				
<b>Total .....</b>	<b>15,385.96</b>	<b>\$709,340.00</b>	<b>\$14,985,433.28</b>	<b>\$15,694,773.28</b>	<b>\$975,295.00</b>	<b>\$7,444,870.00</b>	<b>\$8,420,165.00</b>	<b>\$207,943.54</b>

\*Cranston—Total Buildings and Improvements—\$1,035,000.00 (\$150,000.00 exempt).  
Scituate—\$6,176,000.00 Buildings and Improvements; \$7,000.00 Tangible Personal. Valuations as per agreement dated June 9, 1951.  
North Providence—Valuation as per agreement dated March 3, 1953.

**TABLE 54**  
**SUMMARY OF STATISTICS**  
**PROVIDENCE WATER SUPPLY BOARD**  
**FOR THE YEAR ENDED SEPT. 30, 1953**

In form recommended by the New England Water Works Association

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

GENERAL STATISTICS

Population of Providence (1950 Federal Census).....	248,674
Estimated population supplied in suburbs.....	**123,300
Total population supplied.....	371,974
Date of Construction.....	1870-76; 1915-28; 1935; 1938-40
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.....	83.7% by gravity; 16.3% by pumping

STATISTICS OF CONSUMPTION OF WATER

1. Estimated total population to date	.....
2. Estimated population on lines of pipe	.....
3. Estimated population supplied	371,974
4. Total consumption for the year, gallons	14,182,750,000
5. Passed through meters, gallons	12,853,348,500
6. Percentage of consumption metered	90.6%
7. Average daily consumption, gallons	38,860,000
8. Gallons per day to each inhabitant	.....
9. Gallons per day to each consumer	104.5
10. Gallons per day to each tap	698
11. Cost of supplying water, per million gallons, based on total maintenance	\$82.67
12. Cost of supplying water, per million gallons, total maintenance plus fixed charges	157.88

FILTRATION

1. Type of filters	Rapid Sand
2. Number of filter units	14
3. Capacity of filter plant	14 units @ 4.4=61.6 m.g.d.
4. Chemicals used	Ferri-Floc, Quicklime, Chlorine and Sod. Silicofluoride
5. Total water filtered during the year, gallons	14,290,671,000
6. Average quantity filtered per day, gallons	39,152,000
7. Total filtered water delivered to the distribution system during the year, gallons	14,183,430,000

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

\*\*Does not include population supplied through Kent County Water Authority starting September 1, 1953.

**TABLE 54—Continued**

**SUMMARY OF STATISTICS  
PROVIDENCE WATER SUPPLY BOARD  
FOR THE YEAR ENDED SEPT. 30, 1953**

**STATISTICS RELATING TO DISTRIBUTING SYSTEM**

**MAINS\***

1. Kind of Pipe	Cement Asbestos, Cast Iron, Steel and Concrete
2. Sizes	From 6 to 66 inches
3. Extended during year (net)	57,898.85 feet
4. Discontinued during year	1,485.52 feet
5. Total now in use	686.33 miles
6. Cost of repairs per mile	.....
7. Number of leaks per mile	0.13
8. Length of pipes less than 6 inches in diameter	0
9. Number of hydrants added during year	68
10. Number of hydrants now in use	4,080
11. Number of gates added during year	172
12. Number of stop gates now in use	9,900
13. Number of stop gates smaller than 6 inches	0
14. Number of blow-offs	.....
15. 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	0
Discontinued during year	0
Total now in use	12.71
Hydrants added during year	0
Hydrants now in use	159
Stop gates added	0
Stop gates now in use	126
Number of blow-offs	0
Range of pressure on mains	94 to 130 pounds

**SERVICES**

16. Kind of pipe	lead, copper and cast iron
17. Size	½ in. to 16 inches
18. Extended, feet	.....
19. Discontinued, feet	.....
20. Total now in use, miles	.....
21. Number of service taps added during year	1,137
22. Number now in use	55,694
23. Average length of services, feet	.....
24. Average cost of service for year	.....
25. Number of meters added	1,089
26. Number of meters now in use	54,713
27. Percentage of services metered	99.2
28. Percentage of receipts from metered water	.....
29. Number of motors and elevators added	0
30. Number of elevators now in use	.....

\*Not including high pressure fire service.



