



SIXTY-SECOND
ANNUAL REPORT OF
THE SANITARY ENGINEER
TO GOVERNMENT
OF MADRAS

FOR THE PERIOD FROM 1st APRIL 1951
TO 31st MARCH 1952

PRINTED BY THE SUPERINTENDENT
GOVERNMENT PRESS
MADRAS
1953

↑
DE-211-NB
NS-1

SIXTY-SECOND ANNUAL REPORT OF THE SANITARY
ENGINEER TO GOVERNMENT OF MADRAS, FOR THE
PERIOD FROM 1ST APRIL 1951 TO 31ST MARCH 1952.

CHAPTER I.—THE YEAR IN RETROSPECT

In retrospect, the sixty-one years that have passed by in the history of the Sanitary Engineering Branch mark the ups and downs in its progress. It started life as an independent unit in 1890 and, within the first two decades or so, several noteworthy schemes of municipal water-supplies were initiated and installed. Then followed a long period of inactivity. The Sanitary Engineer was left merely to design schemes while their execution was entrusted to the general Public Works Department. Such diarchy did not prove a success. Schemes took a long time to fructify if at all.

2. Eventually with the advent of the popular Government, the reorganization of the Sanitary Engineering Branch was attempted in real earnest in 1949. The functions of design and execution were once again unified and entrusted to the Sanitary Engineer, with a nucleus of staff built up to form part of a future Public Health Engineering Department. The Chief Engineer, Public Works Department, exercising control over the reorganized Sanitary Engineering Branch has been styled as the Chief Engineer (Public Health), in keeping with the new set up.

3. The unification of the functions of design and execution under a single agency has facilitated quick and effective work. Timely action could be taken in the case of the Mangalore and Kozhikode Water-supply Schemes, by initiating essential alterations found necessary during the execution of the schemes. Part of the syphon pipe line proposed in the case of the Palayamkottai Water-supply Scheme could be converted into a useful gallery across the Tambraparni during the very execution of the schemes because the design and execution was managed by a single agency—the Sanitary Engineer. Because of the same factor, the need for the pipes required for the link-up main in the case of the Salem (Mettur) Water-supply Scheme could be anticipated in time and arranged for expeditiously.

4. The volume of work which the Sanitary Engineer has been called upon to handle under the new set up has also increased considerably. As many as about 50 Water-supply and Drainage Schemes (major and minor) figure under execution, about 30 schemes under design, and about 30 under investigation. In addition, he has to exercise the usual supervisory control over the maintenance of all the schemes in operation, to advise the local bodies on repairs, renewals and expansion works connected therewith; to exercise administrative control over the Municipal Engineering Service, to deal with appointments, punishments and appeals relating to subordinate Municipal Engineering staff and Water and Drainage Pumping Station staff. The scrutiny of the designs for grant-in-aid schemes of the Madras Corporation, giving advice on the tenders received for such works and inspecting of such works in progress also devolve on him as the Inspecting Officer on behalf of Government. He is also a member of the Public Health Board and a member of the Water and Sewage Purification Committee. Recently the control of the Experimental Filter Station at Kilpauk has also been transferred to him from the Director of King Institute. Consequent on the



new set up, he has to compile the budget proposals under "50. Civil Works" in addition to the compilation of the budget proposals under "39. Public Health". The expansion of the department with increase in the Technical and Administrative staff, and a State-wide jurisdiction to control investigation, design and execution of schemes has thrown on the Sanitary Engineer a tempo and volume of work larger than ever before.

5. The reorganization of the Sanitary Engineering Branch was sanctioned by the Government in the middle of the year 1949. The Public Health Divisions were formed towards the close of the year 1949-50, and a start was made with the new set up that year itself. The period under review, however, marks the second year of the effective working of the reorganized Sanitary Engineering Branch.

6. The progress made in the year in all the activities of this Branch registers an improvement over the progress made in the previous year.

During the year 1951-52, water-supply schemes for 29 municipal towns and drainage schemes in eight municipal towns were in progress.

Ten panchayat water-supply schemes and one panchayat drainage scheme were under execution.

The composite rural water-supply scheme for the Kayalpatnam, etc., coastal villages in the Tirunelveli district was also under active execution.

The total expenditure for the year on all these schemes was Rs. 82.91 lakhs.

7. The preparation of details, plans and estimates for 28 schemes, both municipal and panchayat, was in progress during the year.

8. Twenty-five schemes (municipal and panchayat) were in different stages of investigation during the year.

9. Bulk purchases of cast iron pipes, both from Indian and foreign manufacture, were made against the reserve stock and against specific requirements of schemes in progress, for a total value of Rs. 33.4 lakhs during the year.

10. Details of a plan to include Post-war Development Schemes were submitted to the Government as required by the Planning Commission, to comprise a Five-Year Plan from 1951-52. This plan contemplates an expenditure of Rs. 4.2 crores over the five years from Government funds excluding contributions to be realized from the local bodies concerned.

CHAPTER II.—STATISTICAL PARTICULARS.

The following statistical particulars would convey an idea of the situation in regard to Municipal and Urban Panchayat Water-supply and Drainage Schemes :—

(1) *Population*.—The official figures of the 1951 census are not yet available. The population figures as furnished in the last year's annual report would undergo large variations when the 1951 census figures are available. The percentage of population as between the rural, urban and municipal areas would perhaps show a general movement from the rural to the urban areas during the last decade. To that extent the provision of water-supply and drainage amenities to the urban areas would assume somewhat greater importance and urgency in the coming years.

(2) *Number of district municipalities*.—During the year, three more panchayats were constituted into municipalities, thus increasing the number of district municipalities from 95 to 98 (excluding the City of Madras).

(3) *Water-supply Schemes*—(a) *municipal*.—The following details will convey a ready picture of the existing situation in regard to municipal water-supplies—

Out of a total number of 98 municipal towns, 45 towns are yet to be provided with protected water-supply.

Of the 53 towns where water-supply schemes are in operation, improvements and expansions to the schemes are necessary in most of the cases, to make them serve the present requirements of the municipal towns concerned.

Out of the 53 water-supply schemes in operation nine are gravitational; 39 involve pumping; while the remaining five schemes are gravitational and pumping combined.

Again 30 of the 53 schemes depend on ground water sources, 9 on upland impounded waters, and 14 on surface waters of rivers and canals.

(b) *Panchayat*.—The following eleven panchayats have protected water-supplies in operation. Most of them are only partial schemes and are in need of expansion and improvements :—

Batlagundu.	Tiruttani.
Dharmavaram.	Yemmiganur.
Kosgi.	Arantangi.
Manapparai.	Sivaganga.
Ramachandrapuram.	Chodavaram.
Rameswaram.	

Chodavaram and Sivaganga Water-supply Schemes were completed during the year.

(4) *Drainage Schemes*—(a) *Municipal*.—Although drainage schemes of a sort are already provided in thirteen municipal towns, most of them are open drains and even so serving part of the town areas only. The sewerage schemes working in Madurai and Ootacamund are in need of radical expansions.

(b) *Panchayat*.—No drainage scheme is in operation in any of the panchayat towns.

(5) *The work ahead*.—It is to be noted that apart from the 46 municipal stations where water-supply schemes are yet to be provided newly and for the first time, most of the existing municipal water-supply schemes are also in need of improvements and expansions.

A proper drainage scheme is yet to be provided for all the municipal stations barring two where also the sewerage scheme is to be expanded.

As for non-municipal urban towns the work in regard to water-supply and drainage is a problem yet to be tackled in any effective manner.

(6) It has been assessed that the provision of water-supply and drainage schemes to all municipal towns (including improvements to existing schemes) would cost roughly of the order of Rs. 80 crores under present-day rates, while the provision of similar facilities for the non-municipal urban towns might easily cost another Rs. 60 to 70 crores. These are indeed staggering figures. But it is to be remembered that the provision of a protected water-supply or a sewerage system to many of the major municipal towns at present would cost anything between 1/2 to 1 crore of rupees each. So much so, each of these schemes should be looked upon more as a medium project as it were than as a small local scheme costing a few lakhs of rupees.

CHAPTER III.—PROGRESS IN THE YEAR ON EXECUTION OF SCHEMES.

(1) As many as 29 municipal water-supply schemes (including improvement schemes) and ten panchayat water-supply schemes and one Rural Water-supply Scheme were under execution during the year. The estimated cost of these schemes was Rs. 353.09 lakhs, and the outlay of expenditure during the year was about Rs. 78.70 lakhs.

(2) As for drainage, eight municipal and one panchayat drainage schemes were under execution during the year. Their total estimated cost was Rs. 54.86 lakhs; the expenditure during the year was Rs. 4.21 lakhs.

(3) Only three of these schemes (water-supply and drainage) were under execution by the local bodies concerned under the supervision of the Public Health Engineering Department, the expenditure on such schemes during the year being Rs. 0.98 lakh.

(4) The total expenditure on the schemes (including improvement schemes) during the year under report was Rs. 82.91 lakhs as against Rs. 64.44 lakhs in the previous year.

(5) The following notes will indicate the progress made on the execution of the different schemes during the year as well as their stages at the end of the year.

NOTES ON SCHEMES IN PROGRESS DURING THE YEAR 1951-52.

WATER-SUPPLY SCHEMES.

1. *Arantangi Water-supply Scheme*.—The extension of the distribution system to serve new areas was taken up as a special case and completed during the year. The expenditure incurred was Rs. 14,269. The watchman's quarters was completed. Improvements were effected to the infiltration well in order to increase the yield therefrom. The panchayat was enjoying a satisfactory supply during the year.

2. *Bellary Water-supply Scheme (improvements)*.—The work of the construction of a masonry sump was in progress.

3. *Chittoor Water-supply Scheme*.—To tide over the acute water scarcity at Chittoor, the work of laying about 8,200 r.ft. of 12" cast iron pumping main from the head works was taken up as an urgent measure diverting cast iron pipes required for the work from the reserve stocks. The work was in progress.

4. *Chodavaram (Panchayat) Water-supply Scheme*.—The scheme was completed in October 1951 and was opened by the Chief Engineer (Public Health) on 19th December 1951. The town is enjoying the benefit of the protected water-supply all the 24 hours. The expenditure incurred during the year was Rs. 38,596.

5. *Cochin Water-supply Scheme*.—Connexions to additional public fountains in the distribution system, were given. The expenditure incurred was Rs. 8,970.

6. *Coimbatore Water-supply Scheme (improvements)*.—About 63,500 r.ft. of 18" diameter duplicate gravitation main was laid. The construction of the masonry service reservoir at R.S. Puram was completed. Cast iron pipes required for the balance of duplicate gravitation main and for the

feeder mains were received from the Kulti Iron Works, from England and from Germany. Supply to the town was increased by linking up the duplicate main at an intermediate point.

7. *Dharmavaram (Panchayat) Water-supply (improvements)*.—The existing overhead tank was dismantled and the new pressed steel tank was erected and the work completed during the year.

8. *Erode Water-supply (improvements)*.—The work was completed in all respects.

9. *Guntakal Water-supply Scheme*.—All the works connected with the first stage of the scheme, i.e., excavation of the tank and the central trench work, revetting of the side slopes, etc., were completed. Preliminary yield tests were also completed.

10. *Guntur Water-supply Scheme*.—The construction of the summer storage tank at Jagarlamudi was 90 per cent completed.

The formation of the approach road and execution of cross masonry works were in progress.

Out of the four low level service reservoirs, three were completed and the fourth was nearing completion.

The three high level service reservoirs were in different stages of construction.

The booster pumps house at the high level reservoir site was started and was in good progress.

About 4 miles of 27" diameter pumping main were laid and jointed and further work on this item was in good progress.

A start was made on the laying and jointing of the distribution mains in the three zones of the high level area.

The total expenditure incurred on the scheme in the year was Rs. 19.22 lakhs.

11. *Hindupur Water-supply Scheme (I stage)*.—The I stage work was completed, and sanction of proposals awaited for taking up the execution of the II Stage.

12. *Kakinada Water-supply Improvements (Part I) Scheme*.—The land required for the formation of the summer storage tank was acquired by the Revenue Department and handed over to this Department in March 1952. Execution of the scheme is to be taken up shortly.

13. *Kakinada Water-supply Improvements (Part II) Scheme*.—The scheme was completed during the year and the new filter beds put into commission, increasing the town supply thereby from 7 lakhs of gallons to 12 lakhs gallons per day.

14. *Karaikudi Water-supply Scheme (Limited Distribution System)*.—All the works in stages I and III of the scheme have been completed. Progress has been made in stage II also and only a length of 1,200 r.ft. of small calibre mains remains to be laid.

The work is being executed by the municipality under the supervision of this Department.

15. *Karamadai (Panchayat) Water-supply Scheme*.—The balance of work on the service reservoir was completed during the year. Laying and jointing of distribution mains and connexions to seven public fountains were also executed.

16. *Kayalpatnam, etc., Villages Composite Water-supply Scheme.*—Good progress has been made on the laying of pumping mains in different sizes. Due to the long delay in the acquisition of lands at the head works, very little progress could be made on the head works.

17. *Kodaikanal Water-supply Scheme (extension to Observatory area).*—The work was completed but for a verandah avenue for the pumping station.

18. *Kozhikode Water-supply Scheme.*—The scheme as sanctioned was completed. But because of the excessive iron content noticed in the supply drawn from the source, proposals were sent up for executing additional works to remove the iron, and sanction is awaited.

19. *Kumbakonam Water-supply Scheme (II stage).*—Good progress was made on the laying of the distribution system and erection of public fountains. The construction of the R.C.C. reservoir of 40,000 gallons capacity at Melacauvery and the R.C.C. reservoir of 2 lakhs gallons capacity at Petta North were completed and the pipe connections to the two service reservoirs were in progress.

20. *Kurnool Water-supply improvements (construction of additional filter beds).*—The laying and jointing of the 12" gravitation main from the settling tank to the filter bed was completed. The scour and overflow pipe connections were in progress.

The filters are expected to be completed in all respects and put into operation shortly.

21. *Madurai Water-supply improvements.*—There was no improvement scheme under execution. The municipality was pursuing steps to execute the temporary improvements sanctioned for improving the supply to the southern and eastern areas.

22. *Manapparai (Panchayat) Water-supply improvements.*—The investigation of fresh water sources was in progress.

23. *Mangalore Water-supply Scheme.*—The first stage of the Gurpur scheme sanctioned for execution in advance of the preparation of plans and estimates for the full scheme was taken up. Tests conducted when the work was in progress brought out the limitations of the source both in respect of the quantity and quality of the water available therefrom. As a result, the Gurpur source was abandoned and the scheme was revised with the Netravathi surface flow as the alternative source. The investigation of the Netravathi source was in progress. Advance orders were also placed for 2,000 r.ft. of 20" diameter spun iron pipes 'C' class for the Netravathi Scheme.

24. *Mettupalayam Water-supply Scheme (improvements).*—Seventeen additional public fountains were erected and connections were given to them, as part of the improvement scheme. The work on the sluice valve pits, etc., was in progress. Laying about 680 r.ft. of 2" cast-iron pipe and giving connection to one public fountain remained to be done.

25. *Palayamkottai Water-supply Scheme.*—The work at the head works consisting of the infiltration well, manhole well, suction well, syphon pipe line and the gallery was completed. Good progress was made on the construction of the R.C.C. service reservoir. 16" diameter cast-iron pipes required for the pumping main were being received from abroad and within the country. cast-iron pipes and specials were also being procured for the distribution system.

26. *Peldapuram Water-supply Scheme.*—The land required for the summer storage tank was acquired.

27. *Perundurai T.B. Sanatorium Water-supply improvements.*—The work was completed in all respects and handed over to the sanatorium authorities.

28. *Pollachi Water-supply Scheme.*—The work was completed in all respects and handed over.

29. *Rajahmundry Water-supply improvements.*—The new mechanical filter unit was completed during the year and put into operation. This has augmented the supply to the town.

The new transformer and two of the four pumpsets have been received.

30. *Salem (Mettur) Water-supply Scheme.*—The scheme was completed as sanctioned and trial running of the pumping plants was begun. The long lengths of the pumping and gravity mains were cleaned up and sterilised and the Nangavalli filters were put under trial run. The scheme was ready for functioning (and was inaugurated by the Chief Minister in April 1952).

31. *Salur Water-supply Scheme.*—As the scheme had to be examined *de novo*, trial borings in the river bed and adjacent areas were taken up. The work was in progress.

32. *Sivaganga (Panchayat) Water-supply Scheme.*—The entire earthwork for the Chetti urani and a portion of the revetment for Chetti urani was completed.

33. *Srivilliputhur Water-supply Scheme.*—Sixteen inches diameter cast-iron pipes required for the scheme were being received from Germany and United Kingdom. The work on the construction of the masonry reservoir was in good progress. The gallery work was under departmental execution. Pipes and specials for the distribution system were also being procured.

34. *Tiruchirappalli Water-supply Scheme (improvements)*—(a) *Rectification of defects and improvements to the infiltration system.*—The plugging of the masonry steining of old well No. 1 has to be rectified.

(b) *Second instalment of the first-year programme—Replacing the existing 18" mains by 24" mains from headworks to Kodamurutti bridge.*—Removal of old 18" cast-iron pipes from the existing main was in progress.

(c) *First instalment of the second-year programme.*—The entire work was completed.

(d) *Second instalment of the second-year programme—Laying of distribution system.*—A good percentage of the straight pipes and about 50 per cent of the cast-iron specials required for the scheme have been received. The actual execution of work was to be taken up shortly.

(e) *Fourth instalment of first-year programme—Replacing the main from road to Central Jail.*—Construction of masonry pillars for carrying the vertical pipe connections to the trestles was in progress.

35. *Tirumalai Water-supply Scheme.*—The work was taken up during the year and the pumping main was laid and jointed for a length of about 2 miles. Pumpsets also were being installed in temporary kiosks with a view to giving advance supply of the Papavinassam Source to tide over the summer period.

36. *Tiruppur (Partial) Water-supply Scheme (improvements).*—Further progress was made on the extension of mains and construction of additional public fountains. Laying and jointing about 3,000 r. ft. of 3" mains and giving connection to 4 public fountains remained to be done.

37. *Tiruvallur Water-supply (improvements).*—The work which is for augmenting the supply at head works was commenced in March 1952 and was in progress.

38. *Valparai (Panchayat) Water-supply Scheme.*—Improvements to the service reservoir and laying of the new pumping main were completed. Construction of store-room and laying of the distribution system were in progress.

39. *Vayalpad Panchayat Water-supply Scheme.*—The pumping plants were received and erected. Arrangements for laying and jointing of the pumping main were being made.

40. *Vijayavada Water-supply (improvements).*—Additional pumping main was completed and commissioned. An order was placed for the supply of a submersible pumpset. Additional bore-wells were in progress to supplement the yield from the Infiltration Works.

41. *Visakhapatnam Water-supply (improvements).*—The distribution system for Daba Gardens and Dondapatri extensions was also completed.

Installation of the III Pumping set at the Town Service Reservoir pumping station and the electrification of Gosthani pump house remained to be done..

A. DRAINAGE SCHEMES.

1. *Coimbatore Drainage Scheme.*—Ninety per cent of the work on pre-treatment works, watchman's quarters, etc., have been completed. Construction of laboratory and office block, fencing of the pre-treatment works site were in progress.

2. *Nagapattinam Drainage Scheme.*—The design for the crossing of the pumping main across Kodavayyar was under examination.

3. *Paramakudi (Panchayat) Drainage Scheme.*—Regrading of certain drains remained to be done.

4. *Salem Drainage Scheme—Seventh instalment (Part I).*—The entire work was completed.

5. *Srirangam Drainage Scheme.*—The second stage of the work has just been taken up for execution and construction of open drains, pumping station No. 1 and laying and jointing of 7" pumping main were in progress.

6. *Tiruchirappalli Drainage Scheme.—Diversion of sullage from Boulevard road.*—Good progress was made in the laying of the intercepting sewer line. About 3,800 r. ft. of 14" cast-iron-pumping main was also laid.

7. *Tirupati Drainage Scheme—Sixth instalment.*—Construction of effluent drains was completed. Formation of the sewage farm was in progress.

8. *Virudunagar (Restricted) Drainage Scheme.*—Regrading of 24" diameter main remained yet to be done. A proposal to extend the pumping main up to the sewage farm is being considered.

9. *Visakhapatnam Partial Drainage Scheme.*—The drainage pump-house was completed. Orders for the supply and delivery of pumpsets were placed. Work on the intercepting sewer was being arranged for.

CHAPTER IV.—PROGRESS IN THE YEAR ON THE DESIGN OF SCHEMES.

(i) Detailed plans and estimates for the following schemes were prepared and submitted to the higher authorities during the year 1951-52 :—

(1) Guntur Water-supply Scheme—

(a) Offtake arrangements from the canal and raw water pumping station.

(b) Outlet arrangements from storage reservoir, filtration works, clear water reservoir and pumping station.

(2) Nandyal Water-supply Scheme.—First stage (revised in the light of Chief Engineer's remarks).

(3) Mannargudi Water-supply Scheme (partial).

(4) Salem (Mettur) Water-supply Scheme.—Redesigning of the distribution system, first stage.

(5) Hindupur Water-supply Scheme—Second stage.

(6) (a) Chittoor Water-supply Scheme—First stage.

(b) Do. Second stage.

(7) Cuddalore Water-supply Improvements Scheme, first stage.

(8) Composite Water-supply Scheme for Kayalpatnam and ten other villages in Tirunelveli district, Third stage—Service Reservoirs (excluding Tiruchendur).

(9) (a) Kumbakonam Drainage Scheme—Fifth block.

(b) Do. Whole town (outline proposals only).

(10) Tirupathur Municipality—Vellaivaikal Drainage Scheme.

(11) Kozhikode Water-supply Scheme—Treatment works—First stage (out-lines only).

(12) Tirumalai Water-supply Scheme (Papavinasam source).

The total cost of the Schemes referred to above based on the estimates submitted for approval amounted to Rs. 160 lakhs nearly.

(ii) Detailed plans and estimates for the following schemes were under preparation during the year :—

(1) Mangalore Water-supply Scheme. (Netravathi source.)

(2) Peddapuram Water-supply Scheme. (Finalisation.)

(3) Srikakulam Water-supply Scheme. (Finalisation.)

(4) Nandyal Water-supply Scheme,—Second stage.

(5) Mannargudi Water-supply Scheme (partial) (Finalisation.)

(6) Chittoor Water-supply Scheme,—Third stage.

(7) Cuddalore Water-supply Improvement Scheme, First stage. (Revision.)

(8) Composite Water-supply Scheme for Kayalpatnam and ten other villages in Tirunelveli district, Fourth stage—Distribution System.

(9) Eluru Drainage Scheme.

(10) Tirupathi Water-supply Improvements (Confluence source).

(11) Madurai Water-supply Improvements Scheme.

(12) Madurai Drainage Improvements Scheme—

(a) Sewerage Scheme for Block No. 8. (Finalisation.)

(b) Electrification of main drainage pumping station. (Revision in progress.)

(c) Sewerage Scheme for Block No. 9.

(13) Vijayavada Drainage Improvements.

(14) Dindigul Water-supply Improvements Scheme.

- (15) Guntakal Water-supply Scheme—Second stage.
 (16) Tindivanam Water-supply Scheme—First stage.
 (17) Kozhikode Water-supply Scheme—Treatment works, First stage.
 (Revision.)
 (18) Tirunelveli Water-supply Scheme—First stage.
 (19) Tiruvettipuram Water-supply Scheme.
 (20) Tiruchirappalli Water-supply Improvements Scheme (revised design for main pump house, etc.).
 (21) Melapalayam Water-supply Scheme (distribution system).
 (22) Rajahmundry Comprehensive Drainage Scheme.
 (23) Tirumalai Drainage Scheme.
 (24) Visakhapatnam Water-supply Improvements (Gosthani source).

(iii) The design work on the following schemes was suspended during the year :—

- (1) Uravakonda Water-supply Scheme (scheme deferred till the Tungabhadra high level canal is completed).
 (2) Mangalore Water-supply Scheme,—Second stage. Pumping main (Gurpur source) (Scheme dropped consequent on the change of source to Netravathi).

CHAPTER V.—SCHEMES UNDER INVESTIGATION DURING THE YEAR.

(i) The following field investigations were completed during the year :—

- (1) Tuticorin Drainage Scheme (supplemental).
 (2) Arni Water-supply Scheme, Second stage.
 (3) Chittoor Drainage Scheme.
 (4) Ooty. Water-supply Improvements (Preliminary investigation).
 (5) Kotagiri Water-supply Scheme (Improvements to Harshola Dam).

(ii) The following investigations were in progress during the year :—

- (1) Madurai Water-supply Improvements.
 (2) Madurai Drainage Improvements.
 (3) Vijayavada Water-supply Improvements.
 (4) Vijayavada Drainage Improvements.
 (5) Narasaraopet Water-supply Scheme (Emergency Scheme).
 (6) Eluru Drainage Scheme (Supplemental).
 (7) Masulipatnam Drainage Scheme (Supplemental).
 (8) Jaggayyapet Water-supply Scheme.
 (9) Pithapuram Water-supply Scheme (Supplemental).
 (10) Mayuram Water-supply Scheme.
 (11) Manapparai Water-supply Improvements.
 (12) Manachanallur Water-supply (Rural Water-supply).
 (13) Kavali Water-supply Scheme.
 (14) Srisailem Water-supply Scheme.
 (15) Penukonda Water-supply Scheme.
 (16) Palghat Water-supply Scheme.
 (17) Yercaud Water-supply Scheme.
 (18) Vellur and Vengarai Water-supply Scheme, (Rural water-supply).
 (19) Tiruppur Comprehensive Water-supply Scheme (Bhavani Source).
 (20) Satyamangalam Water-supply Scheme.
 (21) Kozhikode Drainage Scheme (Supplemental).
 (22) Mangalore Drainage Scheme (Supplemental).
 (23) Kaveripatnam Water-supply Scheme.

(iii) The investigation on the following scheme was suspended during the year :—

Coonoor Drainage Scheme (further work suspended on the scheme as it is not in the Five-Year Plan).

CHAPTER VI.

I. Technical sanction accorded for miscellaneous works.—During the year, a number of estimates for investigation in progress were technically sanctioned. In addition, a number of municipal improvement works, for which plans and estimates were received from the local bodies concerned were also sanctioned for execution. The total value of the estimates so sanctioned was nearly Rs. 7-lakhs.

The following is the list of the estimates dealt with :—

List of estimates for which technical sanction was accorded by the Sanitary Engineer during the year 1951-52.

Number and name of work.	Amount of estimate sanctioned. RS.
1. Vijayavada water-supply—Emergency scheme of Improvements (1951) ..	99,500
2. Dindigul Municipality—Construction of water cistern in eight locations of Dindigul town.	7,229
3. Tuticorin Drainage Scheme—Supplemental investigation—Revised Estimate.	3,120
4. Kancheepuram water-supply—Improvements to gallery—Revised Estimate.	19,500
5. Investigation of Yercaud Water-supply Scheme	2,400
6. Palni Municipality—Laying 3 inches C. I. main and erection of seven public fountains.	12,300
7. Chingleput Municipality—Construction of storm water drain in Kailasanathar koil street.	10,400
8. Rural water-supply scheme, Salem district—Investigation of Velur and Vengam Panchayat Boards water-supply scheme.	3,600
9. Rural water-supply scheme—Nilgiris District Ootacamundtaluk—Hallatti village—Kalhatti-Asangathunai and Masikkal hamlets estimate.	12,200
10. Mayuram Water-supply Scheme—Investigation—Estimate	3,600
11. Kodaikanal Water-supply Scheme—Extension to observatory area—Constructing pump house—Revised Estimate.	46,170
12. Water-supply—Tiruttani Panchayat Board—Scarcity—Emergency measures.	2,000
13. Water-supply—Tiruttani Panchayat Board—Emergency measures—Improvements to well opposite to bus stand.	2,000
14. Irrigation—Tung bhadra Project—Hampi village Water-supply—Experimental measure—Plans and estimates—Sanctioned.	24,400
15. Masulipatnam Water-supply Scheme—Cyclone damages—Repairs to storage tank inside bunds.	23,300
16. Tuticorin Municipality—Construction of 13 additional public fountains—Estimates for.	13,500
17. Replacement of pumping main over Hagari bridge—Bellary Municipality.	42,200
18. Water-supply and drainage—Vizianagaram Municipality—Electrification of the head works—Plans and estimates—Sanctioned.	79,000
19. Supplemental field work for Eluru Drainage Scheme—Estimate for ..	850
20. Cuddapah water-supply—Improvements—Preparation of plans and Estimates—Investigation for collecting field particulars.	1,000
21. Underground drainage—Providing underground house connections for the omitted houses in A, B and C blocks, Coimbatore Estimate.	27,000
22. Drainage scheme—Madanapalle Panchayat, Chittoor district—Estimate for supplemental investigation.	1,200
23. Tiruppur Municipality—Water-supply scheme—Investigation—Bhavani river source inclusive of supply to wayside villages.	6,665
24. Water-supply—Kancheepuram Municipality—Extension of 3 inches water mains and erection of public fountains.	20,260
25. Kancheepuram Municipality—Improvements to the infiltration gallery from the middle manhole well—Technical sanction—Accorded.	22,500

Nuber and name of work.	Amount of estimate sanctioned.
	RS.
26. Chittoor partial drainage scheme—Revised Estimate for investigation in connexion with selection of sewage farm site—Sanctioned.	1,710
27. Tiruchirappalli water-supply improvements—Conducting field investigation in the river-bed—Estimate.	2,700
28. Gudiyattam water-supply—Installation of electric motor—Estimate	11,900
29. Pithapuram water-supply—Investigation—Collection of water samples from private bore wells—Estimate—Sanctioned.	150
30. Water-supply—Tiruvallur Municipality—Extension of water-supply to Lakshmiapuram and Pumpathur.	10,250
31. Arcot Water-supply Scheme—Supplemental investigation—Estimate of—Sanctioned.	1,350
32. Drainage—Tellichery Municipality—Drain at Kaivattam—Estimate sanctioned.	13,800
33. Rural water-supply—Sityamangalam Panchayat Board—Gobichettipalayam taluk—Investigation—Sanctioned.	1,300
34. Kancheepuram Municipality—Water-supply extensions of 3 inches main at the erection of public fountains—Estimate for.	10,400
35. Ambur Municipality—Construction of open drains—Sanankuppam Road—Plans and estimates.	14,270
36. Madurai Municipality—Construction of storm-water drains—Extension in proposal No. 1.	42,000
37. Water-supply—Anantapur Municipality—Construction of ten public fountains in different wards—Plans and estimates—Sanctioned.	12,750
38. Vijayavada water-supply improvements—Emergency scheme of improvements (1952)—Sanctioned.	89,750

II. Preparation of type-designs.—The following type-designs were prepared during the year under report :—

- (1) San. No. 93/51—Septic tank latrines—Arrangement for jails.
- (2) San. No. 100/51—Type designs for watchman's quarters.

III. Technical sanction for improvement works accorded by the Executive Engineers in the five Public Health divisions.—The Executive Engineers (Public Health) also scrutinized plans and estimates referred to them by local bodies for improvement works relating to water-supply and drainage schemes, and accorded technical sanction to such estimates. The following statement would indicate the position at a glance :—

Serial number and name of (Public Health) Division.	Number of estimates dealt with.	Total amount of estimates for which technical sanction was accorded.
		RS.
1 South Madras Division	7	20,090
2 North Madras Division	10	41,800
3 Vijayawada Division	17	37,430
4 Tiruchirappalli Division	19	55,155
5 Coimbatore Division	6	23,760
Total ..		1,78,235

CHAPTER VII.—CORPORATION OF MADRAS—GRANT-IN-AID WORKS—WATER-SUPPLY AND DRAINAGE SCHEMES.

During the year under review, the Sanitary Engineer continued to be the inspecting officer for the water-supply and drainage works of the Corporation in terms of G.O. No. 2164, P.H., dated 23rd May 1941, revised in G.O. No. 3386, P.H., dated 5th December 1944. In addition to inspecting grant-in-aid works relating to water-supply and drainage of the Corporation of Madras and carrying out check measurement, the functions of the Sanitary Engineer included also the following :—

(i) Scrutiny and remarks on schemes, for which detailed plans and estimates are prepared by the Corporation and sent to the Chief Engineer for scrutiny before Government sanction is accorded.

(ii) Scrutiny and remarks on the annual budget provisions made by the Corporation with regard to water-supply and drainage schemes, and recommendations on the allotment of grants and loans by the Government for such works.

(iii) Review of the Administration Report and the Annual Progress Report on Water-supply and Drainage Works of the Corporation.

(iv) Scrutiny and remarks on the tenders received for Water-supply and drainage grant-in-aid works estimated to cost more than Rs. 25,000.

(v) Dealing with references on audit and account matters and on administrative references, schedule of rates for items of work, indents for G.I. pipes and fittings.

(vi) Review of the half-yearly progress report of the Corporation on the measures adopted to remedy the pollution of the waterways in the City.

(vii) Inspection and report on the working of the Kilpauk Water-works and other water-works of the Corporation.

2. Plans and estimates in regard to the following schemes were dealt with during the year :—

WATER-SUPPLY.

(i) Revised estimate for the "Separate trunk main No. 8 for South Madras" for Rs. 34.56 lakhs.

(ii) Laying trunk main No. 8 for South Madras; scrutiny of tenders received for the work of laying "separate trunk main No. 8 for South Madras." Second Stage (a portion).

(iii) Laying 48 inches duplicate pumping main from Kilpauk Pumping station to shaft.—Scrutiny of the tenders received for laying the 48 inches duplicate pumping main.

(iv) Emergency water-supply schemes.—Scrutiny of proposals for the first scheme for Rs. 4.5 lakhs; second scheme for Rs. 1.11 lakhs; third scheme for Rs. 3.00 lakhs; and fourth scheme for Rs. 4.00 lakhs.

DRAINAGE.

(i) Revised estimate for the Drainage Scheme for Perambur and Vyasarpadi, amounting to Rs. 16.75 lakhs.

(ii) Laying sewers in Lakshmiapuram colony and lanes south of Poonamallee High road at an estimated cost of Rs. 1.743 lakhs.

(iii) Scrutiny of tenders for laying branch sewers in Vyasarpadi.

(iv) Drainage Scheme for Tyagarayaangar.—Plans and estimates for isposal works were scrutinized and returned for revision.

3. The following works in progress were inspected during the year and assed for grant :—

WATER-SUPPLY.

(i) City Water-supply Distribution System—Improvements—Rs. 15.29 lakhs.

(ii) Laying of separate trunk main No. 8 for South Madras—Estimate, Rs. 35.46 lakhs.

(iii) Further improvements to the City Water-supply Distribution system—Estimate, Rs. 4.76 lakhs.

- (iv) Water-supply for Gandhinagar area.
- (v) Extension of water-supply to Nagappanagar and Aminjikarai areas—Estimate, Rs. 2.77 lakhs.
- (vi) Laying of 48 inches duplicate pumping main from Kilpauk Pumping Station to shaft.
- (vii) Emergency measure coming under the various schemes detailed in paragraph 2 (iv) above.

DRAINAGE.

- (i) Drainage scheme for Tyagarayanagar under T1, T2 and T3 contracts.
- (ii) Drainage for South Mylapore area.
- (iii) Drainage for Vyasarpadi area.

4. *Grants recommended.*—During the year under review, the expenditure on both water-supply and drainage works of the Corporation, which are eligible for Government grant was about Rs. 14.42 lakhs as against Rs. 13.0 lakhs in 1950-51. The total amount of grants sanctioned during the year was Rs. 7.51 lakhs for capital works and Rs. 23,500 for water-supply emergency works.

5. *Staff.*—(i) The Sanitary Engineer is assisted by an Assistant Engineer (Public Health) in discharging these duties as sanctioned in G.O. Ms. No. 1536, Health, dated 29th April 1951.

(ii) The Kilpauk Experiments Filter Station continued to be under the control of the Sanitary Engineer. The Assistant Engineer (Corporation Works) is in charge of the Experimental Filter Station assisted by a Technical Assistant. A Research unit at the Experimental Filter Station is to be started as a part of the reorganization of the Sanitary Engineering Branch. One Sanitary Inspector of the Southern Railways and three filter bed operators from three municipalities underwent training for a period of three weeks at the Experimental Station in the operation and maintenance of filters.

CHAPTER VIII.—RESERVE STOCK OF CAST IRON PIPES.

It was in G.O. Ms. No. 2476, P.H., dated 12th July 1949, that the Government sanctioned the building up of a reserve stock of cast iron pipes and specials in order to speed up the execution of urban water-supply and drainage schemes in the State. Concerted measures are being pursued ever since to build up a buffer stock of pipes and specials and sluice valves by placing special indents for these articles from time to time.

2. During 1949-50 and 1950-51, special orders were placed with Indian manufacturers for the supply of a total quantity of 10,600 tons of various sizes of cast iron and spun iron pipes for a total value of Rs. 40 lakhs. These indents have since been mostly complied with.

3. Cast iron sluice valves of different sizes were imported for a total value of work Rs. 2.7 lakhs. In addition, orders are being placed for sluice valves of indigenous make in the smaller sizes.

4. A special order for cast iron specials was also placed for a value of about Rs. 4 lakhs in order to meet the requirements of several schemes in progress.

5. To meet the urgent requirements of the improvement schemes to Coimbatore water-supply, quantities in 14 inches, 18 inches and 24 inches spun iron pipes were specially imported from the U.K. and from Germany for a total value of about Rs. 16 lakhs.

6. About 1,500 tons of 16 inches diameter spun iron pipes from abroad and 1,000 tons of 12-inch diameter pipes from within the country were also ordered for a total value of about Rs. 12.5 lakhs to meet the requirements of Srivilliputtur, Palayamkottai, Salem, Chittoor and Nandyal water-supply schemes.

7. In addition, an order for 20,000 r. ft. of 'C' class spun iron pipes 20-inch diameter was placed towards the close of the year 1951-52 for part of the requirements of the pumping main in Mangalore Water-Supply scheme.

8. During 1951-52, pipes were received for a total value of about Rs. 33.4 lakhs against orders placed both in the previous year and during the year under review.

9. As anticipated, the reserve stock of pipes and specials built up so far has already helped to break bottle necks in the progress of schemes under execution. The emergency stage of Chittoor Water-supply Scheme and Tirupati Confluence Scheme as well as the quick progress in the case of the Palayamkottai and Srivilliputtur Water-supply Schemes, as well as the running up main in the Salem Water-supply Scheme has been made possible, because of the diversion of pipes from the reserve stocks. The question of raising the limit of the reserve stock to suit the tempo of execution at present will also require to be examined.

CHAPTER IX.—RURAL WATER-SUPPLY SCHEMES.

The tempo of activities on rural water-supply schemes was on the increase during the year, as reflected by the number of estimates received by the Sanitary Engineer and the Executive Engineers (Public Health), from the Revenue Board and the District Collectors respectively for professional scrutiny. The Coimbatore (Public Health) Division alone had to deal with a number of estimates amounting, in all, to nearly Rs. 19 lakhs for rural water-supply works in the Nilgiris and Coimbatore districts. In most of these cases, the proposals as formulated by the minor irrigation staff were found to be defective in details, if not in fundamentals. The terrain in these two districts is rather difficult, and a basic knowledge of ground water hydrology and hydraulics is necessary to design rural water-supply schemes in these areas on efficient and economic lines. Almost all the estimates received in this division had to be returned for revision and re-examination of the details *de novo*.

2. Likewise, in the case of the Vijayavada (Public Health) Division, the number of rural water-supply scheme estimates referred for professional scrutiny was on the increase. Here again, the level of professional work revealed by the designs was not up to the mark.

3. Quite a common feature observed on a general scrutiny of such estimates referred to this department was that the initial line of investigation pursued by the minor irrigation staff before they put forward proposals was itself inadequate or misconceived. In a coastal village in the East Godavari district, an estimate had been approved initially to sink a well in the sandy tract which on completion of the work yielded brackish water. The minor irrigation staff had failed to take note of the fact that a number of

local wells already existing gave brackish water. A belated reference was made to the Sanitary Engineer for advice. It was a clear case where an intelligent investigation initially would have saved an infructuous outlay subsequently. In the case of another work, the conversion of an existing step-well into a draw-well, initially estimated to cost about Rs. 13,000 was found to have cost nearly Rs. 35,000 at the end.

4. Most often it is found that either a work had already been proceeded with and during its mid-execution stage it is discovered that a reference to the Sanitary Engineer is necessitated by the revised estimate for the work having exceeded the sanctioned estimate. Or else, deviations recommended by the minor irrigation staff or the revenue staff during the progress of the work, result very often in radical revision of the sanctioned estimate. In such cases, the reference to the Sanitary Engineer or his Executive Engineers (Public Health) come up rather belated, and the scrutiny assumes more or less a post-mortem examination on completed schemes. Very often the essential details necessary for a proper scrutiny of such works are found lacking, and correspondence calling for such details involves inevitable delays before any final advice could be given.

5. Even in the cases where the estimates framed by minor irrigation staff are ostensibly based on the adoption of approved type designs, it has been found that very often essential features in the type design are ignored and the estimates got up without a proper appreciation of even the structural features of the work involved.

6. Although villages and minor panchayats with a population of 10,000 have been included in the scope of the rural water-supply scheme it may be beyond the professional competence of minor irrigation staff to deal with water-supply schemes for units with a population of more than 5,000. Even so, where the development of any scheme requires the provision of a filter gallery at the head works and/or piping the supply to the consumers, such schemes will have to be referred to the Executive Engineer (Public Health) concerned for approval before they are sanctioned for execution. This aspect has also been pointed out to the Revenue Board. It may also be advisable to give a short course of training to the minor irrigation staff engaged on rural water-supply schemes so that they may have a clear grasp of the fundamentals of the subject and of the technique of developing safe water-supplies from different types of sources to suit rural requirements.

7. In view of the additional load of responsible work falling on the Executive Engineers (Public Health) and the Sanitary Engineer in scrutinizing such schemes and tendering advice thereon it will be necessary to augment the technical staff of the department suitably in order to shoulder this additional work without detriment to the normal functions of the department.

CHAPTER X.—MAINTENANCE OF SCHEMES.

Certain salient features in the maintenance of the water-supply and drainage schemes in operation in the State were brought out in the annual report of the previous year. Under the system in vogue, the maintenance of completed schemes is entrusted to the charge of the local bodies concerned with assistance of their own Municipal Engineering staff and under the supervisory control of the Sanitary Engineer. As explained in the last year's report, the day-to-day attention and maintenance on the schemes by the local Municipal Engineering staff had not been at a satisfactory level.

There were water-supply schemes in operation in a number of stations where Municipal Engineers were not entertained for several years, before the constitution of the Municipal Engineering service. Municipal subordinate staff in these stations had been exercising indifferent and unintelligent management of the component parts of the schemes. There was not any competent local engineering agency available in many cases in order to ensure the design features of the scheme being implemented in practice, and to avoid any overstraining of the source, bad working of the filters, and arbitrary regulation of the control valves in the distribution system in an attempt to meet complaints of inadequate supply.

2. With the posting of Municipal Engineers to many of the municipal stations having water-supply and drainage schemes in operation and the appointment of subordinate engineering staff for the Public Works and Water Works and Drainage Works of the municipalities, attempts are being made in recent years to set right conditions of bad maintenance of schemes. Even so, the difficulties in this direction have increased, since the schemes installed several years ago have most of them become out-moded for the present requirements of the vastly increased populations in the municipal towns. With most of the old water-supply schemes standing in need of large scale expansions and renewals, conditions of supply in these municipal towns are getting to be more and more unsatisfactory. The local body concerned is invariably unable to finance the improvement measures required for its water supply scheme, and the result is that there has been a growing discontent on the part of the consumers on the unsatisfactory conditions of water-supply obtaining.

3. In many of the old schemes in operation it is only the old town which can be said to enjoy the benefit of the protected water-supply. Subsequent extensions and newly developed areas within the Municipal towns are most often outside the ambit of the old water-supply distribution system, and the population in these extension areas are left to their own resources in the matter of water-supply. Attempts, however, are being made in several municipalities to transport drinking water-supply by lorries to such extension areas by tapping off supply from stand posts in the distribution system. This method is open to several objections, the least of which is that the consumers for whom this measure of relief is intended are the least satisfied about it. It need be hardly pointed out that such a method of transporting protected water from place to place within a town is the most uneconomical, and the least satisfactory. Unfortunately, many a municipality seems to be inclined to pursue this measure of extending the benefits of its water-supply system to the unserved areas. The proper remedy for the situation would be to expand the source and extend the distribution system to the unserved areas.

4. The year 1951-52 proved to be even more severe than the previous year in regard to drought conditions affecting the sources of many of the water-supply schemes in operation. Sources reputedly unfailing over the past successive decades, began to give alarmingly poor yields during the summer months of the year under review.

The gallery in the Vegavathi river (of the Conjeevaram water-supply scheme) a source which had served the municipality plentifully for over half a century, was left dry by the sub-soil water level sinking below the collecting pipe. Emergency measures were carried out then and there, to have part of the cross gallery lowered below the water-level so that supply to the municipality could be maintained. The lowering of the remaining length of

the gallery was taken up as a subsequent stage in the improvement scheme. While failure of supply to the town could be averted by these measures, the abnormally low water table obtaining in the river-bed continued to be a handicap against tapping the required supply from this source.

The Gudiyattam municipality faced an equally dismal situation when the supply from the gallery in the Koundinya river-bed was affected abnormally during the drought. After a short field work suitable remedial measures were suggested to avert a water famine.

The Tiruvellore Municipal Water-supply reached a stage of almost total failure when the water table in the Cooum sank below the infiltration gallery level. The town was in the throes of a water famine, all local domestic wells and tanks having gone dry. The Department took prompt steps in sinking a new well which gave a copious supply and thereby enabled the municipality to enjoy its normal quota of water-supply.

The yield from the Arantangi infiltration works was also improved by emergent measures carried out during the year, and the supply placed on a satisfactory footing.

The water-supply position in the Head Water Works of Tiruppur, Virudhunagar, Dindigul, Karur, Chingleput, etc., continued to give more anxiety during this year than in the previous year.

5. As a contrast, the water-supply position in Vijayavada had been substantially improved with bore wells provided inside the old infiltration wells, and with a duplicate 18 inches pumping main laid up to the service reservoir. The supply from the head works was thereby almost doubled and the town given a continuous supply.

The addition to the filter units at Kakinada, Rajahmundry and Erode had tangibly improved the supply position in these municipalities during the year.

The extension of the distribution system to new areas like Daba Gardens, Lalitha Gardens, etc., had improved the supply conditions in Visakhapatnam. Improvements to the distribution system in the high level zones (the Krishnanagar Colony, etc.), and the expansion of the Infiltration works at the Gosthani source are to be taken up shortly.

6. The supervisory control over the maintenance of schemes under operation was being slowly tightened up with periodical inspections by the Executive Engineers (Public Health), of stations under their jurisdictions. It has also been possible to introduce gaseous chlorination of the supplies in some of the major schemes in operation, an improvement long over due in the face of the repeated adverse remarks of the Director of King Institute on the inadequate, if not unsatisfactory chlorination obtaining in many of the water-supply systems in operation. The Director of King Institute is carrying out routine analysis of the water-supplies in all the schemes under operation thrice in a year. Even so, it is being felt that the frequency of analysis should be increased and the control tightened up further in order to achieve optimum results on the efficient maintenance of the schemes in operation. The question of augmenting the analytical staff for the Water Analysis Section and co-ordinating its activities with the Sanitary Engineering Department would require to be examined in this context.

7. As already explained, many of the old water-supply schemes in operation have become awfully inadequate for the needs of the present populations, the scope of the scheme as designed having been exceeded a long time back without the municipality taking timely measures to augment the supply

and expand distribution system. As a result, the question of granting additional house service connections to new applicants in these municipal stations has become a thorny problem. The additional number of house service connections which an outmoded water-supply system in operation could permit is so limited that invariably the grant of any new house service connections by the Executive Authority of a municipality is given rise to a spate of complaints and petitions from the disappointed many in the station. In fact, the acquisition of a water tap for one's house had become such a prized possession in certain municipalities that applicants coveting it are prepared to donate lump sums for improving the water-supply system in the municipality in the hope of securing a water tap in the bargain. These difficulties will continue inevitably until the disparity between the capacity of the schemes and the requirements of the population is set right by improving the water-supply system adequately to meet the needs.

8. In regard to the drainage schemes in operation, the old sewerage schemes functioning at Ootacamund and Madurai had long ago become inadequate to meet the needs of the increased populations. Improvement measures are under consideration to expand the sewerage scheme at Ootacamund to suit the present needs and to avoid the surplussing of sewage into the lake during peak flow periods—an undesirable feature.

Improvements to the main Drainage Pumping Station in Madurai are under consideration in order to deal with the increased quantity of sewage. An extension of the sewage farm at Avaniapuram is also in progress.

In the case of other stations like Vijayavada, Vellore, Tirupati, Bellary, Salem, etc., where open partial drainage schemes are in operation, the maintenance has been but indifferent and the sewage farming far from satisfactory.

The handicaps of maintaining open drains designed for storm flows for efficient discharge of sullage flows were being felt increasingly particularly where the drains were big or covered and desilting was a problem. There were complaints in this regard from Rajahmundry (where a partial drainage scheme is in operation) and temporary remedial measures were suggested to meet the situation.

In Coimbatore Municipality pre-treatment works with provision for grit removal, sedimentation and sludge digestion, were nearing completion, and it is hoped to improve the working of the sewage farm soon with clarified sewage passed on to it after the pre-treatment. The municipality was taking steps to arrange the sewage farming on satisfactory lines.

9. The running and maintenance of pumping installations in the water-supply and drainage schemes in operation was being supervised by the Mechanical Expert and the Additional Mechanical Expert by periodical inspections and check up. The advice tendered by these inspecting officers for the proper upkeep and efficient performance of the plants was being followed by the municipalities concerned, but not always with the necessary promptitude.

Electrification of the water works pumping station at Arapalayam Head Works (Madurai) and partial electrification of the Bellary Head Works were completed during the year. Electrification of the Bellary Head Works, Vizianagaram and Gosthani (Visakhapatnam) was being put on hand. The electrification of Gudur and Gudiyattam Water Works was under consideration.

Appendix A and B show salient details of water-supply and drainage systems in operation, with special reference to the Pumping plants in working.

CHAPTER XI.—THE MUNICIPAL ENGINEERING SERVICE.

The Sanitary Engineer to Government continued to exercise control over the Municipal Engineering Service during the year.

2. A major reform was introduced by the Government during in the year in the Municipal Engineering Service by constituting it into a Government service in G.O. Ms. No. 2013, L.A., dated 31st October 1951. The Municipal Engineers were divided into four grades with the following strength and scales of pay before the reform was introduced :—

Grade.	Strength.	Scale of pay. RS.
I	10	400—20—600.
II	9	300—10—400.
III	15	200—10—300.
IV	17	180—5—200.

In the Government Order cited, the service was reconstituted with three grades with the following strength and scales of pay, as from 1st January 1952 :—

Grade.	Strength.	Scale of pay.	Remarks.
I	10	Rs. 500—50/2—850	Corresponding to an Executive Engineer of the Public Works Department.
II	15	Rs. 260—30/2—380—40/2—500.	Corresponding to an Assistant Engineer of the Public Works Department.
III	26	Rs. 150—10—250.	Corresponding to a Junior Engineer of the Public Works Department.

3. The Engineers in the first and second Grades will be gazetted officers under a separate state service called "The Madras Municipal Engineering Service." All the Engineers in the third grade will be non-gazetted officers under a separate service called "The Madras Municipal Engineering Subordinate Service."

4. Six of the municipal stations in the third grade, prior to the above reform, were upgraded to the second grade to bring the total number in the second grade to 15, to correspond with the 15 posts of second grade municipal engineers. The following list shows the grading of the 51 municipal stations (for which posts of municipal engineers are sanctioned) both before and after the provincialization of the service :—

Previous grading.

Grading as at present.

I Grade Municipalities.

1 Vijayavada.	1 Vijayavada.
2 Coimbatore.	2 Coimbatore.
3 Madurai.	3 Madurai.
4 Ootacamund.	4 Ootacamund.
5 Tiruchirappalli.	5 Tiruchirappalli.
6 Guntur.	6 Guntur.
7 Kakinada.	7 Kakinada.
8 Vishakapatnam.	8 Vishakhapatnam
9 Salem.	9 Salem.
10 Kozhikode.	10 Kozhikode.

Previous grading.

Grading as at present

II Grade Municipalities.

1 Rajahmundry.	1 Rajahmundry.
2 Tiruppur.	2 Tiruppur.
3 Tuticorin.	3 Tuticorin.
4 Bellary.	4 Bellary.
5 Dindigul.	5 Dindigul.
6 Eluru.	6 Eluru.
7 Masulipatnam.	7 Masulipatnam.
8 Tanjore.	8 Tanjore.
9 Vellore.	9 Vellore.
	10 Mangalore.
	11 Kurnool.
	12 Vizianagaram.
	13 Nellore.
	14 Kancheepuram.
	15 Kumbakonam.

III Grade Municipalities.

1 Coonoor.	1 Coonoor.
2 Karaikudi.	2 Karaikudi.
3 Kumbakonam.	3 Nagapattinam.
4 Mangalore.	4 Tirunelveli.
5 Nagapattinam.	5 Virudunagar.
6 Nellore.	6 Cuddalore.
7 Tirunelveli	7 Cuddapah.
8 Vizianagaram.	8 Erode.
9 Virudunagar.	9 Pollachi.
10 Kancheepuram.	10 Adoni.
11 Cuddalore.	11 Chidambaram.
12 Cuddapah.	12 Devakottai.
13 Erode.	13 Kodaikanal.
14 Kurnool.	14 Nandyal.
15 Pollachi.	15 Palakol.
	16 Palayamcottai.
	17 Palghat.
	18 Karur.
	19 Tenali.
	20 Mayuram.
	21 Chittoor.
	22 Anakapalle.
	23 Palni.
	24 Tadpatri.
	25 Anantapur.
	26 Pudukkottai.

IV Grade Municipalities.

Previous grading.

- 1 Adoni.
- 2 Chidambaram.
- 3 Dovakottai.
- 4 Kodajkanal.
- 5 Nandyal.
- 6 Palakol.
- 7 Palayamkottai.
- 8 Palghat.
- 9 Karur.
- 10 Tenali.
- 11 Mayuram.
- 12 Chittoor.
- 13 Anakapalle.
- 14 Palni.
- 15 Tadpatri.
- 16 Anantapur.
- 17 Pudukkottai.

5. Proposals were under consideration to include in the third grade new municipal stations and to sanction the post of third grade municipal engineer for each of these stations.

6. An encouraging feature was that several municipal councils were pressing for the sanction of a municipal engineer for their station so that municipal engineering works could be put through the more quickly and efficiently thereby.

7. Steps will have to be taken to fill many of the existing vacancies in the third grade as well as the additional posts proposed for the new third grade stations, by open recruitment and promotion of deserving and suitable senior municipal supervisors in service. Now that the service is fully provincialized, it will be possible to attract and retain engineers with good qualifications and experience and improve the efficiency of the service abroad.

8. The position in regard to the Municipal Subordinate Engineering staff under the employ of municipal councils, i.e., municipal supervisors, overseers, draughtsmen and tracers, water works and drainage works staff, etc., would require to be examined and improved in order that existing handicaps and defects could be removed.

CHAPTER XII.—GENERAL.

The Sanitary Engineer continued to be a member of the Board of Public Health as well as of the Water and Sewage Purification Committee. He was also a member of the Technological Diploma Examination Board constituted by the State Government.

He continued to function as the Inspecting Officer for the grant-in-aid works (other than road and electrical works) of the Corporation of Madras. He was a Special Councillor of the Corporation of Madras.

He also served as a member of the Hotel Sanitation Committee constituted in G.O. No. 3476, Health, dated 5th October 1950, which concluded its labours in September 1951.

2. The Sanitary Engineer continued to exercise control over the maintenance of the Experimental Filter Station at Kilpauk assisted by the Assistant Engineer (Public Health) posted for this purpose.

3. The post of Instructor in Elementary Sanitary Engineering at Madras Medical College continued to be under Sanitary Engineer pending the appointment of an Assistant Engineer (Public Health) against the post sanctioned by Government for the purpose.

4. Another post of Assistant Engineer (Public Health) was sanctioned for the technical section of the Sanitary Engineer's office, to cope with the increased volume of technical work in investigation and design of water-supply and drainage schemes.

5. A fourth batch of B.E. students of the department were deputed by the Government for training at the All-India Institute of Hygiene and Public Health, Calcutta, for the M.E. (P.H.) Course. Students of the M.E. (P.H.) course who were deputed for practical training in this branch by the Director of the All-India Institute of Hygiene and Public Health, Calcutta, were also given necessary practical training on works in progress under the several Public Health divisions and at the Central Design Office of the Sanitary Engineer.

6. *Direction personnel.*—Sri S. Rajagopalan, B.E., M.I.E. (Ind.), held the post of Sanitary Engineer during the year.

The Executive Engineers (Public Health) of North and South Madras Divisions with their headquarters at Madras continued to assist the Sanitary Engineer, in addition to their division work, in the preparation of plans and estimates for the various Water-supply and Drainage Schemes and in dealing with technical references on schemes. The amalgamation of these two divisions into the Central Public Health division with headquarters at Madras and the creation of the post of Executive Engineer (Public Health) Designs, attached to the Office of the Sanitary Engineer, were approved and given effect to on 31st March 1952, afternoon. According to this arrangement, the Executive Engineer (Public Health), Central Division, will function like the Executive Engineers of the other Public Health Divisions and the Executive Engineer (Public Health) Designs, will attend solely to the Design Work in the Sanitary Engineer's office and technical references coming up to the Sanitary Engineer.

Sri S. T. L. K. V. N. S. Ramanujachari, B.Sc. (Eng.), A.M.I.E. (Ind.), held the post of Mechanical Expert to the Sanitary Engineer.

Sri M. V. Subrahmaniam, B.A., B.E., held the post of Additional Mechanical Expert.

Sri M. G. Parthasarathy, B.E., Assistant Engineer (Public Health), held the post of Personal Assistant to the Sanitary Engineer.

Sri S. R. Srinivasan, B.E., Assistant Engineer (Public Health), held the post of the Assistant Engineer (Public Health), Corporation Works and Experimental Filter Station.

Sri T. Durairaj, B.E., M.E. (P.H.), A.M.I.E. (Ind.), Assistant Engineer (Public Health), held the post of First Assistant Engineer (Technical Section).

Sri V. A. Anandadoss, B.E., M.E. (Public Health), took charge of the post of Second Assistant Engineer (Public Health) (Technical Section), on 18th July 1951, and continued in the post during the rest of the year.

PUBLIC HEALTH DIVISIONS.

The following officers held the post of Executive Engineers (Public Health) of the Public Health Divisions mentioned against them during the year.

I. Vijayavada Division—

(i) Sri P. Thambumulla Reddy, B.A.—1st April to 8th December 1951, afternoon.

(ii) Sri G. R. Subrahmania Iyer, B.E., Executive Engineer (Public Health), North Madras Division (additional charge)—8th December 1951, afternoon to 8th January 1952, forenoon.

(iii) Sri P. Thambumulla Reddy, B.A.—8th January 1952, forenoon to 31st March 1952.

II. North Madras Division—

(i) Sri M. M. Mani, B.E., A.M.I.E. (Ind.)—1st April to 18th May 1951, afternoon.

(ii) Sri S. Rajagopalan, B.E., M.I.E. (Ind.), Sanitary Engineer (additional charge)—18th May 1951, forenoon to 23rd July 1951, forenoon.

(iii) Sri G. R. Subrahmania Iyer, B.E.—23rd July 1951, forenoon to 31st March 1952.

III. South Madras Division—

(i) Sri A. Venkataramanan, B.A., B.E., M.I.E. (Ind.)—1st April to 13th April 1951, afternoon.

(ii) Sri S. Rajagopalan, B.E., M.I.E., Sanitary Engineer (additional charge)—13th April 1951, afternoon to 21st May 1951.

(iii) Sri A. Venkataramanan, B.A., B.E., M.I.E. (Ind.)—21st May 1951, forenoon to 10th March 1952, afternoon.

(iv) Sri G. R. Subrahmania Iyer, B.E., Executive Engineer (Public Health), North Madras Division (additional charge)—10th March 1952, afternoon to 31st March 1952.

IV. Tiruchirappalli Division—

(i) Sri S. Jambunathan, C.E.—1st April to 3rd November 1951, afternoon.

(ii) Sri B. Sathyamurthi, B.E.—3rd November 1951, afternoon to 31st March 1952.

V. Coimbatore Division—

(i) Sri O. Dhananjayan, C.E.

VI. Water-supply and Drainage Division, Madurai—

(i) Sri G. R. Subrahmania Iyer, B.E.—1st April to 18th July 1951, afternoon.

(ii) Sri S. Jambunathan, C.E., Executive Engineer (Public Health), Tiruchirappalli (additional charge)—18th July 1951, afternoon to 21st August 1951, forenoon.

(iii) Sri M. M. Mani, B.E., A.M.I.E. (Ind.)—21st August 1951, forenoon to 31st March 1952.

APPENDICES

13th August 1952

S. RAJAGOPALAN,
Sanitary Engineer to Government

APPENDIX A.

Serial number and name of station.	Scheme when initiated and completed.	Cost of scheme executed in lakhs of rupees.	Scheme designed as partial or full.	Rate of supply in gallons per head per day.		Source of supply and treatment method.	Details of pumping plant.			
				As de- signed.	As actually obtained.		Type of plant.	Unit number.	Horse-power.	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MUNICIPALITIES.										
1 Adoni	1893-95 ..	1.57 ..	Full ..	10 ..	5.5 ..	1. Rainfed storage tank water treated on slow sand filters at Nalla-Cheruvu.	Gravitational ..	..	1	94
Improvements ..	1935-40 ..	7.70 ..	.. ..	.. ..	.. ..	2. Second source—Infiltration wells in the Hagari river-bed near Irabavi.	Pumped ..	..	2	94
2 Anantapur ..	1907-24 ..	4.811 ..	Full ..	15 ..	5.0 ..	Infiltration gallery in the Pandamaneru river-bed.	Do. ..	..	1 Do. 2 Electrical 3 motors. 344	13 20 18 20 10 ..
3 Bellary	1890-1927 ..	1.00 ..	Do. ..	10 ..	5 ..	Infiltration wells in the Hagari river bed.	Do. ..	..	1 Do. 2 Electrical 50 motors. 3	45 51 75 75
4 Bodinayakanur ..	1937-44 ..	5.88 ..	Do. ..	15 ..	7 (Approx.) ..	Hill stream (Kothagudi) water treated on Paterson's mechanical filters.	Gravitational ..	..	..	..
5 Cuddapah ..	1890-93 ..	1.60 ..	Do. ..	5 ..	5.53 ..	1. (Old) Infiltration gallery in Bugga stream.	Pumped ..	..	1 Do. 2 Electrical motors 3	9 10 40
Improvements ..	1936-39 ..	2.60 ..	Do. ..	10 ..	.. ..	2. Pennar water-works ..	Do. ..	..	..	40 5
6 Cuddalore ..	1925-32 ..	2.42 ..	Partial ..	5 ..	5.5 ..	3. Chikakalavi pumping station.	Do. ..	..	..	..
7 Chingleput ..	1909-26 ..	2.96 ..	Full ..	15 ..	.. ..	Infiltration well and gallery in the Pennar river bed.	Do. ..	..	1 Do. 2 Electrical motors 3	16 17 20 15 19
8 Chidambaram ..	1900-15 ..	1.00 ..	Do. ..	15 ..	10.0 ..	Palar river bed.	Do. ..	..	1 Do. 2 Electrical motors 3	16 17 20 15 19
9 Coimbatore ..	1905-29 ..	46.67 ..	Do. ..	20 ..	.. ..	(Raja Valkal) canal bed storage tank water treated on Jewell's pressure filter.	Do. ..	..	1 Do. 2 Electrical motors 3	16 17 20 15 19
Improvements ..	.. ..	.. ..	.. ..	.. ..	.. ..	Shuvani river water dammed into lake and treated on mechanical filters.	Gravitational ..	..	..	..

11 Cochin	1938 ..	0.21 ..	Partial ..	3 ..	.. ..	Bulk supply purchased from water works.	Gravitational ..	.. ..	.. ..	
Improvements ..	1930 ..	3.10 ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	
12 Dindigul ..	1890-96 ..	2.76 ..	Partial ..	10 ..	less than one gal. ..	Odukkam valley infiltration gallery and wells.	Gravitational and pumped. ..	1 Electrical Do. 2A Do. 2B Do. 3 Do. 4	58 7.5 5 7.5 5	
13 Eluru	1905-19 ..	8.80 ..	Full ..	15 ..	7.54 ..	Eluru canal-fed storage tank water treated on slow sand filters.	Pumped ..	1 Electrical Do. 2 Steam engines 13 Electrical 4 2 45	80 30 13 45	
14 Erode	1912-19 ..	3.50 ..	Do. ..	15 ..	.. ..	Canvey raw water treated on Jewell's gravity filters.	Do. ..	1 Electrical (high lift) 2 Electrical (low lift) Do. .. Do. ..	1 30 30 10 10 11	
Improvements ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	
15 Guntur (old) ..	1901-08 ..	2.39 ..	Partial ..	5 ..	1.25 ..	(Old) Vengalapuram Infiltration gallery.	Pumped ..	1 Oil engine Do. ..	1 10 11	
Do. (new) ..	1941 ..	.. ..	Full ..	25 ..	.. ..	(New) Commamur canal-bed storage tank water treated on mechanical filter at Jagarlamudi head works.	.. ..	.. ..	.. ..	
16 Gudiyattam ..	1904-07 ..	0.50 ..	Do. ..	6 ..	.. ..	Infiltration gallery in the Kaundinya river bed.	Pumped ..	1 Gas engine Do. ..	1 18 20/22	
17 Gudur	1928-31 ..	1.14 ..	Do. ..	7.5 ..	7.15 ..	Infiltration well near irrigation tank.	Do. ..	1 Gas engine Do. ..	1 12.5 12.5	
18 Kurnool	1897 ..	32.24 ..	Do. ..	15 ..	8.0 ..	K.C. Canal bed storage tank water pumped treated on slow sand filters.	Do. ..	1 Electrical Do. ..	1 19 21	
Improvements ..	1951 ..	1.04 ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 Gas engine (standard type) Electrical ..	3 19 35	
19 Kumbakonam (old) ..	1901-14 ..	5.29 ..	Partial ..	5 ..	13 (Average) ..	Borewell near Mahamaham tank.	Pumped ..	1 Electrical Do. ..	1 35 35	
Do. (new) ..	1941 ..	.. ..	Full ..	15 ..	.. ..	Infiltration gallery in the Cauvery river padugal.	.. ..	.. ..	.. ..	
20 Kodakanal ..	1902-13 ..	1.43 ..	Do. ..	20 ..	.. ..	Pambar river ..	Gravitational and pumped. ..	1 Do. Do. ..	1 10 10	
Improvements ..	1950 ..	0.23 ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 Do. Do. ..	1 10 10	
21 Karaikudi ..	1934-39 ..	0.33 ..	Partial ..	5 ..	.. ..	Jambal Uthi (Artesian source).	Pumped ..	1 Do. Do. ..	1 5 5	
Improvements ..	1950 ..	0.50 ..	.. ..	.. ..	.. ..	.. ..	.. ..	1 Do. Do. ..	2 5 5	

APPENDIX A—cont.

Details of pumping plant—cont.													Remarks.	
Duty.				Present condition of plant.	Cost per thousand gallons of water pumped in annum.	Pumpage from head-works per day in the year		Capital cost of the pumping plant.	Maintenance cost of the pumping units during the year 1951-52.	Whether mechanical record is provided not to measure the quantity pumped.	Whether chlorination plant is installed or not.			
G. P. M.	Head feet.	Date of installation.	In											
						(12)	(13)					(14)		(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
MUNICIPALITIES—cont.														
1 Adoni	..	320	500	Mar. 1941	Satisfactory.	..	..	..	7,170	Venturi meter.	No	....	One new pump set was received and arrangements are being made for its erection.	
Improvements	..	320	500	Do.		..	..	..	..	..	..	..		
2 Anantapur	..	249 240	75 75	July 1936 Sep. 1936	Do.	181	..	17,500	6,841	No	No	....		
3 Bellary	..	(are motors which drives pumps Nos. 1 & 2. 240/275 240/275 400	240 240 240 300	Feb. 1926 1950 1942	Do.	4.09	4,63,500	1,39,500	77,320	47,955	Venturi meter.	No		One new pump set was received and arrangements are being made for its erection.
4 Bodhanayakanur	..	..	..	..	..	..	..	..	..	..	No	No		
5 Cuddapah	..	100 100 500/450 500/450	120 150 150/170 150/170	 6 Aug. 1941 Do.	Satisfactory.	3.50	..	..	15,763	17,663	Venturi meter.	No	....	
Improvements	..	160	146	1930	Do.	5.06	94,000	15,600	22,000	8,689	Yes.	No	....	
6 Cuddalore	..	100	148	1943 (motor).	..	..	..	..	..	..	..	..	....	
7 Chingleput	..	150 250 240 350	150 180 178 100	1928 Feb. 1950 1942 27 May 1941	Do.	1.49	3,14,280	1,47,440	25,056	9,262	Venturi meter.	No	....	
8 Chidambaram	..	..	100	30 June 1941	Do.	1.58	4,70,000	1,31,000	10,500	12,082	Venturi meter.	No	....	

10 Coonoor	..	..	..	..	..	..	..	..	..	..	..	..	..
21 Cochin	..	..	..	..	..	..	..	..	..	..	..	..	..
Improvements	..	..	..	..	..	..	..	..	..	..	..	..	..
12 Diadigal	..	150	50	23 Mar. 1946	Satisfactory.	5.23	1,50,900	42,600	3,610	7,893	Yes.	No	Due to drought conditions the W. L. went very low at Pandian well. A 5 B. H. P. Mono Block pump was installed in a pit in September 1951 at this pump house.
	..	140	70	11 Aug. 1938		..	..	..	..	..	..	..	
	..	130	75	Sept. 1951		..	..	..	..	..	..	..	
	..	120	80	20 Aug. 1938		..	..	..	..	..	..	..	
13 Eluru	..	850	60	Feb. 1947	..	..	..	..	..	..	..	..	..
	..	850	60	Do.	..	..	..	..	..	..	..	..	..
	..	650	55	1919	Do.	..	..	..	45,363	21,004	No	No	..
	..	2,400	20	Feb. 1947	..	..	..	..	..	..	..	..	..
14 Erode	..	300	144	30 Mar. 1938	Do.	2.06	5,76,000	4,74,000	21,625	34,588	Venturi meter.	No	Orders for the 3rd set of low lift and high lift units are placed.
Improvements	..	300	144	Do.	..	..	..	..	..	..	..	..	
	..	300	62	Do.	..	..	..	..	..	..	..	..	..
15 Guntur (old)	..	300	48	16 Nov. 1937	Do.	1.69	..	..	16,096	10,735	Output measured by 'V' notch arrangement.	No	The scheme (new) is under execution.
Do. (new)	..	300	48	Do.	..	..	..	..	..	..	..	..	
16 Gudiyattam	..	300	65	1919	Do.	1.81	4,18,500	1,43,500	8,000	11,138	No	No	One electrical unit was purchased and erection work is being taken up.
	..	300	65	1922	..	..	..	..	..	..	..	..	
Gedur	..	118	91	1930	Do.	..	..	..	..	..	..	No	..
	..	118	91	1930	..	..	..	..	..	..	..	No	..
18 Kurnool	..	600	85	1930	Do.	1.23	7,20,000	60,000	8,573	14,446	'V' notch recorder.	No	..
	..	600	80	1939	..	..	..	..	..	..	..	..	..
Improvements	..	..	..	1924	..	..	..	..	..	..	..	..	..
19 Kumbakonam (old)	..	650	100	13 Aug. 1945	Do.	1.46	7,20,000	1,20,000	3,587	7,510	No	No	..
Do. (new)	..	650	100	Do.	..	..	..	..	..	..	..	..	..
20 Kodakanal	..	35	335	..	Do.	..	..	..	..	..	No	No	Pumps taken over in August 1950.
Improvements	..	35	335	..	..	..	..	..	..	..	..	..	
21 Karaludi	..	80	85	27 Apr. 1937	Do.	32.49	32,700	12,400	10,000	13,484	Yes.	No	..
Improvements	..	80	85	Do.	..	..	..	..	..	..	..	..	..

APPENDIX A—cont.

Serial number and name of station.	Scheme when completed.	Cost of scheme as executed in lakhs of rupees.	Is scheme designed as partial or full.	Rate of supply in gals. per head per day.		Source of supply and treatment method.	Is supply pumped or gravity supplied.	Details of pumping plant.		
				As designed.	As actually obtained.			Type of plant.	Number of units.	H.P.
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
MUNICIPALITIES—cont.										
22 Kancheepuram ..	1895-97 ..	2.57 ..	..	..	..	Infiltration gallery in the wells Vegavathi river.	Pumped	Electrical Do.	1	42
Improvements ..	1930 ..	0.98 ..	..	..	..	Infiltration well in the same river.	.....	Do.	1	19.5
23 Karur ..	1935-40 ..	0.50 ..	Full	15	9 to 10	Infiltration wells in the Amaravathi river bed.	Pumped	Do.	2	19.5
24 Kakinada (old) ..	1897-1903 ..	0.29 .. 4.425 ..	Full	15	8.7 (average)	(old) Samnikota canal fed Rajan tank stored water treated on slow sand filters.	Pumped	Do.	1	45
								Do.	2	45
								Do.	3	25
								Do.	4	25
								Do.	5	7.5
								Do.	6	7.5
								Do.	7	8.5
								Do.	8	8.5
								Oil engine	9	9.5
								Steam engine	10	25
								(Loco type).	1	22
25 Masulipatnam ..	1907-1918 ..	6.73 ..	Full	15	7.7	Bandar canal fed storage tank water treated on Jewell's pressure filters.	Pumped	Electrical Do.	2	22
26 Mathurai ..	1894 ..	14.82 ..	Do.	15	8.0	Infiltration gallery in the Vaigai river bed at Kochadai.	Do.	Do.	1	170
Improvements ..	1950 ..	2.90 ..	..	..	..	Filter gallery at Arappalayam across Vaigai river.	Do.	Steam engine.	2	15
								Do.	3	15
27 Mettupalayam ..	1930-1934 ..	2.80 ..	Full	5	4.5	Bhavani river water treated on Paterson's gravity filters.	Do.	Electrical (high lift).	1	13
Improvements ..	1950 ..	3.33 ..	..	..	..	.....	.....	Electrical (low lift).	1	13
								.....	2	9
								.....	3	9
28 Nellore ..	1904-1908 ..	1.722 ..	Full	15	8.2	Infiltration gallery in the Pennar river bed.	Pumped	Electrical Do.	1	30
Improvements ..	..	0.98 ..	..	..	..	.....	.....	Do.	2	80
29 Nagapattinam ..	1897-1914 ..	9.50 ..	Full	15	11	Infiltration gallery in the Vetar river bed.	Pumped	Electrical Do.	1	40
								Do.	2	40
								Steam engine.	3	50
30 Ootacamund ..	1910 ..	5.50 .. 0.80 ..	Full	20	8.0	Impounding reservoirs ..	Gravitational.	..	..	..
31 Proddatur ..	1926-1933 ..	0.50 ..	Full	10	3.7	Infiltration well in the Pennar river.	Pumped	Steam engine.	1	10
								Do.	2	10
32 Palacole ..	1926-1931 ..	4.225 ..	Do.	10	9.8	Narasapur canal storage tank water treated on Jewell's pressure filters.	Do.	Oil engines	1	16/17½
33 Pudukottai ..	1900 ..	..	Do.	5	..	Rainfed tank water treated on Jewell's pressure filters in commission—Pudukulam old Jewell's gravitational filter standbys. Rain-fed tank ..	Do.	Electrical Do.	1	15
								Do.	2	10
								Do.	3	10
								Do.	4	10
34 Palni ..	1912-1932 ..	1.00 .. 2.14 ..	Do.	10	..	Adampuram well in infiltration well in Vellar Ammayapatti in the Hills.	Do.	Do.	1	3
35 Periyakulam ..	1906-1912 ..	3.15 ..	Full	15	..	Palani river water tapped in the Hills.	Gravitational.	Oil engine	2	10
Extensions ..	1923 ..	0.51 ..	..	..	..	Berham water (from Kodai Hills) treated on slow sand filters.	Do.	..	..	..
36 Pollachi ..	1930-1937 ..	6.30 ..	Full	15	..	Infiltration gallery in the Aliyar river bed.	Pumped	Electrical Do.	1	85
37 Rajahmundry ..	1923-1934 ..	6.42 ..	Do.	15	11.16	Godavari river water treated on Paterson gravity filters.	Do.	High lift Electrical	1	30
								Do.	2	30
								Low lift Electrical	1	16
								Do.	2	16
38 Srirangam ..	1909-1939 ..	1.14 ..	Do.	10	6.5	Infiltration well near Thumanjana Cauvery.	Do.	Electrical Do.	1	8.5
Improvements ..	1950 ..	0.38 ..	..	..	..	.....	.....	Do.	2	8.5
39 Salem ..	1911 ..	8.27 ..	Full	5	4.67	(Old) Rainfed, Panama-rathupatti lake water treated on slow sand filters.	Gravitational.	Do.	1	110 } in take
Improvements ..	1951 ..	81.45 ..	..	15	..	(New) Mettur Reservoir water treated on Paterson gravity filters.	Pumped	Do.	2	110 } power.
								Do.	3	310 } Boas-
								Do.	4	310 } ter.
40 Tadipatri ..	1930-1933 ..	0.95 ..	Full	15	5	Infiltration well in the Pennar river bed.	Do.	Oil engine	1	6
								Do.	2	6

APPENDIX A—cont.

Serial number and name of station.	Details of pumping plant—cont.						Pumpage from head works per day in the year.	Whether mechanical or not to measure the quantity pumped during the year 1951-52.	Whether chlorination plant is installed or not.	Remarks.		
	Duty.		In	Present condition of plant.	Cost per thousand gallons of water pumped in anna.	Date of installation.						
	G.P.M.	Head Feet.										
	(12)	(13)									(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
MUNICIPALITIES—cont.												
22 Kancheepuram	1100/1306	86/72	27 Apr. 1946.	Satisfactory.	1.03	..	..	28,000	15,565	Venturi meter.	No	....
Improvements	1100/1343	87/70	Do.			..	..	..	..	..	..	....
23 Karur ..	395	102	22 July 1939.	Do.	1.04	5,02,300	3,11,400	10,620	9,553	Water meter.	No	....
	395	102	Do.			..	..	..	..	..	..	....
24 Kakinada (old)	1,250	86	1 Jan. 1947.	Do.	1.00	..	..	23,660	21,720	Venturi meter.	No	....
	1,250	86	Do.			..	..	..	..	..	..	....
25 Masulipatnam	603	75	1938	Do.	2.00	7,09,375	3,12,500	7,007	23,157	Venturi meter.	Chloro feeder.	....
	603	75	1938			..	..	..	..	..	..	..
26 Madurai	2,400/3,300	95/75	17 Jan. 1940.	Do.	..	..	..	57,607	47,075	Venturi meter with recorder.	Yes ..	....
	2,400/3,300	95/75	Do.			..	..	..	..	..	..	..
Improvements	606	55	..	Do.	..	..	..	46,150	53,508	Venturi meter	Yes ..	* The steam plants at Arapalayam Water works Madurai, were replaced by electrical plants in Feb. 1952. H.P. 40 each.
	606	55	..			..	..	..	..	..	..	..
27 Mettupalayam	150	130	1947	Do.	..	..	..	..	..	No	..	Yes ..
	160	130	1947			..	..	..	..	..	..	..
Improvements	160	57	1947	Do.	..	..	..	..	..	..	..	....
	160	57	1947			..	..	..	..	..	..	..

28 Nellore	700/750	74/66	1935	..	Do.	0.90	8,28,000	2,64,000	8,358	13,928	Venturi meter.	No ..
Improvements	700/750	74/66	1935	..	Do.	..	..	..	..	..	..	..
29 Nagapattinam	750	120	1 Dec. 1949.	Do.	..	..	..	1,85,230	20,850	Venturi meter.	Chloro-feeder.	..
	750	130	Do.			..	..	..	..	..	..	..
30 Ootacamund	..	..	..	..	..	..	..	..	..	..	..	..
31 Proddatur	208	55	1931	Satisfactory.	..	..	..	26,261	..	No	..	No ..
	208	55	1931			..	..	..	..	..	..	One steam engine was replaced by an oil engine 13 H.P. in Dec. 1951.
32 Palacole	240	68	1931	Do.	..	..	..	15,712	18,644	No	..	..
	240	68	1931			..	..	..	..	..	..	..
33 Pudukottai	250	110	19 Jan. 1936.	Do.	..	..	..	..	..	..	..	..
	137	133	12 Aug. 1947.			..	..	..	..	..	..	..
	30/60	34/22	..	Do.	..	2.93	2,70,000	98,750	..	12,751	No	No ..
	99/150	160/120	4 Mar. 1942.			..	..	..	..	..	..	..
34 Pali	..	..	..	..	..	..	..	..	..	..	..	..
35 Periyakulam	..	..	..	..	..	..	..	..	..	..	..	..
Extensions	..	..	..	..	..	..	..	..	..	..	..	..
36 Pollachi	470	325	5 Sep. 1948.	Satisfactory.	2.49	4,09,000	72,000	91,000	15,828	Venturi meter.	Yes.	Additional Mechanical filter unit was put in to service. Part of the machinery for bigger capacity units was received.
	470	325	Do.			..	..	..	..	..	..	..
37 Bajamundry	875	86	..	Do.	1.07	13,50,000	9,88,000	7,379	28,230	Venturi meter.	Yes ..	..
	875	86	..			..	..	..	..	..	..	..
	875	45	..	..	..	..	..	..	..	..	..	..
38 Srirangam	250	65	1 Apr. 1940.	Do.	1.27	2,40,000	1,50,000	6,846	5,471	Yes	..	No ..
Improvements	250	65	Do.			..	..	..	..	..	..	..
39 Salem	1,570	147	Mar. 1952	Do.	..	..	..	..	..	..	..	Yes ..
	1,570	147	..			..	..	..	..	..	..	One temporary loaned unit also at in take tower.
Improvements	1,570	431	..	..	..	..	..	..	..	Venturi Electro flo water meter.	Chlorone and Ammonia plant.	..
40 Tadipatri	104	75	1938	Satisfactory.	3.15	2,05,600	50,200	6,000	5,960	Yes	..	No ..
	104	75	1938			..	..	..	..	..	..	..

APPENDIX A—cont.

Serial number and name of station.	(1)	Scheme when initiated and completed.	(2)	Cost of scheme as executed in lakhs of rupees.	(3)	Scheme designed as partial or full.	(4)	Rate of supply in gallons per head per day.		(6)	(7)	Supply pumped or gravitational.	Details of pumping plant			
								As designed.	As actually obtained.				Type of plant.	Plant number.	H.P.	
MUNICIPALITIES—cont.																
41 Tiruchtrappalli	..	..	1896	..	9.30	Full	..	..	15	17.5	Infiltration works in the Cauvery river bed.	Pumped	..	Electrical	1	120
Improvements	..	..	1951	..	0.68	..	..	..	..	..	..	..	..	Do.	3	100
42 Tirupati	..	..	1895-1899	..	2.01	Full	..	..	..	..	Infiltration gallery in the Kalvani river.	Gravitational	..	Do.	4	100
43 Tiruvannamalai	..	..	1900-1934	..	3.45	Do.	..	..	5	5.3	Infiltration gallery in the Periya Yeri.	Pumped	..	Electrical	1	20
														Oil engine	2	20.22
44 Tiruvallur	..	..	1930-1936	..	1.43	Do.	..	..	5	15	Infiltration well and gallery in the Cooum river.	Do.	..	Electrical	1	7.5
														Do.	2	7.5
45 Tanjore	..	..	1891-1895	..	5.30	Do.	..	..	15	12	Filter basin in the Vennar river.	Do.	..	Do.	1	65
Improvements	..	..		..	2.56	..	..	..	..	..	..	..	..	Do.	2	65
46 Tiruppur	..	..	1928-1946	..	1.84	Partial	..	..	5	2	Infiltration gallery in the Kolliveli vari.	Do.	..	Do.	1	3
Improvements	..	..	1950	..	0.49	..	..	..	..	..	..	..	..	Do.	2	3
														Do.	3	5
														Do.	4	5
47 Tuticorin	..	..	1896-1929.	..	2.00	Full	..	..	15	..	Infiltration well and gallery in the Tambraparni river.	Do.	..	Oil engine	1	75
Improvements	..	..	-1950.	..	0.04	..	..	..	..	..	..	..	..	Do.	2	75
														Electrical	3	46
48. Vellore	..	..	1902-1907. Redistribution in 1938.	..	1.39	Full	..	..	15	8.00	(Old.) Rainfed tank water (Otter) treated on slow sand filters and supplemented by infiltration gallery outside the tank bund.	Gravitational. Pumped	..	Gas engine	1	47/52
					0.90	..	..	..	..	..	..	..	..	Pumped	2	47/52
														Gas Engine Pumped.	3	65
49 Vijayavada	..	..	1898-1909.	..	7.06	Full	..	..	15	15	(New.) Infiltration works in the Palar river bed.	..	..	Electrical	3	65
Improvements	..	..	-1950.	..	2.50	..	..	..	..	..	Infiltration wells in the Krishna river padugal.	Pumped	..	Do.	2	55
50 Virudhunagar	..	..	1929-1938.	..	6.41	Full	..	..	10	7 Gls.	Infiltration gallery across the Arjuna river.	Pumped	..	Do.	1	35
														Do.	2	35

APPENDIX A—cont.

[illegible][illegible]

APPENDIX A—cont.

Serial number and name of station.	(1)	Scheme when initiated and completed.	(2)	Cost of scheme as executed in lakhs of rupees.	(3)	Is scheme designed as partial or full.	(4)	As designed.	(5)	As actually obtained.	(6)	Source of supply and treatment method.	(7)	Is supplementary or	Details of pumping plant.		
															Type of plant.	Plant number.	H. P.
															(9)	(10)	(11)

PANCHAYAT BOARDS.

1 Arantangi	1928-1930	..	2-57	Partial	..	5	..	..	..	..	..	..	..	..	Electrical	1	3
2 Arkonam	1931-1939	..	1-93	Full	..	10	..	..	..	..	..	..	..	..	Do.	2	3
3 Battagundu	1940-1942	..	0-93	Do.	..	3	..	..	..	..	..	..	..	..	Do.	3	13 3
4 Chodavaram	1914-1931	..	1-98	Do.	..	5	..	..	..	..	..	..	..	..	Do.	4	3
5 Dharmavaram	1914	..	0-09	Do.	..	3	..	..	..	..	..	..	..	..	Do.	5	3
6 Kosgi	1915	..	0-11	Do.	..	1	..	..	..	..	..	..	..	..	Do.	6	3
7 Manaparai	1937-1939	..	0-15	Do.	..	5	..	..	..	..	..	..	..	..	Do.	7	3
8 Rameswaram	1914-1922	..	0-35	Do.	..	10	..	..	..	..	..	..	..	..	Do.	8	1
9 Ramachandrapuram	1933-1935	..	1-57	Full	..	7-0	..	..	..	..	..	..	..	..	Do.	9	4
10 Tiruthani	1930-1931	..	0-06	Do.	..	1	..	..	..	..	..	..	..	..	Do.	10	11/12
11 Yemmiganur	1925-1927	..	0-41	Do.	..	3	..	..	..	..	..	..	..	..	Do.	11	11/12
		..	0-33	Partial	..	5	..	..	..	..	..	..	..	..	Do.	12	3
		..	0-06	Do.	..	1	..	..	..	..	..	..	..	..	Do.	13	3
		..	0-41	Do.	..	3	..	..	..	..	..	..	..	..	Do.	14	3
		..	0-33	Partial	..	5	..	..	..	..	..	..	..	..	Do.	15	3

APPENDIX A—cont.

Serial number and name of station.	Details of pumping plant—cont.										Pumpage from head-works per day in the year.	Capital cost of the pumping plant.	Maintenance cost of the pumping unit during the year 1951-52.	Whether mechanical recorder is provided to measure the quantity pumped.	Whether chlorination plant is installed or not.	Remarks.
	Duty.		Present condition of plant.		Cost per thousand gallons of water pumped in annas.		Maximum.		Minimum.							
	Head in feet.	G.P.M.	Date of installation.		Head in feet.	G.P.M.	Head in feet.	G.P.M.	Head in feet.	G.P.M.						
(1)	(12)	(13)	(13-A)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)	

PANCHAYAT BOARDS—cont.

1 Arantangi	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2 Arkonam	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3 Battagundu	200	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4 Chodavaram	146	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5 Dharmavaram	100	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6 Kosgi	60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7 Manaparai	80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8 Rameswaram	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9 Ramachandrapuram	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10 Tiruthani	141	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11 Yemmiganur	141	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..



HEALTH DEPARTMENT

G.O. No. 3708, 22nd November 1952

Administration Report—Sanitary Engineering Branch—1951-52—
Reviewed.

READ—the following papers :—

I

Letter from Sri M. S. THIRUMALE AYYANGAR, B.E., M.E. (Hons.), M.I.E. (Ind.), I.S.E., Chief Engineer (Public Health), Chepauk, to the Secretary to Government, Health Department, Fort St. George, Madras, dated the 28th August 1952, No. 1299-PH/52-4.

[Administration Report—Sanitary Engineering Branch—1951-52.]

In continuation of my Endorsement No. 1299-PH/52-3, dated 22nd July 1952, I forward herewith Sanitary Engineer's letter No. 18110-G/52-2, dated 13th August 1952, together with the Administration Report of his Branch for the year 1951-52 and Appendices A and B thereto.

2. The Sanitary Engineer's suggestions to raise the limit of reserve stock of C.I. pipes and to expand the technical staff of his Branch to cope with the increasing number of reference on rural water-supply works from the Revenue department may be considered, when concrete proposals are put forward by him. Similarly, the suggestion regarding the betterment of the service conditions of the Municipal Engineering Subordinate staff may be taken up for consideration, when concrete proposals are received from him.

3. The Sanitary Engineer's request in his letter that copies of the Report may be furnished to all the Executive Engineers (Public Health) and the Assistant Engineers (Public Health) of his Branch may be complied with by supplying the Sanitary Engineer with as many additional printed copies as are necessary for being supplied to the Executive Engineers and Assistant Engineers.

II

Letter from Sri S. RAJAGOPALAN, B.E., M.I.E., Sanitary Engineer, Chepauk, to the Chief Engineer (Public Health), Chepauk, Madras, dated 13th August 1952, No. 18110-G/52-2.

[Administration Report—Sanitary Engineering Branch—Annual Report for the financial year 1951-52. Reference.—Correspondence resting with this office letter No. 18110-G/52-1, dated 7th August 1952.]

I forward herewith my Annual Report for the Sixty-second year of the working of the Sanitary Engineering Branch, for the period 1st April 1951 to 31st March 1952.

The Report deals with the progress of works during the year under investigation, design and execution, and salient particulars about reserve stock of C.I. pipes, about the maintenance of schemes in operation, about rural water-supply schemes referred to this Department, and about the Municipal Engineering Service, including the upgrading of municipal stations.

I request that copies of the Report as approved by the Government may, please, be supplied to all the Executive Engineers (Public Health) and the Assistant Engineers (Public Health) of this Department.

III

Endorsement No. 1299-P.H./52-5, dated 17th September 1952.

Order—No. 3708, Health, dated 22nd November 1952.

Recorded.

2. The number of municipal and panchayat water-supply schemes in operation during the period under review was 64 as against 63 in the previous year. Chodavaram and Sivaganga Panchayat Water-supply Schemes were completed during the year. The number of municipal drainage schemes in operation was 13 in municipalities as in the previous year. No drainage scheme was functioning in any of the panchayat.

3. The water-supply schemes under execution during the year were 29 in municipalities and 11 in panchayats including 1 composite water-supply scheme for Tiruchendur and Kayalpatnam Panchayats and nine other villages under the rural water-supply scheme. The number of drainage schemes under execution in municipalities was eight and one in a panchayat.

4. Detailed plans and estimates were prepared for ten water-supply schemes and two drainage schemes during the year. The plans and estimates for nineteen water-supply schemes and five drainage schemes were under preparation during the year.

5. The year under review was the third year of the first five-year programme for the execution of municipal water supply and drainage schemes on the basis of priority.

(By order of the Governor)

S. R. KAIWAR,
Secretary to Government.

- 36580
- To the Chief Engineer (Public Health).
 - „ Sanitary Engineer through the Chief Engineer (Public Health).
 - „ Director of Medical Services.
 - „ Director of Public Health.
 - „ Director, King Institute, Guindy.
 - „ Director, All-India Institute of Hygiene and Public Health, Calcutta (with covering letter).
 - „ Public Health Commissioner with the Government of India (with covering letter).
 - „ Librarian, Secretariat Library.
 - „ Editor, *People's Health*, Lloyds Road, Royapet, Madras.
 - „ Public (Economics and Statistics) Department.
 - „ Press (as per distribution list in G.O. No. 4831, P.H., dated 11th November 1941).
 - „ Development Department (2 copies).