

IV. Recommendation

During the course of the field survey and as a result thereof, some important issues have been found which are to be improved, rectified or prepared for as early as practicable. They are described below and recommended to be put in effect by the agencies concerned.

4.1 General

4.1.1 Guarantee of Uninterrupted Flow of Canals

The proposed new treatment plants are to take the raw water from Muweis Canal and Saidiya Canal which are maintained under the responsible irrigation authorities. Though the canal water is easily available as the source of public water supplies, the flow of these canals is stopped for about three weeks during a certain period in winter, for maintenance purposes.

It is the best solution to take water from those Canals to realize most economical water supply. However, if the flow thereof should be stopped, another, very expensive, almost prohibitive, source must be sought for. Considering the above situation, it is recommended to obtain a guarantee of uninterrupted operation of the Canals.

4.1.2 Periodic Review of Long Term Program

When the Long Term Program was prepared, assumptions were made, mostly due to insufficiency of necessary data, on various parameters like the future development of the surveyed areas, population, water demand and others. The actual situation may differ somewhat from the Program based on the assumptions, and reviewing and revising it from time to time is most recommendable.

4.1.3 Calling-up Public Concerns in Water Supply

The public should be made more aware of the preciousness of water for the public health and the value of water supply services.

To reduce the pipeline leakage, the public should be encouraged to report, voluntarily and without delay, findings of the leakage.

To reduce the in-house loss and wastage, the public should be taught how to make simple repairs and to pay more attention to the dripping taps.

The public should be given more informations and education to learn that a good water supply service is worth paying for with the reasonable tariff.

4.2 Legislation and Organization

4.2.1 Legislation for Water Works

There is no established legislation for the water supply operation prevailing in the Governorate, except for the rudimental regulation or contract which partially regulate the service installation especially for the house connection and water tariff.

It is necessary to promulgate the national law or decree for the establishment of the local Public Water Company and this law or decree should authorize the PWC to develop the bylaw which includes the necessary provisions for the operation and maintenance of the water supply systems.

Such bylaw should include key provisions, among others :

- to authorize the water supply organization to operate and maintain the water supply systems,
- to prepare and introduce a water tariff bill in the legislative institution,
- to assess and levy the water tariff,
- to regulate the materials and equipments to be in accordance with the standard and design,

- to prevent the waste, contamination of water, misuse, and disorder of the public water supply systems,
- to allow the authority to examine and inspect the consumers' water related properties, and
- to regulate and control the safety measures for water supply operation,

Penalty should be imposed for the extreme cases of violation of the bylaws.

4.2.2 Establishment of Nation-wide Water Works Association

It is recommended to establish Egyptian Water Works Association consisting of the representative members of the water supply agencies /companies, manufacturers of pipes/equipments/chemicals/civil works contractors and so forth related to water works as an advisory center to provide the information, data and guidelines which can be utilized conveniently by the water related agencies or individuals. The followings are major activities of the association :

- Planning and preparation of the standards on pipes/equipments/chemicals of water works including standard drawings,
- Inspection and checking of conformity of above with the standards,
- Preparation of the design and operation manual,
- Data collection and publication,
- Training of employee, and
- Other necessary activities to support water supply works.

4.2.3 Establishment of New Organization for Water Supply In Sharqiya Governorate

In the Governorate, there are three water supply organizations with different practices of services, water sources, treatment and distribution systems originated from the different historical development background. Such difference in an administrative area hinders efficient performance and development of water supply works in many respects.

It is therefore recommended to establish the new organization, amalgamating the existing three organizations in order to unify the water supply services. This new organization should be formed as a public company with the ultimate objective to achieve the managerial autonomy, supported with the arrangements of ordinance and decree under the intensified guidance of NOPWASD.

4.3 Financing and Tariff

4.3.1 Project Financing

A substantial amount of the capital investment will be required to realize the extensive water supply development envisaged in the Long Term Program up to the year 2005. Even the First Priority-Phase Program to be implemented immediately, for which the technical and financial feasibility has been studied, will require a sizable magnitude of investment funds.

To implement the project with financial validity, the funds should be secured by a coordinated and integrated preparation by all relevant government agencies. The foreign currency portion should preferably be financed from a foreign lending agency at a lenient loan condition of low interest and long repayment period. The local currency portion, almost equal in size to the foreign portion, should be funded from the government in accordance with the disbursement schedule shown in the study report.

4.3.2 Revision of Water Tariff

The present tariff is low, unreasonably and unrealistically, when compared to the water service's operation/maintenance costs and other commodity prices.

In order to achieve the new company's financial independence, a principal objective of the organizational improvement, the internal fund should be generated to a possible extent by raising the water tariff gradually.

Even when the affordability of low income water consumers is taken into account, still the present tariff can be raised up to a certain, realistic level. By paying a higher tariff, the consumers will learn that it will help improvement of the service, in addition to becoming aware of the value of water.

4.3.3 Billing

The water tariff should be billed, in principle, in accordance with the water metering because of its reasonableness and fairness. The particular attention should be paid, however, by the water authority to provide the meters sufficiently and perform the legitimate control for the maintenance and operation of the meters so that the billing by the water meter is practiced successfully.

The standpipes' consumption is to be metered and billed also, and the consumers, registering their right of usage for a particular standpipe, should share the water bill according to a pre-determined rule.

In cases when the supply is serviceable but a connection cannot be equipped by the water meter, due to shortage for instance, a flat-charge is recommendable to be adopted for the transitional period, until the meter becomes available. The flat-charge is best to be set, upon referring to the method consumption of similar households.

4.4 Personnel Management and Training

4.4.1 Manpower Development and Personnel Management

At present, each of the water services in Sharqiya Governorate employs sufficient number of personnel. However, it cannot be denied that the personnels' technique and knowledge are not necessarily satisfactory. Developing the manpower is urgent and important, and it will be achieved only by training the personnel intensively and extensively.

The personnel management is also important for the individuals and whole organization. Promotion, transfer, etc. should be made on the merit system. Fair and right management will motivate their will for self-improvement and self-discipline and end in a successful management of the whole organization. In connection with the merit system, introducing qualification systems to the organization will be worth-while.

4.4.2 Training of Personnel

a) For Personnel engaged in Operation

During the field survey of the existing water supply systems, Various inefficiencies in the operation were noticed. Such inefficiencies originate from the lack of skill and knowledge in the operation and insufficiency of the fund for maintenance. To remedy this situation, a thorough training of the personnel concerned is considered indispensable. It is, therefore, recommended that the personnel be given opportunities to participate in the training course held by NOPWASD and/or public water companies, in order to improve their capability in their assignments.

b) For Personnel engaged in Administrative and Engineering Works

It is worthwhile for the organizations, both public and private, to carry out the training through the routine works and to have their own in-house training programs, the curriculum of which usually include basic and general institutional, socio-economic and accounting courses and the high-level professional courses.

Also needed are the courses for promoting the managerial capabilities like educating/training the subordinates and coordination/integrating their functions.

c) For Personnel engaged in Engineering

Like any other organization, an engineering work is usually carried out by a team lead by the engineer(s) and supported by the technicians and skilled workers. For a successful progress, communication and cooperation between the different organizational levels are of vital importance while presenting the opportunities of on-the-job training for both the team and individuals.

4.5 Operation

4.5.1 Operation Manual

Operation manual for routine and emergency cases which cover intake, treatment, transmission and distribution facilities should be prepared for the convenience of operation. In the manual, careful and safe handling of chlorine gas should be emphasized.

4.5.2 Coordination of Public Utilities

As a city grows in size and the inhabitants' living standard rises, the necessity of using roads for the public service utilities such as laying the pipes of water supply, sewage and drainage underground and spanning the cables of electricity and telephone on the sides of public roads increases, while the traffic congestion worsens obviously.

In planning and executing these utilities, coordination of the responsible agencies concerned is essential for the better use of road spaces, both above- and under-ground, and is effective in saving the construction costs. For such a coordination of plans and schedules, the interested agencies, including the service utilities, road maintenance and traffic control, are recommended to have meetings periodically or to form a joint-committee, in which every location of the structures to be installed/constructed in the right-of-way along the

roads and every stage of the works should be consented.

4.5.3 Filing of Drawing/Documents

One of the most serious problems experienced in the field is the lack of records, drawings, and documents which every organization is expected to keep in file and make ready for use. These documents are needed both for the proper execution of routine operations and for the right planning of facilities expansion.

For the appropriate maintenance of meters and adequate billing, every record of meters should be kept on file.

As the documents are the public property, taking out and returning to the library must be recorded. The regulations and organizational set-up for it should be prepared, as required.

The documents should be classified, indexed and filed, preferably in plural numbers for different offices concerned, and kept in order under the care of responsible persons.

a) Distribution Pipelines

Drawings and related documents of the pipelines should be kept in good order and condition, while the list of materials, dimensions and technological records like installation, accidental damages and repairs should be revised and updated for technical and managerial purposes.

b) Service Installations

A service installation differs from other water supply facilities in that it has two components of the public and private property. The record of service installation is to be considered as a contract document which must be kept in file under a good care. Such records should be classified by the consumer's name and/or address.

Every service installation should be maintained with a positive goodwill management of consumers.

c) Identification of Valve/Hydrant Location

In the surveyed area for the leakage study, finding the exact location of stopvalves, drain valves and fire hydrants has often presented difficulties, especially in case of the old supply systems.

Making the marks of them on nearby structures like house-walls, electricity poles and curbstones will be helpful for easy detection, while recording the location on the map should be practiced.

4.5.4 Groundwater

The groundwater in the Governorate has some problems in its quality and quantity. In the northern area, it is not potable due to the salinity, and in the southern area, some existing wells contain a high concentration of iron and manganese sometimes. Also in the southern area, some wells fail to produce water due to the seasonal dropdown of the water table.

Monitoring the wells with regard to the mentioned points will be both useful and valuable for the future development of groundwater in the area.

4.5.5 Leakage and Wastage Problem

As a result of the leakage survey in the field, it has been found that most part of leakage and/or wastage was caused by the faulty valves/taps damaged by the consumers' carelessness and left unrepaired and by the leaking pipes and valves. It seems that leaks found by the nearby residents are not reported to the water supply authority. Almost all public taps like standpipes are left damaged and/or unclosed. A considerable amount of water should have been saved, if they were taken care of without delay.

To this end, the consumers should be encouraged to report any leaks, be it in their house connections or in the public roads. The water supply authority is recommended to train the staff and form teams specialized in detection and repair of leaks and let them make the periodical surveys of service area for leakage.

4.5.6 Repair of Water Meters

In most of the existing water supply services, malfunctioning water meters are left unrepaired, leading to affect the supply services' financial situation adversely, and also to damage the mutual trust between the services and consumers.

Periodical checking of the water meters and immediate repair of the malfunctioning meters should be made a rule in the services. An appropriate setup including the meter inspection/repair teams and the meter repair shop together with store should be prepared. The ownership and management of the water meters should be clarified legally and institutionally.

4.5.7 Provision of Bulk Water Meters

Except at the treatment plants' outlet, no bulk water meter has been installed to measure and/or record the flow for distribution. The bulk water meter's record should be used in estimating the daily use and the hourly fluctuation. Comparison with the consumer meters' record will be useful in evaluating the relationship of production and consumption.

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