

Appendix-12

Non - Revenue water

General

Losses in a water network correspond to the difference between the quantity of water entering the network and the identified

(metered or estimated, billed or unbilled) quantities of water consumed.

The losses can be divided into two categories:

- **Physical losses** (leaks, overflow, etc.), i.e. the amount of water produced but not consumed.
- **Non- physical or commercial losses** (due to fraud, under- metering, etc.): these represent the water produced and consumed but neither billed nor account for.

Control on water losses

- Select (DMA)
- Collect the information to the pilot area.
- Measurement the flow and pressure of inlet pipe that feeding the pilot area.
- Measurement the flow and pressure in 24 hour to get a minimum night flow.
- Calculate the water quantity consumed from each house (depending at meter).

- Analyses the data for flow and pressure.
- Use the devices (leakage detection, acoustic, etc...) to discover the leak.

The aim of the pilot study:

- 1) Reduction of water losses (leakage, illegal connection, etc...)
- 2) Control and balance the pressure in the network.
- 3) Calculate consumption use per capita and compared with the design daily demand per capita to know the shortage in the network.

Selection of sector for pilot study

- Sector having distribution pressure to some extent.
- Sector having 24 hr continuous water supply and may be sector near to the water sources.
- Sector having a little illegal connection by pumps.
- Sector before pipe line replacement.

- Sector having a map of water distribution networks.
- Sector having pipe replace plan in the future.
- Sector which needs a few flow meters.
- If possible within R2, R3, R14.

District 511

- Zone :- R14
- Kind of pipe used in the network : Asbestos.
- Feeding project to the district : Shark Dijla WTP
- Water supplying to the network 24 hr



According to ministry of planning in 2004 the number of population in the district 511 = 8355 people

Area of the district 511 = 0.369957 km²

Area of the district 511 = 369957.344851 m²

- Drawing availability which illustrate the network of potable pipes network.
- Potable water network not renewed.
- Leakage in network are very much because the network is old.

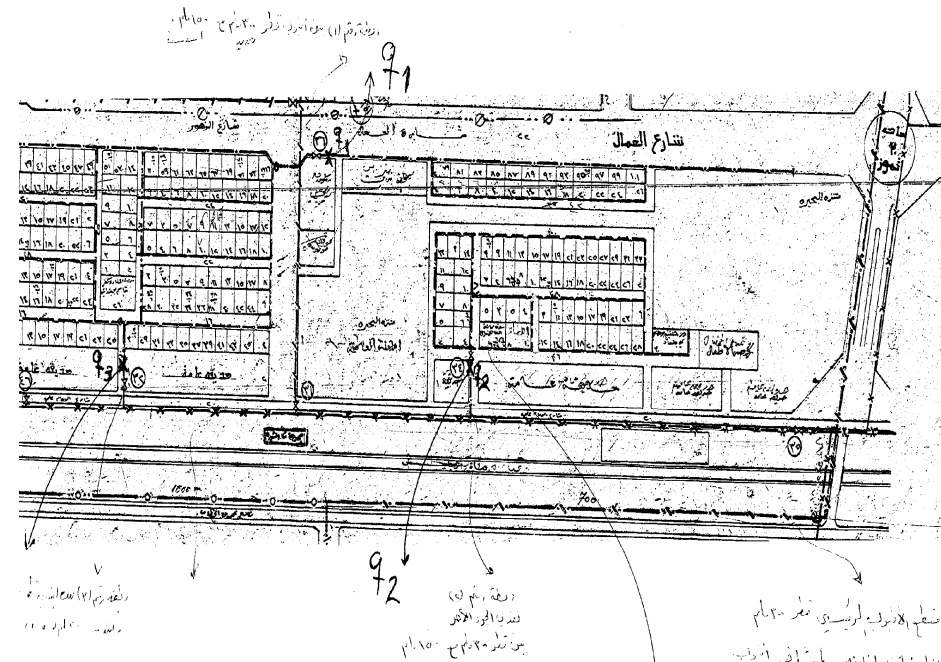
1) First Pilot Study: In district (511)

Use The Devices:-

The Devices Installed and Prepared to be Used In district (511)

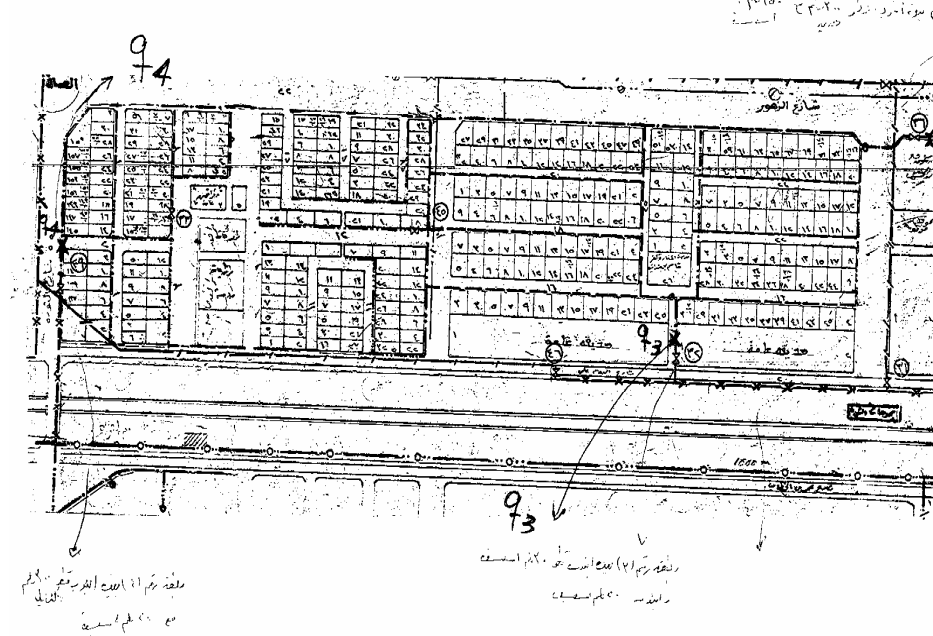
Pipes Feeding in district(511) :-

- ❖ cast Iron pipe dia. 300mm and the branch 150 mm (asbestos) (q1)
- ❖ Ductile pipe dia. 300mm and the branch 150 mm (asbestos) (q2)



- ❖ Asbestos pipe dia. 300mm and the branch 200 mm (asbestos) (q3)

- ❖ Asbestos pipe dia. 300mm and the branch 200 mm (asbestos) (q4)



Using the pipe locator

- ❖ The metal pipe locator used to discover the pipe dia. 300mm (cast iron) (q1) and giving the depth of pipe (1.02)m

- ❖ The problem when we used the pipe locator, under ground existed sewage pipe and cables.



pipe locator used to discover pipe dia. 300mm (cast iron)



pipe locator used to discover pipe dia. 300mm (cast iron)

Measurement of pressure in (q1)

- ❖ Data logger used in apposition (q1) to measure of pressure to pipe dia.300mm iron.
- ❖ The data and graph shows the measurement of pressure.



dia. 300mm(cast iron)
data logger (pressure)



dia. 300mm (cast iron)
data logger (pressure)