

Case study

Madras Metropolitan Water Supply and Sewerage Board

Reduction in Unaccounted for Water in Madras City

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Madras (now Chennai) Metropolitan Water Supply & Sewerage Board embarked upon an ambitious ten year programme in 1989 for reduction in Unaccounted For Water in Madras City. As part of the Phase-I of the UNDP-funded project, it was necessary to cover at least 10% of the metropolitan city under Phase-I of the Program wherein 15,000 consumer connections were covered under testing. In effect, about 100 km of water distribution mains from about 15 different selected areas of the city were tested for leakage using Mobile Tanker Method. The areas were so selected that all major parameters affecting the leakage are addressed. The city mainly had Cast Iron and uPVC pipelines ranging from 5 to 80 years of age. Normal pressure in the water mains was generally 1 to 3 m head of water with some exceptions of about 7 to 10 m near the service reservoirs. The test by Mobile Tanker Method involved:

- a) Injecting water into the isolated test area through mobile tanker & pump unit;
- b) Maintaining prescribed pressures of 3m, 7m, 12m at injection point by manipulating the *unit* valves;
- c) Reading on the delivery line meter of the *unit* was the direct indication of leakage in the test area;
- d) Assessment was possible for a range of pressures maintained during the test that would prevail in distribution system later;
- e) Pressure transducers and dataloggers were introduced at other isolation points as well to check if the test area was appropriately pressurized;
- f) Leak points were located using various leak detection equipment;
- g) Once leak points were rectified, assessment of reduction was possible by repeating the test;
- h) Improvement of pressure at isolation points was an indication of overall improvement due to leakage reduction;
- i) Entire exercise was complete when the entire stretch was scanned by leak detection equipment, leaks pinpointed, and the service connections and mains restored;
- j) In Madras, total exercise beginning with segregation of area, carrying out test and restoring the system for normal supply took about 6 to 8 hours.

Pipe location and House to house survey preceded the entire testing activity and provided required accurate data for the testing teams.

Some major observations were:

- Missing ferrules at house service connections,
- Poor repair practices and pipe laying practices
- Service connections made with insufficient cover / protection

On an average, the leakage observed was about 167 lit/connection/hr at 7m head of water while the same was 247 lit/connection/hr at 12 m head of water. It was possible to bring down the leakage by more than 90% by repairs and re-testing. Work prioritization for the Program was possible due to the observed conditions of the distribution system.