ATCHA AUERNARUEMONSUK : OPERATION PLANNING OF PIPE REPLACEMENT FOR WATER LEAKAGE REDUCTION OF METROPOLITAN WATERWORKS AUTHORITY . THESIS ADVISOR : ASSO. PROF. CHA-UM MALILA , CHINDA CHARANRUANGTIRAKUL Ed.D. 170 PP.

The purpose of this study is to prepare the operation planning of pipe replacement for water leakage reduction of Metropolitan Waterworks Authority. It is generally recognized that as much as 30 % of the total water supply is wasted through leaks in pipes, especially in galvanized iron (GI) service pipes which have been being used since the time the Authority was established. The replacement of GI pipes needs proper planning in order to achieve the efficient water distribution system with the minimum cost of investment and with the maximum benefit without affecting the service.

Based on the proper distributed pipe design, and pipe materials, the benefit-cost analysis is used to search for an optimal operation plan. It is observed that 130 km. of service pipes and 20,000 service connections in the area covering 80 blocks out of 555 blocks, should be replaced. It is estimated that the total unaccounted for water could be reduced from 41 % (in the year 1986) to 31 % with the cost of investment of 160 million Baths which is less than 25 % of the budget formerly set up for this programme. These findings may result in saving a considerable amount of money for pipe replacement, and a large amount of water which can be used to serve more customers with higher pressure for the time being which demand exceeds supply.