Journal of Applied Science Research 2(5): 276-278, 2006

Cost of Leakage

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Abstract: The method of Leakage water. Their costs and productivity. There are a few methods to control the leakage water, among these methods bringing back the value of leakage water which has been unregistered, is preferable. But water management doesn't take into consideration registering of leakage water. Because water has not only social side but it has also economical side. Under no circumstances does it require a different management understanding to provide water which is inevitable and beneficial for social and economical life. But we must choose the method whose cost is less than others and brings us the same conclusion. This article informs us about the prices and benefits of alternatives.

Key words: Leakage Water, Water Management, Coast, Investment and Replacement

INTRODUCTION

When once the level of leakage has been assessed from field tests, its value can be derived by multiplying it by the unit cost of leakage.

The unit cost of leakage is the economic benefit resulting if leakage were to be reduced by one unit of water, in this case 1 cu. m. per day. It consists of two separate elements, the unit capital cost of leakage; and the unit operating cost of leakage. It is important to. Consider only those costs which would be affected by a change in leakage levels. It is not generally necessary, therefore, to consider existing fixed overhead costs such as staff costs and regular maintenance, as these costs would be unlikely to change significantly if leakage levels were reduced[3].

The unit capital cost of leakage includes:

- Costs of future demand—related capital works, such as source and treatment works, reservoirs trunk mains, and distribution system reinforcements.
- Fixed operating cost is (labour cost is, transport, fixed maintenance, etc.) associated with these future schemes.
- Additional pumping costs associated with future schemes which exceed the present level of pumping costs included. In the unit operation cost of leakage.

The unit operation cost of leakage includes:

- The cost of production of water (costs of chemicals etc, but excluding no fixed costs such as labour).
- Cost of pumping in the existing system (electricity, diesel).

The above approach, however, is only valid if the demand for water from consumers is actually met. If it is not, a reduction in leakage will not lead to a reduction in costs but to an increase in revenue for the water utility. This unit sales value of leakage must be considered in the interim period until such time consumer demand is fully satisfied.

The first; step is to derive the unit cost of leakage, i.e. the value that can be attributed to saving one unit of water. The unit cost is made up of two component; the unit operation cost and the unit capital cost.

Unit operation cost determination procedure:

- Determine the sources of water (existing sources and bulk purchases) where output would be reduced if demand decreased.
- For each pumping station affected by such a reduction in output, determine the total power consumption, the total amount of water pumped, and the corresponding cost per unit of water pumped for electricity this cost should be based on the electricity tariff charge for the last unit of power used. Frequently, these figures can be derived from monthly records. The unit pumping cost is then[1]: Power consumption x unit energy cost / water output if only voltage and current meters are available the power consumption can be Determined from: power consumption = 0.00173 x volts x amps x power factor.
- For each source determine the unit treatment cost. Unit treatment cost = annual chemical cost / annual water production

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- For bulk purchases determine the it unit purchase cost. Unit purchase cost = unit charge + annual fixed charge / annual quantity purchased
- Addition of the appropriate values in 2,3 and 4 above provides the unit operating cost for each source. These unit operating costs should then be weighted in proportion to the likely magnitude of the reduction at each source, and an overall weighted average unit operating cost derived.

Unit capital cost determination procedure:

1. Derive a demand—related capital expenditure programme, over at least a 25 year planning horizon, for the water supply utility for which the date of each item of capital expenditure could be deferred if leakage were reduced (Fig. 1) Such deferral of capital expenditure realizes a cost saving, since for any given discount rate a smaller sum would have to be invested now in order to realize the capital expenditure required at that. Later date, i.e. the later the capital is expended the smaller will be its net present value (NPV).

To derive such a capital expenditure programme population projections, per capita domestic demands, industrial and commercial demands, etc., must be determined to produce a water demand curve over the planning horizon considered. Capital schemes for source and production facilities, trunk mains, reservoirs, and distribution system augmentation can then be identified and programmed. Costing of individual items of capital expenditure is then performed, and all items for a particular year summated to provide a year by year capital expenditure programme. The programme

Should also include fixed operating cost associated with the schemes which would also be deferred if the scheme was deferred. Additional pumping costs associated with future schemes

Should also be included where they exceed present pumping cost levels included in the unit operation cost of leakage[5].

2. Determine the total NPV of the capital expenditure programme at various discount rates. The benefit resulting from a one year deferment of the programme can then be computed and the resultant saving annualized over 50 years to give an annual average benefit. Theoretically, savings should be annualized to infinity, but 50 years is widely accepted as being a period beyond which very little difference would be made to the figures computed. The annual average benefit when divided by the average annual increase in water demand over the planning horizon yields the unit capital cost of leakage.

Unit cost of leakage: This is derived by summating the unit operating cost and the unit capital cost.

Unit cost of leakage = Unit operating cost + Unit capital cost.

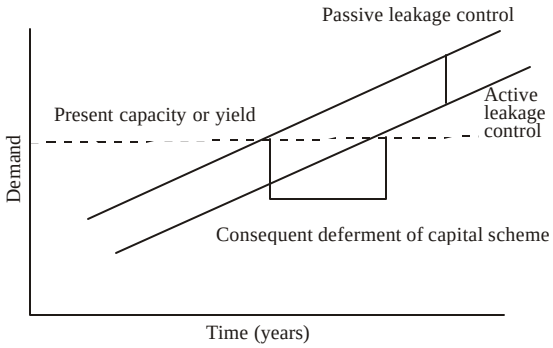

Fig. 1: Effect of difference of capital expenditure

The above determination of the unit cost of leakage can only be used in the cost benefit analysis if the demand from all consumers is currently satisfied, and thus any reduction of leakage would mean a reduction in total water demand. If consumer demand is not met, however, a reduction in leakage will enable the demand to be better satisfied and so revenue will be increased. This value, termed the Unit Sales Value of Leakage, is derived by dividing the total value of water billed by the total volume of water billed, and then applying a correction factor to take account of the fact that some of the water saved due to leakage control will also be lost due to leakage in the areas into which the saved water will flow[6].

RESULT AND DISCUSSIONS

There is a choose relation between the used item of the pipe and the cost of water. Besides this the state of construction is also effective on the leakage water. The vast majority of unphysical leakage water is caused by indefiniteness of the state construction. 1/1000 ‘application of construction must be used When the project is planned. As the necessity of the rules, the project must be planned after finding the density of parameters in an unchangeable way.

The roleve (discriminate of the coordinate) of the applied project must certainly be taken, the management problems, the knowledge of materials, and the coordinates of pipes must be practiced on the roleve project. “The conception of water management-construction-density” can be discussed on the leakage water. We should take some precautions against the water pollution and its safety on the condition of keeping its state.

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