

(38) Contingencies, 10 per cent. . . . .	2,000 00
(39) Engineering and Superintendence, 3 per cent. . . . .	2,000 00
<b>Total . . . . .</b>	<b>\$30,000 00</b>

**Reservoirs.** We have not as yet discovered a satisfactory site for a reservoir of large capacity at the elevation of the existing James Street Reservoir. Southwest of the Barton Reservoir and across the G. T. R. track an irregular area of rocky land may be secured. We estimate that a reservoir of ten million gallons capacity at this site would cost about \$110,000.00, including the land.

The greater part of the excavation would be in rock, and a heavy embankment would be required along the north side.

Southwest of James Street Reservoir it might be practicable to construct another reservoir with a capacity of ten millions, or perhaps more, but owing to the abrupt slope at the base of the mountain such a reservoir would necessarily be long and narrow. The requisite land at this site would cost much more than in the vicinity of the Barton Reservoir, and the cost of construction would not be less. This reservoir, including site, would probably cost \$130,000.00.

Whatever the reservoir capacity may be, or wherever located, its contents would only serve as a reserve in case of an interruption in the pumping, or of failure of one or more of the force mains.

Although the water in Barton Reservoir has remained remarkably pure, partly through careful attention and partly through changing a percentage of the water each day, yet the fact remains that in large open reservoirs with paved or concrete sides, the quality of the water stored may deteriorate seriously if not frequently changed, owing to the aquatic growths, vegetable and animal. These growths may impart to the water offensive odors and tastes that are difficult to remove, and engineers now favored covered reservoirs, to exclude sunlight, and collection of dust, leaves, etc., in the summer and autumn, and to prevent the formation of ice in the winter.

To construct covered reinforced concrete reservoir would probably increase the cost from forty to fifty per cent.

In the Hamilton Waterworks System reliance for domestic supply and for fire protection must be placed in the pumping machinery and the force mains, and not upon storage reservoirs. Taking into consideration the expense of constructing large reservoirs, we are of the opinion that the sums estimated may be expended more advantageously in machinery and mains.

**Waste.** We cannot close this report without reference to the problem of waste prevention. That fifty per cent. of the water pumped at the Beach Pumping Station is wasted, may be confidently stated, twenty per cent. being uncontrollable through leaks in mains and services, and thirty per cent. through defective plumbing and wilful waste by the householders.

Your average daily consumption is now approximately 7,500,000 gallons per day, or 100 gallons per capita.