

nection with all plans* described in this report, and in the recommendations which will be made, it will be seen that Gros Cap works would fit in and constitute a part of the ultimate entire program of works.

Coldwater Creek Gravity Scheme.

The elevation at the confluence of the east and west branches of this creek is about 673 feet, whilst on the Trunk Road where the new road will join, it has an elevation of about 638 feet. There is, therefore, a drop of about 35 feet, which is ample for a gravitation conduit and thus eliminate the necessity for transmission line to and installing pumps near Root River. It must, however, be pointed out that to avoid a deep cutting in rock for a short distance along the road where the new road connects with the Garden River Road it would be advisable to lay the conduit through the property lying east of it. This would be less expensive than to follow the highway, as, no doubt, the right-of-way could be acquired at small cost.

The conduit would be constructed of reinforced concrete and laid from the intake at the fork, down the valley of Coldwater Creek, then along the highway to Root River Bridge. From this point the conduit would make a small detour to avoid the rock-cutting already mentioned and join the new road, a short distance south of Garden River Road. It would then be laid on the side of the new road, along the Trunk Road, as far as Pine Street, and there be connected to a reservoir. The total length of the conduit would be approximately 6 miles.

Since the cost of a reinforced concrete conduit for a daily supply of, say, six million U.S. gallons of water per day is not very much less than that for ten million U.S. gallons, it is advisable to estimate for the latter size. By adopting this idea, the city would have at its command practically ten million U.S. gallons daily, although by regulating the valves at the intake the supply to the Pine Street reservoir would only be sufficient to keep the storage at full capacity, and to be constantly overflowing.

The pumping plant and reservoir would be at any convenient place having an elevation of about 610 feet. For the present purposes a site near Pine Street is suggested. The water would be pumped into the city mains through two mains with a connection to a balancing reservoir near Pine and McNab Streets. The surplus water during the day time would flow into the balancing reservoir and be available for use during the night or to feed the pumps for fire purposes. It is not considered necessary to construct a receiving reservoir having a larger capacity than two million U.S. gallons and a balancing reservoir holding, say, five million U.S. gallons.

*NOTE.—Mr. Wynne-Roberts presents five different plans with this report, three of them taking supply from the river and two from Coldwater Creek (one by pumping and one by gravity). He recommends the Coldwater Creek gravity scheme, and suggests that test holes be sunk near the creek with the idea of developing a supply from wells which could supplement the supply from the creek. He presents considerable data regarding the geological formation of the district, from which data he concludes that wells will likely be successful. The report also includes much bacteriological data concerning the river and the creek, and it is shown that the river is very polluted while the creek shows much better quality, and the watershed of the creek can be fenced in and protected without exorbitant cost. Aside from the pollution of the river, says Mr. Wynne-Roberts, it is not desirable to build an intake into the river on account of the building and dock operations which will be carried out along the river front in the future, and which would disturb the intake and perhaps necessitate its being moved from place to place as the need of shipping or industry might dictate.—EDITOR.

The pumps would be in duplicate, one set operated by electric motors and the other set by steam or Diesel engines.

Estimated Cost of Coldwater Creek Gravity Scheme.

	Ultimate for 30,000 pop.	Present for 20,000 pop.
300 acres land around springs	\$ 9,900	\$ 9,900
20 acres land along stream	600	600
Intake and well	2,000	2,000
Clearing, fencing, roads, etc.	5,000	5,000
2¾ miles reinforced concrete conduit, 30-in. diameter	72,500	72,500
3¼ miles reinforced concrete conduit, 27-in. diameter	73,000	73,000
Cottage for caretaker	1,000	1,000
1 acre land for reservoir and pumping station in Pine Street	500	500
Reservoir, 2,000,000 U.S. gallons . . .	30,000	30,000
Pump house	12,000	10,000
Three 4-million-gallon-daily electric driven pumps	20,000	20,000
Two 1-million-gallon-daily electric-driven pump	5,000	2,500
Three 4-million-gallon-daily steam-driven pumps	30,000
Pipe connection in pump house	8,000	6,000
Two cottages	2,000	1,000
Transmission line	8,000	6,000
Switchboard, crane, meter, etc. . . .	5,000	5,000
24-inch main to balancing reservoir, 7,000 ft.	77,000	77,000
12-inch main to high-level district, 6,000 ft.	25,000	20,000
24-inch main to Bruce St., 7,600 ft. . .	91,200	91,200
12-inch main to Queen and Pine Sts., 2,000 ft.	9,000	9,000
Land for balancing reserv'r, 2 acres . .	1,000	1,000
Balancing reservoir, 5,000,000 U.S. gal.	75,000	40,000
Miscellaneous	10,000	6,000
	\$571,700	\$489,200
Contingencies	57,170	48,920
Totals	\$628,870	\$538,120

Estimated Annual Cost of Coldwater Creek Gravity Scheme.

	For 30,000 pop.	For 20,000 pop.
Interest, 6 per cent.	\$37,723	\$32,287
Depreciation:		
Intake and conduit, 2%	2,940	2,940
Buildings and reservoir, 2%	2,460	1,620
Pumping machinery, 5%	2,750	1,125
Transmission lines 5%	650	550
Cast-iron mains, 2%	4,204	4,204
Labor:		
Caretaker	800	800
Two station operators	3,000	3,000
Men	1,000	500
Repairs and maintenance	500	300
Supplies	300	200
Power:		
Electric	10,340	7,260
Steam	1,800
Miscellaneous	1,000	750
Totals	\$69,476	\$55,536