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April 15, 1975.

YELLOWKNIFE, N.W.T.
USE OF KAM LAKE AS SEWAGE LAGOON

Mr. Jack Grainge, Public Health Engineer, originally recommended the use of Kam Lake as a sewage lagoon. He has had a vast experience in the design and operation of the various types of sewage disposal systems in the Canadian North and he favours lagoons where space is available because they work well if adequate in size; they produce a safe effluent, have a low operating cost, and they do not require much expertise to operate them. If a natural lake can be used there is a low initial cost as well.

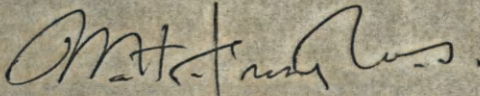
The argument that Kam Lake should not be used because it is a natural lake might be valid if natural lakes were scarce, but this argument is not valid at Yellowknife where there are far too many natural lakes. It becomes a little ridiculous to expend money to blast an artificial lagoon into the precambrian rock since land not covered by water is at a premium and the cost of blasting would be prohibitive. The cost of operating as effective a sewage disposal plant in this climate would be considerable by comparison with the cost of operating a lagoon. There would also be high capital costs. As it stands at the moment, there does not appear to be any logical reason why Kam Lake should not be used as a sewage lagoon and there are obvious objections to the dumping of only partially treated sewage from a primary sewage treatment unit directly into Yellowknife Bay. This was one suggested alternative to a sewage lagoon.

The DOE guidelines require consideration of the effect of sewage effluents on natives who are possible users of water and as previous researchers discovered several years ago, there is no strong flushing action in Yellowknife Bay as a result of the flow from the Yellowknife River, which at certain seasons is a very small stream. Partial treatment is therefore unacceptable from a health standpoint.

Another suggestion, the use of an oxygenating sprinkler system, would not be practical in Yellowknife since it would be frozen most of the year if outdoors, and use in a building would not be economically feasible. Blowing air into the bottom of the basin might be considered or the creation of a cell at one end of the lake may also be useful, but probably unnecessary.

Arguments about the effect of arsenic in Kam Lake on the sewage digestion processes cannot be taken seriously since there are so many insoluble compounds of arsenic which would be formed by chemical reaction with sewage. These would remove it from interfering with enzyme action.

Drainage from Kam Lake into Pud Lake is not physically possible since Kam Lake is lower than Pud Lake. There are dykes around Pud Lake to keep Con Mine tailings from draining into Kam Lake.


W. H. Frost, M.D., D.P.H.

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