
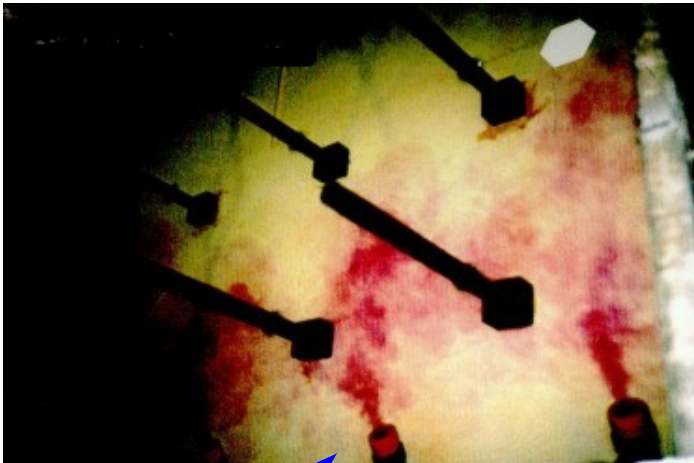


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|  Environmental Hydraulics Group | Project: Chlorine Mixing in Glen Cairn Reservoir – Physical Model | 1995-471 |
| | Location: Region of Ottawa-Carleton, Ontario, Canada | |
| Hydraulic Design & Analysis - Water & Sewage | Client: Region Ottawa-Carleton | |
| | Completed: April 1995 | |

Description: The two Glen Cairn reservoirs have dimensions of 69.3m x 36.5m x 7.3m deep and a storage capacity of 34 ML each. Inflows range from 5 ML/d to 30 ML/d. It was necessary to achieve adequate chlorine residual in all areas of the storage reservoir as rapidly and thoroughly as possible in order to maximize the turnover rate of the water volume.

A physical model and hydraulic study was performed to determine the number, size, and orientation of both inlet pipes and baffle wall components of the facility. EHG reviewed plans, design drawings and available literature for the proposed reservoir cells. Staff designed and built the physical model at a 1:18.25 scale and conducted laboratory tests to identify potential hydraulic constraints in an open water body, such as stagnant regions.

Benefits to the Client: The baffle walls and inlet pipes were relocated and redesigned until an optimal design could be proposed in terms of mixing rate and thoroughness. Due to the success of the Glen Cairn project, EHG was retained again to carry out another physical model analysis for the Ottawa South reservoir. The improved design eliminated dead zones and reliably improved the quality of the water leaving the facility for the distribution system.



Physical Model of Glen Cairn Reservoir

beginning of chlorination (left)

stagnant zone observed after one hour (below)



The number, spacing, size and angle of the nozzles and baffles (not shown) were both optimized to achieve the best chlorine mixing possible