



**Environmental  
Hydraulics  
Group**

**Hydraulic Transients (HT)**  
- Power & Co-Generation

**Project: District Cooling Water System  
Transients – Hydraulic Structures**

**1995-331**

**Location: Toronto, Ontario**

**Client: MacViro Consultants Ltd**

**Completed: May 1995**

**Description:** EHG conducted a transient study on the Condenser Cooling Water system for the Toronto District Heating Corporation for the proposed pumping station and its directly connected water supply system.

Three alternative surge control measures were considered for alleviating the potential floor-flooding problem inside the pump house.

- *Enclosure of Wet Chamber:* Air in the enclosed wet chamber could be compressed to prevent floor flooding. Spilling may still have occurred in all the manholes along the suction line.
- *Overflow Weir Opening:* The potential floor flooding inside the pump house could be eliminated by the provision of a high weir.
- *Overflow Weir Opening plus Berm Placement:* The potential floor flooding inside the pump house could be protected by a combination of high berm and high weir.

**Benefit to the Client:** The following conclusions were made:

1. The transient of the entire cooling system was insignificant during the Interim water demand condition.
2. The discharge system was not adversely affected by a power failure condition under the Ultimate water demand condition.
3. The suction system may have induced floor flooding inside the pump house upon power failure under the Ultimate condition.
4. The floor flooding could be alleviated by proposed remedial measures.

