



**Environmental  
Hydraulics  
Group**

**Hydraulic Design & Analysis**  
- Environment

**Project: Bell Mobility SWM Pond Outlet Drop and Outfall – Hydraulic Structures**

**2000-501**

**Location: Mississauga, Ontario**

**Client: RAND Engineering**

**Completed: February 2000**

**Description:** This project considers the hydraulic impacts and energy dissipation performance of the two-drop structure concept from the overflow manhole at the storm water management (SWM) pond to the outfall headwall in the flood plain at Etobicoke Creek, Ontario. The design flow for this structure is  $9.3 \text{ m}^3/\text{s}$  corresponding to the 100-year return period storm event.

### Benefit to the Client:

Each component of the proposed drop outfall system will dissipate a portion of the total potential energy (13.3 m) as follows:

- The 2 drop MHs will dissipate over half of the total drop energy.
- The hydraulic jump losses will dissipate about 20% of the total energy.
- Entrance losses and pipe friction will dissipate 9% of the total energy.
- The exit and baffle block losses need only dissipate about 15% of the total energy.

The proposed outfall structures can dissipate the energy efficiently in order to deliver controlled flows to the lined channel leading to Etobicoke Creek. The hydraulic jumps, which will occur in each 1800 mm diameter pipe at higher flow rates, require air venting to avoid choking.

