

## Transmission and Distribution Watermains - City of Barrie

**OPWA 2003  
'Public Works Project of the Year'  
(less than \$2 million)  
Environmental Category**



*Barrie's waterfront showing the location of the transmission main (purple dashed line) and the distribution main (red dashed line).*

In early 2002, the City of Barrie (Ontario) in co-operation with the Ontario Ministry of the Environment (MOE), determined that, under certain conditions, the water output (106 L/s) from Heritage Well No. 14 had insufficient chlorine contact time. To rectify the problem, the City concluded that 1,040 metres of transmission main to provide the required chlorine contact time was required, along with 622 metres of 300-mm diameter distribution watermain, complete with 6 new fire hydrants. The MOE required that the new transmission main be in service by December 31, 2002.

Following the geotechnical investigation, the City of Barrie retained the Ainley Group to analyze the cost-

effectiveness of conventional design, the requirements for dewatering, optimum trench support and watermain structural support (pile and grade beam). Consideration was also given to a submarine crossing beneath Kempenfelt Bay - but only on a conceptual basis.

The project site was in the heart of Barrie along the shore of Kempenfelt Bay. The alignment was to be within the abandoned railroad right-of-way near Lakeshore Drive. An existing 1200-mm diameter sanitary sewer, fibre-optic cables and various other utilities were buried beneath Lakeshore Drive, parallel to the proposed water mains. The project presented considerable challenges since the alignment is immediately adjacent to a marina and waterfront beach/park and also required three creek crossings. During the first phase of the project, remnants of an old corduroy road were discovered beneath the abandoned railroad right-of-way.

With approximately 70% of the transmission main and almost 100% of the distribution main and fire hydrant locations laying within an area of deep organic deposits, the Ainley Group determined that these site conditions were optimal for horizontal directional drilling (HDD) with HDPE pipe.

The project was tendered in September 2002 with HDD as the primary construction method and conventional open-cut as an acceptable alternative in certain identified areas of suitable soils. Construction was uneventful (problem-free) and was completed on time and on budget with little disruption to the public.

### Project Facts

**Client:** City of Barrie

#### Key Design Criteria

- Horizontal directional drilling as primary construction method with an option of open cut
- Transmission main – 1,040 metres of 450-mm dia. DR 9 HDPE pipe
- Distribution main – 622 metres of 300-mm dia. DR 11 pipe
- Three creek crossings
- Project site adjacent to a marina and waterfront park.

**Project Cost:** \$1,400,000 (2002)