DESIGN ALTERNATIVES

HARBOURFRONT TRUNK SEWER, BROCK STREET TO RIVER STREET

For the BROCK STREET-RIVER STREET section of the Harbourfront Trunk, six "Alternative Design Concepts" have been evaluated. They are shown in **Figures 6, 7, 8, 9, 10 and 11**. These six have been developed based on:

- **ROUTE OPTIONS FOR NEW INTERCEPTOR SEWER:** See Figure 5 for the routes considered for the new sewer within the downtown core area (Brock Street to Bay Street). For all options, the interceptor route north of Bay Street is alongside the existing Harbourfront Trunk Sewer.

- **TANK LOCATION OPTIONS**: Two locations for the proposed underground storage tank were considered: Douglas Fluhrer Park and Emma Martin Park. Emma Martin Park has been chosen for various technical reasons, especially the operational advantages of having the tank situated alongside the main sewage pumping station. As well, building the tank at Emma Martin Park will have less impact on waterfront parkland and pathways than building it at Douglas Fluhrer Park.

- **INTERCEPTOR CONSTRUCTION OPTIONS**: In constructing a new interceptor sewer in the downtown core, a concern is to minimize disruption to local businesses, pedestrian traffic and vehicle traffic. Two construction methods can be considered:

  Conventional "Open Cut" Construction:
  The sewer is installed from the surface by removing the roadway pavement and excavating the sewer trench. In the downtown core, the limestone bedrock is near the surface, so that trench excavation requires cutting through the rock using a hydraulic ram (hoe-ram). It is likely that nearly the entire roadway width along such streets as Ontario, King or Wellington would be torn up and reconstructed in the process (as was done a few years ago in the course of reconstructing sewers along Clarence Street). The advantage is that this provides the opportunity to upgrade other underground infrastructure that needs it. The disadvantage is the substantial disruption to vehicle and pedestrian traffic that would result from the need to effectively close certain blocks while the work is completed.

  Tunnelling:
  The new interceptor sewer would be constructed by tunnelling through the bedrock at sufficient depth to ensure structural integrity of the tunnel. Again, potential alignments would be restricted to municipally owned rights-of-way or property. Construction of a tunnel will require the location of a number of drop shafts and construction staging areas, which again would be located on available municipal properties. The main disadvantage of the tunnelling option is the cost of construction (see previous cost analysis), but it presents significant advantages by minimizing the amount of surface construction activity and associated disruption. It would also help to minimize issues related to subsurface contamination or disturbance of archaeologically significant areas such as the Fort Frontenac area.

COLLINGWOOD STREET OVERFLOW (KING STREET WEST)

The preliminary design concept for the proposed overflow storage tank near the foot of Collingwood Street is shown in **Figure 15**. The tank would intercept overflows that currently go to the Lake.

The proposed tank will be designed to receive overflow from the trunk combined sewer that runs along King Street, as well as some of the flow from local storm sewers that currently discharge to the Lake at the site (see Figure 3).

The tank design concept shown in Figure 15 has been based on various design objectives:

- Minimizing tree loss or tree damage during construction
- Minimizing westward encroachment onto the water plant site
- Maximizing distance from the shoreline
- Avoiding any need for constructing new pipe outlets into the Lake
- Minimizing surface structures, as done in the case with the large tank completed in 1997 near Richardson Beach.

The air vent is the only visible sign of th
large overflow tank at Richardson Beach

Overflow Control along Harbourfront Trunk Sewer, Brock Street to River Street: ALTERNATIVE DESIGN CONCEPTS

ADCs 1, 2 and 3 involve a new interceptor sewer that would be built at the same depth as the existing Harbourfront Trunk Sewer.
Figures 6, 7 and 8 below show the alternative routes within the downtown area. In all cases, the new interceptor sewer would continue northward from Bay Street along Wellington Street to the proposed overflow storage tank at Emma Martin Park.