

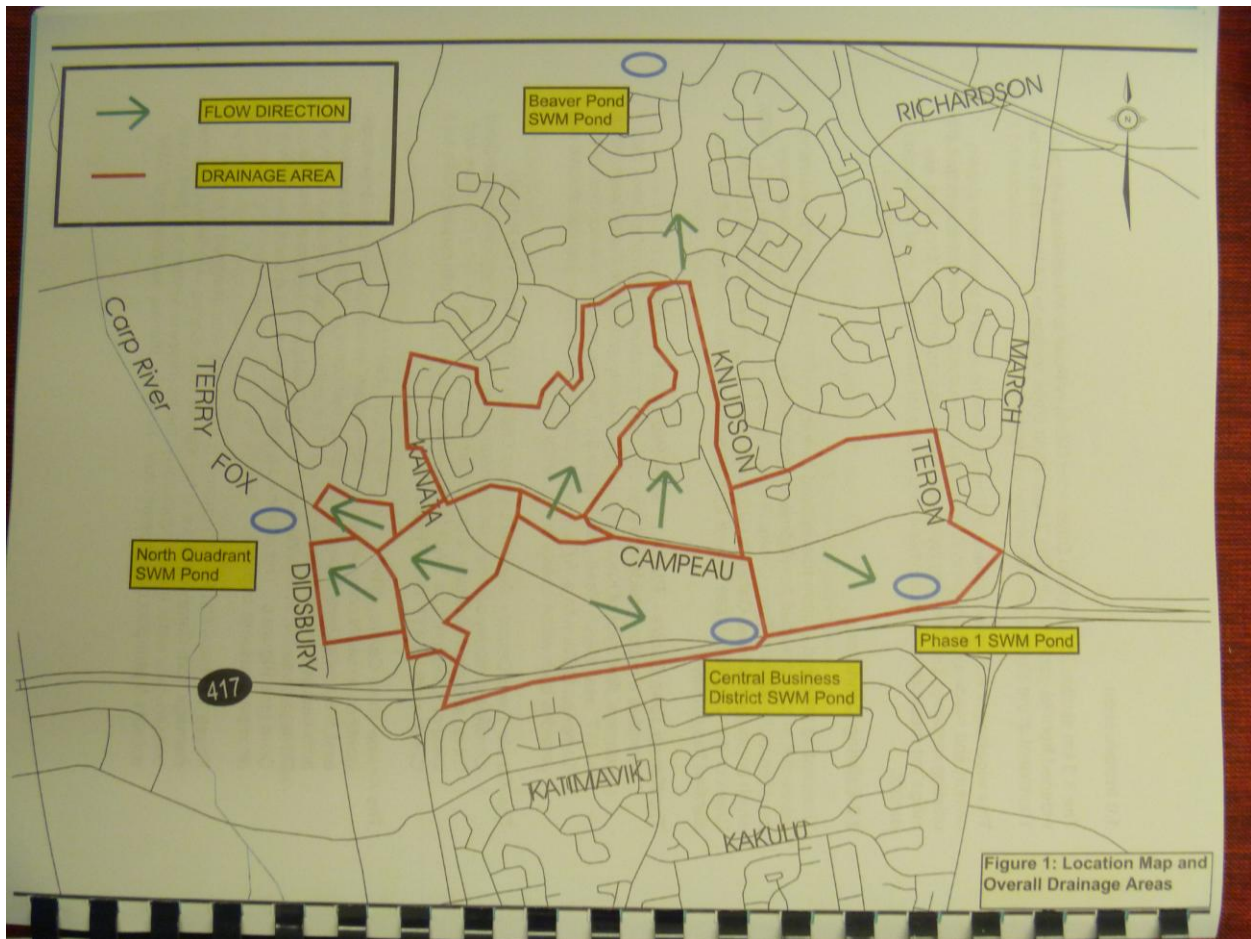
SWM Report - FINAL

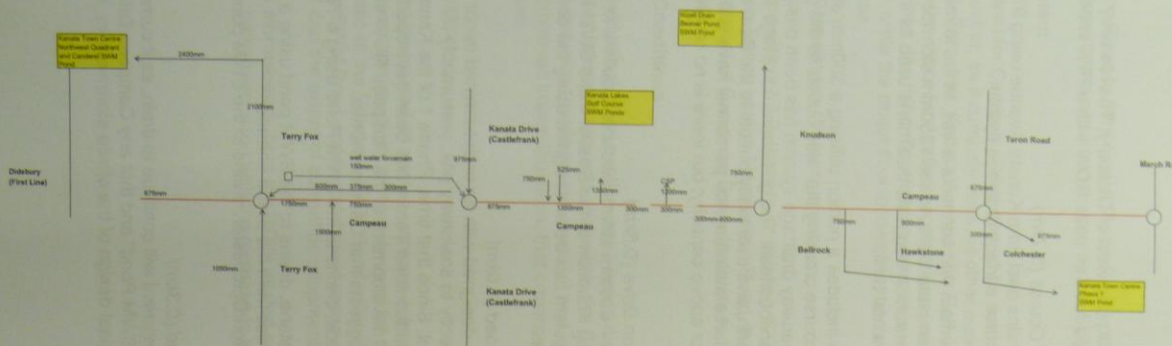
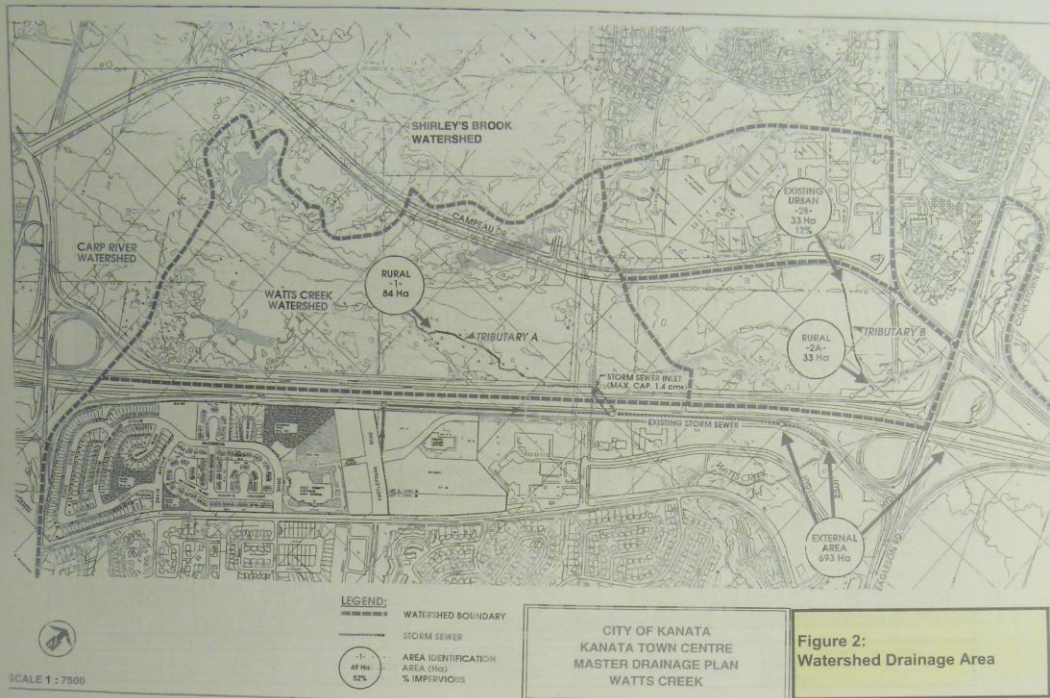
**Campeau Road Widening
Didsbury Road to March Road**

Environmental Assessment Study

June 2008

Prepared by PSR Group Ltd
Prepared for Morrison Hershfield





Terry Fox and thence to the SWM pond west of Didsbury. The roadway drainage system has been designed using a full Campeau ROW with a 70% imperviousness.

2.1.3 Kanata Avenue to the Golf Course (0.7km)

A portion of this road segment drains east from Kanata Avenue using 975mm -1350mm to a 1350mm outlet to the golf course surface drainage system.

Of interest is a water supply forcemain that connects a well, at the former Goulbourn Forced Road intersection with Campeau Drive, to the 1350mm stormsewer that outlets to the golf course. Anecdotal information suggests that this is used as irrigation water for the golf course, on a supplemental basis.

Drainage from this segment also includes a portion utilising a 300mm stormsewer that drains to a 1200mm CSP watercourse crossing that also outlets to the golf course surface drainage system. The roadway drainage system has been designed assuming full Campeau ROW at 70% imperviousness. The golf course drainage system outlets to a 1500mm storm drain, to the north, and eventually outlets to the Beaver Pond SWM Pond on the Kizell Drain. Golf course maintenance personnel have indicated that their receiving system is currently at or above capacity; but there is no record of the type or frequency of flooding.

2.1.4 The Golf Course to Knudson Drive (0.6km)

This road segment uses 300mm – 600mm stormsewers and outlets to a 750mm stormsewer that flows north along Knudson to the Beaver Pond SWM Pond on Kizell Drain. The roadway drainage system has been designed using the complete Campeau ROW with a 70% imperviousness.

2.1.5 Knudson Drive to Teron Road (1.0km)

Originally, this system had been designed with an undetermined minor flow outlet: catchbasins were connected directly to soakaway pits, presumably for a combination of water quantity and quality control. Since that time, Phase 1 of the Kanata Town Centre, South of Campeau, between Knudson and Teron, has been developed and the system has been design anticipating full development of the Campeau ROW with a 57% imperviousness. Initial review suggests that Campeau Drive:

- between Knudson and Bellrock, drains to the SWM Pond using a 750mm stormsewer along Bellrock
- between Bellrock and Hawkstone, drains to the SWM pond using a 900mm along Hawkstone, immediately across from the arena entrance.
- between Hawkstone and Teron/Colchester, drains to the SWM pond using a 300mm along Colchester.

2.1.6 Teron Road to March Road (0.3km)

It has been assumed that this segment will continue to drain, as it currently does, to the Kanata Town Centre "Phase 1 SWM Pond" and that any Campeau Drive widening has been accommodated in the original design of the offsite stormsewers. A portion of this

segment (Teron Road to 80m east of Teron Road) drains to a 675mm stormsewer along Teron Road that is assumed to drain to the SWM Pond.

2.2 Major System

The major system for Campeau Drive should be contained within the Campeau Drive ROW and will outlet, as it currently does, at other major system junctures: these include Didsbury Road, Terry Fox, Kanata Avenue, the Golf Course, and Colchester. It will typically follow the minor flow path: in some cases, such as the segment from the golf course to Knudson, the minor flow follows stormsewers east along Campeau and north along Knudson while the major flow follows the roadway west along Campeau and north to the golf course.

2.3 Roadway Crossings - Watercourses

As mentioned in section 2.1.3, there is an existing 1200mm CSP that drains roughly 10 hectares of Open Space south of Hazeldean Road. It also accepts roadway drainage from a small segment of Campeau Drive. It outlets to the golf course surface water drainage system.

3.0 Proposed Conditions

The proposed "widening" cross section is a 4 lane urban cross section with bicycle lanes and auxiliary lanes as required. It is within the Campeau Drive 40 m ROW and consists of both pervious (medians, boulevards) and impervious (roadway, pathways) surfaces – the proposed imperviousness, that covers various proposed cross sections, is 60% in all cases.

4.0 SWM Evaluation

The proposed widening and its related increase in imperviousness, is generally within the imperviousness assumptions previously used for the sizing of existing SWM ponds: except in the case of the "Phase 1 SWM Pond - Kanata Town Centre - Northwest Quadrant". This SWM Pond and its catchment area need to be reviewed in context of the 1994 report and the extent of current development.

With regards to stormsewers, both the ROW related sewers and the sewer connections to SWM ponds, have been sized with the increase in imperviousness in mind.

5.0 Conclusions

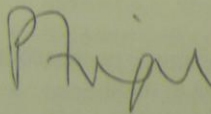
Based on the above review and assessment it is concluded that:

1. Existing SWM ponds can accept the runoff from Campeau Drive widening without the need for re-sizing. Water quality and water quantity concerns can be addressed by the existing ponds, although the current size of the "Phase 1 SWM Pond - Northwest Quadrant", should be reviewed in light of an increase in roadway drainage from two lanes to four lanes
2. The existing infrastructure between the Campeau ROW and the SWM ponds appears to be sufficiently sized to convey the increased flows: however, this should be reviewed at the preliminary design stage
3. the golf course lands will see an increase in roadway related flows and there may be a need to either: provide SWM within the ROW to maintain existing conditions; assist with golf course drainage improvements; provide a combination of SWM on onsite improvements or; confirm the golf course requirement to receive increased flows from Campeau widenign.

6.0 Recommendations

1. Proceed with roadway design, confirming offsite stormsewer capacity
2. Confirm the adequacy of the current *Phase 1 SWM Pond - Northwest Quadrant* to service its current catchment area
3. Review drainage relationship with golf course and identify appropriate drainage alternative.

All of which is respectfully submitted,

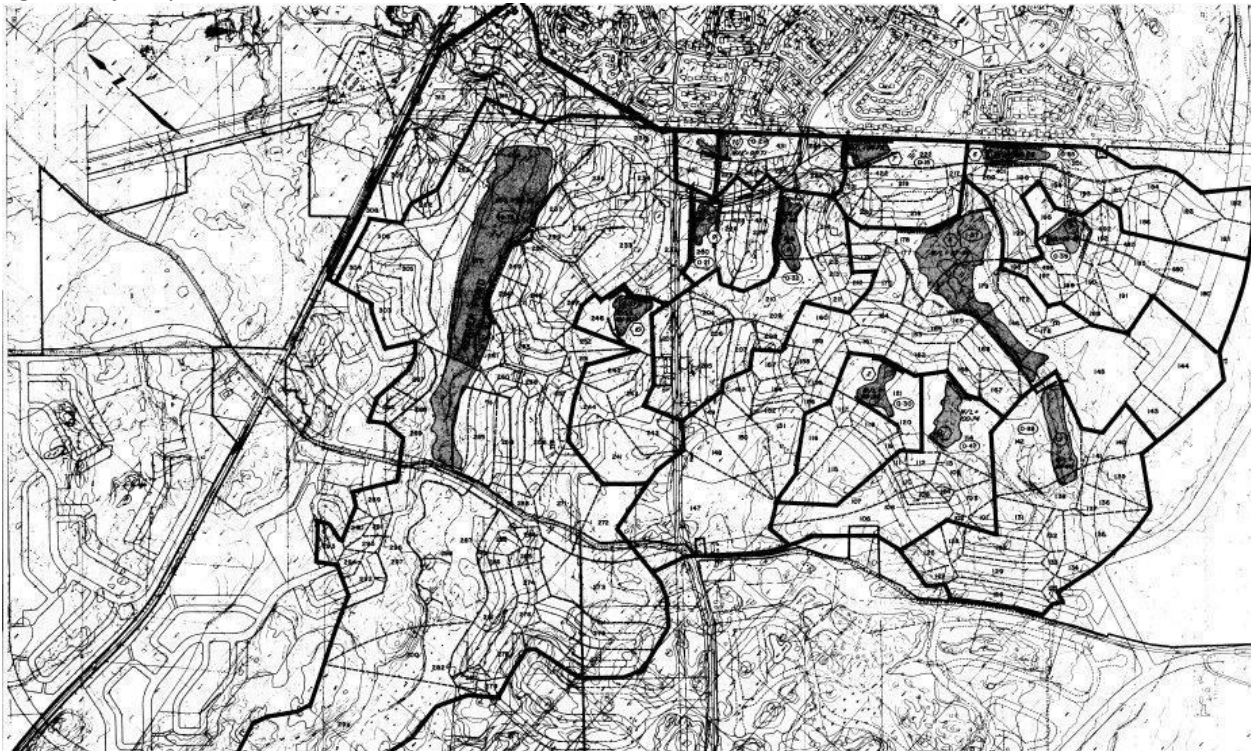


Paul Frigon, P.Eng.



1985 Apr 17 Kanata Lakes: Storm Drainage Report, Campeau Corporation by Oliver, Mangione, McCalla
March 1985 approved 17 Apr 1985

Pg 42 Major System Plan 76



[Campeau Drive is at the right side]

[Note: 11 ponds were created and ICDs installed in the developed area which drained to the southerly diversion ditch which outlets to the Kizell Drain east of the Beaver Pond]

Pg 43 Minor System Plan [cropped]



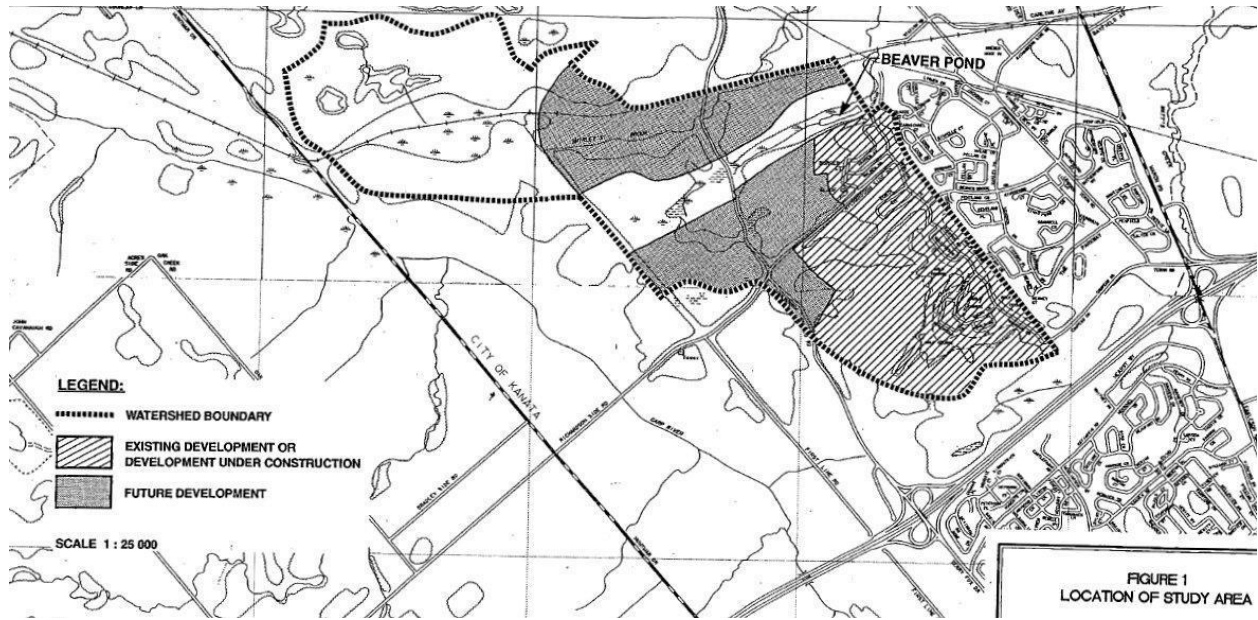
[Note: the storm sewer 2700 mm inlet is further south than now exists; this map shows the outlet and the two tributaries, one going north, the other south]

Pg 45 [storm sewer pipe inlet to Beaver Pond is 2700 mm; words in 2 places on the Beaver Pond say "flooded land, inundee" +]

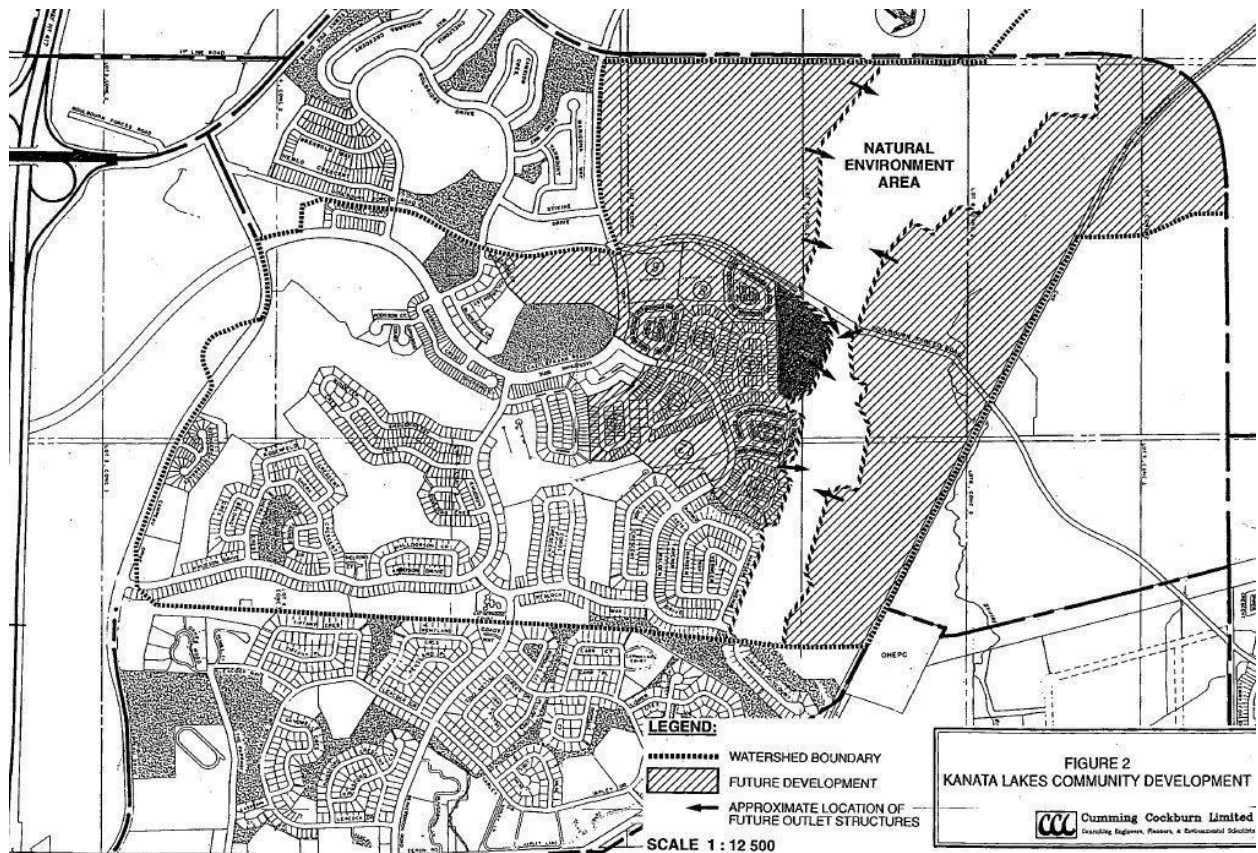
1994 Nov 16 *Kanata Lakes, Beaver Pond, Urban Stormwater Quality Control* by CCL

Pg 4 ... storm sewer outlets will be located adjacent to the free water surface of the pond ... each ... will be provided with a sediment forebay and energy dissipator ... The sediment forebays will be separated from the Beaver Pond by a permeable berm. This will serve as an energy dissipator [existing forebay with 2700 mm inlet has no apparent berm]

Pg 7 [map of study area includes Shirley's Brook]



Pg 8



[Campeau Drive is at the left – shows only part of it in the Marchwood-Lakeside boundary]

1999 Sep Shirley's Brook Watt Creek Subwatershed Study (SBWSS) by Dillon Sep 1999
Map KD-1 343 ha

