

Stormwater Pond Safety

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| Date: | February 20, 2013 |
| To: | Public Works and Infrastructure Committee |
| From: | General Manager, Toronto Water |
| Wards: | All |
| Reference Number: | P:\2013\Cluster B\TW\pw13001 |

SUMMARY

The purpose of this report is to describe the public safety issues associated with publicly owned stormwater management ponds including current practices for providing fencing and footpaths.

RECOMMENDATIONS

The General Manager, Toronto Water recommends that:

1. Public Works and Infrastructure Committee receive this report for information.

Financial Impact

There is no financial impact associated with this report.

DECISION HISTORY

City Council on June 6, 7 and 8, 2012, referred the following motion to the Public Works and Infrastructure Committee:

<http://app.toronto.ca/tmmis/viewAgendaItemHistory.do?item=2012.MM24.2>

The motion recommends that:

1. City Council request the General Manager, Toronto Water to study the safety of Toronto's retention and detention ponds and report to the Public Works and Infrastructure Committee with recommendations aimed at improving safety.
2. City Council request the General Manager, Toronto Water to amend the City's Stormwater management policy so that it includes:
 - a. Where and when fencing should be installed around retention and detention ponds; and

- b. A requirement to include footpaths when retention and detention ponds are designed and built.
3. City Council request the General Manager, Toronto Water to review the need for footpaths at existing retention and detention ponds.

ISSUE BACKGROUND

The City of Toronto currently maintains 89 retention and detention ponds for the purposes of stormwater management. Retention ponds, also commonly called "wet ponds", refer to facilities that maintain a permanent pool and are generally designed for water quality improvement, while detention ponds, often called "dry ponds" contain water only in the aftermath of significant rainfall events and are typically used for flow control or flooding protection. A detention pond will hold the water for a short time and then slowly release it, normally within 24 to 48 hours. The design of stormwater management ponds is subject to the approval of the Ministry of the Environment (MOE) and must meet the requirements of MOE's "Stormwater Management Planning and Design Manual" (March 2003).

Stormwater management ponds are usually constructed when a new subdivision is created. The City and the Toronto and Region Conservation Authority (TRCA) have requirements for new developments to control / reduce the peak rate of stormwater runoff from the subdivision so as not to cause flooding downstream and also improve the quality of the stormwater runoff by removing sediment and suspended solids. Stormwater ponds are a cost effective way of meeting these requirements. In new subdivisions, these ponds are built by the developers, and later assumed by the City. In recent years, the City has also built a number of wet ponds through the implementation of the City's Wet Weather Flow Master Plan, and dry ponds in existing neighbourhoods to help provide flooding relief through the City's Basement Flooding Protection Program.

Although constructed stormwater management ponds/wetlands are engineered facilities, they can be landscaped to look natural and are often used as habitat by migrant birds and animals. When they are located close to parks or vegetated areas, they are usually designed to integrate as naturally as possible.

COMMENTS

Whenever people are next to open water there is a public safety concern. In the case of stormwater management ponds, which are built, owned, operated and maintained by the City, there is an onus on the City to mitigate these risks. Stormwater management ponds are primarily for flood control and water quality improvement. In comparison to natural ponds, these facilities are typically deeper with steep side slopes; fast flowing water at inlets and outlets, which may be submerged; and widely fluctuating water levels. In some municipalities these ponds are simply treated as wastewater treatment facilities and are completely fenced in, and accessible only by City staff. However, most municipalities, including Toronto, use a more flexible approach. In most cases, the ponds are designed to look as natural as possible, aesthetically pleasing and integrated within the generally natural surroundings. To protect public safety, a variety of design features and safety measures are incorporated including:

- Signs to warn people to keep away from the water;
- Dense and woody vegetation around the perimeter of the pond to limit immediate access;
- A bench of shallow water around the perimeter of the permanent pool to reduce the hazards of falling or sliding into deep water;
- A rock structure at each water inlet if necessary to dissipate fast-flowing waters;
- Inlet and outlet structures designed to prevent children from being trapped by flowing water;
- Unfenced areas should have a very gradual slope of not steeper than one foot vertical for each four feet horizontal;
- Fences and guard rails are provided at the top of steeper slopes and walls
- Fences (where necessary) are built at least 1 metre back from the high water level of the pond; and
- Some dry ponds have alarm systems and staff are required to monitor the area when the pond is flooding (inspection staff carry lifesaving equipment).

Staff from Toronto Water are preparing a landscaping design guideline for stormwater ponds based on suggested good practice from the 2003 MOE Stormwater Management Planning and Design Manual, with the support from staff in Parks, Forestry and Recreation. The design guideline will be used in the review and approval of ponds proposed by developers to meet the stormwater management requirements for their plans of subdivision. It will identify acceptable side slopes, maintenance access, plant types, paths and fencing. Consultations with other City Divisions, including Engineering and Construction Services, City Planning and Public Realm, as well as the TRCA will take place following the development of the draft design guideline. The design guideline is expected to be finalized by the summer of 2013.

Currently Parks, Forestry and Recreation staff assist with the review of landscaping plans at proposed stormwater ponds that abut parks or natural areas. The provision of footpaths around or near a pond is determined on a case by case basis with Parks, Forestry and Recreation staff. The overall objective is to achieve an adequate level of public safety around stormwater management ponds through proper design without the need for unsightly perimeter fencing.

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SIGNATURE

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