TORONTO STAFF REPORT

August 17, 2006

To: Works Committee

From: Lou Di Gironimo, General Manager, Toronto Water

Subject: Storm Outfall Monitoring Program (including Taylor Massey Creek 2006 Update) (Wards 31, 35, 37 and 40)

Purpose:

To report on the progress of the Outfall Monitoring Program including summaries of: water quality testing activities within the Taylor-Massey Creek watershed; enforcement activities including an estimate of pollution prevented as a result of this enforcement activity and any remedial work; and further actions completed or planned that will contribute to a reduction of contaminated discharges and/or their impact to Toronto's surface waters.

Financial Implications and Impact Statement:

There are no financial implications arising from this report. The funding required to undertake the activities proposed by Toronto Water's Environmental Monitoring & Protection Unit for pollution prevention in local watersheds is available in the approved 2006 Toronto Water Operating Budget, Operational Support, Cost Centre "Service WW600".

The Deputy City Manager and Chief Financial Officer has reviewed this report and concurs with the financial impact statement.

Recommendations:

It is recommended that this report be received for information.

Background:

At its meeting on April 27, 2005, the Works Committee approved the request contained in the communication from Councillor Janet Davis that the General Manager Toronto Water report on issues related to water quality in Taylor-Massey Creek. The concerns raised by Councillor Davis resulted from a red colour effluent being discharged into the creek from a storm sewer on April 5, 2005, which impacted water quality in the creek.

On June 29, 2005, in response to a Toronto Water report entitled "Water Quality Issues Related to Taylor-Massey Creek", Works Committee requested that the General Manager, Toronto Water provide an interim report on the progress and findings of the Storm Outfall Monitoring Program in Taylor-Massey Creek for its meeting of October 11, 2005. A progress report dated September 21, 2005, was tabled describing the findings and further actions to be undertaken by Toronto Water in relation to the Taylor-Massey Creek Outfall Monitoring Program.

Subsequently, Works Committee requested that Toronto Water staff prepare a report outlining resources required to complete the Taylor-Massey Creek outfall survey, remedial work, and to implement the Outfall Monitoring Program across the City. The Works Committee also requested that the report include staffing and resources required by the Environmental Monitoring & Protection Unit of Toronto Water to maximize compliance to the Municipal Code Chapter 681: Sewers (Sewer Use By-Law).

A follow up report dated October 24, 2005, was tabled at the November 9, 2005 Works Committee meeting detailing the above requested information. Subsequently, Council approved the report's recommendations and the necessary resources and staff was authorized as part of the 2006 Operating Budget process. The Works Committee also requested an annual update report be presented to the Committee in the fall of each year detailing the progress and findings of the previous year's Outfall Monitoring Program.

Comments:

The responses to the Works Committee's requests are as follows:

Progress Report of the Outfall Monitoring Program

1. *Summary of the storm sewer outfall survey and water quality testing within the Taylor-Massey Creek watershed:*

The September 21, 2005, progress report indicated that during the 2005 season 153 outfalls along Taylor-Massey Creek were documented and 68, with dry weather (no significant precipitation in the last 24 hours) flows, were sampled. Sample results indicated 21 of these outfalls were discharging contaminated flow at the time of sampling. Fifteen (15) of these outfalls had significant contamination levels and were designated as Priority Outfalls.

In the spring of 2006, the survey and sampling component of the Taylor-Massey Creek Outfall Monitoring Program was completed. A total of 99 outfalls were surveyed during 2006, of which 36 were believed to be from private systems dating back many years. Of the 99 outfalls surveyed, 76 displayed dry weather flows and were sampled. Testing results indicate that 23 of these outfalls were discharging a contaminated flow. Eleven (11) of these outfalls have been designated as Priority Outfalls due to significant contamination levels. Additional sampling of outfalls surveyed during the 2005 season resulted in two more of these outfalls designated as Priority Outfalls.

In total, the Outfall Monitoring Program has determined there are approximately 252 storm outfalls discharging into the Taylor-Massey Creek watershed. Certain sections of the Creek have yet to be inspected due to confined space entry safety limitations. Once complete, the total number of outfalls is expected to increase slightly. Approximately 135 of the additional outfalls found, over and above those in the Toronto Water Asset Inventory System (TIADS), are believed to be from private systems.

Of the 252 outfalls surveyed, Toronto Water staff identified a total of 144 with a dry weather flow on the day in which the inspection occurred. Laboratory testing determined 44 of these outfalls were discharging a contaminated flow at the time of sampling. In total, 28 outfalls exhibited significant contamination and were designated as Priority Outfalls.

Map 1 in Appendix A details all the outfalls discharging into Taylor-Massey Creek and includes approximate locations of known old landfill sites found within the watershed.

Map 2 in Appendix A locates industry in the Taylor-Massey Creek watershed believed to have a process waste water discharge. It is included to offer a visual representation of the location and density of industrial operations with the potential to impact the Creek if a spill or illegal discharge were to occur. It is by no means a complete listing of local land uses.

Maps 3 to 6 in Appendix A identify Taylor-Massey Creek outfalls and Priority Outfalls in each of the four Wards situated within the watershed. Outfalls are indicated as either those currently in the Toronto Water TIADS inventory or new outfalls found by the survey crews.

2. Updated Priority Outfall list for Taylor-Massey Creek:

The 28 Priority Outfall locations and descriptions are listed in Appendix B – Table 1: Taylor-Massey Creek Priority Outfall Locations and Descriptions. The sampling and testing results for the 28 Priority Outfalls are shown in Appendix B – Table 2: Taylor-Massey Creek Priority Outfall Sample Results.

Priority Outfalls receive intensive monitoring and investigative work within the outfall's sewershed. Investigations include tracing the contaminated flow upstream within the sewer drainage area, collecting additional samples at strategic points within the sewer system, dye testing of service connections, public education campaigns, closed circuit television inspection of specific sewer segments, and enforcement activity to ensure remedial action by dischargers. The investigative work for these outfalls is assigned based on priority, taking into account the degree of contamination, environmental impact, expected work load, and speed of resolution.

(a) <u>Priority Outfalls removed from the 2005 Priority list:</u>
No Priority Outfalls in the Taylor-Massey Creek watershed have been removed from the Priority list since the Outfall Monitoring Program was initiated in July of 2005. Once on the Priority list, an outfall is only removed if six (6) consecutive samples indicate no further contaminated discharge is occurring. Presently, there are three (3) outfalls on the short list that are likely to be removed if testing results continue to indicate a cessation of contaminated flows.

(b) Summary of Investigative Work:

To date, Toronto Water staff have focussed investigative efforts in the sewersheds of 11 Priority Outfalls in the Taylor-Massey Creek watershed because they have the greatest negative impact on water quality. These eleven (11) Priority Outfalls include seven (7) from the Outfall Monitoring Program's survey and sampling work completed in 2005 and four (4) from the work completed in 2006.

Toronto Water staff have located a total of five (5) cross connections within the sewersheds of these eleven (11) Priority Outfalls, allowing sanitary flows to enter the storm sewer system. Three (3) of the cross connections were from residences and were immediately repaired by the home owners. The remaining two (2) cross connections were located at commercial addresses and were considered significant dischargers of sanitary flows to Taylor-Massey Creek. The property owners at these commercial sites hired contractors to have the cross connections repaired. Notices of Violations were sent by Toronto Water to formally document the Municipal Code violation.

A detailed description of investigative work performed in the sewersheds of these 11 Priority Outfalls is located in Appendix C.

(c) Update on Current Storm Sewer Outfall Survey and Water Quality Testing Activities:

In June 2006, the initial survey and sampling component of the Outfall Monitoring Program was completed for Taylor-Massey Creek. Toronto Water staff re-sampled outfalls in the Taylor-Massey Creek watershed which had demonstrated a dry weather flow during the first survey conducted in 2005.

Work crews were also deployed to perform outfall survey and sampling work in Black Creek (a large sub-watershed which flows into the Humber River). The Black Creek watershed is located in Wards 7, 8, 9, 11, and 12.

Black Creek was selected as the next watershed for the Outfall Monitoring Program as Toronto Water has received a significant number of impaired surface-water quality complaints within the watershed. Also, Black Creek feeds into the Humber River which then empties into Lake Ontario just west of Sunnyside Beach. The Humber River is known to be a major factor contributing to frequent beach postings at Sunnyside Beach.

Toronto Water's current inventory of outfalls within Black Creek is listed at approximately 260. As of August 11, 2006, a total number of 178 outfalls were surveyed. Sixty-two (62) of these outfalls are believed to be privately owned as they are not in the existing TIADs inventory. Of the 178 outfalls located, 115 were found to have a dry weather flow at the time of inspection. By the end of July 2006, crews have been able to sample 16 of these outfalls and preliminary testing results indicate 2 outfalls were discharging contaminated flows. Investigative work is being performed on one of these outfalls by Toronto Water staff. Municipal Property Assessment Corporation (MPAC) records were used to prioritize visits to residents with finished basements, if a residential cross connection is suspected.

Enforcement Activities and Estimate of Pollution Prevented

Toronto Water's Environmental Monitoring & Protection (EM&P) Unit has been involved in numerous investigations related to contaminated stormwater discharges over the last year. EM&P staff were able to locate and enforce the remediation of five (5) sewer cross connections discharging sanitary sewage to the storm sewers flowing into Taylor-Massey Creek. Of the 5 cross connections located, three (3) were residential and two (2) were significant commercial operations. Notices of Violation (NOVs) were issued to both commercial property owners. All 5 cross connections were immediately rectified.

Issuance of a Notice of Violation requires a detailed response from the discharger and is the first step in the enforcement of the Municipal Code. NOVs are typically issued for the first event and are used as supporting documents for prosecution should subsequent violations occur.

The EM&P Unit recently released Best Management Practice (BMP) booklets for Automotive Repair Operations, Vehicle Wash Operations, and Petroleum Facilities. These easy to understand documents are designed to assist targeted sectors with meeting discharge limits outlined in the Municipal Code Chapter 681: Sewers. Inspections have focussed on these sectors to ensure the BMP's are being followed, particularly within the Taylor-Massey Creek watershed.

The EM&P Unit has also been closely monitoring industrial discharges to sewers with over 1500 inspections conducted and over 200 NOVs resulting from these inspections in 2005. Further, investigations completed in 2005 resulted in three (3) industrial operations being charged with Municipal Code Chapter 681 violations. In 2006 (January to July), over 650 industrial facilities were inspected and over 40 NOVs issued with three (3) prosecutions initiated and two (2) prosecutions continuing forward. In 2006, approximately 25 targeted high potential industrial inspections were conducted within the Taylor-Massey Creek watershed.

Actions Completed or Planned to Reduce Contaminated Discharges

(a) All EM&P enforcement vehicles are clearly signed and have the Toronto Water Spill Reporting Number painted on them. The intent of this program was to increase the visibility of Toronto Water and its enforcement activities. Improved visibility is an excellent method to promote public awareness and is considered an effective enforcement technique as it makes illegal discharges aware of the City's activities.

(b) The Toronto Water Spill Reporting Number has been included in the Toronto Blue Pages and the Toronto Water website home page. It is now easier for the public to locate the reporting number to call in spills or water pollution complaints to Toronto Water. The end result being improved spill response benefiting both the environment, public safety, and Toronto's infrastructure. Additional planned improvements include placing the Spill Reporting number on the City of Toronto home page.

(c) Toronto Water is developing a standardized nomenclature system for all outfalls in the City as a component of the Outfall Monitoring Program. Once finalized, each outfall will receive an identification tag or sign. Outfall tagging is expected to be finished within

approximately 5 years of the completion of the outfall survey work and the outfall nomenclature system. The intent of installing a sign at each outfall is for City staff and the public to be able to easily identify outfalls exhibiting contaminated flows and improve Toronto Water's spill response capability.

(d) Toronto Water is increasing public awareness by:

i) Producing a "Protecting Water Quality" pamphlet for EM&P staff to distribute to the public. The pamphlet educates the reader on water quality issues and is used by EM&P staff to assist in their cross connection investigative work within Taylor-Massey Creek. The pamphlet is an excellent "ice breaker" when speaking with home owners on the importance of preventing contaminated discharges to the environment.

ii) Preparing magnetized educational advertisements for use on EM&P vehicles to promote water quality protection.

iii) Planning a targeted public education campaign to the residential community in the Taylor–Massey Creek watershed in late 2006 and early 2007 on stormwater contamination and prevention. Communication tools being considered include an article for the fall/winter edition of WaterWatch; a fact sheet/brochure distributed to civic centres, libraries, community centres, and local Councillor's offices. These targeted communication programs are complemented by the general stormwater public education campaign that includes a multi-faceted campaign of advertising, community programs, and information on the web site.

(e) Toronto Water's EM&P staff participated in the Toronto Public Service Week in the spring of 2006 with an educational booth promoting the protection and enforcement of water quality. EM&P Officers answered questions related to water quality, enforcement, and protection. The booth and slide show presentation were a great success, drawing a significant amount of public attention.

(f) Toronto Water has developed a partnership with Solid Waste Management (SWM) Services Division to convey observations while working in creeks and rivers near old landfill sites. Groundwater flowing through old landfills may pick up contaminants and may be seen at outfalls and river banks as staining, and occasionally, rainbow sheen on the surface of water. EM&P staff will ensure SWM staff are made aware of such observations. SWM has engaged consultants to investigate potential landfill gas and surface water impacts at priority landfills and will remediate as required.

(g) EM&P staff are successfully using information obtained from both the Municipal Property Assessment Corporation and Urban Development Services Division to assist By-Law Officers with their investigative work of sanitary to storm sewer cross connections.

(h) EM&P staff has developed a close working relationship with Toronto Survey & Mapping Services to produce outfall, sewershed, and watershed maps. These maps help identify and locate outfalls and assist tracing operations, allowing By-Law Officers to find sources of contamination more quickly. The maps presented with this report were produced by Survey & Mapping Services staff.

(i) Toronto Water is considering a partnership with the Ontario Centre for Environmental Technology Advancement (OCETA) and the Toronto Region Conservation Authority (TRCA) to assist industry in the Taylor-Massey Creek watershed to conduct Pollution Prevention (P2) assessments and implement, where possible, Pollution Prevention (P2) actions. These P2 actions are intended to reduce the use and production of pollutants regulated by Toronto's Municipal Code Chapter 681: Sewers, with a focus on metals and organics. The end result being a reduction in the potential for hazardous spills or discharges to the sewer system and the environment and limiting the degradation of biosolids quality.

(j) Toronto Water is considering a program in which staff visit elementary schools in the Taylor-Massey Creek watershed to educate students and teachers on stormwater quality issues. In addition, City staff will be working with the TRCA to expand the Yellow Fish Road Program into the Taylor-Massey Creek watershed. The Yellow Fish Road Program promotes community participation in the prevention of water pollution. Through in-class presentations, students discover how storm sewers in their neighbourhood drain into streams, rivers and lakes. The presentation relates information about hazardous wastes entering the sewer system to negative impacts on aquatic ecosystems. Students then take the information learned in the classroom into the community by distributing educational leaflets to local households and painting yellow fish on the storm catchbasins. These paintings remind the community of the sewers' connection to our local watercourses.

(k) Toronto Water will commence outfall monitoring in the Rouge River watershed following completion of the Black Creek outfall monitoring program.

Conclusions:

Toronto Water's Outfall Monitoring Program has successfully completed the survey and sampling work for most of the stormwater outfalls discharging into Taylor-Massey Creek. The Program has identified 135 outfalls, likely private, to be added to the watershed's outfall inventory. Of all 252 Taylor-Massey Creek outfalls identified, 28 were determined to be Priority Outfalls discharging contaminated flows. Investigative work is proceeding in the sewersheds of the top eleven (11) Priority Outfalls having the most significant impact to the water quality of Taylor-Massey Creek.

EM&P Officers have found five (5) sources of contaminated stormwater discharges to Taylor-Massey Creek and have effectively worked to remediate these discharges. Of these five (5) sources, three (3) were residential and two (2) were significant commercial operations. Further, the EM&P Unit has issued enforcement Notice of Violations to the two (2) commercial sources of contaminated stormwater discharges.

Outfall survey and sampling crews have been deployed to the Black Creek watershed to begin an inventory of outfalls for this part of the City. Sewer Use By-Law Officers continue to monitor Priority Outfall discharges to Taylor-Massey Creek and are following up on investigations.

Toronto Water's Environmental Monitoring & Protection Unit has implemented and planned numerous initiatives, many with partners, all with the intent to improve water quality both throughout all of Toronto's tributaries and Lake Ontario.

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