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<b>TO:</b>	<b>CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON JUNE 19, 2012</b>
<b>FROM:</b>	<b>JOHN BRAAM, P.ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEER</b>
<b>SUBJECT:</b>	<b>PHASING OF STORMWATER MANAGEMENT FACILITIES</b>

<b>RECOMMENDATION</b>
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That, on the recommendation of the Acting Executive Director Planning, Environmental and Engineering Services and City Engineer, the following actions **BE TAKEN** with respect to the proposed modifications that was previously reported to the Planning and Environment Committee on February 6, 2012 for the recommended Phasing of Stormwater Management (SWM) Facilities:

- (a) Fox Hollow SWM Facility #1 south cell and woodlot berms **BE CONSTRUCTED** in 2012 at an estimated cost of \$3,800,000 (including land for both cells, construction, engineering and contingency), and the north cell **BE ADDED** to the GMIS for 2016, at an estimated cost of \$1,900,000 (excluding land and including construction, construction administration and contingency), subject to the conditions identified in the attached Appendix 'A';
- (b) Fox Hollow SWM Facility #3 and north/south channel **BE CONSTRUCTED** in one phase in 2013 at an estimated total cost of \$4,700,000 (including land, construction, engineering and contingency), subject to the conditions identified in the attached Appendix 'A';
- (c) Tributary 'C' - Riverbend SWM Facility A and Riverbend SWM Facility G (north of Oxford Street) **BE CONSTRUCTED** as one phase at the previously reported estimated total cost of \$4,300,000 (including estimated land, construction, engineering and contingency costs) and be constructed in 2013, subject to the conditions identified in the attached Appendix 'A', upon completion and acceptance of the Municipal Class Environmental Assessment (EA), Schedule 'C', for Storm/Drainage and SWM Transportation and Sanitary Trunk Servicing Works for Tributary 'C' Drainage Area within the Downstream Thames Subwatershed, as well as subject to land dedication to the City by the landowners and City's Council approved land development applications in the Riverbend Area;
- (d) Tributary 'C' - Riverbend SWM Facility F **BE CONSTRUCTED** in 2016 as one phase at an estimated total cost of \$2,600,000 (including estimated land, construction, engineering and contingency costs), subject to the conditions identified in the attached Appendix 'A', land dedication to the City by the landowners and upon completion and acceptance of the Municipal Class Environmental Assessment (EA), Schedule 'C', for Storm/Drainage and SWM Transportation and Sanitary Trunk Servicing Works for Tributary 'C' Drainage Area within the Downstream Thames Subwatershed subject to City's Council approved land development applications in the Riverbend Area;
- (e) Hyde Park SWM Facility #4 and the Stanton Drain remediation project south of Fanshawe Park Road **BE CONSTRUCTED** in 2012 in accordance with the approved functional plan at an estimated cost of \$7,400,000 (including construction, engineering and contingency) and the Stanton Drain remediation project north of Fanshawe Park Road West and culvert crossing of Fanshawe Park Road West **BE ADDED** to the GMIS for 2016 at an estimated cost of \$820,000 (including construction, contract administration and contingency), it being noted that the land is purchased but land costs are not included in the estimate as the land for this facility was purchased through the Urban Works Reserve Fund; and

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## PREVIOUS REPORTS PERTINENT TO THIS MATTER

February 21, 2012 – Report to the Planning and Environment Committee – 2012-2016 Growth Management Implementation Strategy

February 6, 2012 – Report to the Planning and Environment Committee – 2012-2016 Growth Management Implementation Strategy'

## BACKGROUND

### **Purpose:**

The main objective of this report is to provide a cost estimation update that is based on the design information completed at the present time and to recommend modifications to the previously reported SWM Facilities phasing approach for Fox Hollow #1, Fox Hollow #3, Tributary 'C'- Riverbend A, Riverbend G and Riverbend F, as well as Hyde Park #4 and Stanton Drain remediation works (location maps in Appendix B).

### **Context:**

In February 2011, Staff recommended that current development plans via the Growth Management Implementation Strategy (GMIS) could be implemented while deferring considerable capital spending and provide savings in debt related interest costs by phasing the large stormwater management facilities. It was proposed that the Fox Hollow #1, Fox Hollow #3, Riverbend A, Riverbend G and Hyde Park #4 SWM Facilities be phased. It was discussed in the report that the total estimated remaining costs for the facilities are \$17,700,000, excluding land costs in three of the facilities. The phasing considered in the report identified that the total estimated cost of Phase 1 would be \$8,500,000 noting there is some cost to phasing construction of SWM facilities by 5 to 10% of the above-noted total estimated cost and that the second phase for the four facilities will be up to \$9,200,000 in accordance with the final functional plans. The report identified that the value of the deferral in saved interest costs would be up to approximately \$2,280,000.

### **Discussion:**

Pursuant to the direction to defer capital spending and provide savings in debt related to interest costs by phasing SWM facilities, staff undertook additional review of the SWM facility works proposed to be phased by the previous report in consideration of final functional plan design servicing requirements and cost estimates associated with the completed works. Technical design principles and corresponding cost estimates based on completed functional designs are discussed for each SWM facility below.

#### Fox Hollow SWM Facility #1

Fox Hollow SWM Facility #1 is proposed to be completed in two phases by completing the south cell in 2012 and the north cell in 2016 or potentially as required based on development progress in the area. This phasing approach is considered reasonable based on the distinct and separate work areas for the north and south cells and comparable construction value attributed to each cell. Conflict with future development is not anticipated to be a significant issue based on timing and potential access from Sunningdale Road for future north cell construction. Staff recommends the inclusion of the woodland berming and a portion of the north cell outlet sewer as part of the initial south cell work. Although not necessary from a SWM servicing perspective, the completion of those works (i.e. woodland berm and north cell outlet sewer) would allow that area to be fully restored and eliminate the need to disturb those areas in the future. The additional cost of those works is not anticipated to be significant.

#### Fox Hollow SWM Facility #3

The sizing of the phased SWMF # 3 is based on volume required to service lands tributary to Fox Hollow SWM Facility #3 south of Sunningdale Road. The phased SWMF #3 would of necessity include many of the components of the ultimate SWMF #3 including inlet/outlet works, storm sewers, access roads, and outlet channel/corridor. The primary savings of a phased facility would be based on the potential deferral of a portion of the required soil material excavation for this facility and forebay to the future completion of this SWM facility. Should this work be deferred to in the future; the soil material would have to be removed from the site at the higher off site cost rate in future dollars without the possibility of onsite disposal due to the development of the adjacent lands.

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In addition, other considerations to the deferral of the work which would incur additional costs and impose possible constraints include but are not limited to the following:

- Reduced access to the site as the area around would be fully developed with trucking of material through a developed subdivision;
- Blending walkout lots adjacent to facility which would be developed in advance of a phased facility; and
- Working within an operating facility with storm sewer contributions which would require temporary works to control flows during construction.

On the basis of the foregoing, the marginal cost (approximately \$185,000 to \$333,000 depending on disposal costs that represents 4-7% of the total cost to construct the facility in its entirety) is considered reasonable in comparison to the potential for the additional costs based on the constraints noted above that will be required in the future to construct the remaining portion of the facility. The City should consider the timing for the construction of the facility in conjunction with development scheduling and requirements for lands tributary to that facility.

It is noted that Fox Hollow SWM Facility #3 is scheduled to be constructed in 2012, however the City is planning to defer the Fox Hollow SWM Facility #3's construction to 2013 until land development activities will require this facility. Southside Construction and Auburn Developments – landowners of the development lands tributary to this SWM Facility have agreed to this approach. The detailed design of this SWM Facility is scheduled to be completed in June 2012 and the City can construct at the time it is required by the land development activities that is expected to be in the summer of 2013.

#### Tributary 'C' -Riverbend SWM Facility A and Riverbend SWM Facility G

Riverbend SWM Facility A and Riverbend SWM Facility G – Phase 1 was proposed to be completed in 2012 and Riverbend SWM Facility F - Phase 2 in 2016 or potentially as required based on development progress in the area in accordance with the City's Council resolution dated February 23, 2012. However, the design and construction of these SWM facilities are subject to completion and acceptance of the Municipal Class EA study, Schedule 'C', for Storm/Drainage and SWM Transportation and Sanitary Trunk Servicing Works for Tributary 'C' Drainage Area within the Downstream Thames Subwatershed. This EA study is under the Munsee-Delaware First Nation's review and consideration (the review has taken 6-7 months to date) and Munsee-Delaware First Nation's Consulting Team has engaged peer review services of the study at the City's cost. Therefore, until the "Duties to Consult" process will be completed by the City and this study will be accepted by the Ministry of the Environment (MOE) and other approval agencies, the City is unable to proceed with the required design and construction of these works and cannot ensure that these works will be completed by the end of 2012 as identified previously in Council's resolution.

This proposed phasing approach is considered reasonable based on the distinct and separate work areas for the proposed works. The City's total estimated cost for the recommended Storm/Drainage and SWM servicing works in accordance with the Draft Municipal Class EA study, Schedule 'C' is in the amount of \$6,900,000. Therefore, we are proposing that the Tributary 'C' - Riverbend SWM Facility A and Riverbend SWM Facility G – Phase 1 be constructed at the previously reported estimated total cost of \$4,300,000 in 2013 subject to the completion and acceptance of this Class EA for Tributary 'C' by the MOE, all approval agencies and the public. Also, the previously reported Riverbend SWM Facility G Phase 2 should be scheduled for construction at the estimated total cost of \$2,600,000 in 2016.

The estimated total cost for Riverbend SWM Facility A and Riverbend SWM Facility G – Phase 1 of those works are estimated at \$4,300,000 including estimated land, construction, engineering and contingency costs.

#### Hyde Park No. 4 SWM facility and Stanton Drain Remediation

Hyde Park No. 4 SWM facility and Stanton Drain Remediation works were identified in the Hyde Park Community Storm Drainage and Stormwater Servicing Environmental Assessment (EA) completed by EarthTech in 2002 to provide water quality control and adequate conveyance capacity for minor/major system stormwater flows under both current and future conditions. This project was approved in the 2009 budget. The accepted design of Hyde Park No. 4 SWM facility consists of a north forebay, south forebay and a permanent pool. Existing development that has occurred subsequent to the acceptance of the EA and imminently planned development requires construction of both of the inlet works and forebays and outlet associated

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with permanent pool volume. The permanent pool must be sized to provide for the predevelopment flows from contributing areas as contributing flows from these catchments cannot be diverted in the interim. Notwithstanding the approximately \$400,000 invested in the currently accepted design and approximately \$891,000 invested in the purchase of the land through the Urban Works Reserve Fund, there is no opportunity to phase the works for the Hyde Park No. 4 SWM facility and maintain the stormwater management objectives of the approved EA.

The remediation of the Stanton Drain is essential to the accepted servicing solution for the area as it provides the outlet system for the facility in addition to addressing flooding deficiencies in the area that have been expressed by residents since undertaking the EA. Although this work is warranted, further to the direction to defer capital spending and provide savings in debt related to interest costs there is a potential to phase a portion of the Stanton Drain remediation works by deferring the construction of the Fanshawe Park Road Culvert and channel upstream of Fanshawe Park Road. Table 1 below illustrates the total estimated costs based on design estimates completed to date and deferral recommendations based on technical design principles noted above.

**Table 1: SWM facility cost estimates and proposed phasing**

SWM Facility	Approved Budget	Total Estimated Costs <sup>1</sup>	Phase 1 2012 <sup>2</sup>	Phase 2 2013	Phase 2 2016	Interest Savings <sup>3</sup>
Fox Hollow No. 1	\$4,167,000	\$5,651,102	\$3,786,101		\$1,865,000	\$466,250
Fox Hollow No. 3 and North/South Channel	\$5,778,000	\$4,668,242	\$1,438,242	\$3,230,000		\$161,500
Riverbend A & G	\$4,300,000	\$4,300,000	\$4,300,000			
Riverbend F	\$2,600,000	\$2,600,000			\$2,600,000	\$650,000
Hyde Park No. 4 & Stanton Drain Remediation	\$7,897,000	\$8,197,000	\$7,377,000		\$820,000	\$205,000
<b>TOTAL<sup>4</sup></b>	<b>\$24,742,000</b>	<b>\$25,416,343</b>	<b>\$16,901,342</b>	<b>\$3,230,000</b>	<b>\$5,285,000</b>	<b>\$1,482,750</b>

**Notes:**

<sup>1</sup>Total Estimated Costs include land, engineering for work related to Addendums to Environmental Assessments (EA) (if required), functional & detailed design, contract administration and contingency. The EA work for the Fox Hollow EA completed in 2004 and the Hyde Park EA in 2002 were excluded

<sup>2</sup>Phase 1 Costs include land with the exception of Hyde Park No. 4 SWM facility that are not included in the total estimated costs or approved budget as the land for this facility was purchased at a cost of \$891,000 through the Urban Works Reserve Fund

<sup>3</sup>Based on simple interest method 5% annual interest and deferral of Phase 2 values for 5 years

<sup>4</sup>If necessary budgeting shortfall to be covered through savings realized on previous SWM facility projects

The total estimated costs of the four SWM facilities and Stanton Drain Remediation works is approximately \$25M based on continuing detailed designs and Tributary 'C' EA. Proposed phasing of the facilities and remediation works defers an estimated amount of approximately \$3.2M to 2013 and another \$5.3M to 2016 and resulting in an estimated annual interest savings of approximately \$300,000 per year.

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**Conclusions:**

Pursuant to the direction to defer capital spending and provide savings in debt related to interest costs by phasing SWM facilities, staff undertook additional review of the SWM facility works proposed to be phased in consideration of final functional plan design servicing requirements and cost estimates associated with the works. It is the recommendation of staff that the Fox Hollow SWM Facility #1 SWM facility be constructed in two phases, the Fox Hollow SWM Facility #3 and north/south channel be constructed as one phase, Riverbend A and G SWM facilities be constructed as one phase in 2012 subject to the completion and acceptance of the Tributary 'C' Municipal Class EA study, Riverbend F SWM Facility be constructed as one phase in 2016 subject to City's Council approved land development applications in the Riverbend Area. Further, that Hyde Park SWM Facility #4 is constructed as one phase and Stanton Drain remediation works be constructed in two phases.

**Acknowledgements:**

This report was prepared within the Planning, Environmental Engineering Services Department within the Stormwater Management Unit by Billy Haklander, Environmental Services Engineer in consultation with Jason Senese Manager, Administrative Services Finance and Scott Mathers Manager, Development Finance.

<b>SUBMITTED BY:</b>	<b>RECOMMENDED BY:</b>
<b>BERTA KRICKER, M.ENG., F.E.C., P.ENG. MANAGER FOR STORMWATER MANAGEMENT UNIT</b>	<b>JOHN BRAAM, P.ENG. ACTING EXECUTIVE DIRECTOR, PLANNING, ENVIRONMENTAL &amp; ENGINEERING SERVICES &amp; CITY ENGINEER</b>

May 30, 2012

/BH

Attach: Appendix "A" – Phasing Conditions  
Appendix "B" – Location Maps

Cc: M. Hayward – City Treasurer and Chief Financial Officer  
J. Senese – Manger Administration Services Finance  
P. Christiaans, Director – Development Finance  
S. Mathers – Manager, Development Finance  
J. Lucas – Manager, Transportation Planning and Design  
J. Lawrence – Manger, Construction Administration

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