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### **YDSS 16TH AVENUE TRUNK SEWER PROJECT POST-CONSTRUCTION ENVIRONMENTAL MONITORING AND MITIGATION PROGRAM TOWN OF MARKHAM, PROJECT 74030**

**The Transportation and Works Committee recommends the adoption of the recommendations contained in the following report, January 24, 2007, from the Commissioner of Transportation and Works:**

#### **1. RECOMMENDATIONS**

It is recommended that:

1. The budget for year two (2) of the three (3) year program for the Gartner Lee Limited assignment related to post-construction environmental monitoring, mitigation and constructive engagement services be approved in the amount of \$1,215,661, excluding GST.
2. The upset limit for Gartner Lee Limited services be increased by \$1,215,661 from \$2,219,000 to \$3,434,661, excluding GST.
3. Staff report back to Council in the first quarter of 2008 on the status of the post-construction monitoring and mitigation program following year two of the three-year program.

#### **2. PURPOSE**

This report seeks approval to continue the 2<sup>nd</sup> year of services with Gartner Lee Limited for the post-construction environmental monitoring and mitigation program following year one of the three-year program. These services are necessary to satisfy the requirements of the Permit to Take Water for the YDSS 16<sup>th</sup> Avenue Trunk Sewer Project. The Purchasing By-Law requires Regional Council approval to proceed with this increase.

#### **3. BACKGROUND**

To satisfy requirements under the Permit to Take Water issued to the Region by the Ministry of the Environment (MOE), an extensive monitoring and mitigation program is in place. Regional Council, at its meeting on January 26, 2006 adopted Clause 1 of Report No. 1 of the Transportation and Works Committee which approved the retention of Gartner Lee Limited to provide post-construction monitoring and mitigation services for a three-year term. At that time the costs associated with the three year program were

outlined in detail, however, given the uncertain nature of the scope of services and to ensure accountability and further optimization of costs, it was agreed the post-construction budget would be approved annually.

With the completion of tunnel concreting and manhole construction for everything east of Warden Avenue in January, the need for construction related dewatering has been completely eliminated. Current project dewatering is only required to meet the supplementation requirements of area creeks as outlined in the Region's Permit to Take Water. It is expected that all construction related activity will be complete by May 2007.

Accordingly, at this point, authorization is only being sought for the approval of year two of the post-construction monitoring budget. The requested 2<sup>nd</sup> year of fees in the amount of \$1,215,661 represents approximately 1.3% of the total project cost which is currently estimated at \$90 million. The program will be reviewed on an annual basis with a report to Regional Council outlining the performance of Gartner Lee Limited in undertaking this assignment and the future scope of services.

#### **4. ANALYSIS AND OPTIONS**

##### **4.1 Rationale for Continuing with Gartner Lee Limited for 2<sup>nd</sup> Year of Services**

On February 1, 2006, Gartner Lee Limited assumed monitoring and mitigation responsibilities for a large portion of the project from the design-build consortium (McNally/Aecon Joint Venture). As construction related dewatering was drastically reduced in late 2006, staff reviewed the merits and efficiencies of having Gartner Lee Limited carry out the monitoring and mitigation for the entire project. The fees for Gartner Lee Limited to carry out the required monitoring services including operation and maintenance of the system and public consultation is approximately 50% of the annual costs that would otherwise be incurred through the design-build consortium (McNally/Aecon Joint Venture). Gartner Lee Limited assumed the monitoring and mitigation for the balance of the project on November 1, 2006. Gartner Lee Limited transition into post-construction monitoring on all project sites has been seamless. In all cases, monitoring and reporting requirements have been streamlined and made more efficient.

Given that Gartner Lee Limited has successfully completed the first year of monitoring for this project and have extensive knowledge specific to this project, it would be advantageous to have the same consultant complete the 2<sup>nd</sup> year of monitoring, notwithstanding the cost efficiencies that have been realized by having Gartner Lee Limited assume the monitoring and mitigation responsibilities for the overall project.

##### **4.2 Scope of Works**

To satisfy requirements under a Permit to Take Water issued to the Region by the Ministry of the Environment (MOE), an extensive monitoring and mitigation program is in place. Information is exchanged with various approval agencies including the Toronto

and Region Conservation Authority (TRCA), Federal Department of Fisheries and Oceans and Ministry of the Environment. The following summarizes the key elements of the program:

***Post-Construction Monitoring Approach***

- Review and report on the recovery of groundwater levels.
- Continue to monitor and report on the health of nine area creeks within the project zone of influence.
- Implement mitigation, as required.
- Monitor the effects of mitigation and determine the need for continued response if necessary.

The area of monitoring will continue to decrease in size as the area of influence grows smaller. The monitoring is designed to show compliance with the Region's Permit to Take Water.

***Groundwater Monitoring***

Groundwater monitoring includes the following activities:

- Collect groundwater levels.
- Record levels and input into a database.
- Evaluate/interpret data to determine the area of recovery.
- Report monthly.

The monitoring program includes the collection of groundwater levels from a network of 79 observation wells, 49 piezometers, and 50 private wells on a weekly and bi-weekly basis as described in the monitoring plan entitled *York Region's Commitment to Well Mitigation* (Inspec-Sol/CRA, 2004). Groundwater monitoring locations are identified on Attachments 1 and 2.

***Surface Monitoring***

Monitor surface water streams and watersheds. Surface monitoring locations are identified on Attachment 3.

***Post-Construction Mitigation Approach***

- Operate pumps and distribution systems to meet flow targets.

These flow supplementation/augmentation requirements are outlined in the Region's Permit to Take Water. This system consists of a portion of the dewatering system established as part of the construction dewatering project. The remainder of the system will be removed this spring.

***Reporting***

- Satisfy all reporting requirements of the Permit to Take Water including detailed monthly monitoring submissions.

***Stream Net Improvement Plan***

- Produce and oversee the aquatic habitat net improvement plan for selected reaches of area creeks as mandated by the Minister of the Environment's letter dated October 1, 2004. The affected creeks include Robinson Creek, Little Rouge Creek, Eckardt Creek, Bruce Creek, Berczy Creek and Mount Joy Creek.
- Consider various habitat improvement techniques for each stream reach.

***Constructive Engagement of Stakeholders***

- Ongoing communication with the public and agencies throughout the post-construction monitoring and mitigation.

All information collected during the monitoring program is assessed and reported on a regular basis through the constructive engagement process. As well, it is proposed that the constructive engagement process will continue to effectively communicate the recovery of the environment and status of environmental improvements to stakeholders. The work program is required to maintain compliance with the MOE's requirement for a complete public engagement program for the 16<sup>th</sup> Avenue Trunk Sewer project during the "Post-Construction" phase of the project.

The Region has been successful in mitigating any adverse environmental effects associated with the dewatering activities of the 16<sup>th</sup> Avenue Trunk Sewer project. Over the next few months, any possible negative effects will be mitigated with flow supplementation using small amounts of groundwater until the Thorncliffe aquifer has fully recovered. The Thorncliffe aquifer has already recovered by over 50% in the area of Stone Mason Boulevard and continues to recover steadily.

## **5. FINANCIAL IMPLICATIONS**

Gartner Lee Limited assumed monitoring and mitigation responsibility for the entire project on November 1, 2006; six months ahead of the initial schedule. This early transition to post-construction monitoring for the entire project resulted in savings of over \$600,000. These savings were primarily due to inefficiencies associated with having both the design-build consortium (McNally/Aecon Joint Venture) and Gartner Lee Limited conduct environmental monitoring and mitigation services for the project. Despite an increased scope, Gartner Lee Limited completed project monitoring and mitigation for year one for \$1,704,000; within five percent of their approved budget of \$1,619,000. This additional cost was associated with the operation and maintenance of mitigation infrastructure (i.e. pumps and distribution pipes) which was not included in the original estimate for year one.

The budget for the three-year post-construction monitoring is summarized in Table 1 below. Fees for years one and two have increased from last year's estimate and fees for

year three have decreased. These changes represent a 13% (\$380,000) increase in total costs for the three year assignment. This increase in cost can be attributed primarily to the inclusion of costs associated with the operation and maintenance of mitigation infrastructure which was not included in last year's estimate.

**Table 1**  
"Post-Construction Monitoring" Budget

| <b>Budget Item Description*</b>                        | <b>Year 1</b>      | <b>Year 2</b>      | <b>Year 3</b>    |
|--------------------------------------------------------|--------------------|--------------------|------------------|
| Groundwater recovery monitoring                        | \$220,000          | \$145,000          | \$80,000         |
| Monitoring of streams, wetlands and woodlots           | 680,579            | 500,000            | 103,927          |
| Data management and interpretation                     | 130,073            | 40,000             | 20,000           |
| Reporting (monthly and annual)                         | 346,267            | 162,000            | 58,000           |
| Meetings and technical presentations to stakeholders   | 45,971             | 78,661             | 44,000           |
| River reach net improvement plan                       | 92,111             | 25,000             | 0                |
| Production and distribution of compliance reports      | 25,000             | 50,000             | 20,000           |
| Management of project website                          | 18,000             | 20,000             | 20,000           |
| Production of annual reports                           | 20,000             | 20,000             | 20,000           |
| Constructive engagement program                        | 41,360             | 25,000             | 15,000           |
| Operation and Maintenance of Mitigation Infrastructure | 85,000             | 150,000            | 50,000           |
| <b>Total (not including GST)</b>                       | <b>\$1,704,000</b> | <b>\$1,215,661</b> | <b>\$430,927</b> |

Funding for this project is derived from wastewater development charges and wastewater user rates allocated 80% and 20%, respectively. Sufficient funds are available within the 2007 Ten-Year Capital Plan to cover the cost of services to be provided by Gartner Lee Limited for this project.

## **6. LOCAL MUNICIPAL IMPACT**

The 16<sup>th</sup> Avenue Trunk Sewer is an integral component of long-term infrastructure being constructed to maintain the environmental protection afforded by the YDSS. The section of trunk sewer provides needed relief to all of the local municipalities reliant upon YDSS servicing.

## **7. CONCLUSION**

As the 16<sup>th</sup> Avenue Trunk Sewer project nears completion, it is necessary to complete the monitoring and reporting of the groundwater recovery and the health of the surrounding environment.

Although recovery monitoring is projected to take place largely over the next two years, the post-construction monitoring program proposed will be reviewed annually. At this time, only the year two budget is recommended for Regional Council approval.

For more information on this report, contact Bala Araniyasundaran, extension 5131, Director, Capital Delivery of the Water and Wastewater Branch in the Transportation and Works Department.

The Senior Management Group has reviewed this report.

*(The attachments referred to in this clause were included in the agenda for the February 7, 2007 Committee meeting.)*