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REQUEST FOR ADDITIONAL FUNDING FOR ADDITIONAL SCOPE REQUIRED FOR KLEINBURG WATER POLLUTION CONTROL PLANT EXPANSION CITY OF VAUGHAN – PROJECT 77470

The Environmental Services Committee recommends the adoption of the recommendation contained in the following report dated September 3, 2009, from the Commissioner of Environmental Services.

1. RECOMMENDATION

It is recommended that:

1. Blanket purchase order number B00010772 issued to Conestoga-Rovers and Associates for detailed design and contract administration services for the Kleinburg Water Pollution Control Plant project be increased by the amount of \$990,924 from \$1,466,052 to \$2,456,976 excluding GST and that the capital budget for this project be increased by \$11.0 million to reflect the revised total project estimate.

2. PURPOSE

This report is to obtain Regional Council approval to increase the purchase order amount for a previously retained engineering consulting firm for the Kleinburg Water Pollution Control Plant (WPCP) expansion project, beyond the 15% contingency and the 20% additional scope change provision provided in the Purchasing By-law. The report also requests that Regional Council increase the capital budget for this project from \$13.1 million to \$24.1 million. The increase in project cost is as a result of more complex plant components to meet new stringent Ministry of the Environment (MOE) requirements. *Attachment 1* shows location of the plant.

3. BACKGROUND

Detailed design and contract administration for expansion of the Kleinburg Water Pollution Control Plant awarded to Conestoga-Rovers based on the recommendation of the Environmental Assessment Report

In April 2008, Conestoga-Rovers and Associates (CRA) was retained to provide engineering services for the detailed design and contract administration services for the Kleinburg WPCP expansion project. The benefits of retaining a single engineering consultant for a project are:

- Improved co-ordination for the Project to ensure timely delivery.
- Single point accountability for the design and contract administration.

Accordingly, Purchase Order number B00010772 was issued to CRA for \$1,223,010 plus GST. The proposal from CRA had the lowest upset limit cost and highest technical score (Reference: Report No. 1 of the Transportation and Works Committee, Regional Council Meeting of January 24, 2008).

Ministry of Environment mandates reduction in Total Phosphorus loading and more stringent effluent criteria

The Class Environmental Assessment (EA) for Kleinburg-Nashville wastewater servicing capacity increase recommended expanding the capacity of the plant from 1205 m³/day to 2,874 m³/day. Subsequent to the approval of the Class EA, CRA was retained as the engineering consultant for detailed design and contract administration. Detailed discussions took place between the Region, CRA and the MOE to determine the final effluent compliance limit and Total Phosphorus (TP) limit. MOE's position is that the TP load for the Humber River cannot be increased over the current operating load of the Kleinburg WPCP. The current water quality (specifically TP) of the Humber River does not meet Provincial Water Quality Objectives (PWQOs) and hence MOE has classified it as a Policy 2 stream, with an objective to upgrade the water quality to meet PWQOs. Current operating conditions of the plant and the comparable MOE requirements for the expansion are summarized in Table 1.

Table 1
Summary of Current and Required Expansion TP Loading

Condition	Design Flow M³/Day	Effluent TP Concentration (mg/l)	Annual TP Loading Permitted at Design Flow (kg)
Current	1,205	0.30	131
After expansion project	2,874	0.13	131

On this basis, the Region undertook an Assimilative Capacity Study (ACS) to determine impact to the Humber River. The ACS study and review of plant operational data indicated that the existing single-stage filtration technology would not reliably meet the new effluent limit. To address the concern, the Region requested CRA provide a recommendation for tertiary treatment. Based on evaluation of tertiary treatment alternatives, CRA recommended implementation of a two-pass filtration system for the current as well as increased plant capacity to meet more stringent effluent limits imposed by the MOE. These design changes require addition of a new building to accommodate 16 new filter beds as opposed to the addition of four filter beds as originally planned.

Other items identified during detailed design that were not included in the original scope of work and which required activation of contingency allowances include:

- A new Redside dace species permit required by the Ministry of Natural Resources (MNR) as this species was recently listed at risk and endangered by the Province.
- Changes to building elevation and facade required by the Kleinburg-Nashville Heritage plan.
- Addition of a standby generator, modifications of the sludge handling system and plant process water system due to inadequate capacity of the municipal service connection.
- Increased size of the outfall due to hydraulic design concerns.
- Project constructability and construction sequencing workshops:
 - To sequence 80 major construction activities with minimum number of construction days and to maintain current operation of the plant.
 - Due to property limitations.
- Increased number of specifications (tender documents).

To compensate CRA for the additional efforts in this regard, a fee increase was approved in the amount of \$243,042, plus GST, which when combined, consumed a portion of the contingency and scope change allowances provided for in the Purchasing By-law. This brought the total upset limit of the contract to \$1,466,052 exclusive of GST.

4. ANALYSIS AND OPTIONS

Environmental Assessment report recommended Water Pollution Control Plant expansion alternative

The EA report recommended expansion of the water pollution control plant alternative. Connection to the YDSS was not recommended for the following reasons:

- Capacity in the YDSS may not be available in time to address immediate growth in the Kleinburg-Nashville community.
- The alternative to plant expansion required construction of a sanitary sewer along the Humber River valley and TRCA regulated lands (environmentally sensitive areas).
- Plant site has sufficient property for expansion and plant expansion alternative will limit the construction activities exclusively to Region owned property.
- Highway 427 extension and route was not finalized at EA report stage.
- The estimated construction cost for the YDSS connection alternative was same as the estimated construction cost for the plant expansion.

Increased plant construction cost to meet MOE mandate

The complexity and scope of construction for this project has increased significantly from the Class EA and consultant selection stage as a result of new, more stringent MOE requirements. *Attachment 2* shows revised plant layout and new buildings compared to the Class EA layout. The construction cost estimate has more than doubled from \$9 million (Class EA) to \$21 million (preliminary bid result). The duration for contract administration has increased from 300 days to 500 days.

More complex plant resulted in additional engineering work

CRA was requested to provide a workplan and cost estimate for increased scope including the following items shown in Table 2.

Table 2
Summary of Additional Scope and Fees

	Additional Scope	Requested Fees
1	Additional Design and Permit related efforts	\$82,450
2	Contract administration services increased from 300 construction days to 500 construction days (includes 30 days pre- and post-construction services)	\$205,736
3	Construction inspection services increased from 270 days to 470 days and addition of second part-time inspector due to multiple critical activities	\$356,113
4	Additional Training, Commissioning and Warranty services due to increased plant complexity and equipment	\$59,734
5	Additional Project management, Project closeout, Shop drawings review, Manuals and Drawings related services due to increased plant complexity and equipment	\$134,548
6	Additional Materials testing, Asset tagging and Other allowances	\$152,343
	TOTAL	\$990,924

5. FINANCIAL IMPLICATIONS

The total requested fee for the additional contract administration and inspection services is \$990,924 excluding GST. This additional fee is in excess of the provision provided for in the Purchasing By-law. The requested fee increase will result in an updated contract

value of \$2,456,976. The additional funding is included in the 2010 and 2011 Capital Budgets. It shall be noted that this fee increase was negotiated and the original proposal from CRA requested a fee increase of \$1.4 million.

Staff has also compared the total engineering fee (detailed design and contract administration) to the construction value for similar projects. For this assignment, the engineering fee to construction cost estimate ratio, if approved by Regional Council, is 11%, which is within the range for similar water pollution control plant projects.

All expenditures on this project are funded 80% from development charges and 20% from rate reserve.

Due to stringent MOE requirements, the construction cost for this project has increased from \$9 million to \$21 million, excluding GST. The additional funding will be included in the 2010 and 2011 Capital Budget.

Since 2002, a little over 700 purchase orders with a total value of approximately \$1.3 billion have been issued to secure engineering, consulting and construction services on water and wastewater projects. Of these, approximately 70 or 10% of the purchase orders have required increases beyond the increases allowed in the Regional Purchasing By-law. The total value of such increases is approximately \$41 million or 3% of the total original value of the purchase orders.

6. LOCAL MUNICIPAL IMPACT

Currently, the Kleinburg WPCP is running above its peak capacity. The WPCP expansion project is a critical component to provide wastewater servicing capacity to meet the growth needs of the Kleinburg-Nashville community. The Cultural and Heritage Department at the City of Vaughan has provided input into the design of the building façade, recognizing that the WPCP is within Kleinburg-Nashville heritage district.

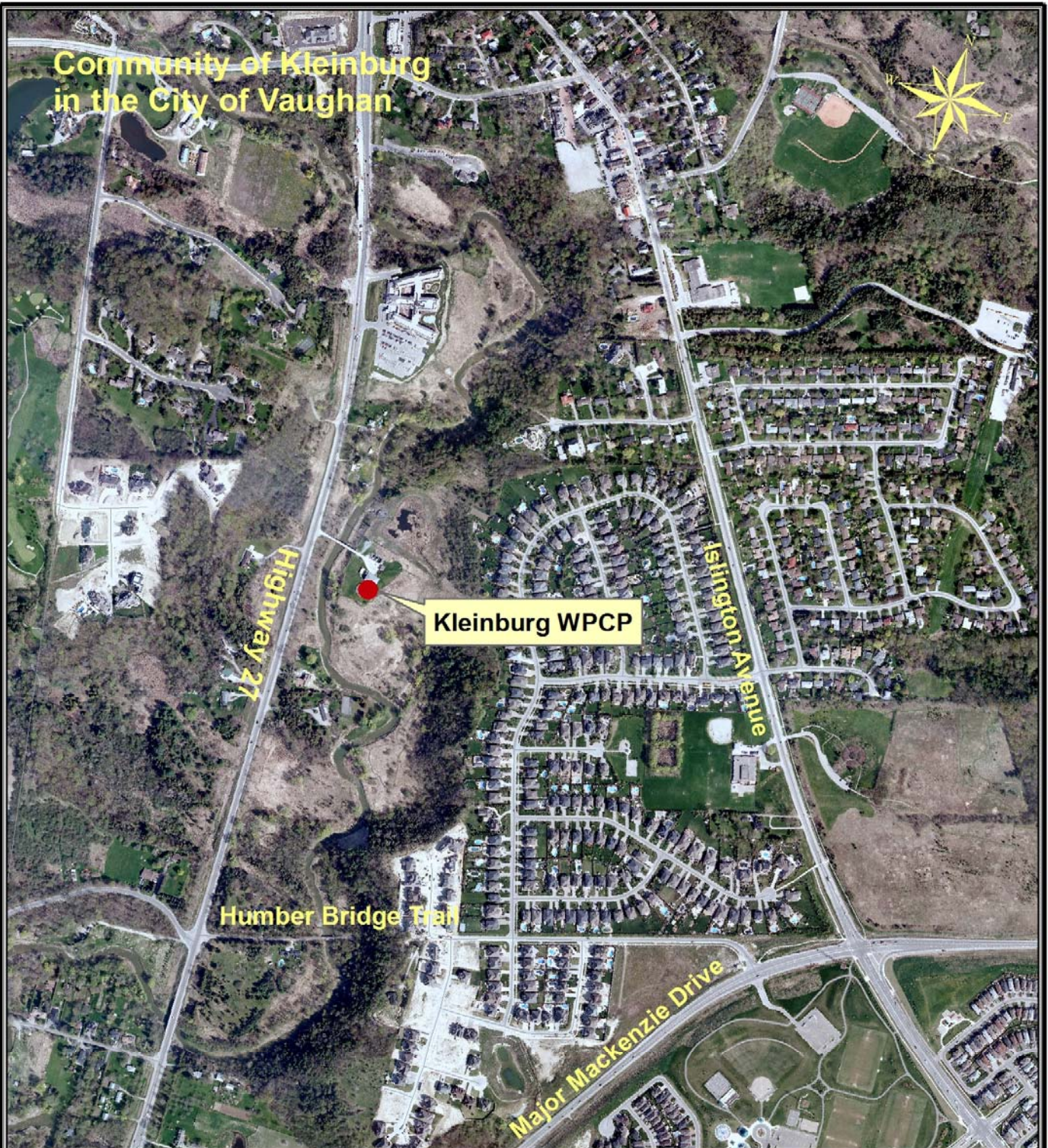
7. CONCLUSION

Authorization of the additional funding is required to cover the additional effort for contract administration and inspection services during construction of the plant and to complete the construction of the project in the summer of 2011 in accordance with the Region's current 10-Year Capital Program.

For more information on this report, please contact Daniel Kostopoulos, Director, Capital Planning and Delivery, Environmental Services at extension 5070.

The Senior Management Group has reviewed this report.

(The two attachments referred to in this clause are attached to this report).



LOCATION PLAN

Kleinburg WPCP Expansion Project-Project# 77470
Community of Kleinburg, City of Vaughan

150 75 0 150 Meters



ENVIRONMENTAL SERVICES

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