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DUFFIN CREEK WATER POLLUTION CONTROL PLANT STAGE 3 EXPANSION PROJECTS PROJECT 73720

The Transportation and Works Committee recommends the adoption of the recommendation contained in the following report, August 25, 2005, from the Commissioner of Transportation and Works:

1. RECOMMENDATION

It is recommended that:

1. This report be received for information.

2. PURPOSE

The purpose of this report is to update Committee and Regional Council on the progress achieved to date as well as forecast activities over the next few months on the Duffin Creek Water Pollution Control Plant (WPCP) stage 3 expansion projects. Additionally, the Regions' Project Management Team and the consulting team are reviewing several options to advance the delivery of the Stage 3 Liquids Process Expansion Project for review and possible implementation by both York and Durham as previously identified in the report of May 19, 2005.

3. BACKGROUND

The Duffin Creek WPCP provides treatment for sewage flows from The Regional Municipalities of York and Durham. Approximately eighty percent of the treated flows at the plant originate from York Region. The Duffin Creek WPCP is jointly owned by the two Regions and management of the Duffin Creek WPCP is governed by the York Durham Sewage System Primary System Co-owners agreement (executed on November 28, 1997).

The update to the Long Term Wastewater Master Plan has identified the Stage 3 Expansion Projects at the Duffin Creek WPCP to increase wastewater treatment capacity to be able to service growth in York Region. During the year 2004, the average daily flow to Duffin Creek was 347 MLD (Millions of Litres per Day) and the future projections to growth indicate that the rated treatment capacity of 420 MLD will be reached by the end of 2010.

During the preliminary treatment of the wastewater, the liquids and solids are separated for further treatment in different processes. Thus, the overall expansion has been broken down into two projects; one for the liquids treatment process and one for the solids.

The Stage 3 Expansion Projects will accomplish the following:

- Increase the liquids process treatment capabilities from 420 MLD to 630 MLD.
- Increase the solids treatment process to provide a firm treatment capacity of 270 Dry Tonnes per day.
- This expansion will accommodate expected growth in York Region until 2035.

A Schedule C Class EA for these projects is presently ongoing and is expected to be completed by late 2005.

3.1 Engineering Contracts

Presently, consulting contracts associated with the Duffin Creek WPCP Stage 3 Expansion Projects have been awarded as follows:

- On March 31, 2005, York Region Council authorized the award of the Project Planning and Support Services, Contract P-04-67 in the amount of \$981,190, including GST to Revay and Associates Limited.
- On May 19, 2005, York Region Council authorized the award of the Professional and Engineering Services for the Pre-design, Detailed Design, Contract Administration and Resident Inspection, Contract P-05-29 in the amount of \$15,295,112, excluding GST for the Stage 3 Liquids Process Expansion Project and the amount of \$14,602,462, excluding GST for the Stage 3 Solids Process Expansion Project, both to Team Duffin. Team Duffin is lead by CH2M Hill and Earth Tech Canada with resources from MacViro, Simcoe Engineering and Totten Sims Hubicki.

4. ANALYSIS AND OPTIONS

4.1 Progress Summary

Since the awards, the project team has focussed on the following activities:

- Planning for the complete design activities:
 - Preparing estimated project schedules from present through commissioning.
 - Preparing detailed project conception and pre-design schedules.
 - Preparing and implementing detailed project control tools.
 - Preparing a project charter.
 - Preparing the Value Engineering RFP.
 - Designing and implementing the web-based “collaborative business platform”, located at www.duffincreek.ca.

- Preparing and implementing the project work breakdown structure and identifying detailed project deliverables.
- Conducting regular design and co-ordination meetings.

Due to the enormity of the projects, multiple meetings have been conducted to prepare the project control and reporting tools that will be required to monitor the progress of the projects accurately and completely. The numerous tools presently developed are dynamic in nature considering the complexity and length of the projects and it is anticipated that they will continue to be a work-in-progress as the project moves through the various phases.

Since the same consulting consortium of Team Duffin has been awarded both design assignments, the resource management required to execute the projects as required has been carefully reviewed by the Regions' project management team.

4.2 Current Schedule Overview

Table 1 provides milestone dates for key activities anticipated for the Stage 3 Liquids Process Expansion Project and Table 2 provides milestone dates for key activities for the Stage 3 Solids Process Expansion Project.

Table 1
Stage 3 Liquids Process Expansion Project
Key Project Milestones

Task	Schedule Date
Project Consulting Engineering Services Award	May 2005
Submit Conceptual Design Report	October 2005
Submit Pre-design Report	August 2006
Pre-Purchase Equipment	October 2006
Submit Final Design Documents	August 2007
Tender/Award Construction Contracts	December 2007
Construction Completion	January 2010
System-Wide Commissioning and Operation	May 2010

Table 2
Stage 3 Solids Process Expansion Project
Key Project Milestones

Task	Schedule Date
Project Consulting Engineering Services Award	May 2005
Submit Conceptual Design Report	November 2005
Submit Pre-design Report	September 2006
Pre-Purchase Equipment	November 2006
Submit Final Design Documents	September 2007
Tender/Award Construction Contracts	February 2008
Construction Completion	July 2010
System-Wide Commissioning and Operation	December 2010

4.3 Forecast Activities from August 22, 2005 to November 21, 2005

The following are key events scheduled over the next three months:

- Weekly meetings to discuss and review conceptual design elements.
- Preparation of concept design report and peer review.
- Bi-weekly meetings to review and discuss progress, review decisions, coordination and schedule short-term objectives.
- Prepare and initiate project design office.
- Issue RFP and award Value Engineering Services contract.
- Review and possible implementation of methods and strategies to advance the delivery of the Stage 3 Expansion Projects.

4.4 Options for Project Delivery Advancement

Team Duffin suggested in their proposal that it may be possible to expedite delivery of some additional liquid capacity by providing a “modular” approach to the liquid treatment process only. This possibility is currently being discussed between the Regions’ project management team and Team Duffin.

The concept suggested in the proposal is to fast-track the design and construction of a module of part the liquid process. It is currently envisioned to design, construct and commission a primary settling tank, an aeration tank and final clarifier. This would require a few temporary connections including; one to the existing headworks, one to the primary sludge system, one to the air supply system and one to the existing disinfection facilities.

Initial reviews to this concept require further information before a possible recommendation can be made for implementation including detailed investigations by the Regions and the consultants to determine:

- The treatment capability of the existing headworks, primary sludge system, air supply system and disinfection facilities to accept additional flows.
- The additional engineering and construction costs.
- The regulatory requirements for an interim Certificate of Approval (CofA) to facilitate a two-step increase in capacity.
- Coordination of issues during construction to avoid the complexities associated with multiple contractors.
- The additional operating requirements and costs for interim operation.
- The timing of the need for the incremental capacity based on current flow projections.

The Project team is also exploring other possible methods or strategies to expedite the delivery of this project. They include:

- Performing a stress test to the existing WPCP to determine if there is any further availability of treatment capacity within the existing facilities and if so, how much?
- Reviewing several possible construction contract elements, contents, techniques, packages or breakdowns to determine if an advanced delivery of equipment or construction is available.

An assessment of the requirement, benefit and feasibility of an accelerated delivery approach requires additional development and progress in conceptual design activities. Staff will report back to Committee and Regional Council regarding these matters in December, 2005.

5. FINANCIAL IMPLICATIONS

All ongoing work relating to this project to meet the present initial design and construction schedule is in the initial stages of design conception and planning. York Region's 10 year Capital Plan includes sufficient funds to cover the current committed engineering, construction, project management and miscellaneous costs associated with the projects.

6. LOCAL MUNICIPAL IMPACT

The Duffin Creek WPCP Stage 3 Expansion Project is required to accommodate short term and long term future growth within York Region and Durham Region for the next 25 to 30 years.

7. CONCLUSION

The Duffin Creek WPCP stage 3 expansion projects are very important in order to sustain growth throughout York Region for the next 25 to 30 years. It is expected that this large and complex project will take approximately two years for the tender and award stage and then approximately three years to construct.

During the current conceptual design phase, the Regions' Project Management Team is continuing to monitor the Consulting Team's efforts closely to ensure project completion within the approved budget and in an expeditious manner. Regional staff will bring forward an updated report on the status of the project in December, 2005.

The Senior Management Group has reviewed this report.