

Minutes - Standing Committee on Fiscal Issues - October 12, 2004

REPORTS

**Minute No. 49 North End Water Pollution Control Centre (NEWPCC) Centrate
Treatment
File WS-7.1**

STANDING COMMITTEE DECISION:

The Standing Committee on Fiscal Issues concurred in the administrative recommendation and received the report as information.

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DECISION MAKING HISTORY:

Moved by Councillor Thomas,

That the administrative recommendation be concurred in.

Carried

**RE: NORTH END WATER POLLUTION CONTROL CENTRE (NEWPCC)
CENTRATE TREATMENT**

FOR SUBMISSION TO: The Standing Policy Committee on Fiscal Issues

ORIGINAL REPORT SIGNED BY: The Director of the Water and Waste Department

REPORT DATE: October 5, 2004

RECOMMENDATION(S):

That this report be received as information.

REPORT SUMMARY

KEY ISSUES:

- Implementation of a Centrate Treatment Facility at the NEWPCC to meet anticipated Province of Manitoba effluent license limits for nitrogen and phosphorus reduction.
- The Province has mandated the City of Winnipeg to complete the Centrate treatment facility by the end of 2006.
- Manitoba Conservation has indicated that its license requirements for NEWPCC will include reduction of Nitrogen and Phosphorus rather than just Ammonia reduction as initially planned by the City.
- An internal preliminary risk assessment indicated the following risks:
 - Manitoba Conservation has yet to issue the official license for this Facility.
 - *Manitoba Conservation's license requirements may increase the project cost beyond the initial estimate.*

IMPLICATIONS OF THE RECOMMENDATION(S):

General Implications

- | | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | None |
| <input type="checkbox"/> | For the organization overall and/or for other departments |
| <input type="checkbox"/> | For the community and/or organizations external to the City of Winnipeg |
| <input type="checkbox"/> | Involves a multi-year contract |

Comment(s):

Policy Implications

- | | |
|-------------------------------------|-------------------|
| <input checked="" type="checkbox"/> | No |
| <input type="checkbox"/> | Yes - Comment(s): |

Environmental Implications

- | | |
|--------------------------|------|
| <input type="checkbox"/> | None |
|--------------------------|------|

Yes - Comment(s): Reduction of nitrogen and phosphorus at the NEWPCC in the centrate sidestream in concert with nutrient reduction at the WEPCC will meet the interim reduction targets established by the Province in February 2003.

Human Resources Implications

No
 Yes - Comment(s): Additional staff will be required to maintain and operate the new facility.

Financial Implications

Within approved current and/or capital budget
 Current and/or capital budget adjustment required.
Comment(s): Additional Capital funding has been identified in the 2005 Capital Program as submitted for Council's consideration.

REPORT

REASON FOR THE REPORT:

At its meeting held on December 16, 1999 City Council adopted a policy whereby all Capital projects with a total estimated cost of \$10 million or more be submitted by the associated Civic Department to the Standing Policy Committee on Fiscal Issues for review and recommendation prior to any bid solicitation being issued.

HISTORY:

- 1992 The Clean Environment Commission (CEC) convened Public Hearings regarding application of the Manitoba Surface Water Quality Objectives for the Red River, Assiniboine River, and tributaries. As a result of the hearings, the CEC made recommendations, which are intended to protect the Red and Assiniboine Rivers such that their use is not adversely impacted.
- 1993 Minister of Environment adopted the Clean Environment Commission (CEC) recommendations requiring the City to disinfect effluent from its three Wastewater Treatment Plants and to establish unionized ammonia parameters.
- 2003 In January, competitive proposals were requested from a number of consulting engineering firms for disinfection and centrate treatment improvements to the NEWPCC.
- 2003 In March, Council adopted the 2003 Capital Budget including an amount of \$1,000,000. for the NEWPCC Centrate Treatment Project (ammonia reduction only).
- 2003 In January and April, at the request of the Province of Manitoba, the Manitoba Clean Environment Commission (CEC) conducted public hearings on the City of Winnipeg's Wastewater Collection and Treatment Systems.
- 2003 On April 14, the City assigned Earth Tech (Canada) Inc. to undertake the design and construction of a Centrate Treatment and Secondary Effluent Disinfection System for the NEWPCC.
- 2003 On August 26, the CEC issued their report on the hearings recommending that Manitoba Conservation establish "interim" effluent limits for Winnipeg's three Water Pollution Control Centres in accordance with their Water Quality Standards, Objectives and Guidelines, and further that the City of Winnipeg be directed to plan for removal of nutrients, specifically nitrogen and phosphorous from its treated wastewater discharges.
- 2003 On September 26, the Assistant Deputy Minister of Manitoba Conservation wrote a letter to the Director of the Water and Waste Department advising of their plans to reflect the

CEC report recommendations in Environment Act Licenses for the City's Wastewater Treatment Plants.

- 2003 On November 26, Council concurred in the recommendation of the Executive Policy Committee and adopted an increase to the Sewer Utility's rates to be effective January 1, 2004.
- 2003 In December, Council adopted the 2004 Capital Budget including an amount of \$9,946,000. for the NEWPCC Centrate Treatment Project (ammonia reduction only).
- 2003/4 On December 10, February 2 and February 24, meetings were held between the City and the Province to discuss plans for wastewater system improvements.
- 2004 On June 23, Council received as information a report outlining the work schedule and financing plan for the sewer utility that includes implementing Centrate treatment at the NEWPCC by the end of 2006.

DISCUSSION:

MAJOR PROJECT STEERING COMMITTEE

Administrative policy for projects with a Capital cost exceeding \$10 million requires formation of Major Project Steering Committee. The Committee has been formed and its members are:

Barry D. MacBride - Director and Chair
Mike Ruta - Corporate Controller
Bill Larkin - Director of Public Works
Harry Finnigan - Director of Planning, Property and Development.

The Committee has reviewed this report and recommended that the report be sent to Fiscal Issues Committee.

REGULATORY REQUIREMENTS

The City's original plans and budgets for this project were to implement unionized ammonia reduction only from the centrate sidestream to protect fish. The August 2003 CEC public hearing recommendations and the September 26, 2003 letter from Manitoba Conservation identified the requirement that the City implement nutrient reduction at all three Water Pollution Control Centres. Manitoba Conservation has recently established an interim nutrient reduction target of 13% nitrogen and 10% phosphorous for all City discharges by the end of 2006 to protect Lake Winnipeg. This interim target will be accomplished through the implementation of full biological nutrient removal at the WWPCC and significant nutrient reductions in the centrate sidestream at the NEWPCC. This new requirement has increased the cost and complexity of this project.

ENGINEERING

Preliminary/Conceptual Design:

This phase of the engineering consists of historical information review, site inspection, equipment and infrastructure evaluation, centrate characterization, evaluation of treatment alternatives and preparation of a report with a recommendation for the centrate treatment process. The work started in February 2004 and it is expected to be completed in November 2004. The City has reviewed progress to date on the centrate volume to be treated, design parameters, and treatment alternatives. The estimated cost for this portion of engineering is \$365,000

Functional/Detailed Design:

The consultant has identified biological oxidation as the preferred process for the removal of nitrogen and chemical precipitation as the preferred process to remove phosphorous. The consultant is currently evaluating two methods that could be used for the biological nutrient removal (BNR) process, namely: a conventional reactor/clarifier system and a sequencing batch reactor (SBR) system. For phosphorous removal, it is proposed, that prior to the BNR process, chemical(s) will be injected into the digested sludge immediately upstream of the sludge dewatering process to precipitate phosphorous.

Upon completing the evaluation of process equipment, and obtaining required equipment information from vendor(s), design specifications covering the facility and equipment will be developed for competitive bids.

Detailed design will commence in October 2004 and is scheduled for completion by July 2005. The budget for functional and detailed design is \$1,215,000.

Contract Administration and Commissioning:

The Consultant will develop an administration manual to address the following requirements:

- Pre-construction meetings
- Review meetings
- Change orders
- Progress payments
- Quality control
- Contractor submittals
- Site memos
- Communication protocol
- Shop drawing processing procedure

In addition to the above tasks, the Consultant will coordinate inspections to determine substantial and total completion. The Consultant will also coordinate development of “record” drawings, operation manuals, and summary of project information into one package.

The commissioning phase will involve development of a testing and commissioning schedule, start-up coordination, testing and warranty date. Contract administration work is expected to start in June 2005 with construction completed in August 2006 and commissioning activities completed by the end of December 2006 at an estimated cost of \$ 1,200,000.

FACILITY CONSTRUCTION

This portion of the work has not commenced, but it is expected that a single tender for the construction of the Facility will be advertised shortly after completion of detail design. The construction is scheduled to start in June 2005 and is expected to be completed in August 2006. The budget estimate for this portion of the work is \$23,166,000.

BUDGET SUMMARY

Capital Budget Requirements (in \$000s) for NEWPCC Centrate Treatment Project

Year	Authorized Capital	Actual + Projected Cashflows	Cumulative Capital Budget Remaining
2003	\$ 1,000	\$ -	\$ 1,000
2004	9,946	487	10,459
2005	15,000	8,443	17,016
2006	-	17,016	0
Total	\$ 25,946	\$ 25,946	\$ 0

Additional financial information is provided in Appendix 1.

The 2004 Adopted Capital Budget and 2005 to 2009 Five-Year Forecast identified a capital requirement of \$11,395,000 in 2005 when the estimated total project cost was \$22,341,000. The base year of that estimate was the year 2002.

As mentioned earlier, the requirements to remove nitrogen and phosphorus from the Centrate has increased the estimated project costs to \$25,946,000 from \$22,341,000. Accordingly, the 2005 capital was increased by \$3,605,000 to \$15,000,000.

RISK ASSESSMENT/MITIGATION

A formal risk assessment/mitigation process will be conducted early in the detailed design stage. However, at this time, the following risk factors and preliminary mitigation efforts have been identified.

License requirement:

Manitoba Conservation has not yet issued a formal Environment Act License for the NEWPCC. If the actual license requirements exceed what has been assumed for design criteria, the cost of the project could increase. To meet the end of December, 2006 completion deadline, design work is proceeding on the basis of having to remove approximately 35% of the centrate nutrients to comply with the total City required reduction of 13% nitrogen and 10% phosphorous.

Project management:

The NEWPCC Centrate Project will be a complex engineering assignment that will span over three years from start to finish. The following measures have been undertaken to ensure proper management of the project.

- To manage the Project successfully over its life, a dedicated project management team has been assembled with the necessary skills and experience, including a Project Director dedicated to this project.
- The City of Winnipeg Project Director will review the financial status of the Centrate Treatment Project with the Departmental Controller on a quarterly basis.
- A risk management process will be implemented that will identify potential risks and mitigative strategies as the Project proceeds.

APPENDIX 1

**CENTRATE TREATMENT - NEWPCC
WATER AND WASTE DEPARTMENT - ENGINEERING DIVISION
APPENDIX 1
As at September 21, 2004**

Components	COSTS				PROJECTED COSTS TO COMPLETE				TOTAL	VARIANCE	NOTE
	Total Budgeted Costs	Approved Budget To Date	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to Date (per G/L) 21-Sept-04	2004	2005	2006	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavourable)
ENGINEERING											
A) PRELIMINARY DESIGN/CONCEPTUAL	365,000	365,000	-	58,480	58,480	306,520	-		306,520	365,000	0
B) FUNCTIONAL/DETAILED DESIGN	1,215,000	1,215,000	-	-	-	121,500	1,093,500	-	1,215,000	1,215,000	0
C) CONTRACT ADMIN/COMMISSIONING	1,200,000	1,200,000	-	-	-	-	400,000	800,000	1,200,000	1,200,000	0
Total Engineering	2,780,000	2,780,000	-	58,480	58,480	428,020	1,493,500	800,000	2,721,520	2,780,000	0
FACILITIES CONSTRUCTION											
BUILDING AND EQUIPMENT	23,166,000	8,166,000	-	-	-		6,949,800	16,216,200	23,166,000	23,166,000	0
Total Facilities Construction	23,166,000		-	-	-		6,949,800	16,216,200	23,166,000	23,166,000	-
Total	25,946,000	10,946,000	-	58,480	58,480	428,020	8,443,200	17,016,200	25,887,520	25,946,000	-
Percentage Complete						0.22%					