

**Minutes - Standing Policy Committee on Public Works - November 9, 2004**

**REPORTS**

**Minute No. 13      Wastewater Treatment System Improvements - Cost Estimates  
File WW-2.3**

**STANDING COMMITTEE DECISION:**

The Standing Policy Committee on Public Works concurred in the administrative recommendation, namely, that the report be received as information.

**Minutes - Standing Policy Committee on Public Works - November 9, 2004**

DECISION MAKING HISTORY:

Moved by Councillor Angus,

That the administrative recommendation be concurred in.

Carried

**RE: UPDATE ON WASTEWATER TREATMENT SYSTEM IMPROVEMENTS - COST ESTIMATES**

**FOR SUBMISSION TO:** THE STANDING POLICY COMMITTEE ON PUBLIC WORKS

**ORIGINAL REPORT SIGNED BY:** Barry D. MacBride, Director  
Water & Waste Department

**REPORT DATE:** October 25, 2004

**RECOMMENDATION(S):**

That this report be received as information.

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**REPORT SUMMARY**

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**KEY ISSUES:**

A separate report on the 2005 water and sewer rates has been submitted based on updated cost and timing projections of wastewater improvement projects. The purpose of this report is to reconcile capital cost changes for the information of council.

The estimated costs for wastewater treatment system improvements have increased as a result of additional engineering analyses and process modeling. The total cost of the wastewater improvement program is currently estimated at \$728 million compared to \$635 million that was included in the 2004 sewer rate projections. This increase of \$93 million is mostly attributed to Biological Nutrient Removal.

In addition, the City must budget for the increase in capital costs from inflation that is associated with deferring projects over time. Deferring large capital projects is a good thing financially but can look more expensive in budgets because the City properly includes inflation to the time of constructions in capital budgeting. With the additional timing “increase” for inflation of \$50 million, the total cost including inflation of 2% per year is estimated at \$900 million versus \$756 million that was included in the 2004 sewer rate projection.

**IMPLICATIONS OF THE RECOMMENDATION(S):**

**General Implications**

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

Comment(s): As the capital cost estimates have increased, there will be an impact on sewer rates as forecasted in a separate report.

**Policy Implications**

- No
- Yes – Comment(s):

**Environmental Implications**

- None
- Yes – Comment(s): The projects contribute to Provincial targets directed to improve water quality of the Red and Assiniboine Rivers and Lake Winnipeg.

**Human Resources Implications**

- No
- Yes – Comment(s):

**Financial Implications**

- Within approved current and/or capital budget
  - Current and/or capital budget adjustment required
- Comment(s): Additional funding requirements have been identified in the 2005 – 2010 Capital Estimates. Future years' current estimates will increase as a result of costs that will be incurred to operate these new facilities.

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## **REPORT**

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### **REASON FOR THE REPORT:**

To provide an update on the estimated capital costs of wastewater collection and treatment system upgrades, which result from the Clean Environment Commission (CEC) recommendations.

### **HISTORY:**

- 1993 On December 17, 1993 City Council authorized the establishment of a River Quality Environmental Studies Reserve Fund for the purpose of providing funding for environmental projects to improve river quality. This reserve was renamed in 1996 to the Environmental Projects Reserve to more accurately reflect its purpose.
- 2003 In January and April, at the request of the Province of Manitoba, the CEC conducted public hearings on the City of Winnipeg's Wastewater Collection and Treatment Systems.
- 2003 On August 26, 2003, 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 The Assistant Deputy Minister of Manitoba Conservation wrote a letter dated September 26, 2003, 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, 2003 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.
- 2004 On June 23, 2004, Council received as information a report outlining alternative work schedules and financing plan for the sewer utility.
- 2004 On July 4, 2004 Manitoba Conservation issued a draft Environment Act License to the City of Winnipeg for the WEWPCC. The City of Winnipeg submitted their comments and proposed changes to the draft License for the WEWPCC to Manitoba Conservation on August 9, 2004. Manitoba Conservation issued the Environment Act License to the West End Water Pollution Control Centre on September 3, 2004. On October 1, 2004, The City of Winnipeg issued an appeal to the Minister of Conservation to address specific aspects of the license.

## **DISCUSSION:**

The 2004 sewer rate projection tabled with City Council on November 26, 2003 included a capital budget cost estimate of \$756 million to 2025. The 2005 sewer rate projection includes a capital budget cost estimate of \$900 million to 2030.

### Project Timing

The timing of these projects has also varied since the 2004 rate model as follows:

	2004 Rate Plan	2005 Rate Plan
NEWPCC Centrate Treatment	2006	2006
NEWPCC Disinfection	2005	2006
WEWPCC Disinfection	2008	2006
WEWPCC BNR	2008	2006
SEWPCC BNR	2007	2012
NEWPCC BNR	2008	2014
Biosolids	2010	2010
Combined Sewer Overflow Mitigation	2025	2030

Several projects were deferred because it is recognized that they could not be completed according to the aggressive schedule presented last year. The Province has not yet officially approved deferring of these projects.

### Project Cost

The cost estimates have been updated as a result of additional engineering work for Centrate Treatment at the North End Water Pollution Control Centre (NEWPCC) as well as biological nutrient removal and disinfection at all three of the Department's wastewater pollution control centres.

Appendix A provides a comparison of the original costs presented to the CEC, the cost estimates included in the 2004 sewer rate model and the most recent cost estimates that are incorporated in the 2005 sewer rate model.

### **Original Costs presented to the CEC**

The cost estimates presented were based upon engineering work done in 2002 on the cost of the works planned over 50 years at that time. As nutrient removal was not expected to begin for 15 years, the cost estimates for nutrient removal were very preliminary based on standards common in other jurisdictions. No allowance was provided for inflation to the time of construction.

## **2004 Rate Plan**

The 2004 rate plan was based upon correspondence from the Assistant Deputy Minister of Conservation. The major expenditures for nutrient control were to be concluded by 2008. The CEC costs were adjusted to 2004 dollars and inflation was added to the year in which the expenditure was forecasted. In addition the costs of nutrient removal were increased by adding an allowance, without the benefit of design, to attempt to reflect the increases in reactor sizes from the stricter standards received from Manitoba Conservation. The costs for CSO mitigation were to be concluded by 2025.

## **2005 Rate Plan**

The 2005 rate plan capital cost estimates have increased from 2004 due to increase in biological nutrient removal and disinfection costs. Additional engineering and process modeling have demonstrated that additional plant infrastructure and tank storage will be required to meet treatment standards as per Environment Act licenses for the three water pollution control centres. The estimated cost of nutrient removal has increased by \$86 million to \$341 million. In addition, the lower than expected transmissivity of the effluent at the NEWPCC is causing disinfection costs to rise by \$5 million because additional equipment will be required to meet the license provisions. The costs are based on 2004 dollars. For actual budgeting purposes, inflation to the year of construction will be added as per Appendix A.

The Department will be hiring an independent panel of engineering experts to review all the plant design work to ensure that the Department is designing the most cost effective infrastructure.

### Uncertainty

The cost estimates for the improvements are based upon what the department expects to see in the Environment Act Licenses to be issued for each water pollution control centre. If the provisions in the Licenses are more stringent than expected, the capital cost could increase. The Department has appealed certain provisions in the Environment Act License 2669 recently issued for the West End Water Pollution Control Centre. The Department expects that licenses for the other two water pollution control centres will be issued before the end of 2004.

The cost estimates for the combined sewer overflows and biosolids have not been updated since last year. Additional, detailed engineering will be undertaken in 2005 and updated costs will be produced at that time.

## **FINANCIAL IMPACT:**

The following financial impact statement for this project has been prepared in accordance with the recommendation adopted by Council on December 13, 2000.

**Financial Impact Statement** Date: [October 22, 2004](#)

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**Project Name:**

**UPDATE ON WASTEWATER TREATMENT SYSTEM  
IMPROVEMENTS - COST ESTIMATES**

**COMMENTS:**

As this report is submitted for information only, there is no financial impact related to the recommendaion

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Maira L. Geer C.A.  
Manager of Finance & Administration

**IN PREPARING THIS REPORT THERE WAS CONSULTATION WITH AND CONCURRENCE BY:**

**Not Applicable**

**THIS REPORT SUBMITTED BY:**

Water and Waste Department

Engineering Division

Prepared by: M. A. Shkolny, P. Eng. and B. D. MacBride, P. Eng.

File No.: 020-17-08-09-00

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## Appendix A – Wastewater Improvements Cost Summary<sup>1</sup>

Wastewater Improvement Projects Capital Cost Estimates (\$millions)	Presentation to CEC	2004 Rate Plan		2005 Rate Plan		Increase (Decrease)	
		No Inflation	With 2% Inflation	No Inflation	With 2% Inflation	No Inflation	With 2% Inflation
Component	2002 \$ (no inflation)	Capital Costs adjusted to 2004\$	November 2003 2004\$ (2004 to year of construction)	November 2004 Rate Report Revised Costs in 2004\$	November 2004 2004\$ (2004 to year of construction)	2005 vs 2004	2005 vs 2004
<b>Disinfection</b>							
NEWPCC Disinfection	\$ 15.00	\$ 15.00	\$ 15.20	\$ 20.00	\$ 20.30	\$ 5.00	\$ 5.10
WEWPCC Disinfection	3.00	3.30	3.60	3.90	4.04	0.60	0.44
Subtotal Disinfection	\$ 18.00	\$ 18.30	\$ 18.80	\$ 23.90	\$ 24.34	\$ 5.60	\$ 5.54
<b>Effluent Nutrient Control</b>							
Effluent NH <sub>3</sub> /Nutrient Related Studies	\$ -	\$ 0.51	\$ 0.51	\$ 0.51	\$ 0.51	\$ -	\$ -
NEWPCC	127.00	164.60	178.20	210.50	242.70	45.90	64.50
Centrate Treatment at NEWPCC	10.00	20.50	21.30	25.45	25.96	4.95	4.66
SEWPCC	47.00	61.20	64.10	82.90	93.61	21.70	29.51
WEWPCC	7.00	8.50	9.20	21.90	22.34	13.40	13.14
Subtotal Nutrient Control	\$ 191.00	\$ 255.31	\$ 273.31	\$ 341.26	\$ 385.12	\$ 85.95	\$ 111.81
<b>CSO Control Program</b>							
(Stage Ia) - SCADA, Demo, Weirs	\$ 14.00	\$ 19.40	\$ 20.20	\$ 19.40	\$ 20.20	\$ -	\$ -
(Stage Ib) - Integrate with BFR	26.00	28.00	33.80	28.00	32.90	-	(0.90)
(Stage II) - In line storage	50.00	54.00	63.80	54.00	65.85	-	2.05
(Stage III) - Additional storage	181.00	196.00	274.70	196.00	297.90	-	23.20
Subtotal CSO Control	\$ 271.00	\$ 297.40	\$ 392.50	\$ 297.40	\$ 416.85	\$ -	\$ 24.35
<b>Biosolids Program</b>							
(Stage I) - Pelletization and Storage	\$ 30.00	\$ 38.00	\$ 41.60	\$ 37.60	\$ 41.60	\$ (0.40)	\$ -
(Stage II) - Thermophilic conversion	20.00	18.00	21.10	18.40	21.10	0.40	-
Sub-Total Biosolids	50.00	56.00	62.70	56.00	62.70	-	-
<b>TOTAL Environmental Projects</b>	<b>\$ 530.00</b>	<b>\$ 627.01</b>	<b>\$ 747.31</b>	<b>\$ 718.56</b>	<b>\$ 889.01</b>	<b>\$ 91.55</b>	<b>\$ 141.70</b>
<b>CEC Additional Recommendations</b>							
#2 Licensing (incl EIS and Hearings)	\$ -	\$ 4.80	\$ 6.10	\$ 5.00	\$ 6.42	\$ 0.20	\$ 0.32
#9 Public Notification	-	0.25	0.26	0.25	0.26	-	-
#16 EMS, SOP & ERP	-	0.50	0.51	0.50	0.51	-	-
#18 & 19 Public/Aboriginal consultn, annual report card	-	0.45	0.46	0.45	0.46	-	-
Sub-Total CEC Extras	\$ -	\$ 6.00	\$ 7.33	\$ 6.20	\$ 7.65	\$ 0.20	\$ 0.32
<i>Misc upgrades not in above</i>		\$ 1.70	\$ 1.80	\$ 2.80	\$ 2.80	\$ 1.10	\$ 1.00
<b>GRAND TOTAL</b>	<b>\$ 530.00</b>	<b>\$ 634.71</b>	<b>\$ 756.44</b>	<b>\$ 727.56</b>	<b>\$ 899.46</b>	<b>\$ 92.85</b>	<b>\$ 143.02</b>

<sup>1</sup> Capital summary excludes cost for CEC recommendation of discontinuing landfill leachate treatment.