Minutes - Standing Committee on Fiscal Issues - November 8, 2005

REPORTS

Minute No. 6 **Water Treatment Program Financial Status Report No. 5 for the period from May 1, 2005 to September 30, 2005**
File WS-7

STANDING COMMITTEE DECISION:

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

DECISION MAKING HISTORY:

Moved by Councillor Pagtakhan,
That the administrative recommendation be concurred in.

Carried

RE: WATER TREATMENT PROGRAM FINANCIAL STATUS REPORT NO. 5 FOR THE PERIOD FROM MAY 1, 2005 TO SEPTEMBER 30, 2005

FOR SUBMISSION TO: THE STANDING POLICY COMMITTEE ON FISCAL ISSUES

ORIGINAL REPORT SIGNED BY: Barry D. MacBride, P. Eng., Director
Water and Waste Department

REPORT DATE: October 31, 2005

RECOMMENDATION(S): That this report be received as information.

REPORT SUMMARY

KEY ISSUES:

- Information report required pursuant to Council Direction.
- The project is projected to be within budget although market forces, which appear to now be materializing, may result in cost escalation.
- The project completion date appears achievable but requires an aggressive schedule.

IMPLICATIONS OF THE RECOMMENDATION(S):

General Implications

X	None
	For the organization overall and/or for other departments
	For the community and/or organizations external to the City of Winnipeg
	Involves a multi-year contract

Comment(s):

Policy Implications

X	No
	Yes – Comment(s):

Environmental Implications

X	None
	Yes – Comment(s):

Human Resources Implications

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

Financial Implications

X	Within approved current and/or capital budget
	Current and/or capital budget adjustment required

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:

1993 Council approved the creation of the Water Treatment Reserve Fund to cash finance a portion of the water treatment plant (WTP) cost.

2000 On November 22, Council adopted the Water Treatment Program.

2002 On July 17, Council amended the Water Treatment Program to include ultraviolet light disinfection and modified the schedule so that the WTP would be operational in 2007.

2003 On June 25, Council adopted a recommendation that a "construction management" strategy be utilized for design and construction of the WTP, and that City forces operate the facility.

2004 On June 8, the Standing Committee on Fiscal Issues received "Water Treatment Program Financial Status Report No. 1" as information.

2004 On July 21, Council adopted a recommendation to reduce the WTP design capacity from 515 to 400 million litres/day.

2004 October 12, the Standing Committee on Fiscal Issues received "Water Treatment Program Financial Status Report No. 2" as information.

2004 On October 27, Council adopted a recommendation to amend the implementation schedule for the Water Treatment Program approved by Council to defer the chloramination facility from 2005 to 2007 and commission it concurrent with the balance of the WTP.

2004 On December 13, Council adopted the 2005 Capital Budget that included $84 million for the WTP project.

2005 On February 8, the Standing Committee on Fiscal Issues received "Water Treatment Program Financial Status Report No. 3" as information.

2005 On March 23, Council adopted a recommendation to amend the Water Treatment Program to include on-site generation of sodium hydochlorite for disinfection instead of chlorine gas and a standby power system to allow operation of one train of the WTP to produce 200 megalitres per day of treated water during power outages.

2005 On June 14 the Standing Committee on Fiscal Issues received "Water Treatment Program Financial Status Report No. 4" as information.

DISCUSSION:

MAJOR PROJECT STEERING COMMITTEE

Administrative policy for projects with 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 (Alternate: Jason Ruby)
Bill Larkin, Director of Public Works
Harry Finnigan, Director of Planning, Property and Development (Alternate: Ian McKay)

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

Current Status:

The Water Treatment Program comprises all works related to the treatment process approved by Council.

Design and construction of the UV disinfection facility (which is being installed in the existing Deacon Booster Pumping Station) has been completed. The facility has been commissioned and validation of the UV reactors occurred in February, 2005. Due to the critical nature of this installation, extensive testing has been undertaken to confirm appropriate operation of systems. This testing has identified control system and hydraulic problems. Resolution of these problems has begun and it is expected that the UV system will be operational by February of 2006. The budget for the UV disinfection project is $9 million. Overall, the UV project is about $1 million below budget at the present time. This includes the projected cost of approximately $450,000 for additional work required to resolve problems identified during testing.

Preliminary engineering of the WTP has been completed. The Preliminary Design Report has been reviewed and accepted by the Department.

Detailed design of the WTP is underway, and tenders have been received for certain long delivery and early construction items. Bulk excavation for the WTP clear well and the WTP proper has been completed. Piling for the clear well is complete and concrete work is underway. Overall, construction of the clear well is approximately 30% complete. Construction of the clear well has been delayed about three weeks due to wet weather during the summer months. However, this component of the project is not on the critical path and as a result the completion date for the WTP project has not been affected. Yard piping has commenced and is approximately 25% complete. Yard piping will be completed in the spring of 2006. A summary of contracts which have been tendered and a list of upcoming contracts are provided later in this document.

An environmental effects assessment study concerning the Water Treatment Program has been undertaken, so that information relating to environmental effects is available as soon as possible for discussion with regulators and stakeholders. An Open House was held in the R.M. of Springfield to discuss the environmental effects of the WTP on January 20, 2005. A second open house was held on April 21, 2005. No substantive issues have been identified. It is expected that this report will be completed by the end of October, 2005.

A positive business case that contemplates redeployment of existing operating personnel to the WTP, and locating additional maintenance staff necessary to support Water Services Division infrastructure at the WTP has been developed. If adopted, this initiative will increase the size and cost of certain facilities which are part of the WTP. This matter is the subject of a separate report to the Standing Policy Committee on Public Works. Additional funding of approximately $2.75 Million required will be identified in future capital budgets.

The overall completion of the Water Treatment Program is scheduled such that the WTP will be operational in 2007, pursuant to the Council approved plan. A very aggressive design and construction schedule is being pursued in order to meet this completion date.

Risks and Risk Mitigation:

The following measures are being undertaken to mitigate risk and ensure proper oversight of the Water Treatment Program.

- An experienced Project Director and a dedicated project team have been assigned to the project by the Department.
- The Project Director will review the financial status of the Water Treatment Program with the Departmental Controller on a monthly basis.
- The Department has engaged highly qualified consultants to undertake design, construction management, environmental effects assessment and provide an operational review to the facility design and assistance in operator training and start-up.
- A comprehensive risk management process has been implemented. A risk management seminar was held on January 6/7, 2005. This seminar identified approximately 30 potential risks which will require monitoring. Of the risks identified, about a dozen could

be considered serious or critical. Mitigative strategies were established for each of the risks that were identified.

- Risks are being actively managed by a Risk Management Team that meets on a monthly basis. Risks are added and removed from the list as the project proceeds.
- It was established that the risks associated with use of chlorine gas at the WTP and the risks of a long-term power failure were unacceptable. Accordingly, on March 23, 2005 Council adopted a recommendation to amend the Water Treatment Program to include on-site generation of sodium hypochlorite for disinfection instead of chlorine gas and a standby power system to allow operation of one train of the WTP to produce 200 megalitres per day of treated water during power outages.
- Design seminars have been undertaken to identify the principal factors that drive cost and impact schedule.
- Value for money assessments are undertaken at appropriate stages of the project to ensure cost effectiveness.
- The Department reports to the Standing Committee on Fiscal Issues every four months regarding progress, risk issues and budget.

Key risk factors and mitigative strategies relating to project delivery and operation of the facility are outlined in the discussion that follows.

Project Delivery Issues:

To minimize potential cost increases, Value Engineering (VE) was undertaken during the conceptual design phase of the WTP. Value for money assessments are being repeated as appropriate during detailed design, to ensure an economical and constructible facility.

The WTP project is so large that very few general contractors in Winnipeg would be able to secure bonding for a bid submission. Lack of competition on a large project can significantly impact bid prices. Further, a significant number of large construction projects are being undertaken in Winnipeg concurrent with construction of the WTP. Construction firms are reaching capacity, and a period of high inflation within the heavy construction industry now exists. This has placed an upward pressure on the budget for the Water Treatment Program and created significant challenges in delivering the project within the original budget. Increasing fuel costs, high demand for manufactured goods and shortages in certain commodities due to natural disasters and the Tar Sands project will exacerbate this situation.

Timing may also impact overall project cost. We will continue to accelerate the schedule as much as is feasible in order to attain more competitive pricing as the industry enters a high inflation phase. However, it should be noted that an extremely tight schedule can sometimes attract cost. Accordingly, an ongoing evaluation of schedule versus risk and cost is being undertaken.

Other projects in Manitoba such as the floodway expansion and the new airport are also experiencing cost increases.

As discussed earlier, under the construction management process the capital cost of the project will not be determined until the project is completed. Accordingly, the City is exposed to risk relating to the capital budget until this point. This is being mitigated by controlling scope creep, undertaking VE and performing rigorous cost estimates during the design process. The City's risk with respect to project cost will decline as the project progresses. At present, about 26 percent of the project budget is committed. By year-end, commitments should be about 31 percent, and our target for the end of the first quarter of 2006 is a 75 percent level of commitment.

Operating Issues:

The City does not currently operate a WTP and has no certified WTP operators on staff. The City must invest in personnel and training in order to develop the necessary capacity to operate the WTP. This is quite achievable but will involve nominal startup costs and an investment in staff. Risk will be mitigated by hiring an experienced, certified professional (the plant superintendent) to become familiar with plant design, construction and operation. The superintendent will be responsible for developing classification requirements, recruiting and training plant operating personnel in the years leading up to completion of the facility. An Operations Consultant with experience in the operation of large treatment facilities has been retained to support the Department during the design phase and the first year of plant operations. The Operations Consultant is also providing input concerning plant design, maintenance issues and staffing requirements.

Upcoming Construction Activities:

A summary of tenders have been received to date is provided below.

Tender	Tender Amount (Million $)	Award
Yard Piping Valves - Supply Only	$0.91	Mar-05
Clearwell Piling Supply	$1.04	Apr-05
Bulk Excavation	$0.71	Apr-05
Clearwell Sluice Gates Supply	$0.74	Apr-05
Yard Piping & Valve Chambers - Supply and install	$4.42	Jun-05
Clearwell Concrete	$7.90	Jun-05
Dissolved Air Flotation Equipment - Supply Only	$7.02	Jul-05
WTP Piling Supply	$0.55	Aug-05
Total	**$23.28**	

The total of the pre-bid estimates for the above tenders was $24.68 Million.

Upcoming tenders, pretender estimates and the approximate award date of the tenders are included as information and the following table.

Tender	Pre-Tender Estimate (Million $)	Projected Award
WTP Piling Supply and Installation	$1.88	Cancelled *
Polymer Preparation and Feed Equipment Supply	$0.58	Cancelled *
Ozone Equipment - Supply Only	$2.50	Oct-05
Filter Equipment - Supply Only	$3.23	Nov-05
Raw Water Pumps - Supply Only	$1.44	Nov-05
Branch One Supply Pumps - Supply Only	$0.90	Dec-05
Emergency Generators - Supply Only	$2.10	Jan-05
High-voltage Switchgear and Transformers - Supply Only	$0.75	Jan-05
WTP Sluice Gates - Supply	$1.20	Jan-05
WTP Cast in Place Concrete	$14.00	Feb-05
Sodium Hypochlorite Generator Equipment	$1.20	Feb-05
Total	**$29.78**	

* Tender not recommended due to high bids. Will be included in subsequent tender when more competition may exist.

Finances:

The original budget for the Water Treatment Program including engineering, contingencies, financing administration and inflation through to the 2007 completion date was $214 million. The Construction Manager undertook an estimate at the end of Conceptual Design which confirmed that this budget was adequate. On March 23rd, 2005 Council approved additional funds of $13.3 million for on-site generation of sodium hypochlorite and standby power generation, bringing the total approved budget for the Water Treatment Program to $227.3 million.

At the end of the preliminary design phase the Construction Manager undertook another cost estimate. This "Preliminary Design" or "Class 3" estimate is based upon the greater level of detail available now that preliminary design is complete, and reflects actual costs for components of the project that already have been tendered. The estimate assumes that there will be no GST on tenders from January 1, 2005 onward. Class 3 estimates are usually within 10% of the final cost, for a comparable scope of work under favorable and competitive market conditions. The estimate reflects inflation projected at 0.5% per month in the heavy construction industry for the duration of the project, and carries a contingency allowance of 14.5%.

The Class 3 estimate completed at the end of preliminary design projected a cost overrun of $5 million. The design was reviewed and adjustments were made to bring the estimate to the $227.3 million budget approved by Council.

As of September 30, 2005 funds committed to the Water Treatment Program stood at approximately $59.9 million, and funds expended were about $23.4 million. The funds expended to date have been for engineering studies, pilot testing, design services, construction of the UV disinfection facility and the initial stages of the WTP Clearwell and the WTP proper. Committed expenditures to date are slightly ($1.0 million) below budget. At the time of our last report, total expenditures for 2005 were projected at about $77 million. Expenditures for 2005 are now projected at about $36 million. This variance is due in part to a change in construction strategy necessary to maintain schedule, whereby the construction of the WTP Raw Water Pumping station was deferred and combined with the balance of the WTP. Other reductions in actual expenditure have occurred as a result of delays in construction of the Clearwell and Yard Piping contracts due to wet weather.

In 1993, council approved the creation of the Water Treatment Reserve Fund to cash finance approximately 50% of the cost of a WTP. As a result of this initiative, approximately $117 million of the $227 million budget for the Water Treatment Program will be funded from the reserve and $110 million in debt financing. All expenditures to date have been funded from the reserve.

Capital requirements for the Water Treatment Program are summarized in the table below.

Water Treatment Program Capital Requirements (in $000s)

Year	Authorized Capital	Actual + Projected Cashflows	Cumulative Capital Budget Remaining
Up to 2003	$20,000	$4,100	$15,900
2004	$26,000	$8,300	$33,600
2005	$84,000	$64,900	$52,700
2006	$84,000	$75,800	$60,900
2007	$0	$74,200	($13,300)
Total	$214,000	$227,300	($13,300)

The foregoing indicates that an additional capital approval of $13.3 M will be required in a future capital budget in order to complete the project. These funds have been submitted for Council's consideration and approval as part of the 2006 Capital Budget.

A summary of project cost categories, budgets, and actual and forecast expenditures for the program is included in Appendix 1.

FINANCIAL IMPACT:

As this report is submitted for informational purposes only, there is no financial impact associated with this recommendation.

Moira 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:

Department: Water and Waste Department
Division: Engineering Services Division
Prepared by: Tom Pearson
File No.: 020-18-29-05-00

WATER TREATMENT PROGRAM
WATER AND WASTE DEPARTMENT - ENGINEERING DIVISION
APPENDIX 1
As at September 30, 2005

		COSTS				PROJECTED COSTS TO COMPLETE				TOTAL	VARIANCE	NOTE
	Components	Total Budgeted Costs	Approved [1] Budget To Date	Costs Incurred up to last report	Costs submitted this report	Total Costs Incurred to Date (per G/L) 30-Sep-05	2005 [6]	2006	2007	Total Costs Remaining to Complete	Total Project Cost	Variance from Budget (Unfavorable)	
A)	CONCEPTUAL ENGINEERING	3,700,000	3,765,300	3,765,297	(0)	3,765,297				-	3,765,297	(65,297)	(2)
B)	UV DISINFECTION	9,000,000	9,000,000	6,731,872	703,646	7,435,518	450,000	114,482		564,482	8,000,000	1,000,000	(3)
C)	CHLORAMINATION	3,000,000	3,000,000					1,500,000	1,500,000	3,000,000	3,000,000	0	
D)	PROGRAM'S PROJECT MANAGEMENT OFFICE	100,000	100,000	41,521	7,747	49,268	3,000	20,000	27,732	50,732	100,000	0	
E)	WATER TREATMENT PLANT ENGINEERING	24,260,000	22,700,000	2,007,929	6,003,058	8,010,987	4,797,751	7,595,559	4,290,406	16,683,716	24,694,703	(434,703)	(4)
F)	WATER TREATMENT PLANT CONSTRUCTION	187,240,000	91,476,700			2,591,658	9,118,958	92,439,959	83,589,425	185,148,342	187,740,000	(500,000)	(5)
	Total	**227,300,000**	**130,042,000**	**12,546,619**	**6,714,451**	**21,852,728**	**14,369,709**	**101,670,000**	**89,407,563**	**205,447,272**	**227,300,000**	**0**	
	Percentage Complete					10%							

1) **Council has approved a total budget of $130.042 Million for the Water Treatment Program; Distribution of costs to project activities A) to F) was done by the Water and Waste Department.**
2) **Negative variance due to additional study requirements.**
3) **Positive variance due to competitive bids received for UV equipment and installation contracts.**
4) **Negative variance due to additional engineering requirements.**
5) **Negative variance due to additional program requirements.**
6) **Expenditures projected for 2005 have been reduced from $77 M to $36 M due to changes in construction strategy and weather related delays. See report.**