Minutes - Standing Policy Committee on Infrastructure Renewal and Public Works - December 1, 2005

REPORTS

Minute No. 21 **Elimination of Septage Acceptance at the West End Water Pollution Control Centre (WEWPCC)**
File WS-7

STANDING POLICY RECOMMENDATION:

The Standing Policy Committee on Infrastructure Renewal and Public Works concurred in the administrative recommendation, namely:

1. That septage no longer be accepted at the West End Water Pollution Control Centre (WEWPCC) after December 1, 2006.

DECISION MAKING HISTORY:

Moved by Councillor Thomas,

That the administrative recommendation be concurred in.

Carried

RE: ELIMINATION OF SEPTAGE ACCEPTANCE AT THE WEST END WATER POLLUTION CONTROL CENTRE (WEWPCC)

FOR SUBMISSION TO: THE STANDING POLICY COMMITTEE ON INFRASTRUCTURE RENEWAL AND PUBLIC WORKS

ORIGINAL REPORT SIGNED BY: Barry D. MacBride, P.Eng.

REPORT DATE: November 16, 2005

RECOMMENDATION(S):
That septage no longer be accepted at the West End Water Pollution Control Centre (WEWPCC) after December 1, 2006.

REPORT SUMMARY

KEY ISSUES:

- Design consultants have recommended closing the septage facility at the WEWPCC effective December 1, 2006.
- Closing this facility would reduce the level of service for septage collection and treatment provided at the WEWPCC.

IMPLICATIONS OF THE RECOMMENDATION(S):

General Implications

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

Comment(s): A number of waste generators including residential and commercial/industrial premises in and around the west side of the City of Winnipeg, including the R.M. of Headingley, utilize waste hauling companies which haul their waste to the WEWPCC for processing. Costs to these waste generators are likely to rise with increased haul distances to alternate disposal sites at either the South End Water Pollution Control Center (SEWPCC) or the North End Water Pollution Control Center (NEWPCC).

Policy Implications

X	No
	Yes - Comment(s):

Environmental Implications

	None
X	Yes - Comment(s): Reliability of the upgraded nutrient reduction treatment process at the WEWPCC will be improved by eliminating septage at this

[ ] location.

Human Resources Implications

[X] No
[ ] Yes - Comment(s):

Financial Implications

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

Comment(s):

REPORT

REASON FOR THE REPORT:

In accordance with City Organization By-Law No. 7100/97 Part 13, the Standing Policy Committee on Public Works shall provide policy advice on matters within Water/Waste Services.

HISTORY:

1997 The City of Winnipeg, Sewer By-Law No. 7070/97 states under Part 12 Wastewater Disposal Vehicles that "only discharge points designated by the Sewer Utility may be used".

2003 On December 16, Council adopted the 2004 Capital Budget and the 2005-2009 Five Year Forecast that included $8,905,000.00 for Nutrient Removal - WEWPCC and $3,398,000.00 for Wastewater Disinfection - WEWPCC.

2004 On December 13, Council adopted the 2005 Capital Budget and the 2006-2010 Five Year Forecast that included $16,200,000.00 for Nutrient Removal - WEWPCC and $300,000.00 of funding in 2005 to study septage acceptance and disposal practices at all three pollution control centres.

DISCUSSION:

For the purpose of this report, septage is defined as all truck hauled waste, both liquid and solid wastes, collected from holding tanks that service residential, commercial and industrial premises.

The WEWPCC receives septage from locations in and around Winnipeg and as a proportion of plant flow, the WEWPCC receives a larger quantity of septage than either the South End Water Pollution Control Center (SEWPCC) or North End Water Pollution Control Center (NEWPCC). Analysis of previous deficient plant performance has suggested that these peak loads have affected effluent quality in the past.

In September of 2004, Earth Tech was authorized to proceed with the design of the WEWPCC Biological Nutrient Removal (BNR) upgrade project. This was in response to the Clean Environment Commission hearings held in 2003 and the subsequent issuance of an Environment Act License for the WEWPCC by Manitoba Conservation. The scope of this project included a review of septage management for the WEWPCC. In December of 2004, Earth Tech submitted their Draft Conceptual Design Report.

The Draft Conceptual Design Report included a review of the septage flow volumes, a comparison of septage flows received at WEWPCC to those received at SEWPCC and

NEWPCC, and a comparison of the proportion of septage to normal municipal loads. Proportionally, the septage loading to the WEWPCC relative to the total plant flow is double the septage proportion received at the SEWPCC or at the NEWPCC. Therefore the WEWPCC is impacted more significantly by septage than either of the other two facilities.

Over the past six years the WEWPCC has received approximately 30 million litres per year of septage, of which the commercial/industrial portion represented approximately 50% of the total septage by volume. While the total septage load volume can be estimated, the exact origin of all septage is unknown at this time.

A portion of WEWPCC septage does originate from within City limits, estimated to come from approximately 170 properties in South Charleswood in the area bounded by Wilkes, Kenaston, McGillivray and the West Perimeter. It is also estimated that the majority of the commercial and industrial septage originates in Winnipeg.

In the absence of flow equalization by temporary storage, which would allow slowly releasing the septage into the treatment plant inflow, septage imparts a significant load on the WEWPCC as an instantaneous load. Raw waste loading spikes can temporarily increase the total suspended solids (TSS) to four times the average and increase the organic loading or biological oxygen demand (BOD) to more than double the average, thereby resulting in shock loadings to the system.

In December of 2004, an external panel of top North American experts in wastewater treatment was retained by the City to act as an Independent Review Team (IRT) to provide a peer review of the Conceptual and Functional Design phases of the WEWPCC BNR Upgrade Project. Members of the IRT are:

- Jan A. Oleszkiewicz Ph.D; P. Eng; C. Eng (UK), DEE, FCSCE,
  University of Manitoba; Department of Civil Engineering;
- Glen Daigger Ph.D; P. Eng; M.Sc. C. Eng, DEE,
  CH2M HILL - Senior Vice President, Chief Technology Officer
- Peter Burrows P. Eng; B Sc. M. Eng,
  CH2M HILL - Vice President
- James L. Barnard Ph.D.; M.Sc. E. Eng,
  Black & Veatch, LLP - Senior Process Specialist

The City received a Final Report from the IRT on September 8, 2005 detailing their position based on Earth Tech's Draft Conceptual Design Report. With regard to septage, the IRT's position is as quoted:

> *"Septage contributes a disproportionably large mass of TSS and BOD to the plant influent. This is a much higher load than at any other BNR plant and it mainly occurs during daily hours when the loads are high already. The septage (the term includes hauled commercial and industrial waste as well) has an effect on the operation of the present plant. Implementation of the biological nitrogen and phosphorus removal will require a maximum control on the quality of the influent waste stream. In the opinion of*

the IRT, inclusion of septage will have a significant detrimental effect on the performance of the new facility – particularly on nitrification. Due to the small size of the WEWPCC it would be most appropriate to re-direct the septage to the other, larger facilities."

"The IRT, based on its experience, is of the opinion that septage should be completely removed from this plant."

"Redirecting commercial or industrial septage and sludge hauled in from one other plant, to a larger plant such as the NEWPCC will save the City problems with unpredicted inhibition or even incidence of bulking. Much larger plants (e.g. Bonnybrook [in Calgary]*) have had problems with proportionally smaller septage loading affecting their BNR and had to implement more aggressive testing of the incoming loads."*

Earth Tech's recommendation on septage in their Conceptual Design Report is as follows:

"In summary, it is strongly recommended that hauled waste not be accepted at the upgraded WEWPCC facility due to the high potential for toxic loads and shock loads. Although the potential for shock loads would be reduced by installing a septage receiving [flow equalization tank] *at a cost of approximately $1.5 million, the BNR process would still be at risk of upset due to the unknown constituents in the hauled waste."*

Closing the septage receiving facility at the WEWPCC will directly affect some wastewater haulers and indirectly affect the homes and businesses that rely on the haulers for this service. With this closure, costs to the septage haulers will rise with increased haul distances to either the SEWPCC or the NEWPCC.

Communication with the Wastewater Haulers

35 wastewater hauling companies are licensed by the Water and Waste Department to use the City's three septage facilities. All haulers were invited to a meeting on October 12, 2005 to:

- advise that the closure of the septage receiving facility at the WEWPCC was under consideration
- inform them of the reasons for the recommended closure
- share other options that could be considered to continue accepting septage at this facility
- find out how closing this facility would affect them

The haulers were also advised this report would be submitted to the Committee on Infrastructure Renewal and Public Works and that they would be informed of the date, time and location of the Committee meeting. A copy of the slide presentation is included as Appendix A, and a copy of a summary of options handout is included as Appendix B.

If the West End septage facility were to close, 9 hauling companies would be directly affected. The meeting was attended by 6 of the 9 hauling companies that most frequently use the WEWPCC. It was noted that one of the hauling companies has a contract with RM of

Headingley to service approximately 600 residential premises on their low pressure sewer system[1].

A survey form (Appendix C) was given out and the feedback received from the haulers in attendance as well as from those who returned a mailed out survey, is as follows:

- 86% felt "adequately" to "well informed" on the reasons to close the septage facility.
- If the septage facility is closed, approximately 30 loads per week of the current WEWPCC septage loads would go to the SEWPCC and 36 loads per week would go to the NEWPCC.
- Of the responding haulers that are affected, 3 of them indicated that they would be affected a lot.
- Possible effects of the closure would be raised fees to customers and longer working hours.
- Although there wasn't a strong preference for any of the options presented, and 39% of the responses were "undecided", of those decided, closing the septage facility was not preferred and changing the facility to a septage transfer facility as described by Option #4 in the attached presentation, was slightly preferred.

Based on the discussion which occurred at the meeting, the status quo with no limitations on septage disposal and no cost increase to the haulers was their preferred option. The haulers were advised that continuing septage disposal at the WEWPCC would require full cost recovery from the haulers for an upgraded facility and the true cost of treatment.

It is recommended that septage no longer be accepted at the West End Water Pollution Control Centre after December 1, 2006 due to the following:

- The impact of the closure affects a small number of haulers;
- The costs involved in all of the options to either accept and treat septage or to set up a holding and transfer station for septage (Option 2, 3 and 4) would be prohibitive to the haulers and to the City;
- Two other City facilities can accept and treat septage.

The department further intends to study the issue of septage management on a city-wide basis in the future. Funding of $300,000 is included in the 2005 Capital Budget to study the City's septage acceptance and disposal practices to determine an environmentally sustainable cost effective approach to manage septage acceptance and treatment. In addition, $2.0 million has been identified in 2010 of the 2006-2010 Capital Forecast for a septage acceptance facility which would include flow equalization. The future requirement for these funds will be determined through the septage acceptance study.

[1] A low pressure sewer system requires a two compartment holding tank which needs to be pumped out at least annually to remove accumulated solids. An integral pump conveys liquid waste from the holding tank through the sewer system.

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:** November 14, 2005

Project Name: **First Year of Program**

COMMENTS

There is no financial impact related to the recommendation.

"Original signed by"
Moira L. Geer C.A.
Manager of Finance & Administration

IN PREPARING THIS REPORT THERE WAS CONSULTATION WITH AND CONCURRENCE BY: N/A

THIS REPORT SUBMITTED BY:

Water and Waste Department
Engineering Division
Prepared by: J. Veilleux, P.Eng.
File No. S-596
JV:jv:lc

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APPENDIX A
SEPTAGE HAULER SEMINAR
PRESENTATION MATERIAL

Water and Waste Department

Wastewater Hauler Meeting

October 12, 2005

Winnipeg

What is the issue?

- Our consultants recommend that we shut down the septage facility at the West End site effective December 1, 2006.

Winnipeg

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Why are we here today?

- To give you some background information on the recommendation
- To find out how closing the septage facility at the West End plant would affect you

Winnipeg

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Introduction

- Manitoba Conservation requires that we upgrade all three of our wastewater treatment plants to reduce nutrients (nitrogen and phosphorus) in the discharged wastewater.
- According to the Environment Act Licence issued to the West End plant, this upgrade must be in effect by December 2006.

Winnipeg

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Why is the consultant recommending the West End septage facility close?

- To comply with our new licence, we are upgrading the West End plant. This upgrade includes using a "new" process to remove the nutrients required.
- The new nutrient removal process at the West End plant will be very sensitive to what is called "shock loads" or "toxic loads".
- These loads could prevent the new process from working properly, and as a result, we wouldn't be complying with the Environment licence.

Winnipeg

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How would septage prevent the new process from working properly?

- When septage is discharged at each of the three City septage facilities, it flows directly into the wastewater entering the plants from the sewer system.
- When septage enters the West End plant:
  - The total suspended solids increases to about four times the average
  - The biochemical oxygen demand increases to more than double the average
  - The septage can contain small concentrations of nuisance materials

Winnipeg

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APPENDIX A
SEPTAGE HAULER SEMINAR
PRESENTATION MATERIAL

How would septage prevent the new process from working properly?

- These factors could "shock" the system or be "toxic" to the system causing the new process to shut down.
- Process recovery time will be longer with the new process.

The current septage acceptance system at the West End plant can NOT continue.

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Is the West End plant different than the other two plants?

- **Yes. Compared to the other two plants, the West End plant:**
  - is the smallest
  - in relation to the overall wastewater entering the plant, the septage volume is more than double the amount received at the North End or the South End plant
  - is the first plant to be upgraded to a new process to meet the licencing requirements

Therefore septage has a greater impact on the treatment process at the West End plant than the other two plants.

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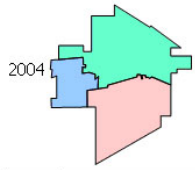
How does West End plant size compare to the North End and South End plant?



	NEWPCC	SEWPCC	WEWPCC
Total wastewater in thousands of litres per day	240,000	70,000	35,000
Total septage in thousands of litres per day	251	67	96

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What are the options available once the new process is in place?

OPTION 1 - Do not accept any septage at the West End site effective December 1, 2006.

Modifications Required to Septage Facility	• **Shut down**
Risk to New Treatment Process	• **No risk to new process**
Approximate Cost per Load	• **Potential costs involved to transport septage to other septage facilities**

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What are the options available once the new process is in place?

OPTION 2 – Upgrade the West End site to accept residential holding tank and septage tank waste only.

Modifications Required to Septage Facility	• **Divert all other septage loads** • **Construct an equalization tank with mixers and a pumping station** • **Add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records all septage volumes discharged**
Risk to New Treatment Process	• **Reduced (but not eliminated) risk of shock loads** • **Still a risk of toxic loads**
Approximate Cost per Load	• **Up to $70 per load**

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What are the options available once the new process is in place?

OPTION 3 – Upgrade the West End site to accept residential holding tank and septage tank waste only, **and** limit number of loads per day to about 4, **and** restrict the time of day loads can be discharged (high flow times).

Modifications Required to Septage Facility	• **Divert all other septage loads** • **Add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records all septage volumes discharged**
Risk to New Treatment Process	• **Eliminates shock loads** • **Still a risk of toxic loads**
Approximate Cost per Load	• **Up to $25 per load**

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APPENDIX A
SEPTAGE HAULER SEMINAR
PRESENTATION MATERIAL

What are the options available once the new process is in place?

OPTION 4 – Upgrade the West End site to be a septage transfer facility only (for all septage)

Modifications Required to Septage Facility	▪ Either build a large holding tank or use existing sludge holding tank, add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records all septage volumes discharged ▪ Transfer all septage to another City septage facility
Risk to New Treatment Process	▪ No risk to new process
Approximate Cost per Load	▪ About $40 - $65 per load

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Winnipeg

When does Manitoba Conservation require the other two plants to be upgraded?

- It is expected that nutrient removal will be required at the South End plant by 2012.
- According to the licence for the North End plant, nutrient removal is to be in place by 2014.

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Is there a chance that these two septage facilities would close?

- We intend to maintain a disposal facility for hauled septage in the city.
- Septage facilities will need to be upgraded (with a potential for full cost recovery) once the new nutrient removal process is introduced in the plant.
- We will be starting a study later this year to determine the most environmentally sustainable, cost effective approach to hauling, receiving and treating septage.

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What is the next step?

- Gather your feedback
- Prepare a report for City Council that includes your feedback and our consultants' recommendation
- Submit the report to the Public Works Committee
- We will inform you of the date, time and location of the committee meeting once we have finalized our report.

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Summary

Our priority is:

- To do everything we can to consistently meet the terms of our licence for the WEWPCC
- To meet the needs of the wastewater haulers

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APPENDIX B
SEPTAGE HAULER SEMINAR
OPTION SUMMARY HANDOUT

Options for Septage Facility at the West End Plant to Prepare for the New Nutrient Removal Treatment Process

Option	Modifications Required to Septage Facility	Risk to New Treatment Process	Approximate Cost Per Load
1. Shut down the septage facility	• Shut down	• No risk	• Costs involved to transport septage to other septage facilities
2. Accept residential holding tank and septic tank waste only	• Construct an equalization tank with mixers and a pumping station • Add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records all septage volumes discharged	• Reduced (but not eliminated) risk of shock loads • Still a risk of toxic loads	• Up to $70 per load
3. Accept residential holding tank and septic tank waste only, **and** limit the number of loads per day to about 4, **and** restrict the time of day loads can be discharged (i.e., during high flow times only)	• Add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records all septage volumes discharged	• Eliminates shock loads • Still a risk of toxic loads	• Up to $25 per load • Could be additional costs to transport septage to other septage facilities
4. A septage transfer facility only (for all septage)	• Either build a large holding tank or use the existing sludge holding tank, add a security gate, on-site septage sampling program for all loads, flow meter, and data logger that records septage volumes discharged • Transfer all septage to another City septage facility	• No risk	• About $40 - $65 per load

Note: Costs are initial estimates only, and subject to change.

APPENDIX C
SEPTAGE HAULER SURVEY

Winnipeg
Water and Waste Department

WEST END WATER POLLUTION CONTROL CENTRE SEPTAGE FACILITY SURVEY

Name of Hauling Company (optional): _____

1. Currently, approximately how many loads do you take each week to each of the septage facilities?

   _____ *loads/week* to West End Water Pollution Control Centre

   _____ *loads/week* to South End Water Pollution Control Centre

   _____ *loads/week* to North End Water Pollution Control Centre

   _____ *loads/week* to other location(s) – please specify: _____

2. Of the loads you currently take to the West End facility, where would you take these loads if the WEWPCC septage facility were to close?

   _____ *loads/week* to South End Water Pollution Control Centre

   _____ *loads/week* to North End Water Pollution Control Centre

   _____ *loads/week* to other location(s) – please specify: _____

   _____ I do not use the West End Pollution Control Centre

   _____ I will no longer haul septage

3. Do you feel informed about why our consultants are recommending that we close the septage facility at the WEWPCC?

   I feel,
   ___Well informed
   ___Adequately informed
   ___Not as informed as I would like to be

4. How much would closing the WEWPCC septage facility affect you/your business?

   1 Not at all 2 3 A little 4 5 A lot

please see over

APPENDIX C
SEPTAGE HAULER SURVEY

5. If the WEWPCC septage facility were to close, how likely are you/your business to do the following:

	Not likely 1	2	Somewhat likely 3	4	Very likely 5
Change service area	☐	☐	☐	☐	☐
Raise fees charged to customers	☐	☐	☐	☐	☐
Work longer hours	☐	☐	☐	☐	☐
Reduce number of customers	☐	☐	☐	☐	☐
Continue business as usual	☐	☐	☐	☐	☐
Other – specify:	☐	☐	☐	☐	☐

6. Which of the options do you/your business prefer (see handout for description of options):

	Prefer a lot 1	2	Undecided 3	4	Do not prefer 5
OPTION 1 – Close septage facility	☐	☐	☐	☐	☐
OPTION 2 – Accept residential septage only	☐	☐	☐	☐	☐
OPTION 3 - Accept residential septage only with restrictions	☐	☐	☐	☐	☐
OPTION 4 – Change to septage transfer facility	☐	☐	☐	☐	☐
Other – specify:	☐	☐	☐	☐	☐

7. Do you have any other concerns that we haven't addressed?

Yes _____ No _____

If yes, please describe:

_____

_____

_____

If you would like to speak with someone about your concerns, please give your contact information.

Name: _____ Phone: _____

Thank you for your time.