Township of South Frontenac

WASTE MANAGEMENT PLAN STUDY

DRAFT REPORT

FOR PRESENTATION TO STEERING COMMITTEE ON APRIL 17, 2008

April 8, 2008

TOWNSHIP OF SOUTH FRONTENAC

WASTE MANAGEMENT PLAN STUDY

REPORT

TSH Project No. 14-150091-12

Prepared by:

Anne Kloosterman

Reviewed by:

Guy Laporte, P.Eng.
Project Manager

Totten Sims Hubicki Associates
654 Norris Court
Kingston, Ontario
K7P 2R9

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT PLAN STUDY
REPORT

EXECUTIVE SUMMARY

The Township of South Frontenac chose to undertake a waste management plan study to guide the Municipality on how to best manage this important and costly responsibility. The study has been directed by the Sustainability Committee, a committee of Council. The Committee established the following list of objectives for any proposed waste management system for the Township of South Frontenac:

PRIMARY STUDY OBJECTIVES

- Environmentally Sound
- Compliant with Regulations
- Feasible and Easy to Implement
- Cost Effective and Affordable

The Township of South Frontenac is an amalgamation of the former Townships of Bedford, Loughborough, Portland, and Storrington. Total equivalent population, based on Statistics Canada census has been determined to be 18,731 in 2006. This is estimated to grow to 26,762 in 2026 based on historical growth rates.

Waste generation, at 1.5 kg/capita/day, has been estimated at 10,250 tonne/year, growing to 14,650 tonne/year in 2026. Approximately 250,000 tonne may be generated over the next twenty years. The Township of South Frontenac requires a strategy to manage this waste stream. Reducing the amount of waste generated will be a key component of the waste management strategy.

PROBLEM STATEMENT

- The Township of South Frontenac requires a long term strategy to effectively manage up to 250,000 tonne of solid waste over the next twenty years.

Following its deliberations, the Committee has established a number of secondary study objectives that are consistent with, and give more meaning to, the primary objectives.

Topographical surveys of the Township's landfills show that the amount of waste being disposed of is the equivalent of 1.2 kilograms per person per day, suggesting that approximately 20% of the Township's waste stream is already being diverted. The committee determined that a system that maximizes diversions from waste disposal is best for the environment and most sustainable. In this regard, the Committee has established a diversion target of 50%.

A component of the Township's waste stream is currently being exported to waste disposal sites outside of South Frontenac. The Committee has considered increasing this diversion, however, there is a cost for shipping wastes elsewhere that is not offset by lower costs at the Township's waste disposal sites. The Committee has concluded that wastes generated within South Frontenac that cannot be diverted from landfilling should be landfilled in South Frontenac.

The Township of South Frontenac has been assessing and monitoring its waste disposal sites to confirm compliance with current environmental standards. The Township has used different methods to mitigate impacts, such as acquisition of additional buffer or capping of portions of a site. Were impacts cannot be adequately mitigated it may be necessary to close a site. Assessment and monitoring of sites will continue.

Secondary study objectives are summarized below.

SECONDARY STUDY OBJECTIVES	• The Township of South Frontenac will endeavour to divert 50% of its waste stream from landfilling. • Wastes generated in South Frontenac that cannot be diverted from landfill should be landfilled in South Frontenac. • The Township of South Frontenac should continue its ongoing program of assessing, monitoring and managing landfill site impacts.

Currently, waste management services in the Township of South Frontenac are area rated and the level of service in each district is different. The Committee has considered the costs and advantages of a single tier waste management system. The Committee recommends that the current system of managing waste management services on a District level be changed to single system with equal levels of service for all Township residents. This decision has significant impact on the detailed recommendations that follow.

SERVICE DELIVERY	• The current service, which is managed on a District level, should be changed to a Township wide system with a common level of service for all residents.

The Committee has considered options in fifteen areas of waste management, as listed below. It must be noted that the following recommendations might be significantly different had the committee decided to continue with area rating. It should also be noted that, although the recommendations have been identified in fifteen different areas, they are not independent of each other. For example, the recommendation to provide curb side pick up of recyclables in Bedford District is dependent on a previous recommendation to provide curb side pick up of wastes. Any change to a recommendation has to be evaluated with respect to its impact on other recommendations.

It should be further noted that the following recommendations are offered as guidance only. Many of the recommendations will require preparation of implementation plans through which it may be determined that full implementation is impractical. The words “to the extent practical” could be added to all of the following.

The following is a listing of recommendations contained in this report:

1. Collection

1.1 – Curb side collection should be implemented for all Districts. Curb side collection should be offered were practical to do so. Where access for waste collection vehicles is not sufficient residents will be required to bring their wastes out to an accessible road where they will be responsible for construction/maintenance of containers.

2. Recycling

2.1 – The Township of South Frontenac should continue its arrangement with Kingston Area Recycling Centre to offer superior blue box recycling to its residents.

2.2 – Curb side collection of blue box recyclables should be extended to Bedford District in conjunction with curb side collection of wastes.

3. Composting

3.1 – The current practice of offering rear yard composters for a subsidised price should continue.

3.2 – The Township of South Frontenac should establish a central yard waste composting facility at one of the Township's active waste disposal sites, preferably Portland Waste Disposal Site.

3.3 – The Township should monitor the progress of others with respect to development of a regional organics composting facility, as this might offer the Township another option for diversion of a part of the waste stream.

4. Household Hazardous Wastes

4.1 – The Township of South Frontenac should continue with planning and development for a permanent Household Hazardous Waste Transfer facility at its works garage on Keely Road.

4.2 – Operations should be summer only, at a frequency that is sufficient to satisfy demand.

5. Other Waste Diversion

5.1 – The Township of South Frontenac should continue to divert e-wastes from the waste disposal sites.

5.2 – The Township should monitor planning by Waste Diversion Ontario to take advantage of any opportunities that might develop through that organization.

5.3 – The Township should continue to divert bulky and difficult wastes from the sites. For example, none of the Township sites accept refrigerators. The Township should maintain a listing of firms that can accept certain wastes, such as old refrigerators, to assist residents with their proper disposal.

5.4 – The Township should continue to seek options for recycling of farmer's plastic bail wrap.

5.5 – The Township should encourage the development of reuse centres by volunteer groups.

5.6 – Following adoption of this report the Township will need to develop specific work plans and implementation schedules to achieve 50% diversion from waste disposal.

6. Waste Disposal

6.1 – Wastes generated within the Township of South Frontenac that cannot be diverted from landfilling should be landfilled within South Frontenac.

6.2 – The service area of all sites should be considered to be the entire Township of South Frontenac.

6.3 – Consideration may be given to compensating Districts that contribute more, in the way of assets or reserve funds, to this standardized waste management plan.

6.4 – The Township should manage its waste stream such that sites with least capacity are filled first.

7. Management of Active Waste Disposal Sites

7.1 – The Township of South Frontenac should continue its ongoing program of assessing and monitoring landfill site impacts. Measures to minimize site impacts, such as periodic grading and capping of completed areas of waste disposal, should continue.

7.2 – The Township should continue to manage its waste disposal sites to ensure optimal use of landfill capacity and to minimize environmental impacts.

8. Waste Disposal Site Operations

8.1.1 – The Township should continue to seek improvements to landfill site operations to ensure optimal use of landfill capacity.

8.1.2 – The Township should continue to seek alternative sources of cover material as a cost savings measure, however, alternative covers should be assessed for their potential environmental impacts prior to use.

8.2.1 – The Township of South Frontenac should invest in, or contract for the services of, specialized landfill compaction equipment with the objective of optimizing the remaining landfill capacity. Compaction rates of 800 Kg/m^3 are realistic for larger sites, 600 Kg/m^3 for smaller ones.

9. Waste Disposal Site Closures

9.1 – Massassauga WDS is to close in 2009; planning for its closure should commence now.

9.2 – The Township should plan for periodic, partial closures at its larger waste disposal sites to take advantage of reduced environmental impacts.

9.3 – The Township should manage its waste streams to accelerate the closure of sites that have limited capacity

10. Management of Closed Waste Disposal Sites

10.1 – The Township should continue to assess the environmental impacts of recently closed waste disposal sites and implement appropriate mitigation measures.

10.2 – The Township should continue to enforce its Official Plan policies regarding development near waste disposal sites.

11. Waste Disposal Site Expansions

11.1 – There is no immediate requirement for additional waste disposal capacity in South Frontenac Township. Consumption of available capacity should be monitored. Efforts to establish additional capacity should commence at least five years in advance of existing capacity being consumed.

11.2 – Options to access available approved capacity at Portland WDS and expansion of Salem WDS are options that may be pursued.

12. Emerging Technologies

12.1 – The Township of South Frontenac should monitor emerging technologies for opportunities to divert, or better manage, its waste stream

12.2 – In particular, the Township of South Frontenac should monitor opportunities to divert organic wastes to a central composting facility. The Township should monitor efforts by neighbouring municipalities to divert organics and efforts by private industry to develop a central composting facility near Westport.

13. User Fees

13.1 – The Township of South Frontenac should continue to require bag tags on all garbage bags, the Township should move towards a standard bag tag that can be used by all residents.

13.2 – The Township should consider changes to its bag tag system with the objective to encourage more recycling and diversion. Consideration should be given to full user pay.

13.3 – Prior to making any significant change to the current bag tag system the Township should determine what system best serves its long term needs and then prepare a transition plan to implement the final system.

14. Funding

14.1 – The Township should consider changes to its funding model to assign a larger portion of costs to users, via user fees. This will help to keep property tax rates down, while at the same time encouraging diversion

15. Public Consultation / Education

15.1 - Public consultation regarding this waste management plan is recommended. Township Council should be asked to authorize staff to seek public input. Implementation of key recommendations should be deferred until after the Public has had opportunity for input.

Preparation of this waste management plan has been overseen by the Sustainability Committee. The next step would be to present this draft report to Township Council with a recommendation that it be subject to public consultation.

This report will remain "draft" until it is accepted by Township Council. Following public input, and further review by the Sustainability Committee, Township Council should be asked to consider a final report that would include a revised list of recommendations for implementation.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTER PLAN STUDY
REPORT

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TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT PLAN REPORT

1.0 INTRODUCTION

1.1 Purpose

The Township of South Frontenac chose to undertake a waste management plan study to provide future Councils with guidance both from the perspective of how waste is presently being handled, on an area-rated basis, and how it could be better managed, including how it might be managed were responsibility for waste management to rest with the Township as a whole. The study will provide a strategy that will outline the best methods / practices for the long term.

Totten Sims Hubicki Associates were retained in May of 2007 to assist with preparation of the plan. The study has been directed by the Sustainability Committee, a committee of Township Council.

Appendix A is a copy of the terms of reference for this study.

1.2 Study Objectives

Study objectives are a list of criteria against which alternative recommendations can be evaluated. The Sustainability Committee has determined that any waste management system proposed for the Township of South Frontenac should comply with the following:

- Environmentally Sound
- Compliant with Regulations
- Feasible and Easy to Implement
- Cost Effective and Affordable

1.3 Secondary Objectives

Following its deliberations, the Committee established a number of secondary study objectives that are consistent with, and give more meaning to, the primary objectives.

Topographical surveys of the Township's landfills show that the amount of waste being disposed of is the equivalent of 1.2 kilograms per person per day, suggesting that approximately 20% of the Township's waste stream is already being diverted. The committee determined that a system that maximizes diversions from waste disposal is best for the environment and most sustainable. In this regard, the Committee has established a diversion target of 50%.

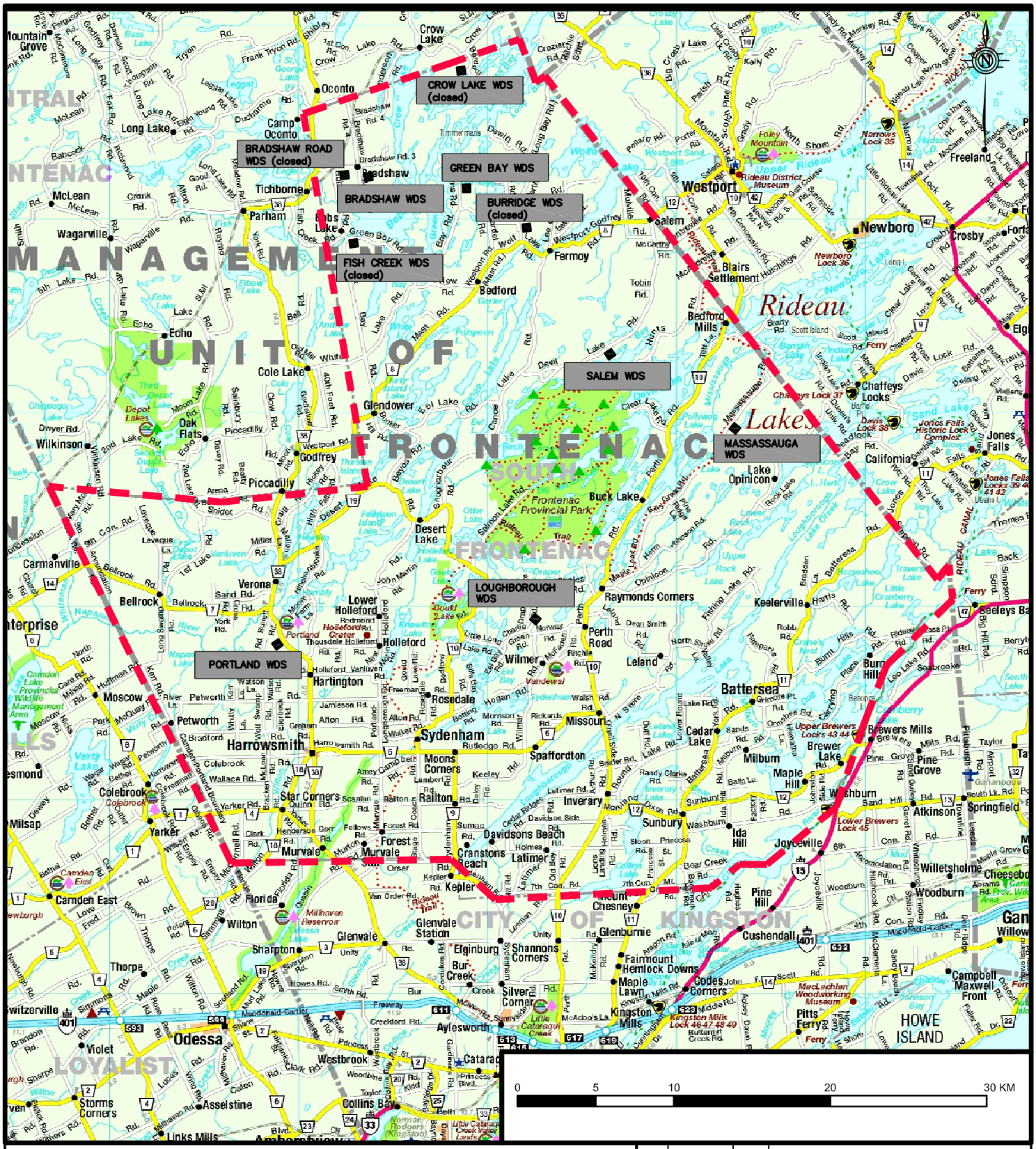
In setting this target the Committee has taken into account the Provincial objective of 60% diversion from waste disposal. The committee has noted that the range of options available to a smaller municipality is limited, due to economies of scale. It notes, for example, that the Township of South Frontenac does not have the resources to implement a full three stream collection system (although it could possibly participate on a Regional level, if such a service were available). 50% diversion is deemed to be a realistic and achievable goal, and a significant improvement over current diversion.

A component of the Township's waste stream is currently being exported to waste disposal sites outside of South Frontenac. The Committee has considered increasing this diversion, however, there is a cost for shipping wastes elsewhere that is not offset by lower costs at the Township's waste disposal sites. The Committee has concluded that wastes generated within South Frontenac that cannot be diverted from landfilling should be landfilled in South Frontenac.

The Township of South Frontenac has been assessing and monitoring its waste disposal sites to confirm compliance with current environmental standards. The Township has used different methods to mitigate impacts, such as acquisition of additional buffer or capping of portions of a site. Were impacts cannot be adequately mitigated it may be necessary to close a site. Assessment and monitoring of sites will continue.

Secondary study objectives are summarized below.

- The Township of South Frontenac will endeavour to divert 50% of its waste stream from landfilling.
- Wastes generated in South Frontenac that cannot be diverted from landfill should be landfilled in South Frontenac.
- The Township of South Frontenac should continue its ongoing program of assessing, monitoring and managing landfill site impacts.



PROJECT:

TOWNSHIP OF SOUTH FRONTENAC

No.	DATE	BY	ISSUES / REVISIONS
1			

DRAWN BY:	CHECKED BY:	PROJECT No. :
SAS	GML	14-150035
DESIGNED BY:	APPROVED BY:	DRAWING No.
SAS	GML	1
SCALE:	DATE:	
SCALE BAR	APR 2007	

engineers architects planners

Totten Sims Hubicki Associates (1997) Ltd.

DRAWING:

WASTE DISPOSAL SITE KEY PLAN

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1.4 Background

The Township of South Frontenac came into being ten years ago, on January 1, 1998. The township is an amalgamation of the former Townships of Bedford, Loughborough, Portland, and Storrington. The Township is home to 14,807 residents in 9,193 households and covers an area of 97,539 hectares (377 square miles) (Source: 2007 Ontario Municipal Directory).

Waste management services are area-rated to the four former Townships (now known as Districts). The level of service is different for each District, and can be briefly described as follows:

- Bedford District residents are required to transport their wastes to one of the four active waste disposal sites. Recycling transfer depots are provided at two of the four sites.
- Loughborough and Portland residents are provided with curb side collection of wastes and recyclables, and also have the option of transporting their wastes to the District landfill.
- Storrington residents are provided curb side collection of wastes and recyclables, but do not have the option of disposal at a local landfill. Bulky wastes must be transported to a transfer station in Kingston where they can be deposited for a fee.

All residents are able to purchase subsidized rear yard compositors from the Township and may take advantage of occasional household hazardous waste days.

Figure 1.1 is a map of the Township of South Frontenac that also shows waste management facilities.

1.5 Previous Reports

There has been significant study of individual waste disposal sites that has been referenced in preparation of this report. The 2006 Annual Reports for Loughborough, Portland, Salem, and Massassauga Waste Disposal Sites have been of significant value. Annual Reports by Kingston Area Recycling Center have also been invaluable.

A full listing of relevant reports has been included in Appendix B.

1.6 Recent Initiatives

The Township of South Frontenac entered into an agreement with Kingston Area Recycling Center (KARC) in the fall of 2006 to handle all of the Municipality's recycled materials. KARC offers a comprehensive and efficient recycling service, better than what South Frontenac could offer on its own. However, the list of recyclable materials will be determined by KARC and thus have not been given detailed consideration by this plan.

The Township is proceeding with plans to establish a year round Household Hazardous Waste Transfer Facility at its works garage on Keely Road.

The Township has entered into an agreement with KIMCO Ltd. for recycling of e-wastes. Electronic wastes are separated at three of the Township's six active landfill sites and picked up by KIMCO for further processing.

2.0 RELEVANT LEGISLATION

2.1 Environmental Protection Act

The Environmental Protection Act (EPA) provides the legislative framework for the establishment of waste management facilities. The establishment, operation, management, alteration, enlargement and/or extension of waste management facilities in the Province of Ontario requires a Certificate of Approval under Part 5, Section 27 of the EPA.

To obtain approval for any new waste management system, transfer facility or landfill site, or for any substantive change to what exists, the Ministry of the Environment will require an application for a Certificate of Approval. To confirm compliance with current regulations, applications must be accompanied by the following documents, as a minimum:

- A legal survey and proof of ownership;
- An Operation Plan to guide operation and eventual decommissioning of the facility, and;
- An impact assessment, which will confirm that the site can operate without significant environmental impacts or nuisance to neighbouring properties.

In some instances the Ministry will require public consultation as part of the application process. For new landfills, or expansions of greater than 100,000 m^3, public hearings are mandatory.

2.2 Ontario Regulation 347

Regulation 347 (formerly Regulation 309) under the EPA is the primary regulation for controlling the handling, disposal and management of hazardous and non-hazardous wastes in the Province. Under the regulation, wastes are classified into categories that stipulate handling requirements. The Regulations specify control measures for disposal facilities.

Standards for the location, maintenance and operation of landfill sites are stated in Section 11 of Regulation 347. Section 9 of the Regulation additionally states that the terms and conditions of the Certificate of Approval can, on a site specific basis, over-ride the standards of the Regulation.

2.3 Ontario Regulation 101/94

Ontario Regulation 101/94 is also known as the 3Rs Regulations. It, and accompanying regulations, became law on March 3, 1994. The regulations are an integral part of Ontario's Waste Reduction Action Plan. The plan was aimed at reducing the amount of waste going to disposal by at least 50 per cent by the year 2000 compared to the base year of 1987. The objective was achieved through a strategy based on the 3Rs — reduction, reuse and recycling.

The 3Rs Regulations were designed to ensure that industrial, commercial and institutional (IC&I) sectors, as well as municipalities, developed programs to reduce the amount of valuable resources going to disposal.

Regulation 101/94 requires specified municipalities to implement recycling programs, including collection of Blue Box wastes, home composting of organic wastes, and composting of leaf and yard waste. Municipalities with populations greater than 5,000 are required to establish blue box collection systems. These municipalities must also provide rear yard composters at cost or less, along with educational material. Municipalities of greater than 50,000 people must provide a central leaf and yard waste composting facility.

2.4 Ontario Regulation 299/94

Ontario Regulation 299/94 has significant relevance to the new South Frontenac Township. Regulation 299/94 amends Regulation 347 to allow the service area of a landfilling site to be expanded to the boundaries of a (new) municipality without the requirement of compulsory hearings. Compulsory hearings are a normal requirement for applications which effect a population of 1,500 or greater.

Ministry staff has interpreted this regulation to allow changes to a service area, but not to rate of fill. They have allowed that, as a rule of thumb, the service population may increase by 25% without the need for a new approval. This is based on an assumption that waste generation rates have decreased by that amount as a result of waste diversion initiatives. Increases in the population serviced beyond 25% will still require a new application, but hearings are not compulsory.

Regulation 299/94 affords South Frontenac significant flexibility. For example, it may be more convenient for certain residents to attend a landfill outside of their traditional service area, due to the hours of operation. This can be allowed. Similarly, there may be times when the municipality will need to handle an unusual waste stream, such as a clean up program. Again, it would be appropriate to direct this waste stream to the site best able to deal with it.

2.5 Ontario Regulation 232/98

Ontario Regulation 232/98, and its accompanying Guideline, specifies a comprehensive standard for landfill design, operation, monitoring and closure. O. Reg. 232/98 came into effect on August 1, 1998 and applies to all new or expanding waste disposal sites, or any site of greater than 40,000 m^3. Ministry staff relies heavily on the Guidelines associated with this regulation when reviewing Certificate of Approval applications. New Certificates issued since 1998 have generally enforced compliance with this standard.

O. Reg. 232/98 imposes a much higher and more detailed standard on waste site management than did the preceding O. Reg. 347, and, for landfilling sites, O. Reg. 232/98 takes precedence. O Reg. 347 is still relevant to previously approved sites of less than 40,000 m^3 and to waste management facilities that are not landfills.

2.6 Bill 90, Waste Diversion Act

Bill 90, an Act to promote the reduction, reuse and recycling of waste, was given Royal Assent on June 27, 2002. The Act created Waste Diversion Ontario (WDO), a non-crown corporation. WDO was established to develop, implement and operate waste diversion programs for a wide range of materials. The Act empowers the Minister of the Environment to designate a material for which a waste diversion program is to be established.

Once the Minister has designated a material through a regulation under the Waste Diversion Act, the Minister asks Waste Diversion Ontario, working co-operatively with stewards, to develop a diversion program. The Minister has designated Blue Box Waste, Used Tires, Used Oil Material, Waste Electronic and Electrical Equipment and Municipal Hazardous or Special Waste under the WDA. The Minister has indicated that the Used Oil Material designation has been set aside and development of a diversion program for Used Tires has been deferred.

The Blue Box Program Plan was approved by the Minister on December 22, 2003 and commenced on February 1, 2004. WDO is currently developing diversion programs for Waste Electronic and Electrical Equipment and Municipal Hazardous or Special Waste.

2.7 Ontario Regulation 101/07

Ontario Regulation 101/07, the Waste Management Project Regulation made under the Environmental Assessment Act, makes it easier for municipalities to find viable solutions for managing waste. The regulation sets out the EA requirements for waste diversion and disposal facilities.

Accompanying regulations under the Environmental Protection Act are intended to streamline the approval process for recycling certain materials. The regulations include the following components:

- Recycling facilities of any size will not have to go through the EA process provided that just 1,000 tonnes per day of residual waste ends up going to disposal.
- Small rural landfills or expansions of between 40,000 and 100,000 cubic metres would go through an environmental screening process, saving municipalities 18 months and thousands of dollars.
- Proponents can pilot new waste technologies without having to undergo an EA providing they are small and can meet the ministry's air emission standards.
- It will be easier to recycle certain wastes that currently do not meet existing exemption criteria. Included are waste paint, crumb rubber, batteries and electronics.
- Converting certain wastes into alternative fuels will no longer require waste management approvals but still must meet air emission standards.

2.8 MOE Guidelines B-7 and B-9

MOE Guideline B-7 is also known as the "Reasonable Use Concept". In essence, Guideline B-7 allows a property owner to pollute groundwater that flows off of its property, but only to a pre-defined amount. In no instance is a landowner allowed to pollute the groundwater to an extent that it becomes non-potable.

Guideline B-7 is an important concept for rural waste disposal sites. All wastes disposal sites generate leachate. Rural sites are "naturally attenuated" which means that the leachate is weakened to an acceptable level within the site boundaries. This often involves purchase of additional lands, which become the "leachate attenuation zone".

Guideline B-9 is titled "Resolution of Groundwater Interference Problems". Guideline B-9 applies to old, closed waste sites. B-9 is less onerous than B-7 because it allows the polluting property owner to consider probable off site uses of the groundwater. If the neighbouring property is undevelopable, a wetland for example, then contamination in excess of Ontario's Drinking Water Standards may be allowed.

Although B-7 and B-9 are guidelines, Ministry staff have successfully defended their enforcement at numerous hearings. For many site owners, the existence of a guideline can be better than no guideline at all.

2.9 Provincial Water Quality Objectives

Leachate generated by a waste disposal site may also impact surface waters. If this occurs, the impact will be compared to Ontario's Provincial Water Quality Objectives. This can be more onerous than a groundwater impact, as surface water impacts cannot be mitigated by purchasing the impacted lands.

2.10 Provincial Policy Statement, 2005

Section 1.6.8 of the Provincial Policy Statement on land-use planning, issued under the authority of Section 3 of the Planning Act, states that:

> "Waste management systems need to be provided that are of an appropriate size and type to accommodate present and future requirements, and facilitate, encourage and promote reduction, reuse and recycling objectives.
>
> Waste management systems shall be located and designed in accordance with provincial legislation and standards."

2.11 Other Regulation

Waste management facilities, particularly new waste landfill sites, may also be subject to approval under the Environmental Assessment Act and the Ontario Water Resources Act.

Operating waste disposal sites must comply with the Federal Fisheries Act.

2.12 Definition of Waste

Interpretation of the Province's waste management legislation/regulation falls to staff of the Ministry of Environment. The issue of what constitutes a waste is one which has caused much debate. The definition of waste is important because waste must be handled in accordance with all of the legislation pertaining to it. All areas of waste management, including collection, storage, transportation and disposal, are subject to review and approvals.

The interpretation of what is waste is often an area of confusion for the general public. For example, the author has been asked why a municipality could not pick up household hazardous wastes along with garbage and recyclables. While this is technically possible, the special waste handling licenses and specialized equipment required would significantly limit the municipality's options with respect to who can be allowed to pick up garbage. Costs for waste collection would be substantially higher. Accordingly, the process of requiring the householder to transport its household hazardous waste to a central depot (the material is not defined as waste until the householder has disposed of it) has become the norm across Ontario.

3.0 PROBLEM DEFINITION

This Waste Management Plan Study is to assess existing waste management systems in the Township of South Frontenac and to recommend improvement. The study is to consider all wastes generated by residents of South Frontenac, which also includes a small component of commercial and institutional waste (there are no large commercial or industrial waste generators located in the Township). The total volume of waste to be managed can be estimated based on population.

3.1 Service Population

The Township's population has been obtained from the StatsCan censuses; the 2001 census reported on the population of the former Townships of Loughborough, Portland, Storrington, and Bedford, while the 2006 census reported on the population of the Township of South Frontenac. Using historical data, a predicted growth rate of 1.8% per year was calculated for South Frontenac, and the future populations for each of the Districts were projected.

All four Districts include a component of seasonal residents, however, the effect of seasonal residents on the waste stream would be most pronounced in Bedford District, were seasonal residences outnumber year round residences by a ratio of four to one. For purposes of estimating waste generation we have calculated an "equivalent population" for Bedford District allowing that seasonal residents may reside in Bedford District for an average of 45 days per year.

Total equivalent population has thus been determined to be 18,731 in 2006, growing to 26,762 in 2026. The equivalent population is further detailed on Table 3.1 on the following page.

Table 3.1 - Historic and Projected Population

	Equivalent Waste Disposal Site Users					
	Bedford Equivalent	Loughborough	Portland	Storrington	Twp of South Frontenac	
1991	1,270	4,489	4,734	3,940	14,433	ACTUAL
1992	1,320	4,600	4,804	4,046	14,770	
1993	1,373	4,714	4,875	4,154	15,117	
1994	1,428	4,831	4,947	4,265	15,472	
1995	1,485	4,951	5,021	4,380	15,837	
1996	1,523	5,046	5,085	4,468	16,122	
1997	1,555	5,086	5,078	4,552	16,271	
1998	1,587	5,127	5,071	4,638	16,422	
1999	1,620	5,168	5,064	4,725	16,577	
2000	1,654	5,209	5,057	4,814	16,733	
2001	1,682	5,250	5,051	4,886	16,869	
2002	1,719	5,366	5,162	4,993	17,240	
2003	1,757	5,484	5,276	5,103	17,619	
2004	1,795	5,604	5,392	5,216	18,007	
2005	1,835	5,727	5,510	5,330	18,403	
2006	1,868	5,830	5,609	5,425	18,731	
2007	1,901	5,934	5,710	5,523	19,068	PROJECTED
2008	1,935	6,041	5,812	5,622	19,411	
2009	1,970	6,150	5,917	5,724	19,761	
2010	2,006	6,261	6,023	5,827	20,116	
2011	2,042	6,373	6,132	5,932	20,479	
2012	2,079	6,488	6,242	6,038	20,847	
2013	2,116	6,605	6,355	6,147	21,222	
2014	2,154	6,724	6,469	6,258	21,604	
2015	2,193	6,845	6,585	6,370	21,993	
2016	2,232	6,968	6,704	6,485	22,389	
2017	2,272	7,093	6,825	6,602	22,792	
2018	2,313	7,221	6,947	6,720	23,202	
2019	2,355	7,351	7,072	6,841	23,620	
2020	2,397	7,483	7,200	6,965	24,045	
2021	2,441	7,618	7,329	7,090	24,478	
2022	2,484	7,755	7,461	7,218	24,919	
2023	2,529	7,895	7,596	7,348	25,367	
2024	2,575	8,037	7,732	7,480	25,824	
2025	2,621	8,182	7,872	7,614	26,289	
2026	2,668	8,329	8,013	7,751	26,762	

Statistics Canada Census
Dissolved Twp Population Apportioned per 2001 Percentage
Projected/Interpolated

3.2 Estimate of Waste Generation

Studies conducted in Canada and the United States indicate that the amount of waste generated per day varies from 0.55 kg/person in smaller communities to 2.5 kg/person in larger cities. These estimates include a significant institutional and commercial component, and an industrial waste component that can be as high as 40% of total waste in industrialised cities. Previous studies undertaken by TSH in rural areas, villages and hamlets comparable in size to South Frontenac indicate waste generation rates within the range of 0.75 to 1.9 kilogram per person per day. For purposes of this study the residents of South Frontenac are expected to produce 1.5 kilograms of waste per person per day.

Table 3.2 is a detailed estimate of waste generation for the Township of South Frontenac for the period 2007 to 2026. Over that twenty year period the Township is estimated to generate 250,000 tonne of waste.

Topographical surveys of the Township's landfills show that the amount of waste entering the landfills is equivalent of 1.2 kilograms per person per day. This means that approximately 0.3 kilograms per person per day, or 20% of total household solid waste, is already being diverted from landfills by various means.

The Township of South Frontenac has set for itself a goal of 50% waste diversion. This can be achieved through numerous methods or initiatives, such as reduction , reuse, recycling, composting or conservation incentives, which are discussed in more detail later in this report.

Table 3.2 - Estimated Waste Generation

Year	Population	Waste tonne	Cumulative tonne
2007	19,068	10,440	10,440
2008	19,411	10,628	21,067
2009	19,761	10,819	31,886
2010	20,116	11,014	42,900
2011	20,478	11,212	54,112
2012	20,847	11,414	65,526
2013	21,222	11,619	77,145
2014	21,604	11,828	88,973
2015	21,993	12,041	101,014
2016	22,389	12,258	113,272
2017	22,792	12,479	125,751
2018	23,202	12,703	138,454
2019	23,620	12,932	151,386
2020	24,045	13,165	164,551
2021	24,478	13,402	177,953
2022	24,918	13,643	191,595
2023	25,367	13,888	205,484
2024	25,824	14,138	219,622
2025	26,288	14,393	234,015
2026	26,762	14,652	248,667

3.3 Problem Statement

Potentially, 250,000 tonnes of waste will be generated by the residents of South Frontenac over the next twenty years. The Township of South Frontenac requires a strategy to manage this waste stream. Reducing the amount of waste generated will be a key component of the waste management strategy.

The problem statement for this study can be summarized as:

> "The Township of South Frontenac requires a long term strategy to effectively manage up to 250,000 tonne of solid waste over the next twenty years."

4.0 WASTE SERVICE ANALYSIS

4.1 Bench Marking

Waste is generated by both permanent and seasonal residents. There is a significant seasonal population in all districts, particularly in Bedford District, where it estimated that seasonal residences outnumber permanent residences four to one. While seasonal residents do not reside full time in South Frontenac, they do have equal access to waste services and certainly make use of them. Therefore, for the purposes of this report, waste service rates and statistics have been created on a per-household basis, regardless of permanent or seasonal status.

Table 4.1 lists the number of households by district and for the entire Township. This data was taken from Assessment Roles.

Table 4.1- Household Counts

District	Permanent	Seasonal	Total
Bedford	572	1,814	2,386
Loughborough	2,090	491	2,581
Portland	1,989	181	2,170
Storrington	2,080	467	2,547
Totals	6,731	2,953	9,684

4.2 Financial Data

Financial Data for South Frontenac Waste Services was collected for 2007 and is shown in Table 4.2,
Table 4.3, and Table 4.4. Actual costs have been massaged to remove reserve contributions and one time costs. The resulting data represents "baseline" operating and monitoring costs and expected revenue for all aspects of the Township's Waste Services Program.

The financial data was also used to calculate the predicted expenditures and revenues if all services were to be standardized in all districts. The standardized costs are listed along side the 'status quo' costs in the following tables.

Table 4.2 - Expenditures

EXPENDITURE ITEM	STATUS QUO				STANDARDIZED SERVICE	
	Bedford	Loughborough	Portland	Storrington	South Frontenac	Notes
Collection	-	76,663	93,955	111,353	375,961	Add Bedford Township as average of other three.
Waste Disposal EXP				83,987	-	Storrington no longer pays tipping fees.
Management of Active Waste Disposal Sites	88,681	36,252	41,256	-	166,189	Significant environmental risk associated with owning a landfill site.
Waste Disposal Site Operations	80,185	77,872	64,061	-	182,026	Allow 50% savings from reduced operation of Bedford sites.
Site Closures (annual contribution to build reserve funds)	20,600	2,500	16,700	-	67,300	Additional savings for Bedford (no need for transfer stations at closed sites)
Management of Closed Waste Disposal Sites	15,643				15,643	Significant environmental risk associated with owning a landfill site.
User Fees EXP	3,741	4,123	3,400	4,283	15,547	Cost to print tags
Expenditure TOTAL	208,850	197,410	219,372	199,623	822,666	
Expenditure PER HOUSEHOLD	87.53	76.49	101.09	78.38	84.95	Households include seasonal.

Table 4.3 - Revenues

REVENUE ITEM	STATUS QUO				STANDARDIZED SERVICE	
	Bedford	Loughborough	Portland	Storrington	South Frontenac	Notes
Waste Disposal REV	10,432	21,150	32,050		89,632	Additional revenue assumed for Storrington bulky waste (Average of Portland and Loughborough)
User Fees REV	-	2,337	1,663	1,095	5,095	
Revenue TOTAL	10,432	23,487	33,713	1,095	94,727	
Revenue PER HOUSEHOLD	4.37	9.10	15.54	0.43	9.78	

Table 4.4 - Net Costs

NET ITEM	STATUS QUO				STANDARDIZED SERVICE	
	Bedford	Loughborough	Portland	Storrington	South Frontenac	Notes
Net TOTAL	198,418	173,923	185,659	198,528	727,939	
Net PER HOUSEHOLD	83.16	67.39	85.56	77.95	75.17	

In the expenditures, revenues, and the net costs, the per-household value is approximately the average of the four status quo values. This illustrates that there would be very little economic change by switching to a standard service model.

5.0 STATUS QUO VS. STANDARDIZED SERVICE

This report presents recommendations in fifteen separate waste management areas. However, before decisions could be reached in several of the areas, it was necessary to determine if individual recommendations would be required for each District or if there should be a single recommendation to apply to the entire Township. The Sustainability Committee dedicated an entire evening to a discussion of this matter.

For some issues, the current practice is already standard for the entire Township and the recommended changes are small, if any. For other issues, significant changes are recommended. The differences between "status quo" and "standardized" services are detailed on Table 5.1 below.

Table 5.1- Status Quo vs. Standardized Services

ITEM	STATUS QUO	STANDARDIZED SERVICE
1.0 - Collection	Curb side collection of waste and recyclables is offered in Loughborough, Portland and Storrington. Residents in Bedford have to take their wastes to one of four active sites.	Curbside collection for all Township residents.
6.0 - Waste Disposal	Residents of Loughborough, Portland and Bedford have access to active waste disposal sites in those wards, all of Storrington's waste has to be exported.	All residents have access to all active sites.
7.0 - Management of Active Waste Disposal Sites	Each District is responsible for management of its active waste disposal sites. Environmental assessments for each site are at various stages, few are complete.	All districts would share costs associated with active landfill sites. Assessments are ongoing and there is the potential that some sites will need to close.
8.1 - Waste Disposal Site Operations	Hours of operation are established for each of six waste disposal sites based on current need.	Reduced hours may be consider for Bedford District sites given that residents no longer need to make weekly visits.
8.3 - Temporary Closures	All sites with available capacity are open at least three days a week	Temporary or seasonal closures may be considered, particularly in Bedford District. The rate of fill (i.e. for Loughborough site) might be increased to advance closure date.
9.0 - Site Closures	Future site closures in Bedford District will require conversions to transfer stations.	Transfer stations are not required where curb side pick up is available.
10.0 - Management of Closed Waste Disposal Sites	Each District is responsible for management of its closed waste disposal sites.	All districts would share costs associated with closed landfill sites. Current costs are quite small, but there is the potential for much higher expenditures in the future.
12.0 - Emerging Technologies		A common approach to all Township waste may offer more opportunities to take advantage of emerging technologies.
13.0 - User Fees	Each District has its own bag tag program, tipping fee schedule and list of prohibited wastes.	User fees would be the same for all residents.
14.0 - Funding	Funding for waste management services is different in each District, each District funds its own services.	Funding would be standardized.

5.1 Status Quo

The status quo option represents the exact services currently offered, or not offered. Each district currently manages its own sites differently, as they did before amalgamation. Bedford District does not offer curb side collection, and Storrington District must export all of its waste with a private contractor. Each district operates its own funding system for waste services, as a combination of bag-tag revenues and taxes. Portland District offers a garbage tax reduction to seasonal residents; the other three districts do not.

5.2 Standardized Service

Under the standardized system recommended by this report, all aspects of waste management would be the same for all four districts in the Township. Some of the changes which would occur include:

- Curb side collection would be offered to all residents
- All residents would have access to all sites throughout the Township
- Funding would be standardized; user fees would be the same for every resident
- Transfer stations would not be required
- Reduced hours at some sites, leading to lower operating costs

Additionally, the combined waste generation of the entire Township increases the feasibility of new technologies for waste management.

Each recommendation considered economic, environmental, sustainability, risk, and management factors. Table 5.2 on the following page lists the factors which were considered in this evaluation and their desirability.

5.3 Portland Waste Disposal Site

Portland Waste Disposal Site represents 58% of the available waste disposal capacity in the Township. Concern has been expressed on behalf of the residents of Portland District that this site will fill much quicker if all residents of South Frontenac are allowed to use it. That doesn't need to be the case.

Table 5.3 is an excerpt from the 2007 Annual Report for Portland Waste Disposal Site. If site operations are allowed to continue unchanged and service only the residents of Portland District, then the site is expected to close in 2044. Compare this to Table 5.4. If the objectives of this plan are met, which includes 50% diversion and higher compaction rates, then the total Township waste disposal capacity can service the entire Township population for almost the same amount of time, until 2039. The residents of Portland District are well served by this plan.

5.4 Recommendation

Conversion to a single, standardized service across the Township is recommended. Standardized service can be offered at this time with minimal cost impact to individual tax payers, and with significant service improvements.

Table 5.2 – Status Quo vs. Standardized: Analysis

Factor	Sub-Factor	Definition	Option 1		Option 2	
			Do Nothing		Standardize Township Waste Management	
Cost	Net cost per household	Which option results in a higher per-household cost?	▽	Costs vary by district; highest in Portland, lowest in Loughborough	↕	Equal cost across township; similar to current costs
	User Fees / Tipping Fees	Who is the recipient of user fees / tipping fees?	▽	Township of South Frontenac and WS (Storrington)	△	Township of South Frontenac
	Bag Tags / Garbage Tax	How are costs shared by districts? Garbage tax on assessment, or by purchased bag tags?	▽	Tax in Portland, Loughborough, Storrington; partial tax in Bedford. Bag tag revenue minimal	↕	All districts taxed equally.
	Cost for Seasonal Users	Does the option ensure part-time residents contribute to waste management costs?	▼	Portland provides garbage tax cut to seasonal households	△	All households taxed equal garbage tax; increase revenue for Township
Management	Level of Service	Which option will provide the best service to the most residents of South Frontenac?	▽	Curbside pickup to 3 of 4 districts	▲	Curbside pickup to all districts
	Convenience	Which option will make waste disposal sites the most convenient to residents?	▽	Residents must use sites within district; this is usually the closest site	▲	Residents may use any site in Township
	Equipment and Staffing	Which option makes the most efficient use of staff and landfill equipment?	▼	Districts run independently; each district requires own set of equipment	▲	Districts could share equipment, coordinate open hours to share staff
	Control of Sites	Which option allows for the best site control by the Township administration?	▽	Sites run by own district; no central control	△	All sites run by Township administration
Risk	Clean up costs	Who is responsible for the cost of any landfill-related clean-up?	↕	Township of South Frontenac	↕	Township of South Frontenac
	Risk Potential	Does the option mitigate the current level of environmental risk?	↕	No, risk remains the same	▲	Yes; standardized monitoring and maintenance practices lowers risk of environmental impacts
	Compliance with MOE	Does the option ensure compliance with MOE regulations and recommendations?	▽	No, compliance not ensured	△	No, compliance not ensured, but combined resources improves each site's ability to be in compliance
Environmental Impact	Land	Does the option require additional land(s) to expand sites?	▼	Yes; districts with less remaining capacity will need additional land for expansion	▲	No; capacity of all sites would be shared; when one district's sites are full, they may use another's
	Water	Does the option attempt to mitigate risk to water surrounding the landfill?	▽	Yes; however, need for capacity may slow the closure of polluting landfills	▲	Yes; shared capacity means polluting landfills can be closed expediently
	Waste Generation	Does the option discourage waste generation?	▲	Yes; Residents without curbside pick-up may generate less waste since they have to dispose of it themselves	▼	No; No incentive to produce any less than 2 bags of garbage (*dependant on bag-tag policy)
	Transportation	How much transportation is required for the waste?	△	All waste goes to nearest site (except Storrington)	▼	Waste may be diverted or transferred to any site in the entire Township
Sustainbility	Diversion of Waste	Does the option encourage waste diversion (recycling)?	△	Yes, in districts which offer curb-site recycling pick-up	▲	Yes; curbside recycling pick-up available to all districts
	Financial Reserves	Are financial reserves sustainable	▽	Not for all districts	▲	Yes, combined resources and planning ensure sustained financial reserves
	Emerging Technologies	Does the option consider implementing emerging waste-management technologies?	▼	No; district populations too small to implement such technologies	▲	Yes; combined population large enough to consider such technologies

Table 5.3 - Portland Waste Generation Projections (from 2007 Annual Report)

Year	Population Portland	Waste Received (tonne)(1)	Waste Received (m^3)(2)	Cover Material (m^3)(3)	Total Volume (m^3)	Remaining Volume (m^3)(4)
2007	5,398	2,404	4,006	1,001	5,007	215,083
2008	5,434	2,420	4,033	1,008	5,041	210,042
2009	5,470	2,436	4,060	1,015	5,075	204,967
2010	5,507	2,452	4,087	1,022	5,109	199,858
2011	5,544	2,469	4,114	1,029	5,143	194,715
2012	5,581	2,485	4,142	1,035	5,177	189,538
2013	5,618	2,502	4,170	1,042	5,212	184,326
2014	5,656	2,519	4,198	1,049	5,247	179,079
2015	5,694	2,535	4,226	1,056	5,282	173,797
2016	5,732	2,552	4,254	1,063	5,317	168,479
2017	5,770	2,569	4,282	1,071	5,353	163,126
2018	5,809	2,587	4,311	1,078	5,389	157,738
2019	5,848	2,604	4,340	1,085	5,425	152,313
2020	5,887	2,621	4,369	1,092	5,461	146,851
2021	5,926	2,639	4,398	1,100	5,498	141,353
2022	5,966	2,657	4,428	1,107	5,535	135,819
2023	6,006	2,674	4,457	1,114	5,572	130,247
2024	6,046	2,692	4,487	1,122	5,609	124,638
2025	6,087	2,710	4,517	1,129	5,647	118,991
2026	6,127	2,729	4,548	1,137	5,684	113,307
2027	6,168	2,747	4,578	1,144	5,722	107,584
2028	6,210	2,765	4,609	1,152	5,761	101,824
2029	6,251	2,784	4,640	1,160	5,799	96,024
2030	6,293	2,802	4,671	1,168	5,838	90,186
2031	6,335	2,821	4,702	1,175	5,877	84,309
2032	6,378	2,840	4,733	1,183	5,917	78,392
2033	6,420	2,859	4,765	1,191	5,956	72,436
2034	6,463	2,878	4,797	1,199	5,996	66,440
2035	6,507	2,897	4,829	1,207	6,036	60,403
2036	6,550	2,917	4,861	1,215	6,077	54,327
2037	6,594	2,936	4,894	1,223	6,117	48,209
2038	6,638	2,956	4,927	1,232	6,158	42,051
2039	6,683	2,976	4,960	1,240	6,200	35,851
2040	6,727	2,996	4,993	1,248	6,241	29,610
2041	6,773	3,016	5,026	1,257	6,283	23,327
2042	6,818	3,036	5,060	1,265	6,325	17,002
2043	6,864	3,056	5,094	1,273	6,367	10,635
2044	6,909	3,077	5,128	1,282	6,410	4,225
2045	6,956	3,097	5,162	1,291	6,453	0
2046	7,002	3,118	5,197	1,299	6,496	0

Notes:

1. Based on 1.25 kg/capita/day
2. Based on compaction rate of 600 kg/m^3
3. Ratio of cover to refuse is 1 to 4
4. Total volume remaining 217,700 m^3 (October 2007)

Table 5.4 - South Frontenac Total Waste Generation Projections

Year	Population	Waste Received		Cover Material	Total Volume	Remaining Volume
	South Frontenac	(tonne)(1)	(m^3)(2)	(m^3)(3)	(m^3)	(m^3)(4)
2007	19,068	5,220	6,525	1,631	8,156	345,790
2008	19,411	5,314	6,642	1,661	8,303	337,487
2009	19,761	5,410	6,762	1,690	8,452	329,035
2010	20,116	5,507	6,884	1,721	8,605	320,430
2011	20,479	5,606	7,008	1,752	8,759	311,671
2012	20,847	5,707	7,134	1,783	8,917	302,754
2013	21,222	5,810	7,262	1,816	9,078	293,676
2014	21,604	5,914	7,393	1,848	9,241	284,435
2015	21,993	6,021	7,526	1,881	9,407	275,028
2016	22,389	6,129	7,661	1,915	9,577	265,451
2017	22,792	6,239	7,799	1,950	9,749	255,702
2018	23,202	6,352	7,940	1,985	9,924	245,778
2019	23,620	6,466	8,083	2,021	10,103	235,675
2020	24,045	6,582	8,228	2,057	10,285	225,390
2021	24,478	6,701	8,376	2,094	10,470	214,920
2022	24,919	6,821	8,527	2,132	10,659	204,261
2023	25,367	6,944	8,680	2,170	10,850	193,410
2024	25,824	7,069	8,837	2,209	11,046	182,365
2025	26,289	7,197	8,996	2,249	11,245	171,120
2026	26,762	7,326	9,158	2,289	11,447	159,673
2027	27,244	7,458	9,322	2,331	11,653	148,020
2028	27,734	7,592	9,490	2,373	11,863	136,157
2029	28,233	7,729	9,661	2,415	12,076	124,081
2030	28,741	7,868	9,835	2,459	12,294	111,787
2031	29,259	8,010	10,012	2,503	12,515	99,272
2032	29,785	8,154	10,192	2,548	12,740	86,532
2033	30,322	8,301	10,376	2,594	12,970	73,563
2034	30,867	8,450	10,562	2,641	13,203	60,360
2035	31,423	8,602	10,753	2,688	13,441	46,919
2036	31,989	8,757	10,946	2,737	13,683	33,236
2037	32,564	8,914	11,143	2,786	13,929	19,308
2038	33,150	9,075	11,344	2,836	14,180	5,128
2039	33,747	9,238	11,548	2,887	14,435	0

Notes:

1. Based on 0.75 kg/capita/day
2. Based on compaction rate of 800 kg/m^3
3. Ratio of cover to refuse is 1 to 4
4. Total volume remaining 345,790 m^3 (October 2007)

6.0 WASTE MANAGEMENT COMPONENTS

In order to develop an integrated waste management plan, the waste management task has first been broken down into its component parts. Each component has been assessed against study objectives at an individual level, and in conjunction with other components.

For this part of the study a series of worksheets have been developed and reviewed with the Sustainability Committee. The Township's current practices were compared to others' and an analysis was completed to arrive at a recommended course of action. The worksheets are included in Appendix C and summarized in the following chapters.

6.1 Waste Collection

6.1.1 Current Practice

Curb Side Collection is offered to residents of Loughborough, Portland and Storrington. Residents of Loughborough and Portland have the option of taking their wastes directly to the landfill. Residents of Storrington have to take their bulky wastes to the Cananda Waste Transfer facility on Dalton Avenue in Kingston.

Residents of Bedford are required to take their wastes to one of four disposal sites.

6.1.2 Analysis

Curb side collection will continue to be offered in Loughborough, Portland and Storrington. Provision of curb side collection in Bedford has been considered. Issues with curb side collection in Bedford include:

- Township will not service private lanes.
- Cottagers are problematic in that they prefer Sunday drop offs.

Still, others have successfully implemented curb side collection in rural areas similar to Bedford.

6.1.3 Recommendation

1.1 – Curb side collection should be implemented for all Districts. Curb side collection should be offered were practical to do so. Where access for waste collection vehicles is not sufficient residents will be required to bring their wastes out to an accessible road where they will be responsible for construction/maintenance of containers.

6.2 Recycling

6.2.1 Current Practice

Curb side pick up of blue box recyclables is offered to residents in Loughborough, Portland and Storrington. The Township follows a two-stream process as developed by KARC – containers are collected on one week and fibres the next. The Township has contracted its recyclables management to KARC and therefore offers the same service to Township residents as is offered in Kingston. While this is a very good service, the Township has limited control over what can be offered.

Some separation occurs at Loughborough and Portland Waste Disposal Sites. Recycling depots are established at two of the four active waste disposal sites in Bedford, with some diversion occurring at all four sites.

South Frontenac residents are also permitted to deliver recyclables directly to the KARC facility in Kingston.

6.2.2 Analysis

The alternatives that can be considered are limited by the Township's agreement with KARC.

The Sustainability Committee has considered curb side pick up in Bedford Township in conjunction with curb side pick up of garbage. Provincial regulation obliges a municipality to offer curb side pick up of blue box recyclables if it offers curb side pick up of garbage (the opposite is not true – municipalities are permitted to offer blue box service without garbage pick up service).

6.2.3 Recommendations

2.1 – The Township of South Frontenac should continue its arrangement with Kingston Area Recycling Centre to offer superior blue box recycling to its residents.

2.2 – Curb side collection of blue box recyclables should be extended to Bedford District in conjunction with curb side collection of wastes.

6.3 Composting

6.3.1 Current Practice

The Township of South Frontenac offers rear yard composters to residents at a subsidize rate of $30 per unit. The Township also provides educational material with the composters. This meets the minimum requirements of O.Reg. 101/94

6.3.2 Analysis

City of Ottawa (2005) cost to process yard waste was $23.10, which was offset by revenues of $4.72 per tonne.

A private firm, Earthworx, operates a composting facility near Westport. The operator is currently applying for a license to compost all organic material. While this site would not convenient to most Township residents for yard waste disposal, the Township will want to monitor Earthworx's progress towards composting of all organics, as this may provide the Township with another option for waste diversion.

Establishment of a central yard waste disposal facility at an existing waste disposal site would be less costly than a stand alone site because it can be supervised by the landfill site attendant. Portland Waste Disposal site is conveniently located on an arterial road and has room for a composting facility, although composting will have to occur on top of the existing waste fill.

Capital costs include preparation of the site and purchase of a wood chipper ($50,000). Operating costs included periodic turning of the windrows and annual clean outs ($20,000 per year). Costs may be off set by sale of material and by preservation of landfill capacity.

6.3.3 Recommendations

3.1 – The current practice of offering rear yard composters for a subsidised price should continue.

3.2 – The Township of South Frontenac should establish a central yard waste composting facility at one of the Township's active waste disposal sites, preferably Portland Waste Disposal Site.

3.3 – The Township should monitor the progress of others with respect to development of a regional organics composting facility, as this might offer the Township another option for diversion of a part of the waste stream.

6.4 Household Hazardous Wastes

6.4.1 Current Practice

The Township of South Frontenac has a permit arrangement with the City of Kingston's Hazardous Waste Transfer Station at 70 Lappan's Lane in Kingston. Township residents may secure a Hazardous Waste Disposal Ticket from the Township office for $32.00 (+ GST) per vehicle and visit.

The Township has also hosted occasional household hazardous waste days. In 2007 the waste day was so well attended that it had to be held over for a second day.

In light of the overwhelming response to the 2007 household hazardous waste day, the Township is proceeding with development of a permanent HHW storage and transfer station at its works garage on Keely Road.

6.4.2 Analysis

The Township has determined that a permanent HHW storage and transfer facility is a necessary component of a complete waste management service.

6.4.3 Recommendations

4.1 – The Township of South Frontenac should continue with planning and development for a permanent Household Hazardous Waste Transfer facility at its works garage on Keely Road.

4.2 – Operations should be summer only, at a frequency that is sufficient to satisfy demand.

6.5 Other Waste Diversion

6.5.1 Current Practice

The Township's current practices regarding waste diversion from landfill sites include:

- Yard wastes are not accepted at waste disposal sites.
- Refrigerators, freezers and air conditioners are not accepted at waste disposal sites, residents are instructed to take them to a private disposal facility such as Thake in Westport
- Singles are not accepted at Loughborough WDS
- Scrap Metals are stored separately at the waste disposal sites and are periodically picked up by scrap metal recyclers.
- An agreement to take e-wastes has been entered into with Kimco. Bins have been set up at Loughborough, Portland and Salem sites. Storrington residents are to use Loughborough.

6.5.2 Analysis

Municipalities have broad powers to set criteria on what can or cannot be accepted at their waste disposal sites.

Informal reuse centres are operated by site attendants at many sites in eastern Ontario, although these are primarily volunteer run operations.

Electronic waste diversion costs $617.28 per tonne, and diversion of regular waste to Waste Management costs $85.60. Landfill capacity can be valued at $51.36 per cubic meter.

The following tables compare the difference in total Township-wide lifespan if current practices continue (Table 6.1) or if 50% diversion is achieved (Table 6.2). These tables do not account for other capacity saving measures, such as increased compaction.

Measurements of site usage at the Township's six active waste disposal sites indicate that approximately 20% of the existing waste stream is being diverted. Achieving 50% diversion will require significant change to past practices. While the Township has initiated a number of important changes in the past two years, including improvements to blue box recycling and e-waste diversion, more will be require. Following adoption of this report the Township will need to develop a implementation program to achieve 50% diversion.

Table 6.1 - Total Landfill Lifespan (Status Quo Diversion)

Year	Population	Waste	Waste Volume	Cover	Total Volume	Cumulative	Remaining
2007	19,411	8,502	14,423	3,606	18,029	35,740	327,761
2008	19,761	8,655	14,683	3,671	18,354	54,093	309,407
2009	20,116	8,811	14,947	3,737	18,684	72,777	290,723
2010	20,479	8,970	15,216	3,804	19,020	91,798	271,703
2011	20,847	9,131	15,490	3,873	19,363	111,161	252,340
2012	21,222	9,295	15,769	3,942	19,711	130,872	232,629
2013	21,604	9,463	16,053	4,013	20,066	150,938	212,563
2014	21,993	9,633	16,342	4,085	20,427	171,365	192,135
2015	22,389	9,806	16,636	4,159	20,795	192,160	171,340
2016	22,792	9,983	16,935	4,234	21,169	213,329	150,171
2017	23,202	10,163	17,240	4,310	21,550	234,880	128,621
2018	23,620	10,346	17,551	4,388	21,938	256,818	106,682
2019	24,045	10,532	17,866	4,467	22,333	279,151	84,349
2020	24,478	10,721	18,188	4,547	22,735	301,886	61,614
2021	24,919	10,914	18,515	4,629	23,144	325,031	38,470
2022	25,367	11,111	18,849	4,712	23,561	348,591	14,909
2023	**25,824**	**11,311**	**19,188**	**4,797**	**23,985**	**372,577**	**0**
2024	26,289	11,514	19,533	4,883	24,417	396,993	0
2025	26,762	11,722	19,885	4,971	24,856	421,850	0
2026	27,244	11,933	20,243	5,061	25,304	447,153	0
2027	27,734	12,147	20,607	5,152	25,759	472,912	0
2028	28,233	12,366	20,978	5,245	26,223	499,135	0
2029	28,741	12,589	21,356	5,339	26,695	525,830	0
2030	29,259	12,815	21,740	5,435	27,175	553,005	0

16 Years Remaining

Table 6.2 - Total Lanfill Lifespan (50% Diversion)

Year	Population	Waste	Waste Volume	Cover	Total Volume	Cumulative	Remaining
2007	19,411	5,314	9,015	2,254	11,268	22,337	334,522
2008	19,761	5,410	9,177	2,294	11,471	33,808	323,051
2009	20,116	5,507	9,342	2,336	11,678	45,486	311,373
2010	20,479	5,606	9,510	2,378	11,888	57,374	299,485
2011	20,847	5,707	9,681	2,420	12,102	69,475	287,384
2012	21,222	5,810	9,856	2,464	12,320	81,795	275,064
2013	21,604	5,914	10,033	2,508	12,541	94,336	262,523
2014	21,993	6,021	10,214	2,553	12,767	107,103	249,756
2015	22,389	6,129	10,397	2,599	12,997	120,100	236,759
2025	26,762	7,326	12,428	3,107	15,535	263,656	93,203
2026	27,244	7,458	12,652	3,163	15,815	279,471	77,388
2027	27,734	7,592	12,880	3,220	16,099	295,570	61,289
2028	28,233	7,729	13,111	3,278	16,389	311,960	44,899
2029	28,741	7,868	13,347	3,337	16,684	328,644	28,215
2030	29,259	8,010	13,588	3,397	16,985	345,628	11,231
2031	**29,785**	**8,154**	**13,832**	**3,458**	**17,290**	**362,919**	**0**
2032	30,321	8,301	14,081	3,520	17,602	380,520	0
2033	30,867	8,450	14,335	3,584	17,918	398,439	0
2034	31,423	8,602	14,593	3,648	18,241	416,679	0

24 Years Remaining

6.5.3 Recommendations

5.1 – The Township of South Frontenac should continue to divert e-wastes from the waste disposal sites.

5.2 – The Township should monitor planning by Waste Diversion Ontario to take advantage of any opportunities that might develop through that organization.

5.3 – The Township should continue to divert bulky and difficult wastes from the sites. For example, none of the Township sites accept refrigerators. The Township should maintain a listing of firms that can accept certain wastes, such as old refrigerators, to assist residents with their proper disposal.

5.4 – The Township should continue to seek options for recycling of farmer's plastic bail wrap.

5.5 – The Township should encourage the development of reuse centres by volunteer groups.

5.6 – Following adoption of this report the Township will need to develop specific work plans and implementation schedules to achieve 50% diversion from waste disposal.

6.6 Waste Disposal

6.6.1 Current Practice

The Township of South Frontenac currently disposes of garbage as follows:

- Loughborough and Portland Districts operate one landfill each for residents of those Districts.
- Bedford operates four waste disposal sites for residents of Bedford District
- Storrington contracts for disposal of waste outside of the municipality

Table 6.3, on page 28, is a summary of waste disposal site statistics for South Frontenac's six active waste disposal sites as of April 24, 2007. Loughborough's waste disposal site has capacity to last another 14 years, to 2021. Portland's site will last until 2046 and Bedford District four sites combined have capacity to last 18 years, to 2025. Lifespan projections assume no change to the current practice of each district providing its own disposal facility, and no significant change to current waste generation rates and waste disposal practises.

Overall, the six sites would service all of South Frontenac for 17 years, to 2024. As will be noted elsewhere in this report, there are many ways to extend the lifespan of the existing sites.

6.6.2 Analysis

The Committee considered alternatives to divert more wastes outside of South Frontenac, to preserve landfill capacity. They also considered a unified waste management service, with all sites being available to all residents.

Total landfill capacity in the Township is 345,790 m³ (approximately 200,000 tonne). This equates to an asset value of $17.8M. The value of landfill capacity has to be weighed against the cost of operation and maintenance and the risks associated with perpetual ownership. The cost

benefit is higher when sites are filled faster. Costs to maintain sites that have been filled and are closed are much less, and risks are easier to manage, than for active sites.

6.6.3 Recommendation

6.1 – Wastes generated within the Township of South Frontenac that cannot be diverted from landfilling should be landfilled within South Frontenac.

6.2 – The service area of all sites should be considered to be the entire Township of South Frontenac.

6.3 – Consideration may be given to compensating Districts that contribute more, in the way of assets or reserve funds, to this standardized waste management plan.

6.4 – The Township should manage its waste stream such that sites with least capacity are filled first.

6.7 Management of Active Waste Disposal Sites

6.7.1 Current Practice

Recent inspections by Ministry of the Environment abatement officers have resulted in updated site assessments and new Certificate of Approvals for four of the Township's waste disposal sites. Detailed assessments are ongoing for two others. The current status of each site is summarized below. Table 6.3, on page 28, is a summary of statistics for Municipal Financial Reporting for each site.

6.7.1.1 Loughborough Waste Disposal Site

Loughborough WDS has undergone extensive assessment and has a new Certificate of Approval as of November 23, 2006.

6.7.1.2 Portland Waste Disposal Site

Portland WDS has undergone extensive assessment and has a new Certificate of Approval as of March 8, 2005.

6.7.1.3 Salem Waste Disposal Site

Salem WDS underwent extensive assessment and an expansion in the early 90's. The Certificate of Approval was updated as on July 14, 2005.

6.7.1.4 Massassauga Waste Disposal Site

Massassauga WDS was recently assessed and the site is almost full. The current certificate of Approval is an older type, dated March 31, 1980. The next Certificate of Approval will be for closure.

6.7.1.5 Green Bay Waste Disposal Site

Green Bay WDS is currently undergoing as assessment of environmental impacts. The current Certificate of Approval is an older type, dated March 31, 1980.

6.7.1.6 Bradshaw Waste Disposal Site

Bradshaw WDS is currently undergoing as assessment of environmental impacts. The current Certificate of Approval is an older type, dated July 25, 1990.

6.7.2 Analysis

Analysis of remaining site life span tends to concentrate on remaining approved capacity; however, it needs to be noted that sites may also close due to unacceptable environmental impacts.

Ministry of the Environment has inspected most of the sites in South Frontenac and has issued instructions to bring design, operation, and monitoring programs up to current standards.

6.7.3 Recommendation

7.1 – The Township of South Frontenac should continue its ongoing program of assessing and monitoring landfill site impacts. Measures to minimize site impacts, such as periodic grading and capping of completed areas of waste disposal, should continue.

7.2 – The Township should continue to manage its waste disposal sites to ensure optimal use of landfill capacity and to minimize environmental impacts.

Table 6.3
Statistical Data for Waste Disposal Sites
Township of South Frontenac
April 2, 2008

					Bedford Ward					
		Loughborough		Portland	Salem	Massassauga	Bradshaw	Green Bay	Fish Creek	Crow Lake
ITEM	UNITS	Phase 1 (2)	Phase 1&2 (3)		Operating				Closed	
Total Site Area	ha.	8.65	8.65	31.40	9.98	4.37	6.60	2.30	1.30	0.90
Approved or Proposed Area of Waste Disposal	ha.	2.00	0.90	5.60	0.80	0.40	0.48	0.60	0.40	0.40
Current Area of Waste Disposal	ha.	1.93	0.00	3.30	0.60	0.26	0.35	0.16	0.40	0.27
Total Capacity Including Final Cover	m^3	164,600	231,250	422,100	65,000	14,060	19,800	14,500	6,520	5,900
Allowance for Final Cover	m^3	15,000	21,750	42,000	6,000	3,000	3,600	4,500	3,000	1,900
Total Capacity	m^3	149,600	209,500	380,100	59,000	11,060	16,200	10,000	3,520	5,000
Existing Waste and Periodic Cover	m^3	137,450	137,450	162,400	40,420	10,370	7,080	4,710	3,520	5,000
Remaining Volume of Waste Disposal	m^3	27,150	72,050	217,700	18,580	690	9,120	5,290	-	-
Anticipated Life Span (1)	years	4 (to 2011)	14 (to 2021)	39 (to 2046)	17 (to 2024)	2 (to 2009)	31 (to 2037)	26 (to 2032)	0	0
Estimated Closure Costs	$	$ 280,000	$ 420,000	$ 1,100,000	$ 160,000	$ 80,000	$ 100,000	$ 120,000	$ -	$ -

NOTES: 1. Anticipated life span assumes no change to current users, if sites with capacity have to pick up for closed sites, then their life spans will be reduced.
2. Closure costs for Loughborough WDS have been reduced to reflect partial closure that took place in 2005.
3. Approval for Phase 2 of Loughborough WDS is subject to satisfactory completion of a hydrogeological study.

6.8 Waste Disposal Site Operations

6.8.1 Current Practice

Waste disposal sites in South Frontenac are typically operated in compliance with O. Reg. 347. Hours of operation are published on the Township's website; sites are secured outside of open hours.

Several sites in South Frontenac have been approved for the use of crushed glass as an alternative cover material. Other municipalities have implemented other techniques to optimize landfill capacity, such as wood chippers, tire shredders, improved security and compaction, and temporary closures.

6.8.2 Compaction

The level of compaction applied has a huge bearing on remaining landfill life span. Compaction efforts vary at each site, none of the sites use specialized compaction equipment.

Sites with no compaction are typically assumed to have achieved 400 kg of waste disposal per cubic meter. Typical compaction rate for a small rural site with infrequent grading and covering is 500 kg/m³.

Compaction Cost:

- Purchase – 2002 used CAT 816F - $210,000
- Tackaberry Rental - $165/hour, minimum 4 hours, plus $135 float
    - small sites 8 times per year, 4 hours per site
    - large sites once every two years, 8 hours per site
    - Annual cost: $25,440 (small sites), $69,840 (large sites)
- Payback: improving compaction at Loughborough WDS from 600 kg/m³ to 750 kg/m³ could save 1,000 m³ per year (equivalent value is $51,360).

The following tables compare the difference in total Township-wide lifespan if current practices continue (Table 6.1) or if 800 kg/m³ compaction is achieved (Table 6.2). These tables do not account for other capacity saving measures, such as increased diversion.

Table 6.4 - Total Landfill Lifespan (Status Quo Compaction)

Year	Population	Waste	Waste Volume	Cover	Total Volume	Cumulative	Remaining
2006	19,068	8,352	14,168	3,542	17,710	17,710	345,790
2007	19,411	8,502	14,423	3,606	18,029	35,740	327,761
2008	19,761	8,655	14,683	3,671	18,354	54,093	309,407
2009	20,116	8,811	14,947	3,737	18,684	72,777	290,723
2010	20,479	8,970	15,216	3,804	19,020	91,798	271,703
2011	20,847	9,131	15,490	3,873	19,363	111,161	252,340
2012	21,222	9,295	15,769	3,942	19,711	130,872	232,629
2013	21,604	9,463	16,053	4,013	20,066	150,938	212,563
2014	21,993	9,633	16,342	4,085	20,427	171,365	192,135
2015	22,389	9,806	16,636	4,159	20,795	192,160	171,340
2016	22,792	9,983	16,935	4,234	21,169	213,329	150,171
2017	23,202	10,163	17,240	4,310	21,550	234,880	128,621
2018	23,620	10,346	17,551	4,388	21,938	256,818	106,682
2019	24,045	10,532	17,866	4,467	22,333	279,151	84,349
2020	24,478	10,721	18,188	4,547	22,735	301,886	61,614
2021	24,919	10,914	18,515	4,629	23,144	325,031	38,470
2022	25,367	11,111	18,849	4,712	23,561	348,591	14,909
2023	**25,824**	**11,311**	**19,188**	**4,797**	**23,985**	**372,577**	**0**
2024	26,289	11,514	19,533	4,883	24,417	396,993	0
2025	26,762	11,722	19,885	4,971	24,856	421,850	0
2026	27,244	11,933	20,243	5,061	25,304	447,153	0
2027	27,734	12,147	20,607	5,152	25,759	472,912	0
2028	28,233	12,366	20,978	5,245	26,223	499,135	0
2029	28,741	12,589	21,356	5,339	26,695	525,830	0
2030	29,259	12,815	21,740	5,435	27,175	553,005	0

16 Years Remaining

Table 6.5 - Total Landfill Lifespan (800 kg/m³ Compaction)

Year	Population	Waste	Waste Volume	Cover	Total Volume	Cumulative	Remaining
2006	19,068	8,352	10,440	2,610	13,050	13,050	345,790
2007	19,411	8,502	10,628	2,657	13,285	26,334	332,505
2008	19,761	8,655	10,819	2,705	13,524	39,858	318,982
2009	20,116	8,811	11,014	2,753	13,767	53,625	305,214
2010	20,479	8,970	11,212	2,803	14,015	67,640	291,199
2011	20,847	9,131	11,414	2,853	14,267	81,908	276,932
2012	21,222	9,295	11,619	2,905	14,524	96,432	262,408
2013	21,604	9,463	11,828	2,957	14,786	111,217	247,622
2014	21,993	9,633	12,041	3,010	15,052	126,269	232,571
2015	22,389	9,806	12,258	3,065	15,323	141,592	217,248
2016	22,792	9,983	12,479	3,120	15,598	157,190	201,650
2017	23,202	10,163	12,703	3,176	15,879	173,069	185,771
2018	23,620	10,346	12,932	3,233	16,165	189,234	169,606
2019	24,045	10,532	13,165	3,291	16,456	205,690	153,150
2020	24,478	10,721	13,402	3,350	16,752	222,442	136,397
2021	24,919	10,914	13,643	3,411	17,054	239,496	119,344
2022	25,367	11,111	13,889	3,472	17,361	256,857	101,983
2023	25,824	11,311	14,139	3,535	17,673	274,530	84,310
2024	26,289	11,514	14,393	3,598	17,991	292,521	66,319
2025	26,762	11,722	14,652	3,663	18,315	310,836	48,003
2026	27,244	11,933	14,916	3,729	18,645	329,481	29,359
2027	**27,734**	**12,147**	**15,184**	**3,796**	**18,980**	**348,462**	**10,378**
2028	28,233	12,366	15,458	3,864	19,322	367,784	0
2029	28,741	12,589	15,736	3,934	19,670	387,454	0
2030	29,259	12,815	16,019	4,005	20,024	407,477	0

20 Years Remaining

6.8.3 Temporary Closures

The Mississippi WDS is nearing capacity and should close in 2009 in any event.

Sites can be temporarily 'moth balled' to allow other sites to fill up quickly and be closed.

If Bedford District institutes curbside pickup waste could be directed to one site while other sites are limited to occasional duty.

6.8.4 Recommendation

8.1.1 – The Township should continue to seek improvements to landfill site operations to ensure optimal use of landfill capacity.

8.1.2 – The Township should continue to seek alternative sources of cover material as a cost savings measure, however, alternative covers should be assessed for their potential environmental impacts prior to use.

8.2.1 – The Township of South Frontenac should invest in, or contract for the services of, specialized landfill compaction equipment with the objective of optimizing the remaining landfill capacity. Compaction rates of 800 Kg/m^3 are realistic for larger sites, 600 Kg/m^3 for smaller ones.

6.9 Waste Disposal Site Closures

6.9.1 Current Practice

Partial closures were undertaken at Loughborough and Salem Waste Disposal Sites in 2007. Two sites in Bedford District, Fish Creek and Crow Lake, have been completely closed in recent years.

6.9.2 Analysis

Remaining landfill lifespan has been estimated for all active waste disposal sites and are summarized on **Error! Reference source not found.**.

Waste Disposal Site closures are very expensive and should be planned for. Consideration can be given to converting a site to a waste transfer station.

6.9.3 Recommendations

9.1 – Massassauga WDS is to close in 2009; planning for its closure should commence now.

9.2 – The Township should plan for periodic, partial closures at its larger waste disposal sites to take advantage of reduced environmental impacts.

9.3 – The Township should manage its waste streams to accelerate the closure of sites that have limited capacity

6.10 Management of Closed Waste Disposal Sites

6.10.1 Current Practice

The Waste Management Act of 1970 resulted in licensing of waste disposal sites in Ontario (i.e. the issuance of Certificates of Approval). Prior to 1970 there was no requirement to license landfills.

All of South Frontenac's active waste disposal sites are licensed and are being actively monitored. Monitoring is also ongoing at the following closed waste disposal sites:

- # A380303, **Fish Creek Waste Disposal Site** on Lot 20, Concession II, geographic Township of Bedford (closed in 2004)
- # A380302, **Crow Lake Waste Disposal Site** on Lot 35, Concession VII, geographic Township of Bedford (closed in 2002)
- #A380301, **Burridge Waste Disposal Site** on Lot 19, Concession VI, geographic Township of Bedford (closed 1989)
- #A380304, **Bradshaw Road Waste Disposal Site** on Lot 26, Concession III, geographic Township of Bedford (closed 1974)

The Ministry of the Environment's Waste Disposal Site Inventory of June 1991 lists the following licensed waste disposal sites in South Frontenac Township for which we have limited information :

- A380308, Lot 14, Concession VIII, geographic Township of Bedford
- A380902, Lot 25, Concession XII, geographic Township of Loughborough
- A380903, Lot 3, Concession VII, geographic Township of Loughborough
- A380904, Lot 16-17, Concession VIII, geographic Township of Loughborough
- X 9099, Lot 7, Concession VI, geographic Township of Portland
- A380902, Lot 25, Concession XII, geographic Township of Loughborough

6.10.2 Analysis

Closed waste disposal site still have the potential to impact the environment and should be assessed for potential environmental impacts, particularly in advance of any new develop with in 500 meters.

6.10.3 Recommendation

10.1 – The Township should continue to assess the environmental impacts of recently closed waste disposal sites and implement appropriate mitigation measures.

10.2 – The Township should continue to enforce its Official Plan policies regarding development near waste disposal sites.

6.11 Waste Disposal Site Expansions

6.11.1 Current Practice

No new expansions are planned. Waste management planning that was undertaken for Bedford District in the early nineties proposed eventual closure of all but two sites, Salem and Bradshaw. Property acquired for Salem WDS in the 1990's would permit further expansion of that site in the future.

6.11.2 Analysis

Recent legislation, O.Reg. 101/07, will permit expansions of up to 100,000 m³ without compulsory hearings. 100,000 m³ represents about 10 years of South Frontenac Township's needs.

The Township currently has 345,790 m³ of waste disposal capacity, sufficient to serve Township residents for more than 20 years.

Salem WDS is the best candidate for expansion of all of Bedford District's waste disposal sites.

Portland WDS has been approved for 1,061,590 m³, whereas the current design and operation plan provides for use of only 220,090 m³. Options to access existing approved capacity should take precedence over applications for new capacity.

6.11.3 Recommendation

11.1 – There is no immediate requirement for additional waste disposal capacity in South Frontenac Township. Consumption of available capacity should be monitored. Efforts to establish additional capacity should commence at least five years in advance of existing capacity being consumed.

11.2 – Options to access available approved capacity at Portland WDS and expansion of Salem WDS are options that may be pursued.

6.12 Emerging Technologies

6.12.1 Current Practice

The Township participated in discussions with SALT Inc. regarding on site processing and recycling of existing wastes. There has been no communication from SALT in recent months, it is assumed that the Township's sites do not offer a sufficient economy of scale to provide SALT with a representative pilot project.

The Province of Ontario is preparing a policy statement on waste management planning

6.12.2 Analysis

Many of the more promising technologies require significant volumes of waste to be economical. For example, Plasco Energy's solution requires a minimum of 200 tonnes per day, while South Frontenac generates only 20 tonnes per day.

Earthworx may offer an opportunity to divert organics from the waste stream that is currently being landfills.

6.12.3 Recommendation

12.1 – The Township of South Frontenac should monitor emerging technologies for opportunities to divert, or better manage, its waste stream

12.2 – In particular, the Township of South Frontenac should monitor opportunities to divert organic wastes to a central composting facility. The Township should monitor efforts by neighbouring municipalities to divert organics and efforts by private industry to develop a central composting facility near Westport.

6.13 User Fees

6.13.1 Current Practice

The Township introduced new bag tags in September of 2007. 100 Bag tags were distributed to taxpayers who are assessed a garbage charge, additional tags cost $3.00. The bag tags cost $6,900 to print, about 80 cents per home

In addition to the bag tags there are additional fees for specific items such as tires and large furniture.

6.13.2 Analysis

The fact that residents of South Frontenac have become accustomed to using bag tags is seen as a positive. The use of one tag per bag has advantages over other options, such as "two bags free", in that it simplifies monitoring and control.

There is some statistical data from Storrington that may indicate that the use of garbage tags has led to a reduction in the total tonnage of garbage collected. Other municipalities, such as Loyalist Township, have seen a substantial reduction (up to 30%) in waste disposal requirements since implementing a pay-as-you-throw system.

Bag tags, and particularly pay-as-you-throw programs, have shown immediate and lasting improvements to recycling quantities. Bag tags have proven beneficial in diverting wastes from disposal.

Municipalities often find themselves in competition with neighbouring municipalities for resident's 'waste management business'. Municipalities with low user fees will find that waste from neighbouring municipalities is finding its way into their waste stream.

6.13.3 Recommendation

13.1 – The Township of South Frontenac should continue to require bag tags on all garbage bags, The Township should move towards a standard bag tag that can be used by all residents.

13.2 – The Township should consider changes to its bag tag system with the objective to encourage more recycling and diversion. Consideration should be given to full user pay.

13.3 – Prior to making any significant change to the current bag tag system the Township should determine what system best serves its long term needs and then prepare a transition plan to implement the final system.

6.14 Funding

6.14.1 Current Practice

Currently, costs for waste management services are area rated to the four districts.

Portland district offers a discount to seasonal home owners who, it is assumed, do not use the facilities to the same extent as year round residents.

Storrington District offers curb side collection but only for residential bagged wastes. Commercial and bulky wastes must be taken to the Canadian Waste Transfer Station in Kingston were fees are paid by the user.

6.14.2 Analysis

Waste management costs in South Frontenac in 2007 averaged $85.22 per household in 2007. House hold costs for each district varied between $76.49 and $101.09 per household. Conversion to a single tier waste management system, with the changes recommended in this report, would reduce costs to $84.95 per household as indicated on Table 3.2 above. Per household costs are lower in spite of improved service in Bedford and Storrington Districts.

Waste management revenues averaged $7.10 per household, varying between $0.43 and $15.54 per household for each district. Conversion to a single tier waste management system, with no change to funding programs, would improve revenues to $9.78 per household, as indicated on Table 3.3 above.

The large gap between average costs and average revenues per household indicates significant room to implement user fees. A user fee of $2.00 per bag, for example (and allowing 50 bags per household) would generate $970,000 per year, enough to fund the waste management program with some left over for reserves.

6.14.3 Recommendation

14.1 – The Township should consider changes to its funding model to assign a larger portion of costs to users, via user fees. This will help to keep property tax rates down, while at the same time encouraging diversion

6.15 Public Consultation / Education

6.15.1 Current Practice

The Township does a good job of advising residents of changes to the waste management system through advertising, web sites and inserts in the tax bill. There have been issues however. For example, the recent issuance of new bag tags led to confusion by some residents who had not consumed all of their old tags.

6.15.2 Analysis

Public consultation is an excellent way to inform the public regarding proposed changes to a waste management system. It can increase the "buy in" to a waste management change, improving the potential for success.

Public consultation works best when the participants feel like their input matters. It is important that Council not implement key recommendations until after public input is received.

6.15.3 Recommendation

15.1 - Public consultation regarding this waste management plan is recommended. Township Council should be asked to authorize staff to seek public input. Implementation of key recommendations should be deferred until after the Public has had opportunity for input.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

The Township of South Frontenac chose to undertake a waste management plan study to guide future Councils on how to best manage this important and costly responsibility. The single most important conclusion of this study is a recommendation to end the current practice of area rating waste management in favour of a single, Township wide service. That recommendation has significant impact on the other recommendations that follow.

This study has been guided by the Sustainability Committee, a committee of Council. The Committee has considered options in fourteen areas of waste management, as listed below. It must be noted that the following recommendations might be significantly different had the committee decided to continue with area rating. It should also be noted that, although the recommendations have been identified in fourteen different areas they not independent of each other. For example, the recommendation to provide curb side pick up of recyclables in Bedford District is dependent on a previous recommendation to provide curb side pick up of wastes. Any change to any recommendation has to be evaluated with respect to its impact on other changes.

Section 5.2 below is a listing of all of the recommendations contained in this report.

7.2 Summary of Recommendations

1. Collection

1.1 – Curb side collection should be implemented for all Districts. Curb side collection should be offered were practical to do so. Where access for waste collection vehicles is not sufficient residents will be required to bring their wastes out to an accessible road where they will be responsible for construction/maintenance of containers.

2. Recycling

2.1 – The Township of South Frontenac should continue its arrangement with Kingston Area Recycling Centre to offer superior blue box recycling to its residents.

2.2 – Curb side collection of blue box recyclables should be extended to Bedford District in conjunction with curb side collection of wastes.

3. Composting

3.1 – The current practice of offering rear yard composters for a subsidised price should continue.

3.2 – The Township of South Frontenac should establish a central yard waste composting facility at one of the Township's active waste disposal sites, preferably Portland Waste Disposal Site.

3.3 – The Township should monitor the progress of others with respect to development of a regional organics composting facility, as this might offer the Township another option for diversion of a part of the waste stream.

4. Household Hazardous Wastes

4.1 – The Township of South Frontenac should continue with planning and development for a permanent Household Hazardous Waste Transfer facility at its works garage on Keely Road.

4.2 – Operations should be summer only, at a frequency that is sufficient to satisfy demand.

5. Other Waste Diversion

5.1 – The Township of South Frontenac should continue to divert e-wastes from the waste disposal sites.

5.2 – The Township should monitor planning by Waste Diversion Ontario to take advantage of any opportunities that might develop through that organization.

5.3 – The Township should continue to divert bulky and difficult wastes from the sites. For example, none of the Township sites accept refrigerators. The Township should maintain a listing of firms that can accept certain wastes, such as old refrigerators, to assist residents with their proper disposal.

5.4 – The Township should continue to seek options for recycling of farmer's plastic bail wrap.

5.5 – The Township should encourage the development of reuse centres by volunteer groups.

5.6 – Following adoption of this report the Township will need to develop specific work plans and implementation schedules to achieve 50% diversion from waste disposal.

6. Waste Disposal

6.1 – Wastes generated within the Township of South Frontenac that cannot be diverted from landfilling should be landfilled within South Frontenac.

6.2 – The service area of all sites should be considered to be the entire Township of South Frontenac.

6.3 – Consideration may be given to compensating Districts that contribute more, in the way of assets or reserve funds, to this standardized waste management plan.

6.4 – The Township should manage its waste stream such that sites with least capacity are filled first.

7. Management of Active Waste Disposal Sites

7.1 – The Township of South Frontenac should continue its ongoing program of assessing and monitoring landfill site impacts. Measures to minimize site impacts, such as periodic grading and capping of completed areas of waste disposal, should continue.

7.2 – The Township should continue to manage its waste disposal sites to ensure optimal use of landfill capacity and to minimize environmental impacts.

8. Waste Disposal Site Operations

8.1.1 – The Township should continue to seek improvements to landfill site operations to ensure optimal use of landfill capacity.

8.1.2 – The Township should continue to seek alternative sources of cover material as a cost savings measure, however, alternative covers should be assessed for their potential environmental impacts prior to use.

8.2.1 – The Township of South Frontenac should invest in, or contract for the services of, specialized landfill compaction equipment with the objective of optimizing the remaining landfill capacity. Compaction rates of 800 Kg/m^3 are realistic for larger sites, 600 Kg/m^3 for smaller ones.

9. Waste Disposal Site Closures

9.1 – Massassauga WDS is to close in 2009; planning for its closure should commence now.

9.2 – The Township should plan for periodic, partial closures at its larger waste disposal sites to take advantage of reduced environmental impacts.

9.3 – The Township should manage its waste streams to accelerate the closure of sites that have limited capacity

10. Management of Closed Waste Disposal Sites

10.1 – The Township should continue to assess the environmental impacts of recently closed waste disposal sites and implement appropriate mitigation measures.

10.2 – The Township should continue to enforce its Official Plan policies regarding development near waste disposal sites.

11. Waste Disposal Site Expansions

11.1 – There is no immediate requirement for additional waste disposal capacity in South Frontenac Township. Consumption of available capacity should be monitored. Efforts to establish additional capacity should commence at least five years in advance of existing capacity being consumed.

11.2 – Options to access available approved capacity at Portland WDS and expansion of Salem WDS are options that may be pursued.

12. Emerging Technologies

12.1 – The Township of South Frontenac should monitor emerging technologies for opportunities to divert, or better manage, its waste stream

12.2 – In particular, the Township of South Frontenac should monitor opportunities to divert organic wastes to a central composting facility. The Township should monitor efforts by neighbouring municipalities to divert organics and efforts by private industry to develop a central composting facility near Westport.

13. User Fees

13.1 – The Township of South Frontenac should continue to require bag tags on all garbage bags, The Township should move towards a standard bag tag that can be used by all residents.

13.2 – The Township should consider changes to its bag tag system with the objective to encourage more recycling and diversion. Consideration should be given to full user pay.

13.3 – Prior to making any significant change to the current bag tag system the Township should determine what system best serves its long term needs and then prepare a transition plan to implement the final system.

14. Funding

14.1 – The Township should consider changes to its funding model to assign a larger portion of costs to users, via user fees. This will help to keep property tax rates down, while at the same time encouraging diversion

15. Public Consultation / Education

15.1 - Public consultation regarding this waste management plan is recommended. Township Council should be asked to authorize staff to seek public input. Implementation of key recommendations should be deferred until after the Public has had opportunity for input.

7.3 Implementation

Preparation of this waste management plan has been overseen by the Sustainability Committee. The next step would be to present this report to Township Council with a recommendation that it be subject to public consultation.

The Sustainability Committee should reconsider its recommendations in light of public input. Following further review by the Sustainability Committee, Township Council should be asked to consider a revised list of recommendations for implementation.

E:\PROJECTS\14-150091 South Frontenac WDS 2007\14-150091-12 Waste Management Master Plan\Report\8Apr08 WMMP Report.doc

APPENDIX A

TERMS OF REFERENCE

TOWNSHIP OF SOUTH FRONTENAC

P.O. Box 100
2490 Keeley Road
Sydenham, ON
K0H 2T0

Telephone 376-3900 / 1-800-559-5862
FAX (613) 376-6058

E-mail: sftwp@kingston.net

Waste Management Master Plan Study

TERMS OF REFERENCE

Preamble

I don't think that there would be many arguments about the expectations of Township residents ultimately wanting and expecting the same provision of service levels throughout the Township. This could simply be stated, for example, in the case of waste disposal as a Strategic Goal much like the neighboring Township of Rideau Lakes has done. They are now working towards achieving that goal by completing implementation of curbside pickup throughout the Township as well as undertaking other initiatives that will ultimately ensure a sustainable operation well into the future. They are, for example, providing for longer term protection of their existing landfill sites by devoting a large portion of their garbage to private disposers as they fell that at this point in time it is more cost effective to do so. All costs are equally shared.

The point is that it is very difficult to move forward with any cohesive planning approach to waste handling and disposal unless there is a commitment to do so. Not everything can simply be assessed based upon cost alone. Everyone pays taxes and appreciates there is a cost factor involved in providing services. As for more important considerations in the minds of many taxpayers is that they are being treated equally and have or have access to the same amenities as all other residents within the Township.

At the onset of amalgamation I am sure that there were very valid initial considerations about the desirability of area rating in terms of not creating unnecessary tax burdens on residents of any participating Township. Area rating always has been intended to be an interim measure leading to a fully integrated Township operation. Waste is probably one of the biggest challenges facing the Township today. We should prepare for and protect our ability to deal with this issue well into the future.

General Guidance:

It is the intent that this Study consider waste management both from the perspective of how it is presently being handled on an area rated basis and how it could be managed were the responsibility for waste management to rest with the Township as a whole, It is further expected that any subsequent recommendations concerning waste management issues are fully justified and dealt with fairly. The Study will also provide a strategy that will outline the best methods/practices over the long term (long term plan).

Specifics:

As such, the Township would like the following items to be considered in the development of this Waste Management Master Plan Study:

-If the responsibility for waste management rest directly with the Township as a whole and is not area rated, what are the associated costs and benefits?

- How could the costs of closing existing landfill sites be equally shared by all and how best to accomplish this fairly?

TOWNSHIP OF SOUTH FRONTENAC

P.O. Box 100
2490 Keeley Road
Sydenham, ON
K0H 2T0

Telephone 376-3900 / 1-800-559-5862
FAX (613) 376-6058

E-mail: sftwp@kingston.net

Terms of Reference, Continued

- Should curbside pickup be extended into Bedford District after considering the costs and benefits? This may well have an obvious impact on both the maintenance of the four existing dump sites as well as their use as recycle transfer locations?
- Are there new opportunities for waste diversion such as composting facilities at some selected sites?
- Are there opportunities for existing land fill expansions?
- Would it make sense (aside from what Storrington District is presently doing) to divert some of the waste to outside sources to preserve the existing landfill sites particularly if it can be determined that there is a price advantage of doing so?
- Are there new technologies available we should be exploring such as improved methods of compaction or on site recycling?
- Should we be closing any of the existing landfill sites that have the potential for serious environmental impacts?
- There is some statistical data available from Storringston District that might indicate that the use of garbage tags has led to a reduction in the total tonnage of garbage collected. This should be reviewed and a definitive recommendation be made on the best method of encouraging recycling, ie. Tags or no tags with a bag limit or some other appropriate recommendation?
- Should dump cards be continued to be used and if so, should they be permanent cards good for all landfill sites within the Township?
- How best to finance garbage, household charge?
- Should bag tag charges be used for dump closure purposes only?

APPENDIX B

LIST OF RELEVANT REPORTS

WASTE MANAGEMENT
TOWNSHIP OF SOUTH FRONTENAC

LIST OF REPORTS

Loughborough Waste Disposal Site

"Report on Site Development and Operation Plan" Feb 1984 by J.L. Richards

"Hydrogeological Investigation and Proposed Site Operating Plan" April 1989 by Water and Earth Science Associates

"Waste Disposal Site Operating Plan, Interim Report" Jan 1993, by Frontech Ltd.

"1995 Capacity Update" Jan 1996 by Ainley.

"Report on 2002 Hydrogeological Investigation and Groundwater and Surface Water Monitoring Program, Loughborough Waste Disposal Site, Township of South Frontenac" by Golder Associates, January 2003.

"Township of South Frontenac, Development, Operation and Closure Plan for Loughborough Waste Disposal Site, Certificate of Approval A380901" by TSH dated April 2004.

"Township of South Frontenac, Loughborough Waste Disposal Site, 2003 Air Emissions Report" by TSH dated July 2004. Similar reports were completed for 2004 and 2005.

"Report on 2004 Hydrogeological Investigation and Groundwater and Surface Water Monitoring Program, Loughborough Waste Disposal Site, Township of South Frontenac" by Golder Associates, January 2005.

"Township of South Frontenac, Quotation No. 14-11988, Partial Closure of the Salem Waste Disposal Site and Partial Closure of the Loughborough Waste Disposal Site" August 2005 by TSH

"Township of South Frontenac, Development, Operation and Closure Plan for Loughborough Waste Disposal Site, Certificate of Approval A380901" by TSH dated November 2005 and "**Addendum to Development, Operation and Closure Plan for Loughborough Waste Disposal Site, Certificate of Approval A380901"** March 22, 2006 by TSH

"Township of South Frontenac, Loughborough Waste Disposal Site, Certificate of Approval A380901, 2005 Annual Report" by TSH dated April 2006. Similar reports have been prepared for 2006 and 2007.

"Report on 2005 Monitoring Program, Loughborough Waste Disposal Site, Geographic Township of South Frontenac Ontario" March 2006 by Golder Assoc. Similar reports have been prepared for 2006 and 2007.

"Township of South Frontenac, Development, Operation and Closure Plan for Loughborough Waste Disposal Site, Certificate of Approval A380901" by TSH dated November 2006.

Portland Waste Disposal Site

"Operation and Closure Plan for Township of Portland Solid Waste Disposal Site" Jan 1990 by Ainley

"Township of Portland – Solid Waste Disposal Site – 1995 Capacity Update" Feb 1995 by Ainley.

"Request for Proposal for Hydrogeological Services" Nov 1997 by Ainley.

"1998 Groundwater and Surface Water Monitoring Program" by Golder & Assoc.

"2002 Hydrogeological Investigation and Groundwater and Surface Water Monitoring Program, Portland Waste Disposal Site, Township of South Frontenac" by Golder & Assoc., July, 2003.

"Township of South Frontenac, Development and Operation Plan for Portland Waste Disposal Site, CofA No. A381401" by TSH, October 2004.

"Township of South Frontenac, Portland Waste Disposal Site, Certificate of Approval A380901, 2005 Annual Report" by TSH dated April 2006. Similar reports have been prepared for 2006 and 2007.

"2005 Groundwater and Surface Water Monitoring Program, Portland Waste Disposal Site, Township of South Frontenac"; by Golder & Assoc., April 2006. Similar reports have been prepared for 2006 and 2007.

Bedford Township General

"Township of Bedford, Report on the Existing Bedford Waste Disposal Sites and Candidate Area Selection for Proposed Waste Disposal Site" Sept 1990, TSH

"Search for New Landfill Site, Township of Bedford, 1991 Interim Report" March 1992, TSH

"Search for New Landfill Capacity, Township of Bedford, 1992 Interim Report" March 1993, TSH

"Summary of 1993 Field Work, Township of Bedford" March 1994, TSH

Bradshaw Waste Disposal Site

"Report on Operation of Dump" November 1973, TSH

Burridge (Closed) Waste Disposal Site

"Township of Bedford, Closure Report for the Burridge Waste Disposal Site" dated May 1990, by TSH

"**1991 Status Report, Tender for Closure of Burridge Waste Disposal Site, Contract No. 11049, Township of Bedford"** August 1991 by TSH.

Crow Lake (Closed) Waste Disposal Site

"Township of South Frontenac, Crow Lake Waste Disposal Site Certificate of Approval A380302, Site Closure Plan" April 2006, TSH.

Fish Creek (Closed) Waste Disposal Site

"Township of South Frontenac, Proposed Closure of Fish Creek Waste Disposal Site and Waste Management in General, Report on Public Open House Held on June 19, 2004" July 6, 2004, TSH.

"Township of South Frontenac, Fish Creek Waste Disposal Site Certificate of Approval No. A380303, Closure Plan" October 2004, TSH.

"Township of South Frontenac, Quotation No. 14-11912-7, Closure of the Fish Creek Waste Disposal Site" October 2004, TSH.

"Township of South Frontenac, Fish Creek Waste Disposal Site Certificate of Approval No. A380303, 2005 Post Closure Report" April 2006, TSH.

Massassauga Waste Disposal Site

"Township of South Frontenac, Massassauga Waste Disposal Site, Certificate of Approval No. A380309, Development, Operation and Closure Plan" dated September 2002, by TSH.

"Township of South Frontenac, Massassauga Waste Disposal Site, Certificate of Approval No. A380309, Development, Operation and Closure Plan" dated April 2004, by TSH.

"Township of South Frontenac, Massassauga Waste Disposal Site, 2004 Air Emissions Report" dated June 2005, by TSH.

"Township of South Frontenac, Massassauga Waste Disposal Site, Certificate of Approval No. A380309, Design, Operation and Closure Plan" dated April 2006, by TSH.

Salem Waste Disposal Site

"Township of Bedford, Public Participation and Agency Screening Report for the Proposed Expansion of Salem Waste Disposal Site, Public Open House on June 23, 1994" September 1994, TSH.

"Development and Operation Plan for Proposed 30,000 m^3 Expansion, Salem Waste Disposal Site, Township of Bedford" September 1994, TSH

"Township of South Frontenac, Quotation No. 14-11988, Partial Closure of the Salem Waste Disposal Site and Partial Closure of the Loughborough Waste Disposal Site" August 2005 by TSH

"Township of South Frontenac, Salem Waste Disposal Site, Staging Plan, Addendum to September 1994 Development and Operation Plan" February 2005 by TSH

"Township of South Frontenac, Salem Waste Disposal Site CofA No. A380305, 2004 Annual Report" April 2005 by TSH. Similar reports have been prepared for 2005 through 2007.

APPENDIX C

WORK SHEETS

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

TABLE OF CONTENTS

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 1	**DESCRIPTION:** Collection

Description:

Curb side collection of bagged wastes and blue box recyclables

Current Practice:

Curb Side Collection is offered to residents of Loughborough, Portland and Storrington.
Residents of Loughborough and Portland have option of taking to landfill
Residents of Bedford are required to take their wastes to one of four disposal sites.

Legislation:

Environmental Protection Act
O.Reg. 101/94
Waste Diversion Act

Experience of Others:

Others have successfully implemented curb side collection in rural areas similar to Bedford.

Discussion

Should curb side pickup be extended to Bedford District after considering the costs and benefits?

How will this impact the maintenance of the four existing waste disposal sites and their use as recycle transfer locations?

Is curb side pick up based on "density of housing" feasible?

- Township will not service private lanes
  - Should Township share cost of bins?
- Cottagers are a problem – Sunday drop offs

Residents of private lanes are required to bring their wastes out to a public road. Lane residents are responsible for construction and maintenance of the containers, including litter pickup.

Analysis:

2006 Waste Statistics (tonnes)

	Waste			
	(m3)	(kg/m3)	(T)	%
Storrington			1000	**14%**
Portland	4000	600	2400	**34%**
Loughborough	5040	600	3024	**42%**
Bedford	1120	500	700	**10%**
Total			7124	**100%**

Recommendation:

1.1 – Curb side collection should be implemented for all Districts. Curb side collection should be offered were practical to do so. Where access for waste collection vehicles is not sufficient residents will be required to bring their wastes out to an accessible road where they will be responsible for construction/maintenance of containers.

Implementation:

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 2	DESCRIPTION: Recycling

Description:

Recyclable materials are separated from the waste stream and transported elsewhere for re-processing.

Current Practice:

Curb side pick up is available in Loughborough, Portland and Storrington – two stream
Some separation occurs at Loughborough and Portland Waste Disposal Sites
Bins are provided at four waste disposal sites in Bedford

South Frontenac currently has an agreement with Kingston Area Recycling Center for management of collected materials.

Legislation:

Environmental Protection Act
O.Reg. 101/94 – *municipalities with populations greater than 5,000 must offer blue box program. You can offer blue box only, but if you offer curb side pick up of wastes, you must also offer blue box.*
Waste Diversion Act

Experience of Others:

Public education programs are an important component of recycling programs.

The level of participation is always an issue, some municipalities have gone to clear bags to encourage recycling.

Discussion:

The Township of South Frontenac has contracted with KARC for management of recycleables and is limited in what it can do by that agreement.

Should the Township provide grey boxes to its residents?

Analysis:

2006/07 Recycling Statistics (tonne)

	Recyclables							Diversion Rate
	Fibres	Containers	OCC	Mixed Glass	Total	(T)	%	%
Storr	176920	66810	34300	60670	338700	339	**31%**	**34%**
Portland	165530	57720	37360	44480	305090	305	**28%**	**13%**
Lough	200060	65760	47710	55130	368660	369	**34%**	**12%**
Bedford	38390	18800	17060	12360	86610	87	**8%**	**12%**
Total					1099060	1099	**100%**	**15%**

2006 Recycling Costs

	Population	Recycling			
				Collection/Disposal	
	2006	T	kg/p/day	Cost/person	Cost/T
Storrington	5,523	339	0.17	$ 18.53	$ 38.90
Portland	5,710	305	0.15	$ 12.39	$ 44.65
Loughborough	5,934	369	0.17	$ 11.38	$ 38.41
Bedford	1,901	87	0.12	$ 25.46	$ 52.37
Total	19,068	**Average***	0.16	$ 15.15	$ 41.81

The estimated cost for grey boxes for residents of Loughborough, Portland and Storrington was $60,000.

Recommendation:

2.1 – The Township of South Frontenac should continue its arrangement with Kingston Area Recycling Centre to offer superior blue box recycling to its residents.

2.2 – Curb side collection of blue box recyclables should be extended to Bedford District in conjunction with curb side collection of wastes.

Implementation:

No change to current practice.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 3	**DESCRIPTION:** **Composting**

Description:

Organic wastes can be separated from the waste stream and composted to create a reusable end product.

Current Practice:

Rear yard composters are offered for sale to residents at $30.

Legislation:

Environmental Protection Act
O.Reg. 101/94 – *municipalities with populations greater than 5,000 must offer back yard composters, municipalities of greater than 50,000 must offer leaf and yard waste collection.*

Experience of Others:

74% of Ontario municipalities subsidize the sale of compost bins to their residents.

38% of Ontario municipalities offer centralized compost facilities. Most are leaf & yard waste facilities, Tay Valley also accepts Food Wastes; Serviettes, paper towels and tissues; sawdust, shavings and wood chips

Corcan facility operated at Pittsburgh Institution for several years, closed due to lack of funds.

Central compost facilities can be located at an existing landfill site, or stand alone. MOE approval is required but is not onerous.

Earth Works currently operates a yard waste composting facility in Central Frontenac Township, near Westport. Earth Works has an application pending to convert their site to handle all types of compostabel material. If successful, Earth Works proposal will offer this region another opportunity for waste diversion.

City of Kingston undertook an audit of typical garbage bag waste (September 2001)and found:

- 35% could go into rear yard composter
- 13% could go into blue box
- 21% would be compostable at a centralized facility (such as Corcan or Tay Valley's)

City staff have concluded that 50% diversion can be achieved with existing blue box programs, curb side collection of compostables could increase diversion to 70%

Public education programs are an important component of composting programs.

Discussion:

Need to look at chippers, large vs. small

Analysis:

City of Ottawa (2005) cost to process yard waste was $23.10 per tonne, which was offset by revenues of $4.72 per tonne.

Establishment of a central yard waste disposal facility at an existing waste disposal site will be less costly because it can be supervised by the landfill site attendant.

Capital costs include preparation of the site and purchase of a wood chipper – allow $50,000. Operating costs include periodic turning of the windrows and annual clean outs – allow $20,000 per year. Costs may be off set by sale of material and by preservation of landfill capacity.

Portland Waste Disposal Site is conveniently located on an arterial road and has room for the composting facility, although composting will have to occur on top of the existing waste fill, which means that the operation will need to move from time to time.

Recommendation:

3.1 – The current practice of offering rear yard composters for a subsidised price should continue.
3.2 – The Township of South Frontenac should establish a central yard waste composting facility at one of the Township's active waste disposal sites, preferably Portland Waste Disposal Site.
3.3 – The Township should monitor the progress of others with respect to development of a regional organics composting facility, as this might offer the Township another option for diversion of a part of the waste stream.

Implementation:

Establishment of a central composting facility requires approval by MOE. The sequence of events should be:

- Preparation of proposed site plan and operating plan
- Submit application to MOE and obtain approval
- Acquire equipment and prepare site
- Notify residents of opening.

A reasonable schedule would be to prepare site plans and applications in 2008 with opening planned for summer, 2009.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 4	DESCRIPTION: Household Hazardous Wastes

Description:

Collection and diversion of Household Hazardous Wastes

Current Practice:

Township hosts occasional household hazardous wastes days
Township has plans to develop a HHW transfer station on Keely Road

Legislation:

Environmental Protection Act
Transportation of Dangerous Goods Act
Occupational Health and Safety Act
Household Hazardous Waste Collection Facility Guidelines, MOE, May 1993
Official Plan and Zoning

Experience of Others:

Many municipalities in this area rely on KARC facility. Carlton Place also operates a facility that serves municipalities in that area. Quinte Waste Solutions operates a facility in Belleville for Hastings and Prince Edward Counties.

Township of Lanark Highlands opened a HHW transfer facility at Middleville Waste Disposal Site in 2006. Service area was expanded in 2007 to include Township of Tay Valley. Operation is more cost effective than single day events. Opportunities for reuse and for bulking reduce costs.

Public education programs are an important component of HHW programs.

Discussion:

Township has decided on centralized transfer facility at Keeley Road yard.

WDO has announce a program that will assist municipalities with disposal of certain types of HHW.

Analysis:

KARC Services
- $32 per visit
- Few residents are using this option

One day household hazardous waste event - $20,000
- Two days were required in 2006

HHW transfer facility
- Capital cost $30,000 to $50,000
- Operating costs $3,500
- Annual Clean Out - $8,000 to $10,000

Recommendation:

4.1 – The Township of South Frontenac should continue with planning and development for a permanent Household Hazardous Waste Transfer facility at its works garage on Keely Road.

4.2 – Operations should be summer only, at a frequency that is sufficient to satisfy demand.

Implementation:

1. Apply for Certificate of Approval
2. Construct facility
3. Train operating staff
4. Retain services of disposal firm(s)
5. Notify public and provide information on acceptable wastes
6. Operation to commence summer 2008

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 5	DESCRIPTION: Other Waste Diversion

Description:

Any means other than Recycling, HHW transfer or composting to divert wastes from waste disposal sites.

Current Practice:

Refrigerators, freezers and air conditioners are not accepted at waste disposal sites.
- Can be taken to Thake in Westport

Shingles are not accepted at Loughborough WDS
An agreement to take **e-wastes** has been entered into with Kimco.
- Bins have been set up at Loughborough, Portland and Salem sites.
- Storrington residents to use Loughborough

Legislation:

Environmental Protection Act
Waste Diversion Act
Policy Statement on Waste Management Planning, June 12, 2007 – *Province has set a goal of 60% waste diversion*

Experience of Others:

Municipalities have broad powers to set criteria on what can or cannot be accepted at their waste disposal sites. There are many examples of types of wastes that have been banned, primarily to conserve capacity or to eliminate a problem.

E-Waste
- Waste Diversion Ontario has initiated a plan to divert e-waste from landfills. Phase 1 proposal is to be completed by February 1, 2008.

Re-use centers
- "informal" reuse centers are operated by site attendants at many sites in eastern Ontario
- Township of Wollaston and Township of Lanark Highlands have formalized their operations
    - This is primarily a volunteer run operation

Discussion:

Analysis:

- Electronic waste Diversion is $617.28 per tonne
- Diversion to Waste Management $85.60 per tonne (Storrington Example)
- Landfill capacity can be valued at $51.36 per cubic meter, based on tipping fees at WM.

Recommendation:

5.1 – The Township of South Frontenac should continue to divert e-wastes from the waste disposal sites.

5.2 – The Township should monitor planning by Waste Diversion Ontario to take advantage of any opportunities that might develop through that organization.

5.3 – The Township should continue to divert bulky and difficult wastes from the sites. For example, none of the Township sites accept refrigerators. The Township should maintain a listing of firms that can accept certain wastes, such as old refrigerators, to assist residents with their proper disposal.

5.4 – The Township should continue to seek options for recycling of farmer's plastic bail wrap.

5.5 – The Township should encourage the development of reuse centres by volunteer groups.

Implementation:

For immediate implementation.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 6	**DESCRIPTION:** **Waste Disposal**

Description:

How and where is the waste disposed of?

Current Practice:

Loughborough and Portland operate one landfill each
Bedford operates four sites
Storrington contracts to dispose of waste outside municipality

Legislation:

Environmental Protection Act
O.Reg. 347 – General – Waste Management
O.Reg. 299/94 – *permits expansion of WDS service area to boundaries of South Frontenac*

Experience of Others:

Amieliasburgh Township has historically shipped bulky waste off site to conserve landfill capacity.

Town of Greater Napanee ships everything but bulky wastes to Waste Management – but this is a " host municipality" arrangement.

Township of Lanark Highlands has decided to operate one site at a time, to serve all township residents.

Discussion:

"Would it make sense (aside from what Storrington District is presently doing) to divert some of the waste to outside sources to preserve the existing landfill sites particularly if it can be determined that there is a price advantage of doing so?"

Analysis:

Storrington District currently pays $85.60 per tonne for waste disposal by a private firm.

Landfills in Portland and Loughborough are expected to achieve a compaction rate of 600 kg/m^3. At this rate, each cubic meter equates to $51.36.

Total landfill capacity in Township is 345,790 m^3 (approximately 200,000 tonne). This equates to an asset value of $17.8M.

The value of the landfill capacity has to weighed against the cost of operation and maintenance. The cost benefit is higher when the sites are filled faster. Sites that have been filled and closed are much less costly to maintain than active sites.

Recommendation:

6.1 – Wastes generated within the Township of South Frontenac that cannot be diverted from landfilling should be landfilled within South Frontenac.

6.2 – The service area of all sites should be considered to be the entire Township of South Frontenac.

6.3 – Consideration may be given to compensating Districts that contribute more, in the way of assets or reserve funds, to this standardized waste management plan.

6.4 – The Township should manage its waste stream such that sites with least capacity are filled first.

Implementation:

The Ministry of the Environment should be consulted for confirmation that waste generated within the Township of South Frontenac may be disposed of at any site within South Frontenac. Although it has been determined that the service areas of all sites have been expanded to include the entire Township, the Ministry may have concerns regarding a substantial increase in the rate of fill.

Township Council should be asked to endorse a single waste manage system for the entire Township, eliminating the current area rating.

At the earliest opportunity (taking into account current contracts with private haulers and waste disposal firms) the Township should begin disposing of Storrington waste at Loughborough Waste Disposal Site.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 7	DESCRIPTION: Management of Active Waste Disposal Sites

Description:

Managing remaining capacity and environmental impacts of active waste disposal sites.

Current Practice:

- **Loughborough WDS** has undergone extensive assessment and has a new Certificate of Approval as of November 23, 2006
- **Portland WDS** has undergone extensive assessment and has a new Certificate of Approval as of March 8, 2005.
- **Bradshaw WDS** is currently undergoing an assessment of environmental impacts, current Certificate of Approval is an older type, dated July 25, 1990
- **Green Bay WDS** is currently undergoing an assessment of environmental impacts, current Certificate of Approval is an older type, dated March 31, 1980
- **Salem WDS** underwent extensive assessment and an expansion in the early 90's, Certifcate of Approval was updated as of July 14, 2005
- **Massassauga WDS** was recently assessed, site is almost full. Current Certificate of Approval is an older type, dated March 31, 1980. Next Certificate of Approval will be for Closure.

Legislation:

Environmental Protection Act
O. Reg. 347 – General – Waste Management
O. Reg. 299/94 – permits expansion of WDS service area to boundaries of South Frontenac
O. Reg. 232/98 – comprehensive landfill site standards

Experience of Others:

Ministry of the Environment Abatement staff have been inspecting rural landfill sites throughout Eastern Ontario and issuing instructions that design, operation and monitoring programs be updated to current standards. This has occurred for most sites in South Frontenac (Green Bay is the exception).

Analysis of remaining site life span tends to concentrate on remaining approved capacity, however, it needs to noted that sites may also close due to unacceptable environmental impacts.

Discussion:

Analysis:

Recommendation:

7.1 – The Township of South Frontenac should continue its ongoing program of assessing and monitoring landfill site impacts. Measures to minimize site impacts, such as periodic grading and capping of completed areas of waste disposal, should continue.

7.2 – The Township should continue to manage its waste disposal sites to ensure optimal use of landfill capacity and to minimize environmental impacts.

Implementation:

No change to current practice.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 8.1	**DESCRIPTION:** **Waste Disposal Site Operations - General**

Description:

Operation covers many topics, including hours of operation, security, frequency of cover operations, compaction, and separation of various waste streams.

Current Practice:

Sites are operated in compliance with O. Reg. 347
Hours of operation are published on the Township's web site, sites are secured outside of open hours
Several sites in South Frontenac have been approved for the use of crushed glass as an alternative cover material.

Legislation:

Environmental Protection Act
O. Reg. 347 – General – Waste Management
O. Reg. 232/98 – comprehensive landfill site standards (applies to sites that are greater than 40,000 m3 or approved or expanded after Aug 1, 1998)

Experience of Others:

Other municipalities have implemented different techniques to optimize landfill capacity, such as

- Wood chippers
- Tire shredders
- Security
- Better compaction – see worksheet number 8.2
- Temporary closures – see worksheet number 8.3
- Alternative Cover Material
    - Crushed glass
    - Shredder fluff

Discussion:

"Are there new technologies available we should be exploring such as improved methods of compaction or on site recycling?"

Analysis:

Recommendation:

8.1.1 – The Township should continue to seek improvements to landfill site operations to ensure optimal use of landfill capacity.

8.1.2 – The Township should continue to seek alternative sources of cover material as a cost savings measure, however, alternative covers should be assessed for their potential environmental impacts prior to use.

Implementation:

Cover materials are defined by each site's operating plan, the use of alternative covers typically requires amendment to the site's Certificate of Approval.

engineers
architects
planners

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 8.2	**DESCRIPTION:**	**Waste Disposal Site Operations - Compaction**

Description:

Good compaction allows an operator to pack more waste into the same volume.

Current Practice:

Compaction effort varies at each site, none of the sites use specialized compaction equipment

Legislation:

O. Reg. 347 – General – Waste Management
O. Reg. 232/98 – comprehensive landfill site standards (applies to sites that are greater than 40,000 m3 or approved or expanded after Aug 1, 1998)

Experience of Others:

Sites with no compaction are typically assumed to be 400 kg/m^3
Typical compaction for a small rural site is 500 kg/m^3
Loyalist Township has been able to achieve compaction rates of 750 kg/m^3 with a heavy rubber tire loader
Many sites have achieved better compaction with periodic visits by Tackaberry Construction's landfill compactor.

Discussion:

Analysis:

Landfill capacity can be valued at $51.36 per cubic meter, based on tipping fees at WM.

Compaction Cost:

- Purchase – 2002 used Cat 816F - $210,000

- Tackaberry Rental
    - $165 per hour, minimum 4 hours, plus $135 float
    - Allow:
        - Small sites 8 times per year, 4 hour per site
        - Large sites once every two weeks, 8 hour per site
        - Annual cost
            - Small sites $25,440
            - Large sites $69,840
- Payback (examples)
    - Improving compaction at Loughborough WDS from 600 kg/m^3 to 750 kg/m^3 would save 1,000 m^3 per year, equivalent value is $51,360
    - Improving compaction at Salem WDS from 500 kg/m^3 to 600 kg/m^3 would save 170 m^3 per year, equivalent value $8,700.

Recommendation:

8.2.1 – The Township of South Frontenac should invest in, or contract for the services of, specialized landfill compaction equipment with the objective of optimizing the remaining landfill capacity. Compaction rates of 800 Kg/m^3 are realistic for larger sites, 600 Kg/m^3 for smaller ones.

Implementation:

This recommendation should be implemented as quickly as budgets will allow, no approvals are required.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 8.3	**DESCRIPTION:**	**Waste Disposal Site Operations – Temporary Closures**

Description:

Sites can be temporarily "moth balled" to allow other sites to operate at a higher level.

Current Practice:

All available sites in South Frontenac are in use.

Legislation:

Environmental Protection Act
O. Reg. 347 – General – Waste Management
O. Reg. 299/94 – permits expansion of WDS service area to boundaries of South Frontenac

Experience of Others:

The Township of Lanark Highlands is in the process of temporarily closing five of its six waste disposal sites, their intent is to provide better compaction and more efficient cover operations at one site, thus optimizing capacity. Closed sites will be operated as waste transfer stations (Lanark Highlands does not offer rural residents curb side pickup).

North Grenville also tried this, but they are finding it difficult to overcome public opposition to reopening the site that was closed. The closed site was not used as a transfer station and basically set idle.

Discussion:

Is this an option that should be considered for Bedford District?
Is this an option that should be considered for the entire Township?

Analysis:

Mississippi WDS is nearing capacity and should close in 2009 in any event.

Other changes proposed in this waste management plan will allow the municipality more flexibility to direct wastes to the sites that it wishes to fill first – for example, Storrington waste can be directed to Loughborough. Curb side wastes in Bedford District can be directed to one site and other sites can be limited to occasional duty, to keep operating costs down.

Recommendation:

Implementation:

Implementation of this recommendation will follow Council's endorsement of a single, Township wide waste system and following implementation of curb side pick up in Bedford District.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 9	**DESCRIPTION:**	**Waste Disposal Site Closures**

Description:

Planning for closure of existing waste disposal sites.

Current Practice:

Partial closures have been undertaken at Loughborough and Salem WDS's
Fish Creek and Crow Lake have been closed in recent years.

Legislation:

Environmental Protection Act
O.Reg. 347 – General – Waste Management
Provincial Water Quality Objectives
Guideline B-7 – The Reasonable Use Concept
Guideline B-9 – Resolution of Groundwater Interference Problems

Experience of Others:

Discussion:

"Should we be closing any of the existing landfill sites that have the potential for serious environmental impacts?"

Should closed sites be converted to transfer stations?

Analysis:

Waste disposal site closures are very expensive and should be planned for.
Consideration can be given to converting site to a waste transfer station.
Massassauga Waste Disposal Site should close in 2009, planning for closure should start this year.

Table No. 6
Township of South Frontenac

Landfill Site Closure Costs

Site	Years to Closure	Closure Cost	Reserves	Net	Average Cost per year
Loughborough	**14**	**420,000**	**385,000**	**35,000**	**2,500**
Portland	**39**	**1,100,000**	**450,000**	**650,000**	**16,667**
Salem	17	160,000			9,412
Massassauga	2	80,000			40,000
Bradshaw	30	100,000			3,333
Green Bay	25	120,000			4,800
Bedford District	**19**	**460,000**	**68,000**	**392,000**	**20,632**
South Frontenac	**16**	**1,980,000**	**903,000**	**1,077,000**	**67,313**

Recommendation:

9.1 – Massassauga WDS is to close in 2009; planning for its closure should commence now.

9.2 – The Township should plan for periodic, partial closures at its larger waste disposal sites to take advantage of reduced environmental impacts.

9.3 – The Township should manage its waste streams to accelerate the closure of sites that have limited capacity

Implementation:

Application should be made for closure of Massassauga Waste Disposal Site. Public consultation should take place in 2008, following completion of this plan. Closure will take place in 2009.

Implementation of other recommendations should follow Council adoption of this plan.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 10	**DESCRIPTION:** **Management of Closed Waste Disposal Sites**

Description:

Management of Closed Sites

Current Practice:

Sites that have been recently closed (i.e. Fish Creek and Crow Lake) will have a post closure monitoring plan.

Older sites have been identified in the Townships Official Plan and appropriate development policies have been implemented.

Legislation:

Environmental Protection Act
O.Reg. 347 – General – Waste Management
Official Plan and Zoning By-Laws

Experience of Others:

Discussion:

Analysis:

"Should we be closing any of the existing landfill sites that have the potential for serious environmental impacts?"

Recommendation:

10.1 – The Township should continue to assess the environmental impacts of recently closed waste disposal sites and implement appropriate mitigation measures.

10.2 – The Township should continue to enforce its Official Plan policies regarding development near waste disposal sites.

Implementation:

No change to current practice.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 11	**DESCRIPTION:**	**Waste Disposal Site Expansions**

Description:

An expansion is an increase in the approved capacity of an existing waste disposal site

Current Practice:

No expansions are planned

Legislation:

Environmental Protection Act
Environmental Assessment Act
O.Reg. 347 – General – Waste Management
O. Reg. 232/98 – comprehensive landfill site standards (applies to sites that are greater than 40,000 m3 or approved or expanded after Aug 1, 1998)
O.Reg 101/07 – permits expansions to 100,000 m^3 without an EA
Official Plan and Zoning

Experience of Others:

Bedford Township successfully expanded Salem WDS by 29,000 cm in 1995. Sufficient land was acquired such that future expansions may be considered.
Lanark Highlands successfully expanded McDonalds Corners WDS by 40,000 cm in 1998
Stone Mills has an application before MOE to expand Sheffield WDS by 40,000 cm

All of the above sites service less that 1,500 residents.

Municipalities have generally found that MOE approvals staff are more diligent in imposing the requirements of O. Reg. 232/98 to expansion applications. This means that many existing sites are not viable candidates for expansion.

Discussion:

"Are there opportunities for existing landfill expansions?"

Analysis:

The Township currently has 345,790 m^3 of waste disposal capacity. This is sufficient capacity to serve Township residents for more than 20 years with minimal improvement to current waste management practices. No additional landfill capacity is required at this time.

Portland WDS has been approved for 1,061,590 m^3 whereas the current design and operation plan provides for use of only 220,090 m^3. Options to access existing approved capacity should take precedence over applications for new capacity.

Salem WDS is the best candidate for expansion of all of Bedford District's waste disposal sites.

Recommendation:

11.1 – There is no immediate requirement for additional waste disposal capacity in South Frontenac Township. Consumption of available capacity should be monitored. Efforts to establish additional capacity should commence at least five years in advance of existing capacity being consumed.

11.2 – Options to access available approved capacity at Portland WDS and expansion of Salem WDS are options that may be pursued.

Implementation:

No action, beyond ongoing monitoring of Ministry approvals, required at this time.

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 12	**DESCRIPTION:** **Emerging Technologies**

Description:

New methods for management of waste

Current Practice:

Discussions have been held with SALT Inc. regarding on site processing and recycling of existing wastes.

The Province of Ontario is preparing a policy statement on waste management planning

Legislation:

Environmental Protection Act
O.Reg. 101/07 *permits pilot testing prior to completing an EA*

Experience of Others:

Ottawa Trail Road Facility – Plasco Energy Group

- Minimum 200 tonne per day

Williamson County, Tennessee – SALT Inc.

- Aerobic Landfill Project

Earthworx

- Earthworx s developing an organics composting facility near Westport.

Discussion:

"Are there new technologies available we should be exploring such as improved methods of compaction or on site recycling?"

Analysis:

Some of the better technologies require significant volumes to be economic.

For example, Plasco Energy's solution requires a minimum of 200 tonne per day vs. South Frontenac waste generation of 20 tonne per day.

Earthworx may offer an attractive opportunity to divert organics from the waste stream that is currently being landfilled.

Recommendation:

12.1 – The Township of South Frontenac should monitor emerging technologies for opportunities to divert, or better manage, its waste stream

12.2 – In particular, the Township of South Frontenac should monitor opportunities to divert organic wastes to a central composting facility. The Township should monitor efforts by neighbouring municipalities to divert organics and efforts by private industry to develop a central composting facility near Westport.

Implementation:

engineers
architects
planners

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 13	DESCRIPTION: User Fees

Description:

User Fees

Current Practice:

100 Bag tags are distributed to taxpayers who are assessed a garbage charge
New tags as of September 1, 2007
Additional tags cost $3.00
There are specific fees for items like tires and large furniture.

Legislation:

Environmental Protection Act
Municipal By-Law

Experience of Others:

Loyalist Township has achieved 33% reduction in residential waste quantities in five years after pay-as-you-throw (PAYT) implemented compared to five years prior. Blue Box recycling accounts for 30% of the reduction.

Loyalist has also seen a significant reduction in site usage due to high tipping fees for industrial and commercial users.

Other municipalities have found that user pay systems divert another 8% to 13% without enhancements to blue box or curb side collection of organic waste systems.

Many municipalities use user fees to encourage good waste management by their residents.

Discussion:

"There is some statistical data available from Storrington District that might indicate that the use of garbage tags has led to a reduction in the total tonnage of garbage collected. This should be reviewed and a definitive recommendation be made on the best method of encouraging recycling, I.e. Tags or no tags with a bag limit or some other appropriate recommendation?"

"Should dump cards be continued to be used and if so, should they be permanent cards good for all landfill sites within the Township?"

Analysis:

Bag tags cost $6,900 - 80 cents per home

Municipalities often find themselves in competition with neighbouring municipalities for resident's "waste management business." Municipalities with low user fees will find that waste from neighbouring municipalities is finding its way into their waste stream.

Recommendation:

13.1 – The Township of South Frontenac should continue to require bag tags on all garbage bags, The Township should move towards a standard bag tag that can be used by all residents.

13.2 – The Township should consider changes to its bag tag system with the objective to encourage more recycling and diversion. Consideration may be given to full user pay.

13.3 – Prior to making any significant change to the current bag tag system the Township should determine what system best serves its long term needs and then prepare a transition plan to implement the final system.

Implementation:

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 14	**DESCRIPTION:** **Funding**

Description:

The method of assessing costs for waste management services.

Current Practice:

Cost is area rated to four districts.

- Portland offers discount to cottagers
- Commercial and bulky wastes generators in Storrington must make their own arrangements for disposal.

Legislation:

Municipal Act

Experience of Others:

Discussion:

"If the responsibility for waste management rest directly with the Township as a whole and is not area rated, what are the associated costs and benefits?"

"How could the costs of closing existing landfill sites be equally shared by all and how best to accomplish this fairly?"

"How best to finance garbage, household charge?"

"Should bag tag charges be used for dump closure purposes only?"

Analysis:

2007 Expenditures & Revenues (source: Mark Segsworth)

District		Collection	Disposal	Monitoring/ Report	Bag Tags	Total Garbage	Recycling
LOUGHBOROUGH	EXP	76,663	77,872	36,252	4,123		127,270
	REV		-21,150		-2,337		-83,774
	NET	**76,663**	**56,722**	**36,252**	**1,786**	**171,423**	**43,496**
PORTLAND	EXP	93,955	64,061	41,260	3,400		115,987
	REV		-32,050		-1,663		-64,364
	NET	**93,955**	**32,011**	**41,260**	**1,737**	**168,963**	**51,623**
STORRINGTON	EXP	111,353	83,987		4,283		145,007
	REV				-1,095		-90,462
	NET	**111,353**	**83,987**	**0**	**3,188**	**198,528**	**54,545**
BEDFORD							
BRADSHAW			26,461	31,149			
GREEN BAY			16,839	31,835			
MASSASSAUGA			9,622	10,326			
SALEM			27,263	15,371			
CLOSED				15,643			
	EXP				3,741		41,913
	REV		-10,432				-30,881
	NET		**69,753**	**104,324**	**3,741**	**177,818**	**11,032**
TOTAL		**281,971**	**242,473**	**181,836**	**10,452**	**716,732**	**160,696**

- Waste management costs in South Frontenac in 2007 averaged $85.22 per household. House hold costs for each district varied between $76.49 and $101.09 per household. Conversion to a single tier waste management system, with the changes recommended in this report, would reduce costs to $84.95 per household. Per household costs are lower in spite of improved service in Bedford and Storrington Districts.

- Waste management revenues averaged $7.10 per household, varying between $0.43 and $15.54 per household for each district. Conversion to a single tier waste management system, with no change to funding programs, would improve revenues to $9.78 per household.

Recommendation:

14.1 – The Township should consider changes to its funding model to assign a larger portion of costs to users, via user fees. This will help to keep property tax rates down, while at the same time encouraging diversion

Implementation:

TOWNSHIP OF SOUTH FRONTENAC
WASTE MANAGEMENT MASTERPLAN

ITEM: 15	**DESCRIPTION:**	**Public Consultation / Education**

Description:

Public Consultation and Education

Current Practice:

The Township does a good job of advising residents of changes to the waste management system through advertising, web sites and inserts in the tax bill.

Legislation:

The Ministry of the Environment can require a public meeting, in lieu of a full hearing, for significant changes to operation of a waste disposal site. For example, the ministry usually requires a public meeting in advance of a site closure.

Experience of Others:

Public consultation is an excellent way to inform the public regarding proposed changes to a waste management plan. It can increase the "buy in" to a waste management change, improving the potential for success.

Public consultation works best when the participants feel like their input matters. It is important that Council not implement key recommendations until after public input is received.

Discussion:

Analysis:

Recommendation:

15.1 - Public consultation regarding this waste management plan is recommended. Township Council should be asked to authorize staff to seek public input. Implementation of key recommendations should be deferred until after the Public has had opportunity for input.

Implementation: