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Date: May 2012

Project Number:
60224779

MUNICIPALITY OF TEMAGAMI

SOLID WASTE MANAGEMENT PLAN

Municipality of Temagami

Solid Waste Management Plan

Prepared by:

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May 2, 2012

Patrick Cormier
Chief Administrative Officer
Municipality of Temagami
7 Lakeshore Drive
P.O. Box 220
Temagami, ON P0H 2H0

Dear Mr. Cormier:

Project No: **60224779**

Regarding: **Solid Waste Management Plan**

We are pleased to offer the following report to document the recommendations of the Solid Waste Management Plan Steering Committee. This report is an update of the "Final Draft" that was issued in February and incorporates changes that the Steering Committee has made in response to comments received during the public consultation phase.

The Solid Waste Management Plan Steering Committee will recommend that Council receive this report to guide Council and staff on waste management initiatives over the next twenty years. The recommendations of this report are to be brought back to Council for approval on an individual basis. Implementation of many recommendations will also be subject to budget approval.

AECOM has enjoyed working with the Municipality of Temagami on this important assignment. We hope that we can continue to work with you though the implementation phase.

Sincerely,
AECOM Canada Ltd.

Bruce McMullan
Senior Project Manager
Manager, Cobalt Office
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GML:ms

Revision Log

Revision #	Revised By	Date	Issue / Revision Description

AECOM Signatures

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4 MAY 12
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PROVINCE OF ONTARIO

Report Reviewed By:

Bruce McMullan
Co-Project Manager
Manager, Cobalt Office

Executive Summary

Background

The Municipality of Temagami has undertaken a thorough review of its current waste management practices. The purpose of this review is to identify opportunities to optimize waste management programs; to increase waste diversion rates; to optimize operation of the waste disposal sites; and to build in flexibility to take advantage of future opportunities to reduce waste.

Recommendations of the Solid Waste Management Plan are to be environmentally sound; compliant with regulations; feasible and easy to implement; cost effective and affordable. The study has evaluated current practices, identified potential improvements, and established feasible goals in the following areas:

1. Garbage Collection	2. Waste Transfer Stations	3. Recycling Collection & Processing	4. Composting
5. Household Hazardous Waste	6. E-Waste	7. Other Waste Diversion	8. Bear Island
9. Construction and Demolition Waste	10. Management of Active Waste Sites	11. Waste Site Operations	12. Waste Disposal Capacity Requirements
13. Waste Disposal Site Expansion	14. Waste Site Closures	15. Management of Closed Waste Sites	16. Municipal Operations
17. Emerging Technologies	18. Diversion Initiatives	19. User Fees	20. Joint Initiatives
21. Public Involvement/ Education	22. Other	23. Waste Management Program Review	

Problem Statement

"The Municipality of Temagami requires a strategy to effectively manage up to 20,000 tonnes of waste over the next twenty years."

The Process

This report is to document the plan as determined by the Solid Waste Management Plan Steering Committee. The steering committee has included council representation, municipal staff and consultants.

Public Consultation

Targeted public consultation and stakeholder feedback has been incorporated in the Plan's preparation. A public information center that was held on March 8, 2012 resulted in feedback that prompted the following changes to the Solid Waste Management Plan:

- ***Changes to status quo at Lake Temagami Access Point Waste Transfer Station*** – The Committee has changed its recommendation that this transfer station be fenced, secured and supervised when open. In response to numerous comments the Committee is recommending several improvements and that the transfer station be allowed to continue to operate on a twenty four hour basis. Operation of the transfer station is to be re-assessed after one year.

- ***Changes to status quo at Temagami Waste Transfer Station*** – The Committee has changed its recommendation that this transfer station be relocated to a fenced compound at the public works garage. In response to numerous comments the Committee is recommending that this transfer station be closed. The Municipality will work with Lake residents to identify alternative arrangements.

- ***Diversion Initiatives*** – The Committee has identified three additional recommendations for improvements to existing waste diversion programs.

The purpose of this document is to guide and inform Municipal Council and staff over the next twenty years. The Steering Committee will recommend that Council receive this report.

Recommendations

The Solid Waste Management Plan Steering Committee has five significant recommendations for Council's consideration:

1. ***Changes to status quo at Lake Temagami Access Point Waste Transfer Station -*** The Steering Committee recommends the following on a one year trial basis:
    - The site will remain unfenced.
    - Additional effort will be put into education, improved signage and enforcement.
    - An attendant will be provided for 40 hours per week during the summer months (about 10 weeks). Duties of the attendant will be well defined.
    - User groups will be requested to coordinate and provide one recommendation for the attendant's hours of work.
    - User groups will be requested to provide a volunteer attendant for ½ day per week during the off-months.

    The Committee recommends that the Municipality assess operation of the site again one year after the improvements are implemented. If non-compliance issues (as identified by the Ministry of the Environment) persist then further measures will be required. Further measures to be considered will include securing the site and limiting hours of operation.

2. ***Closure of Temagami Waste Transfer Station*** - The Steering Committee recommends the following on a one year trial basis:
    - The transfer station will be closed.
    - The Municipality will work with Lake residents to identify alternative arrangements.

    The Committee recommends that the Municipality assess the long term need for a permanent waste transfer station again after one year. A decision on re-opening or permanent closure of the transfer station should be made at that time.

3. ***Apply for expansion of Temagami Waste Disposal Site –*** There is sufficient approved capacity within the Municipality's three active waste disposal sites to serve Municipal needs for the next twenty years. However, most of the capacity is at the Marten River site which is not a convenient location for most Temagami residents. The very busy Temagami site, on the other hand, is at or near capacity. Preparation of an application to expand the Temagami site should commence immediately.

    Briggs Waste Disposal Site is estimated to be full in eleven years. Preparations to expand Briggs Waste Disposal Site should commence three years in advance of it being full to ensure that the expansion is in place in time.

4. ***Improve operations at waste disposal sites –*** The Municipality of Temagami should arrange for good compaction of its sites, either by purchasing specialized landfill compaction equipment or by contracting for this service. The payback on this cost is longer lifespans which will defer the cost of capping a site and applications for expansion.

   Bears are a nuisance at all three of Temagami's waste disposal sites and at the waste transfer stations. The Municipality should take advantage of advice and Bear Wise funding offered by the Ontario Ministry of Natural Resources to help solve this issue.

5. ***Charge tipping fees for construction and demolition waste*** –Tipping fees on construction and demolition wastes should be reinstated as soon as supervision of the waste transfer stations is implemented.

6. ***Reduce frequency of curbside collection*** – Reducing the collection of commercial wastes from twice weekly to once a week in the off season is recommended.

In addition to the above, the Waste Management Plan Steering Committee recommends:

7. The Municipality should continue negations with MNR to take ownership of Briggs and Marten River Waste Disposal Sites.
8. The Municipality should continue negotiations with Temagami First Nations for disposal of Bear Island waste at Briggs Waste Disposal Site.
9. The Municipality should undertake a review of its current practice of retaining two agencies for collection and processing of blue box recyclables. There might be an opportunity to improve the level of subsidy if everything were under one contract.
10. The Municipality should continue discussions with Ontario Tire Stewardship towards providing residents with free disposal of used tires. The Municipality should consider entering into an agreement with Ontario Electronic Stewardship for disposal of e-wastes.
11. The Municipality should be constantly looking for ways to improve waste diversion. The following waste diversion initiatives are recommended for immediate implementation:
    - A dedicated bin for cardboard should be added at the Lake Temagami Access Point Waste Transfer Station.
    - The Municipality will encourage re-use initiatives such as community garage sales organized by residents.
    - The Municipality will provide residents with more information regarding diversion initiatives and practices including composting at home.
12. Over time, the Municipality should consider the following initiatives to encourage diversion of recyclable materials from its waste disposal sites (the following initiatives not proposed for implementation in the near term):
    - User fees (bag tags for example) on all waste disposal – user fees have been shown to be an effective means to encourage residents and ratepayers to recycle.
    - Prohibitions on disposal of materials, such as blue box recyclables, that do not need to be disposed of in the waste disposal site.
    - Required use of clear plastic garbage bags – clear garbage bags, in conjunction with a prohibition on recyclable materials, has been shown to encourage diversion.
13. The Municipality should be constantly looking for ways to improve its public involvement and education programs.
14. Municipal staff should undertake annual reviews of this program. Every fifth year staff should undertake a more thorough review equivalent to the review that has gone into this report.

The following implementation plan is proposed.

Table EX.1 - Implementation Plan

Item	Timeframe
1. Changes to Status Quo at Lake Temagami Access Point Waste Transfer Station • Complete site improvements • Full implementation	 2012/13 Summer 2013
2. Close Temagami Waste Transfer Station	Fall 2012
3. Apply for Expansion of Temagami Waste Disposal Site	Immediate
4. Improve Site Operations	Immediate
5. Impose Tipping Fees on Construction and Demolition Wastes	Spring 2013
6. Reduce Frequency of Curbside Collection of Commercial Wastes	Fall 2012
7. to 14. All Other Initiatives	Ongoing

Summary

The Waste Management Plan Steering Committee will recommend that Council receive this report to guide Council and staff on waste management initiatives over the next twenty years. The recommendations of this report are to be brought back to Council for approval on an individual basis. Implementation of many recommendations will also be subject to budget approval.

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1. Introduction

This Solid Waste Management Plan (SWMP) is a comprehensive assessment of current waste management practices in the Municipality of Temagami and a guide for changes and improvements. While many practices will remain unchanged, initiatives have been proposed to improve the efficiency, security and sustainability of the service. Some recommendations are immediate, while others will guide the Municipality's decision making process over the next five to twenty years. This strategy is intended to be reviewed annually with formal updates every five years.

2. Overview of Planning Process

This Solid Waste Management Plan commenced with a project initiation meeting on October 6, 2011. The creative process has been guided by a steering committee consisting of staff and council members of the Municipality of Temagami, with assistance from consultants of AECOM Canada Ltd. Targeted public consultation and stakeholder feedback has been incorporated in the strategy preparation.

This report is to document the plan as determined by the Steering Committee. The Steering Committee will recommend that Council receive the final report.

3. Technical Memorandums

Consultants retained by the Municipality prepared numerous technical memorandums to assist the Steering Committee in its decision making. The memos contain greater detail, on specific topics, than is contained in this report. At the Committee's request, the following technical memorandums have been attached as Appendix A:

M1 – Briggs Site
M2 – Marten River (Sisk) Landfill
M3 – Temagami (Strathy) Landfill
M4 – Waste Transfer Stations
M5 – Waste Management Needs Assessment
M6 – Waste Disposal Site Key Statistics
M7– Waste Disposal Site Operations - Compaction
M9 – User Fee Comparison
M10 – Cost Impacts
M11 – Recycling Service Providers

The reader is cautioned that the Technical Memorandums are typically literature reviews and are not intended to be an exhaustive analysis of the topic discussed.

4. Study Objectives

The objectives of this SWMP are: to guide the Municipality of Temagami on how to optimize and sustain its waste management program; to increase waste diversion rates; to optimize operation of the waste disposal sites; and to provide flexibility to take advantage of future opportunities to further reduce the municipality's total waste output.

Recommendations of the SWMP are to be:

- Environmentally sound
- Compliant with regulations
- Feasible and easy to implement
- Cost effective and affordable

The study has included an evaluation of current practices and future needs, establishment of feasible goals, and identification of improvements to the efficiency and effectiveness of the Municipality's waste management program.

The recommendations made in the SWMP are intended to inform Municipal Council and staff, and to assist with future decision making processes, which will include planning, budgeting, and public participation.

5. Study Area

5.1 General

The primary focus of this study is the Municipality of Temagami and its waste management program. There are numerous components to this program, from curbside collection to waste site management to public education. All components are interrelated and need to be examined as such.

The Municipality operates nine waste management facilities:

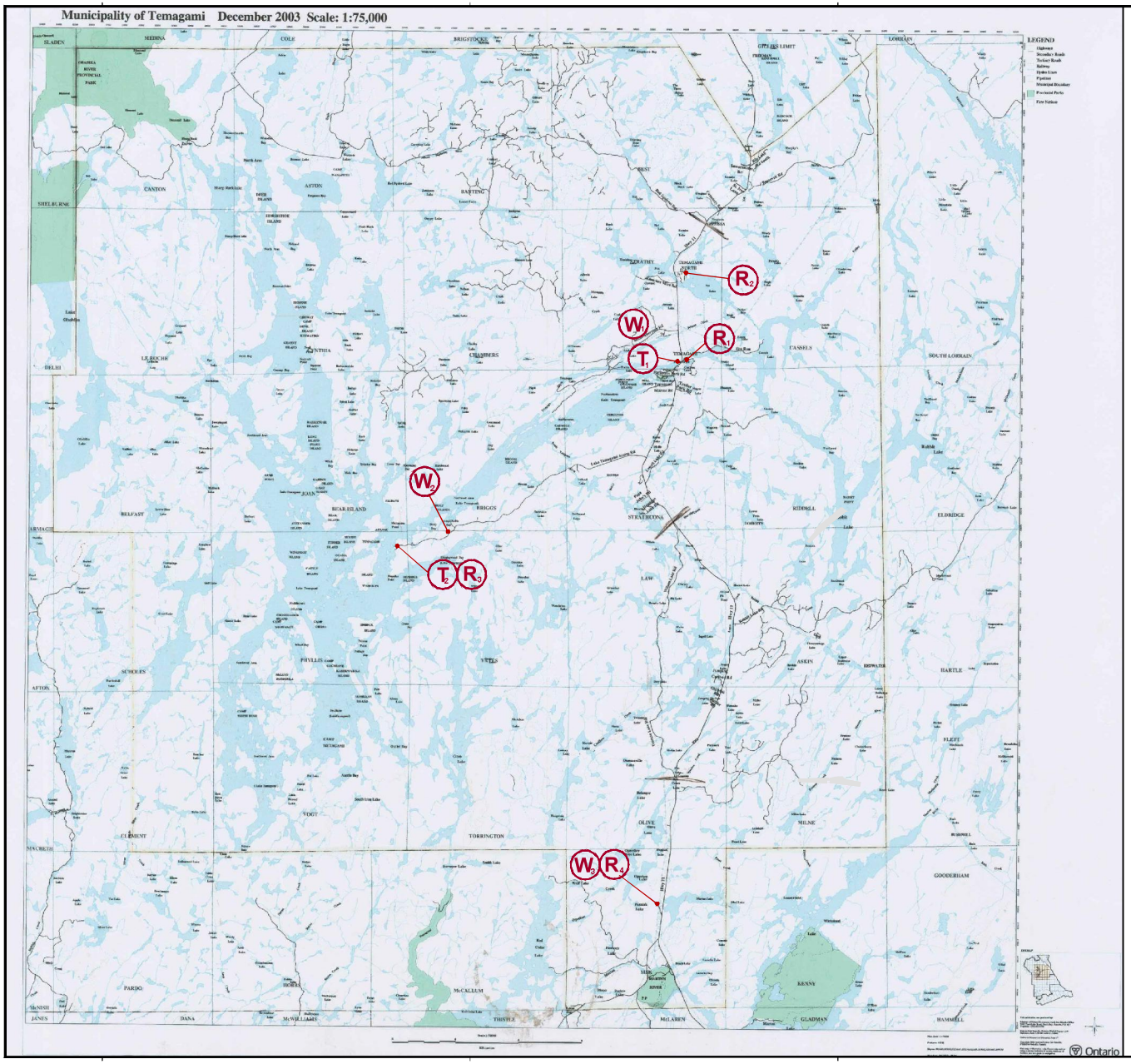
- Three waste disposal sites – Briggs, Marten River and Temagami;
- Two waste transfer stations at Temagami and at Lake Temagami Access Point; and
- Four recyclable wastes transfer stations at Temagami, Temagami North, Lake Temagami Access Point and Marten River Waste Disposal Site.

Figure 1, on the following page, is a map of Temagami with the waste management facilities indicated.

The Municipality of Temagami maintains most of the waste management services offered to residents within its municipal boundaries. The Municipality has delegated responsibility for some services to others, as is the case for blue box recycling. The Municipality may also offer services to others, such as Bear Island.

Within the Municipality there are numerous sectors, each with their own requirements for waste and recycling management. The three largest sectors are the seasonal and permanent residents and commercial establishments within the following communities:

- Villages of Temagami and Temagami North
- Lake Temagami, and
- Rural residents.



Legend

- R — Recyclables Transfer Station
- T — Waste Transfer Station
- W — Waste Disposal Site

- R_1 Temagami Recyclables Transfer Station
- R_2 North Temagami Recyclables Transfer Station
- R_3 Lake Temagami Access Point Recyclables Transfer Station
- R_4 Marten River Recyclables Transfer Station
- T_1 Temagami Waste Transfer Station
- T_2 Lake Temagami Access Point Waste Transfer Station
- W_1 Temagami Waste Disposal Site
- W_2 Briggs Waste Disposal Site
- W_3 Marten River Waste Disposal Site

NORTH

NO.	DATE	BY	ISSUES / REVISIONS

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CLIENT:
MUNICIPALITY OF TEMAGAMI

PROJECT:
SOLID WASTE MANAGEMENT PLAN

DRAWING:
WASTE MANAGEMENT FACILITIES

DRAWN BY:	CHECKED BY:	PROJECT No.:
CGD	GML	60224779
DESIGNED BY:	APPROVED BY:	DRAWING No.
GML	GML	FIG. 1
SCALE:	DATE:	
N.T.S	FEBRUARY 2012	

5.2 Community Characteristics

The Municipality of Temagami is located in Northern Ontario; it includes the communities of Temagami, North Temagami, and Marten River. Temagami is also home to a large community of seasonal and permanent residents on the islands in Lake Temagami. The area is home to many outdoor activities such as canoeing, back country hiking, camping, fishing, and snowmobiling.

In 2006, 934 permanent residents lived in 405 year round dwellings, an average of 2.3 residents per dwelling. There were 920 seasonal dwellings. For this review, we have assumed that each seasonal dwelling is occupied by three residents for an average of four months per year. Thus each seasonal dwelling represents the equivalent of one year round resident.

The average rate of growth for year round residents was 0.9% between 2001 and 2006. For purposes of projecting future waste quantities we will assume a growth rate of 1.0% for both permanent and seasonal residents. *2011 census data that was being released just as this report was being written has indicated a negative growth rate. We will continue to assume a small positive growth rate to ensure adequate capacities.*

6. Problem Statement

Management of solid waste, including the diversion of recyclable materials, is a key responsibility of municipal governments in Ontario. The factors that facilitate or hinder effective municipal waste management can vary greatly and depend on the size of the municipality, geographic location, and industrial or commercial activity.

The key drivers that led to this Solid Waste Management Plan include:

- regulatory requirements
- increasing population and demand
- rapidly diminishing waste disposal capacity, and
- a desire to continually improve efficiencies.

Historically, waste disposal site designers have assumed a waste generation rate of 1.5 Kg/capita/day for design of waste sites. More recent data indicates that waste generation rates are falling. Waste Diversion Ontario estimates waste generation rates for rural, northern municipalities at 1.05 Kg/capita/day. WDO' s rate is before waste diversion – allowing for 21% waste diversion gives a waste disposal rate of 0.83 Kg/capita/day.

For this assessment we have assumed a waste disposal rate of 1.2 Kg/capita/day. This is a compromise between historical and modern waste generation rates, and has been set slightly on the high side to account for commercial and institutional wastes.

Allowing for an equivalent population of 1,854 as of 2006, and allowing a 1.0% growth rate, the Municipality of Temagami will need to accommodate approximately 20,000 tonnes of waste over the next 20 years. 20,000 tonnes is equivalent to 1 acre of waste piled over 4 stories high.

The problem statement can be summarized as follows:

"The Municipality of Temagami requires a strategy to effectively manage up to 20,000 tonnes of waste over the next twenty years."

7. Public Consultation Process

Public consultation and involvement are crucial to the success of any service strategy. This Solid Waste Management Plan is meant to guide the Municipality over the next 20 years and will directly affect how waste management services are offered to residents, both permanent and seasonal. Ongoing consultation will help to establish which issues are most critical to residents and will ensure that these issues are addressed and that new ideas are considered.

The Municipality of Temagami had already received input from residents before the commencement of this study. Correspondence received by Council in advance of this plan has promoted:

1. Additional recycling bins at Mine Landing. It was noted that the existing bins were being filled with cardboard causing other recyclables to be left on the ground.
2. Additional bins and waste compactors at Mine Landing, including dedicated staff for operation and clean up duties.
3. Changes to operating hours at the waste disposal sites.

Public consultation for this study was undertaken as follows:

- Copies of the Municipality of Temagami, Solid Waste Management Plan, Final Draft, dated February 2012, were made available to the public for comment. The draft document was available on the Municipality's web site and hard copies could be viewed at the municipal office or library. The draft plan was presented at a public information session held at the Temagami Community Center on March 8, 2012. Participants were asked to forward written comments by March 15, 2012.

- Notice of the availability of the draft document was by newspaper ad and poster. A brochure that consisted of the ad on the front page plus three more pages of information (basically the executive summary from the final draft report) was available for pick up at the municipal office or at the public information session.

- The public information session consisted of a brief open house during which participants could review display boards followed by a presentation and then a discussion period.

19 participants signed in at the open house and twenty-three written comments were received. Four comments were received in advance of the draft report (including the three noted above), 8 comments were received in advance of the public information session and 11 were received following the public information session. Comments were received from three community organizations:

- La Tempra (Lake Temagami Permanent Residents Association) (comments #3 and15)
- Association of Youth Camps on the Temagami Lakes (comment #5)
- Temagami Lakes Association (comment #8)

Table 7.1 is a summary of comments received.

Table 7.1 - Summary of Comments Received

	Comment	Number of Comments	Reference #
1	Garbage Collection		
	Requests garbage pick up on Wilson Lake Road in summer	1	7
	Supports reduced garbage pick up, wonders why some residents get pick up and others do not – *residents that receive garbage pick up pay an addition charge on their tax bill.*	1	8
	Requests change to residential pick up to once every two weeks	1	10
2	Waste Transfer Stations		
	Recommends improvements to Lake Temagami Access Point Transfer Station (LTAP WTS) – compactors, additional dumpsters, signage, security cameras, attendant etc.	6	2,3,12,14,15,23
	What is meant by volume exceedances – *both transfer stations have a fixed capacity as indicated by CofA – capacity for LTAP WTS for example is 50 m^3 per day and no more than 50 m^3 may be stored at one time. If this is exceeded then the municipality will need to provide alternate arrangements.*	1	9
	4 hours per day, four days a week (for LTAP WTS) is too short, proposes longer hours	6	9,8,12,14,15,17
	Shorter hours at Lake Temagami Access Point WTS will require dock improvements or it will result in congestion at current docks.	4	12,14,15,17
	Concern that plan has not been fully developed, that plan does not address the unique needs of Lake residents	1	15
	Bins at LTAP WTS need to monitored better and dumped more frequently	2	15,17
	Recommends that LTAP WTS remain open 24 hour per day but with 16 hour per week supervision.	1	17
	How will municipality deal with waste disposed of outside gate after hours	1	9
	Disposal site for human waste (from fish huts) is a necessity – suggests reopening of Briggs septic collection site.	1	12
	Will the municipality issue keys to some users	1	9
	Opposed to current location of Temagami WTS – concerned about odors, litter, wildlife, and illegal dumping.	1	11
	Opposed to Temagami WTS at Public Works yard, suggest just close it.	3	19,20,21
	Suggests other locations for WTS	3	15,17,23
	Residents of other Lakes (Rabbit Lake for example) will want to continue using the Temagami WTS	3	13,15,22
	Supports taking control and fencing of waste transfer stations	2	8,12
	Opposed to taking control of waste transfer stations	3	8,14,17
	Proposes third transfer station on Cassel Lake	1	23
3	Recycling Collection & Processing		
	Requests recycling pick up on Wilson Lake Road in summer	1	7
	Supports review of recycling processor but cautions that it may be difficult to get a firm to service the north.	1	8
	Requests a dedicated bin for cardboard at Lake Access	2	1,9
	Suggests by-law and fines for residents who place recyclables in garbage	1	10
	Questions why there is no glass bin at LTAP WTS		
4	Composting		
	Some residents do not compost because they do not want to attract animals, can Municipality offer assistance, alternatives?	1	15
	Suggests establishing compost facility and then selling compost	1	16

	Comment	Number of Comments	Reference #
5	Household Hazardous Waste		
	Municipality should find contractors willing to pickup HHW for recycle value	1	15
6	E-Waste		
	Suggests installation of e-waste bins at transfer stations	2	12,15
8	Bear Island		
	Supports continuation of negotiations to service Bear Island. Bear Island residents use Lake Access Transfer Station and this needs to be taken into account.	1	8
9	Construction and Demolition Waste		
	Supports charging fee for disposal of C&D waste	2	8,14
	Questions how this can be implemented, will revenue cover cost. Notes that costs will be passed on to customer.	3	15,17,18
	Prohibit contractors from using waste transfer stations	1	23
11	Waste Site Operations		
	Request that Temagami WDS be open more hours	1	4
	Support for improved operations	2	8,15
	Questions whether an incinerator would help	1	15
	Supports hiring contractor for compaction services	1	14
12	Waste Disposal Capacity Requirements		
	Seasonal Businesses have not been considered – *normally would be part of commercial waste stream but for this assessment we included commercial waste in determining the waste generation rate selected – 1.2 kg/cap/day*	1	9
13	Waste Disposal Site Expansion		
	Supports expansion of Temagami WDS	1	8
	Notes need to keep Briggs open for use of Lake residents	1	14
16	Municipal Operations		
	Agrees that Municipality should lead by example	1	14
17	Emerging Technologies		
	Municipality should consider an alternative to current practice of burning wastes at landfill sites – *municipality does not burn waste at landfills, it does burn clean brush and lumber as permitted by MOE*	1	15
18	Diversion Initiatives		
	Would prefer not to go to clear bags – *not proposed at this time*	2	9,14
	Supports use of clear bags (but would require an attendant)	2	8,15
	Supports prohibition on materials that can be recycled	1	8
	Recommends incentives as opposed to fees or clear bags	1	14
	Promotes better diversion programs – include glass, batteries, organic wastes. More frequent e-waste events.	2	18,20
19	User Fees		
	Opposed to user fees	2	8,14
	Questions how user fees could be implemented	1	15
21	Public Education		
	Notes that not all residents have computers (one suggested that hard copies of Plan should be mailed to residents)	2	6,15
	Supports PE&I efforts	3	8,14,15

The Steering Committee met in an open public meeting on March 29, 2012 to consider all comments. The Committee also sought input from the Ministry of the Environment – the Ministry's local representative was in attendance at the meeting. The Committee has recommended significant changes to the plan as a result of comments received:

1. Changes to status quo at Lake Temagami Access Point Waste Transfer Station

Three participants expressed opposition to fencing the site and limiting hours of operation. Six participants (including the three who are opposed to fencing the site) have taken issue with the recommendation to limit usage to 16 hours per week. In requesting longer hours, participants have identified needs to accommodate cottagers, campers, canoeists, fishermen and ice fishermen who are on their way home, lodge operators who switch over on Saturdays, camp grounds that dispose of garbage after the evening meal and permanent residents who want to combine their garbage run with other business.

Four participants noted current congestion at the docks - limited hours at the waste transfer station will require more dockage.

Participants also identified many improvements that would help operations – improved docks, more bins, compactors, signage, security, better monitoring and dedicated staff to supervise operations at busy times.

In response to comments the Steering Committee recommends the following on a one year trial basis:

- The site will remain unfenced.
- Additional effort will be put into education, improved signage and enforcement.
- An attendant will be provided for 40 hours per week during the summer months (about 10 weeks). Duties of the attendant will be well defined.
- User groups will be requested to coordinate and provide one recommendation for the attendant's hours of work.
- User groups will be requested to provide a volunteer attendant for ½ day per week during the off-months.

The Committee recommends that the Municipality assess operation of the site again after one year. If non-compliance issues (as identified by the Ministry of the Environment) persist then further measures will be required. Further measures to be considered will include securing the site and limiting hours of operation.

2. Relocation of Temagami Waste Transfer Station

One participant documented issues with the current location (odors, litter, attracts bears) and three expressed opposition to the proposed new location for the same reasons. They all suggested that it be closed.

Three participants noted that the proposed location is less convenient than the current location and three participants (two from Rabbit Lake) objected to the recommendation that use of the waste transfer station be limited to Lake Temagami residents only.

The Steering Committee observed that the waste transfer station had outgrown its initial intent which was to provide water access to a transfer station for a limited number of largely seasonal residents on a portion of the North East Arm of Lake Temagami. The committee concluded that an urban location for a waste transfer station of the size that this station has evolved into is problematic.

In response to comments the Steering Committee recommends the following on a one year trial basis:

- The transfer station will be closed.
- The Municipality will work with Lake residents to identify alternative arrangements.

The Committee recommends that the Municipality assess the long term need for a permanent waste transfer station again after one year. A decision on re-opening or permanent closure of the transfer station should be made at that time.

3. Diversion Initiatives

A number of participants were disappointed that the waste plan was not more focused on waste diversion initiatives. Several suggested improvements to the recycling program and others promoted better composting facilities and more convenient programs for diversion of e-waste and household hazardous waste (batteries). Two participants supported establishment of a re-use facility.

The Waste Management Plan includes numerous recommendations for improvements to existing waste diversion programs. The Steering Committee has instructed that the following be added:

- A dedicated bin for cardboard will be added at the Lake Temagami Access Point Waste Transfer Station.
- The Municipality will encourage re-use initiatives such as community garage sales organized by residents.
- The Municipality will provide residents with more information regarding diversion initiatives and practices including composting at home.

4. Other Comments

Other comments that were considered by the Committee are summarized below:

- Requests for changes to garbage collection routes and frequency of pick up are not supported by the Committee. New routes, or extensions to existing routes, are neither cost-effective nor affordable. In relatively low density habitation areas, residents will continue to be expected to use any one of the three waste disposal sites. The Committee notes that residents who receive garbage pickup pay an additional charge on their tax bill for this service.

- Requests for recycling pick up are not supported by the Committee. The Committee recommends that the Municipality review its current arrangement with recycling processors. This should include looking at options for recycling glass.

- The Committee recommends that disposal of construction and demolition waste at Lake Temagami Access Point Waste Transfer Station be prohibited. The Committee recommends that the Municipality prepare a waste by-law that includes a clear definition of what constitutes construction and demolition waste.

- The consultants have confirmed that seasonal businesses have been included in the calculation of waste disposal capacity requirements. Future waste generation has been estimated at 1.2 Kilogram per capita per day – this number was set on the high side to account for commercial wastes. The report will be amended to clarify this.

- Municipal staff have confirmed that the Municipality does not burn waste at its waste disposal sites – operators do burn clean brush and lumber which is permitted under the sites' current approvals.

Recommendations proposed in the Solid Waste Management Plan are intended to inform Municipal Council and staff and to assist with future decision making processes. It is intended that all substantive recommendations would be brought back to Council for individual debate and budget approval.

8. Definitions

Although waste management is not a highly technical field, there are some industry-specific terms. As many of these terms are used throughout this report, a brief list of definitions is included in this section.

- **ICI Waste** is short form for industrial, commercial, and institutional waste**.** The total waste stream for most municipalities is a combination of ICI waste and residential waste.
- **Diversion** includes all waste which is not disposed of at a landfill, and results from practices such as backyard composting, material reuse, recycling, special processing, and reductions in personal waste generation.
- **E-waste** is discarded electrical and electronic materials such as televisions and computer parts that require special processing for removal of recyclable materials and disposal.
- **Household Hazardous Waste (HHW)** is material which would be toxic or damaging if it were to enter the environment. HHW is typically leftover cleaning supplies, paint, motor oil, batteries, and pharmaceuticals. HHW requires special processing for disposal.
- **Pay-As-You-Throw (PAYT)** is a specific type of user fee program where a fee is charged for every bag of garbage that is to be disposed of. PAYT programs are very effective in reducing waste generation rates and encouraging recycling.
- **Recyclables** are items which, after disposal, are processed and marketed for their raw material, such as aluminum, steel, and various types of plastic. Recyclables do not include reusable materials, such as reusable shopping bags, or hazardous materials which require special processing, such as paint or oil.
- **Blue Box Recyclables** are materials that are typically collected by blue box programs, but may also be collected by other means, such as in bins at the waste disposal site.
- **Source Separated Organics** (SSO) are household-generated waste organics, such as kitchen scraps and yard wastes, which are collected curbside, separate from regular garbage and recyclables. SSO typically includes all organic matter, including meat, dairy, and bones, which would be inappropriate for composting in a back-yard composter. Industrial-scale SSO processing facilities use accelerated techniques to process this material.
- **Waste** includes all materials that an individual discards in day-to-day life. This is a broad term which includes, but is not limited to recyclables, compostables, re-usable material, and garbage.
- **Waste Disposal Site** is a municipal facility where garbage is permanently disposed of, usually buried. The term is often used interchangeably with landfill, although Waste Disposal Sites often include other facilities such as separate collection areas for recyclables.
- **Waste Footprint** is the area at the waste disposal site that may be covered with waste and is typically defined by the site's Certificate of Approval. For older approvals (pre 1980) the waste footprint determines the capacity of the site. Total area is the area of the property that the waste disposal site occupies and includes the waste footprint and buffers. A typical Certificate of Approval will include a statement such as *"...for use and operation of a 1.02 hectare waste disposal site within a total area of 12.35 hectare..."*
- **Waste Generation Rate** is the total quantity of waste generated per capita per year.
- **Waste to Waste Disposal Site (Landfill)** is the portion of the waste stream that is permanently disposed of.

9. Relevant Legislation

Provincial laws, regulations, and guidelines, are the original driving force behind many waste management programs. Municipalities are required to provide certain services to their residents and are required to do so in a manner which protects the natural and social environment. That is not to say that municipalities would not provide these services in the absence of legislation from higher authorities, but it does provide a standard framework and support for a wide variety of initiatives and policies.

The following is a brief list of laws, regulations and guidelines that have been considered in the development of recommendations for this plan.

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.

Ontario Regulation 347

Ontario 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.

Ontario Regulation 232/98

Ontario Regulation 232/98 (O. Reg. 232/98) and its accompanying Guideline specify 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.

Ontario Regulation 101/94

Ontario Regulation 101/94 (O. Reg. 101/94) is also known as the 3Rs Regulation. 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 percent 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 (ICI) sectors, as well as municipalities, developed programs to reduce the amount of valuable resources going to disposal.

O. Reg. 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.

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 (WDA), 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.

Ontario Regulation 101/07

Ontario Regulation 101/07, the Waste Management Project Regulation made under the Environmental Assessment Act (EAA), makes it easier for municipalities to find viable solutions for managing waste. The regulation sets out the EAA requirements for waste diversion facilities. Expansion of small rural landfills by up to 100,000 cubic metres would require only an environmental screening process. Accompanying regulations under the Environmental Protection Act are intended to streamline the approval process for recycling certain materials.

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."*

Bill 146

Bill 146, Organic Waste Diversion Act, was brought to the provincial legislature in December of 2010 and proposed that organic material be banned from landfills in Ontario. The bill received enough support to proceed to Committee for review.

Bill 146 does not provide any specifics or guidance on how municipalities are to comply. Currently, source separated organics (SSO) programs exist only in a handful of municipalities – mostly large cities – and the development of industrial-scale composting has been slow due to nuisance issues such as odour. If Bill 146 were to pass, it would likely require municipalities to provide curbside collection and processing of SSO.

Fisheries Act

The Fish Habitat Protection provisions of the federal Fisheries Act provide for the protection of fish habitat. The principle provision (section 35) states that no one may carry on any work or undertaking that results in the harmful alteration, disruption or destruction (HADD) of fish habitat, unless authorized to do so by the Minister of Fisheries and Oceans Canada.

Other provisions related to Fish Habitat Protection and Pollution Prevention are also worth noting, including those related to the prohibition of deleterious substances into fish-bearing waters (section 36). Municipalities have been charged under this provision for allowing landfill leachate to discharge into a watercourse.

Violations under the Fisheries Act can result in substantial fines and the risk of imprisonment. A violator may also be required to cover the costs of restoring the habitat and may be required to perform other court ordered remedies.

Environmental Assessment Act and Ontario Water Resources Act

Waste management facilities are subject to approval under the Environmental Assessment Act and the Ontario Water Resources Act. These Acts apply to proposals for new or expanded sites and do not typically apply to ongoing operations.

10. Current Practice and Future Needs

10.1 Waste Collection

10.1.1 Curbside Collection

The Municipality provides curbside pickup within the communities of Temagami and North Temagami and along Highway 11 from 4 km south of Temagami to North Temagami. Garbage is collected by municipal staff using a 20 cubic yard compactor truck owned by the Municipality. Residential waste is collected on Tuesdays and typically requires a full day. Commercial waste is collected on Mondays and Fridays taking one half day for each event.

10.1.2 Transfer Stations

Two waste transfer stations are operated by the municipality and are intended for the benefit of residents of Lake Temagami. Both are located for convenient access by boaters. One is adjacent to the municipal office in Temagami and one is at the Lake Temagami Access Point at Mine Landing. Both transfer stations are unattended and are available to residents twenty four hours a day. The transfer stations are intended for bagged waste only; however, there have been instances of human waste and fish guts being disposed of, posing a health and safety hazard for operators and the public. Transfer stations are emptied on an as-needed basis; approximately 3-4 times per week and up to twice daily during long weekends in the summer.

Ontario Ministry of Environment staff recently inspected operations at the two transfer stations and they have identified several issues:

- no control over the type of waste deposited at the site
- volume exceedances
- users not adhering to signage posted at the site
- Temagami site has attracted bears
- waste is stored in a manner where it can have contact with precipitation

The Ministry has stated that the above issues represent non-compliance with respect to the transfer stations' Certificates of Approval. The Ministry has instructed Temagami to develop a plan to address these issues. At a meeting with the Steering Committee on March 29, 2012 Ministry staff clarified that something less than securing the sites and providing supervision when open would be acceptable if it addressed the issues.

10.1.3 Depot Collection

Residents of Temagami may also choose to take their garbage to one of the three active waste disposal sites. The waste sites are open on a regular schedule, and are available to take bulky wastes that are not permitted at the transfer stations. There is an attendant present when the waste sites are open.

Waste from Bear Island is delivered directly to Briggs Waste Disposal Site.

10.2 Diversion Programs

10.2.1 Blue Box

The Municipality operates four recycling depots in Temagami, Temagami North, Mine Access and at the Marten River (Sisk) Waste Disposal Site. Blue boxes are not currently part of curbside pick-up.

Temagami and Temagami North stations are maintained by the Cochrane-Temaskaming Waste Management Board (CTWMB). The Mine Landing and Marten River sites are maintained by a private firm, R&D Recycling of North Bay, under contract with the Municipality.

10.2.2 Yard Waste Composting

Clean wood and brush wastes are collected at each waste site and burned each fall. All other wood (i.e. painted, pressure treated, etc.) goes into the waste pile. Residents of Temagami are fairly good at finding diversion options for grass and leaf composting, however, grass and leaves that are collected or that are delivered to the waste sites are put in the waste pile.

10.2.3 Household Hazardous Waste

The Municipality of Temagami pays a yearly membership fee to the North Bay Household Hazardous Waste Depot. Residents can bring their HHW there for disposal without paying a fee. The Municipality does not offer collection for transfer to the North Bay facility because the facility is not equipped to accept large quantities at a single time.

10.2.4 E-Waste

Currently the Municipality does not have an e-waste disposal plan. In 2012, e-waste will be accepted for 1 day at the Temagami Public School as a fundraiser. Residents can also take advantage of “take back” programs that are offered by all major electronics retailers.

10.2.5 Other Waste Disposal

Scrap metal is separated at the waste disposal sites and is picked up on an “as needed” basis by R&D Recycling out of North Bay. R&D pays the municipality for the scrap collected.

Refrigerators are collected at the waste sites and transferred to a holding area until they are de-gassed by Chico’s. After de-gassing refrigerators are tagged and collected by R&D for scrap metal. Propane tanks are vented to the atmosphere and then collected.

Tires are currently used for retaining walls and delineators at the waste sites. There is a tipping fee for tires although the Municipality is looking into an agreement with Ontario Tire Stewardship – OTS would take the tires for free.

10.3 Waste Disposal Sites

The Municipality of Temagami operates 3 active waste disposal sites - Temagami (also known as Strathy), Briggs, and Marten River (also known as Sisk). The Temagami site is operated by the Municipality under a land use permit with the Ministry of Natural Resources. The other two sites are currently owned by the Ministry of Natural Resources and operated by the Municipality - the Ministry and the Municipality have been in negotiations for several years regarding transfer of ownership.

The attendant at all three waste sites is a private contractor employed by the Municipality. All other waste site operations are by municipal employees. The attendant collects tipping fees for large items like boats or tires, but regular domestic waste is free. Tipping fees on construction and demolition wastes at the waste disposal sites have been waved to reduce dumping at the unattended waste transfer stations.

Historically, the Marten River Site has also serviced residents of the unincorporated area just south of Temagami. Non-residents pay a user fee of $115.00 per year.

Wastes collected at Lake Temagami Access Point Transfer Station are disposed of at Briggs Waste Disposal Site; wastes collected at Temagami Transfer Station are disposed of at Temagami Waste Disposal Site. The transfer of waste is done by municipal staff.

All curbside collection is directed to the Temagami Site.

Ministry of the Environment guidelines for waste disposal site operations include:

- Wastes should be covered with a six inch layer of sandy inert soil on a regular basis
- Waste should be compacted regularly to discourage rainwater infiltration
- A site attendant must be present at all times when the site is open
- The site attendant should keep accurate records of the quantity and type of waste and cover materials received
- Nuisances, such as bears, should be controlled
- Monitoring of leachate impacts on groundwater and surface water should be undertaken, and
- An annual report, documenting all activities and monitoring results, should be submitted to the Ministry of Environment.

All waste disposal sites generate leachate, monitoring programs are often required by the Ministry of the Environment to ensure that surface water impacts are within acceptable ranges and that groundwater impacts are contained within the site. The Municipality has been conducting surface water and groundwater monitoring programs at Briggs and Marten River sites continuously since 2008. Story Environmental Inc. completes annual reports for these two sites.

Monitoring programs at Briggs and Marten River were initiated in response to draft Certificates of Approval that were issued by the Ministry of Environment in 2005. The Ministry of the Environment issued final Certificates of Approval to the Ministry of Natural Resources on March 7, 2008. The final versions of the Certificates of Approval do not require extensive monitoring. MOE did not forward copies of the final Certificates to the municipality; the municipality only became aware of these documents as part of research undertaken for this plan.

There are no environmental monitoring programs at the Temagami Site, municipal staff prepare an annual report on operations only. The Ministry has not required environmental monitoring at Temagami because of its small waste footprint relative to the property holding. The site is well separated from sensitive surface water features. However, Ministry staff have indicated that if the site were to expand then a monitoring program may be required.

10.3.1 Closed Waste Disposal Sites

There are many closed sites in Temagami, including 12 former Ministry of Natural Resources sites on Lake Temagami and a municipally owned site on Spring Road and that was closed in the late 1980s.

10.3.2 Promotion and Education

Promotion and education in the Municipality consists of a newsletter to cottagers in late June or early July notifying them of any changes, tax stuffers, and a municipal update page in the monthly paper “Temagami Talk”.

10.4 Current Waste Generation and Diversion

The Municipality of Temagami does not maintain accurate records of the tonnage of waste disposed of each year, although bag counts and annual surveys do provide some information. Waste generation for this report is based on empirical formula.

10.4.1 Population Projections

The following information is available from Statistics Canada’s web site.

Table 10.1 - Population Data

Population and Dwelling Counts	
Population in 2006	934
Population in 2001	893
2001 to 2006 population change (%)	4.6
Total private dwellings	1,325
Private dwellings occupied by year round residents	405
Population density per square kilometer	0.5
Land area (square km)	1,906.42

In 2006, 934 Temagami residents lived in 405 year round dwellings, an average of 2.3 residents per dwelling.

Of the total number of dwellings, 920 may be treated as seasonal. For this review we will assume that each seasonal dwelling is occupied by three residents for an average of four months per year. Thus each seasonal dwelling represents the equivalent of one year round resident.

The average rate of growth for year round residents was 0.9% between 2001 and 2006. For purposes of projecting future waste quantities we will assume a growth rate of 1.0% for both permanent and seasonal residents.

10.4.2 Waste Generation Rate

Historically, waste disposal site designers have assumed a waste generation rate of 1.5 Kg/capita/day for design of waste sites. More recent data indicates that waste generation rates are falling. Waste Diversion Ontario estimates residential waste generation rates for rural, northern municipalities at 0.83 Kg/capita/day. This rate assumes 21% diversion of wastes from the waste disposal site by blue box recycling.

For this assessment we have assumed a waste generation rate of 1.2 Kg/capita/day. This is a compromise between historical and modern waste generation rates, and has been set slightly on the high side to account for commercial and institutional wastes.

10.4.3 Waste Disposal Site Capacity Requirements

Waste disposal site capacity requirements are a function of population served, waste generation rate, and the amount of compaction and cover applied at the waste site.

Waste disposal sites in Temagami are compacted by light bulldozer equipment. Waste compacted in this fashion is expected to result in 500 Kg of waste per cubic meter of waste disposal capacity.

Waste is covered with sandy soil on a scheduled basis. Cover material should amount to approximately 25% of the volume of waste in place.

Table 10.2, on the following page, summarizes the calculation of waste disposal capacity requirements for the next 20 years for the Municipality of Temagami. Approximately 50,000 m^3 of capacity will be required.

The Ontario Ministry of the Environment considers waste disposal sites of 40,000 m^3 or less to be small waste disposal sites. Temagami's needs over the next twenty years are approximately equal to one small waste disposal site.

10.4.4 Available Waste Disposal Site Capacity

The Municipality of Temagami operates three waste disposal sites. Capacity data for each site has been drawn from the 2010 Annual Reports and is summarized on Table 10.3. In total, the Municipality has approximately 50,000m^3 available, approximately the same as projected needs. However more than half of the available capacity is at Marten River Waste Disposal Site which located at the extreme south of the municipality, 40 Kilometres south of the village of Temagami. This site would be inconvenient for most users.

Table 10.2 - Waste Capacity Requirements

Year	Service Population			Waste		Cover Material m^3	Total Volume m^3	Cumulative Capacity m^3
	Permanent	Seasonal	Year Round Equivalent	tonnes	m^3			
2006	934	2,760	1,854					
2007	943	2,788	1,873					
2008	953	2,815	1,891					
2009	962	2,844	1,910					
2010	972	2,872	1,929					
2011	982	2,901	1,949					
2012	991	2,930	1,968	862	1,724	431	2,155	2,155
2013	1,001	2,959	1,988	871	1,741	435	2,177	4,310
2014	1,011	2,989	2,008	879	1,759	440	2,198	6,487
2015	1,022	3,019	2,028	888	1,776	444	2,220	8,685
2016	1,032	3,049	2,048	897	1,794	449	2,243	10,905
2017	1,042	3,079	2,068	906	1,812	453	2,265	13,148
2018	1,052	3,110	2,089	915	1,830	458	2,288	15,413
2019	1,063	3,141	2,110	924	1,848	462	2,310	17,700
2020	1,074	3,173	2,131	933	1,867	467	2,334	20,011
2021	1,084	3,204	2,152	943	1,886	471	2,357	22,344
2022	1,095	3,236	2,174	952	1,904	476	2,380	24,701
2023	1,106	3,269	2,196	962	1,923	481	2,404	27,082
2024	1,117	3,301	2,218	971	1,943	486	2,428	29,486
2025	1,128	3,334	2,240	981	1,962	491	2,453	31,914
2026	1,140	3,368	2,262	991	1,982	495	2,477	34,367
2027	1,151	3,401	2,285	1,001	2,002	500	2,502	36,844
2028	1,163	3,435	2,308	1,011	2,022	505	2,527	39,346
2029	1,174	3,470	2,331	1,021	2,042	510	2,552	41,873
2030	1,186	3,504	2,354	1,031	2,062	516	2,578	44,425
2031	1,198	3,540	2,378	1,041	2,083	521	2,604	47,003
2032	1,210	3,575	2,401	1,052	2,104	526	2,630	49,607

Table 10.3 - Available Waste Disposal Capacity

Site	Approved Capacity (m3)	Existing Waste Disposal (m3)	Available Capacity (m3)
Temagami Waste Disposal Site	40,000	32,500	7,500
Briggs Waste Disposal Site	40,000	23,862	16,138
Marten River Waste Disposal Site	40,000	12,749	27,251
Totals	120,000	69,111	50,889

10.5 Cost of Existing Service

Costing for current waste management services has been provided by municipal staff and is summarized below. The total cost of waste management services for the Municipality of Temagami is approximately $155,000 per year or on average $115.00 per household. Of this amount approximately one quarter is funded through user fees, fees for service to Bear Island and scrap metal revenues; about half is in special area charges; and the remainder is general taxation.

The waste management expenses summarized in Table 10.4 are actual costs for the calendar year 2011. The revenues in Table 10.4 are as budgeted. Costs and revenues vary from year to year.

Table 10.4 - Waste Management Expenses

			2011						
			Costs		Source of Funds				
			Actual Costs	G/L Account	Area Charge	User Fees	G/L Account	Tax Base	Total
1	Garbage Collection	Town	33,138	004 441	35,250		009 441		
2	Disposal	Strathy (Town)	19,481	004 442		16,458	009 442		
3	Transfer Station	Waterfront (Town)	2,182	004 445					
4	Recycling	Strathy (Town)	11,663	004 448	10,481		009 441		
			66,464		45,731	16,458		4,275	66,464
5	Disposal	Sisk	21,872	004 443		5,033	009 443		
6	Recycling	Sisk	6,491	004 446					
			28,363			5,033		23,330	28,363
7	Disposal	Briggs	33,130	004 444		2,900 *	009 444		
8	Transfer Station	Mine Landing	13,705	004 444	36,244		009 441		
9	Recycling	Mine Landing	10,888	004 447					
			57,723		36,244	2,900		18,579	57,723
10	Recycling	Scrap Recovery				10,000 *	009 441	(10,000)	0
			152,550		81,975	34,391		36,184	152,550

* Actual 2011 revenue changed to 2012 expected revenue.

11. Goals and Objectives

11.1 Diversion Goals

11.1.1 Blue Box Diversion Rate

Waste Diversion Ontario (WDO) encourages municipalities to set goals for waste diversion through recycling programs. According to WDO, the average residential blue box diversion rate for municipalities of the size and location of the Municipality of Temagami is 21%.

It is difficult to set a blue box diversion goal for the Municipality of Temagami as the current rate of diversion is unknown. Based on the existing depot collection service, and the relative convenience when compared to waste disposal, a recycling rate in the order of 10% to 15% can be assumed. A recycling diversion rate of 20% is proposed as a reasonable and attainable goal for the Municipality to achieve within 5 years.

11.1.2 Total Waste Diversion Rate

The Province of Ontario has set a total waste diversion goal of 60%, although achieving this rate almost always requires a three-stream collection of waste, recycling, and source separated organics.

It is difficult to set a total diversion goal for the Municipality of Temagami since the current diversion rate is unknown. The municipality has implemented annual reporting for its waste disposal sites, annual site surveys would provide a reasonable estimate of disposal volumes.

Considering the extent of diversion programs already in place in Temagami, and our experience with other municipalities, it is likely that the Municipality of Temagami is currently diverting between 20% and 30% of its residential waste stream. A total waste diversion goal of 40% is proposed as feasible and affordable in the near term (say five years). Over the long term (20 years) a goal of 50% diversion is typical for rural municipalities in Ontario.

11.2 Service Objective

The Municipality of Temagami provides waste management services to all its residents and is committed to maintaining the high level of service that its residents have come to expect.

Notwithstanding the above, this plan will propose changes to program delivery that may prove difficult for local residents. Implementation of operating hours at the transfer stations will be seen by some as a necessary step for proper control of the waste stream, while others will see it as a reduction in the level of service.

When implementing changes, the Municipality has to balance the interests of the Municipality, current and future residents, businesses, provincial policy, and the environment.

12. Evaluation of Alternatives

The Solid Waste Management Plan Steering Committee has considered numerous options to improve waste management services in Temagami. In this chapter we have documented many of the options that have been considered, many of which will not be carried forward. In the next chapter we will provide a summary of recommendations.

12.1 Garbage Collection

Residential waste collection services are currently provided once per week on Tuesdays. Commercial collection is offered twice a week, on Mondays and Fridays. Municipal staff have observed that the quantity of waste collected drops off significantly outside of the summer season, which runs from the long weekend in May through the Labour Day weekend. A reduction to waste collection on one day only, Tuesday, is proposed for the off season.

Curbside collection is offered in the Temagami and North Temagami areas. Extensions to the collection area were considered. Staff noted that all logical extensions would be along the Highway 11 corridor and they noted concern with operating a “stop and go” service on that busy corridor, particularly in areas that are less densely developed. No extensions to the curbside collection areas are proposed.

The Steering Committee has received other requests to initiate curbside collection in areas of less dense development than Temagami or Temagami North. The Committee feels that implementing curbside collection in areas of low residential density is neither cost effective nor affordable.

Several municipalities in Ontario have implemented by-laws that prohibit the disposal of recyclable materials in their waste disposal sites. To enforce this they require the use of clear garbage bags. The requirement for clear garbage bags would be ineffective in Temagami given the current use of unattended waste transfer stations but might be considered for implementation in the future.

12.2 Waste Transfer Stations

The Municipality currently operates two waste transfer stations, one at Lake Temagami Access Point and one in the Village of Temagami. The waste transfer stations are conveniently located for residents of Lake Temagami who are able to access the transfer stations by boat. The transfer stations are unattended, they are available to all users 24 hours per day.

Temagami has experienced several problems with the unattended transfer stations including improper usage (placing recyclables in the wrong bin for example), illegal dumping of construction wastes, usage by residents who have access to other disposal options, and attraction of bears. At times the sites are operating beyond their approved capacities. The sites have been the subject of litter and odor complaints.

The municipality suspects illegal dumping by non-residents – without supervision there is no control over what can be placed into the bins.

On December 2, 2011 the Municipality received two inspection reports from the Ministry of the Environment, one for each transfer station. The Ministry has instructed the Municipality to address issues associated with the transfer stations, or close them. At a meeting with the Steering Committee on March 29, 2012 Ministry staff clarified that something less than securing the sites and providing supervision when open would be acceptable if it addressed the issues.

12.2.1 Lake Temagami Access Point Waste Transfer Station

The Steering Committee has accepted that the user group for the Lake Temagami Access Point Waste Transfer Station is a diverse group with unique needs. The site has to accommodate the specific needs of cottagers, campers, canoeists, fishermen and ice fishermen who are on their way home, lodge operators who switch over on Saturdays, camp grounds that dispose of garbage after the evening meal and permanent residents who want to combine their garbage run with other business. Scheduling a limited number of operating hours to satisfy the needs of this group would be difficult.

The Steering Committee recommends the following on a one year trial basis:

- The site will remain unfenced.
- Additional effort will be put into education, improved signage and enforcement.
- An attendant will be provided for 40 hours per week during the summer months (about 10 weeks). Duties of the attendant will be well defined.
- User groups will be requested to coordinate and provide one recommendation for the attendant's hours of work.
- User groups will be requested to provide a volunteer attendant for ½ day per week during the off-months.

The Committee recommends that the Municipality assess operation of the site again one year after the improvements are in place. If non-compliance issues (as identified by the Ministry of the Environment) persist then further measures will be required. Further measures to be considered will include securing the site and limiting hours of operation.

12.2.2 Temagami Waste Transfer Station

The Temagami Waste Transfer Station was developed to provide a limited number of largely seasonal residents of the North East Arm of Lake Temagami with water access to a waste transfer station. Since its initial installation it has grown into a much larger operation, one that is not appropriate for an urban setting. The transfer station is having unacceptable impacts on nearby residents, it has been the source of complaints regarding odors and bears.

The Steering Committee initially proposed to relocate the transfer station to another site within the village, however, after considering responses from the affected public, the Committee felt that it would be inappropriate to impose this operation on a different residential area.

The Steering Committee recommends the following on a one year trial basis:

- The transfer station will be closed.
- The Municipality will work with Lake residents to identify alternative arrangements.

The Committee recommends that the Municipality assess the long term need for a permanent waste transfer station again after one year. A decision on re-opening or permanent closure of the transfer station should be made at that time.

12.3 Recycling Collection and Processing

No change to the current depot method of collection of blue box recyclables is proposed, although the need for a dedicated bin for cardboard at the Temagami Lake Access Point Waste Transfer Station has been identified.

The municipality is currently served by two recycling processors - Temagami and Temagami North stations are maintained by the Cochrane-Temaskaming Waste Management Board (CTWMB). The Mine Landing and Marten River depots are maintained by R&D Recycling, a private firm out of North Bay, under contract with the Municipality. This situation arises because CTWMB has not wanted to serve the two depots that are more remote to their center of operations. The cost of both services, on a per tonne basis, is approximately equal.

Blue box recycling services in Ontario are funded by Waste Diversion Ontario (WDO). In Temagami, WDO subsidizes the services of CTWMB, no additional subsidy is provided to the Municipality of Temagami for the services of R&D. The Municipality should consider the cost/benefit of bringing this service all under one provider – it may be that with WDO subsidy the Municipality would benefit managing this service for itself.

12.4 Composting

Municipalities that are more densely developed than Temagami often offer facilities for receipt of yard wastes for composting. There is no apparent demand for this service in Temagami. The Municipality will endeavour to provide residents with more information regarding diversion initiatives that they can practice at home, including the use of home composters.

Urban municipalities such as Kingston and Ottawa offer curbside collection of organic materials for composting at central facilities. This is commonly referred to as a green bin program. This service is currently very expensive (in Kingston the service costs almost three times as much as waste disposal or blue box recycling). It may be that as more municipalities implement this service it will come down in price, but for the foreseeable future it is viewed as too expensive for small municipalities such as Temagami.

12.5 Household Hazardous Wastes

Residents of Temagami are able to dispose of household hazardous wastes (HHW) at the household hazardous waste facility in North Bay, however, participation rates are very low. Recent changes in waste stewardship have significantly reduced the cost to municipalities for operation of a HHW transfer facility. Although not recommended at this time, the municipality might consider development of a local HHW transfer facility in the future.

12.6 E-Waste

Electronic waste is the fastest growing waste stream in Ontario. Residents of Temagami have several options for disposal of e-wastes. Temagami Public School recently organized an e-waste drop off day as a fundraiser. In most instances, residents can also return e-wastes to the place of purchase.

Ontario Electronic Stewardship offers municipalities assistance in setting up and operating e-waste collection depots. Temagami might consider this service if there is sufficient demand.

12.7 Other Waste Diversion

Re-use is the second of the 3R's (Reduction, Re-use and Recycling). The Municipality should continue to encourage re-use initiatives such as community garage sales organized by residents.

The Municipality of Temagami should continue efforts to register with Ontario Tire Stewardship. OTS will pick up tires collected by the municipality for free, but they will require that the municipality stop collecting user fees for tire disposal.

12.8 Bear Island

The Municipality of Temagami provides waste disposal services to the residents of Bear Island on a fee for service basis – wastes are transported directly to Briggs Waste Disposal Site. In 2011 the Island shipped nine 10 yard bins of compacted waste, a total of 180 cubic yards (138 m^3). This represents approximately 10% of total site usage.

The Municipality is currently in negotiations with Temagami First Nations to continue this arrangement. The Municipality should seek an agreement that adequately compensates it for operations, monitoring and future closure/expansion of Briggs Waste Disposal Site.

12.9 Construction and Demolition Waste

Construction and demolition wastes represent a significant challenge for the Municipality of Temagami and warrant special consideration. The municipality should apply restrictions on what can be disposed of – others have banned materials that have other options for disposal such as:

- Asphalt pavement
- Cement or brick blocks
- Brush and clean, nail-free, untreated lumber
- Stumps

Haulers should be required to dispose of wastes in the appropriate areas at the waste disposal sites – scrap metals in the scrap metal pile for example. Haulers of large loads of construction debris can be required to show a building permit or a demolition permit issued by the municipality.

Construction and demolition wastes can consume waste disposal capacity at a significant rate. Haulers should be required to compensate the municipality for costs to replace this capacity. Temagami may wish to consider an increase to its current rate of $6.22 per cubic meter. Temagami's current rate is comparable to Tamiskaming Shores' (at $5.24 per cubic meter) but less than North Bay's (at $18.00 per cubic meter).

Note that Temagami is not currently collecting user fees, implementation of higher fees will not be feasible until usage of the waste transfer stations is supervised.

12.10 Management of Active Waste Disposal Site

The Municipality operates three active waste disposal sites. The Briggs and Marten River sites are on Crown Land and the operating license (i.e. Certificate of Approval) is addressed to the Ministry of Natural Resources. The Temagami site is also on Crown Land but the operating license is addressed to the Municipality. Temagami operates this site under a land use permit granted by MNR.

The Municipality has been in negotiations with MNR for some time regarding transfer of ownership of the sites. Continued negotiations are recommended. It is recommended that the Municipality take ownership of the sites but with an understanding that MNR – who opened the sites and operated them for many years – should share in any future liabilities. The Municipality should also request transfer of sufficient lands for buffers and long term operations.

The service area for all three sites includes all of the Municipality of Temagami although the rate of fill for each site may be limited by its initial application. Historically:

- Briggs Waste Disposal Site has served residents of Lake Temagami, including Bear Island. Temagami First Nation pays an annual fee for access to this site.
- Marten River Waste Disposal Site serves the south part of Temagami, including residents of the unincorporated areas just south of Marten River. Non-residents of Temagami are required to purchase a user card.
- Temagami Waste Disposal Site serves residents of Temagami and Temagami North and the northern portion of the Municipality. Wastes that are disposed of at Temagami Transfer Station, which was established for residents of Lake Temagami, are also disposed of here.

Several specific action items have been identified for each site:

- For Briggs and Marten River
    - Update operating plan.
    - Complete hydrogeological assessment.
    - Amend CofA to confirm new ownership, new operating plan and any other changes.

- For Temagami:
    - initiate an application for site expansion (40,000 m^3) (more detail on this later in report)
    - Update operating plan. The approved waste footprint at Temagami is huge; it is based on placing waste 2m deep over an area of 2.56ha. This results in a closure cost of $690,000. There is significant opportunity to save costs by minimizing the waste footprint through a proper operation plan.

12.11 Waste Disposal Site Operations

The current hours of operation for the three active waste disposal sites allow for supervision by a single site attendant and therefore are considered optimal.

The sites are currently leveled and covered by a light bull dozer. This type of equipment does not provide good compaction, good compaction would allow the municipality to pack 50% more waste onto the same site footprint, thus deferring closure costs and costs associated with finding new capacity. Stated another way, the remaining lifespan of active sites that are quoted elsewhere in this report could be extended by 50% with good compaction.

Used compactors are readily available and can be purchased for less than $75,000. An alternative to purchasing a compactor is to purchase this service from a local contractor – adequate compaction could be achieved by packing the sites six to eight times per year.

Bears are a significant nuisance at all three waste disposal sites. Some municipalities have had success with bear fencing. Temagami should continue its attempts to access funds from MNR for this through its Bear Wise program.

12.12 Waste Disposal Capacity Requirements

As noted in Chapter 9, the Municipality of Temagami has sufficient capacity within its three waste disposal sites to serve residents of Temagami for the next twenty years. However, most of this capacity is at the Marten River Waste Disposal Site. The Marten River Site is the least convenient of the three sites for most residents of Temagami. The sites which are most convenient, based on site usage, are the Briggs and Temagami Sites.

Table 12.1 lists key statistics for the Municipalities three sites based on 2010 annual reporting. As indicated, the Temagami site is at, or very close to its approved capacity. Expansion of the Temagami site is recommended.

The Briggs site, if it continues at current rates, will be full in 11 years. This lifespan could be extended by five years with good compaction, but the site will be full within the lifespan of this study.

Table 12.1 - Waste Disposal Site Statistics

Item	Briggs	Marten River (Sisk)	Temagami (Strathy)
Total Site Area (ha)	9.25	12.25	30.25
Area Approved for Waste Disposal (ha)	0.77	1.02	2.56
Current Waste Footprint (ha)	0.52	0.90	<2.56
Total Capacity Plus Cover (m^3)	48,475	46,000	65,426
Allowance for Final Cover (m^3)	8,475	6,000	19,200
Total Capacity (m^3)	40,000	40,000	46,226
Existing Waste (m^3)	23,862	12,749	38,726
Remaining Capacity (m^3)	16,138	27,251	7,500
Lifespan (years)	21	11	1
Closure Date (without expansion)	2032	2022	2012
Closure Cost	$210,000	$280,000	$690,000

The three active sites in Temagami are well spaced and convenient to areas of settlement, while at the same time all three sites are more than 500 meters from nearby residences and recreational water bodies. It is expected that the Municipality of Temagami will rely on these three waste disposal sites for many more years. Expansion of each site as it fills, in 40,000m^3 increments, is recommended. Preparations for expansion should commence at least three years in advance of need, to ensure time to obtain necessary approvals.

12.13 Waste Disposal Site Expansion

As previously noted, expansion of Temagami Waste Disposal site is recommended. In preparation for expansion the following activities should be undertaken:

- A pre-submission meeting should be arranged with MOE. MOE staff may have concerns that would delay approvals if not addressed at an early stage.
- Complete an accurate topographic survey. An accurate survey will determine the existing quantity of waste on site and would identify the best areas for future filling. As noted previously in this report a smaller footprint will reduce future closing costs.
- Complete a preliminary hydrogeological investigation (a preliminary investigation entails a site visit and a review of available reports, well records and geological mapping to assess the risk of offsite impacts. A preliminary hydrogeological assessment may or may not recommend a monitoring program.)
- Complete and register legal survey of property boundaries.

The typical timeframe for expansion of a site, after a complete application has been submitted to the Ministry of the Environment, is at least one year. In light of the diminished capacity at Temagami Waste Disposal Site, preparation of an application for expansion should commence immediately.

12.14 Waste Disposal Site Closure

No waste disposal site closures are proposed over the life of this plan.

Cost for closure of each active site is indicated on Table 12.1 above. Costs are very much dependent on the area of the site footprint – the largest component of cost is for the clay cap. For two of the Municipality's sites there is more approved area for waste disposal than needed – cost savings can be affected by updating the site's operation plans to minimize the waste footprint. Regardless of the approved waste area, the municipality only needs to cap the portion of the waste area that was used.

Another recommendation of this report is to apply for expansion of each active site as it fills. It is a normal requirement of an approved expansion that areas of the old fill that have reached final elevations be capped – this cost is typically lower than full closure as not all of the site will need to be capped at once.

12.15 Management of Closed Waste Disposal Sites

Records indicate that the Ministry of Natural Resources closed at least 12 small waste disposal sites in the Municipality of Temagami in the recent past.

Management of closed waste disposal sites involves implementation of controls to ensure that incompatible development is restricted. The Municipality of Temagami has provisions in its Official Plan that will permit the Municipality to deny permits to developments close by closed sites. To ensure proper implementation of these controls the Municipality needs to maintain accurate mapping of known waste disposal sites.

12.16 Municipal Operations

When it comes to waste reduction and waste diversion initiatives, municipalities should set a good example for other businesses. The Municipal office in Temagami provides blue boxes for all of its employees. Public Works staff recycle used oils and batteries.

Municipal staff should seek out opportunities to divert more of the waste materials that result from municipal operations from waste disposal.

12.17 Emerging Technologies

Municipal staff should continue to monitor emerging technologies and the opportunities that may result. Staff should continue to work with organizations that are committed to improved waste management practices, such as Waste Diversion Ontario, Ontario Waste Management Organization, Municipal Engineering Association, Association of Ontario Municipalities, and the Solid Waste Association of North America (SWANA).

New technologies which could potentially be very beneficial to the Municipality of Temagami, such as bio-reactors or plasma-arc, are still in developmental stages and are not yet financially, or practically, feasible. The status of new technologies should be re-evaluated as part of the Municipality's ongoing monitoring program.

12.18 Diversion Initiatives

In preparation of this plan the Municipality of Temagami has investigated a broad array of diversion initiatives. However, three initiatives that have been identified by Waste Diversion Ontario deserve particular attention. Research by Waste Diversion Ontario has concluded that the following diversion initiatives are most effective:

- pay-as-you-throw user fee programs
- reduced frequency of garbage collection, and
- mandatory use of clear garbage bags

All of the above would be ineffective in Temagami as long as the Municipality continues the use of unattended waste transfer stations. These initiatives may be considered for implementation in the future.

12.19 User Fees

Many Ontario municipalities use user fees, such as bag tags, to help fund waste management services and to encourage diversion. Temagami charges tipping fees on bulky items, but not on general wastes. As noted above, user fees would be ineffective in Temagami as long as the Municipality continues the use of unattended waste transfer stations. User fees should be considered for implementation in the future.

12.20 Joint Initiatives

The Municipality of Temagami currently participates in several joint initiatives:

- The Municipality has negotiated an agreement with the City of North Bay for Household Hazardous Waste services.
- Blue box recycling services in Temagami and Temagami North are provided by the Cochrane-Temaskaming Waste Management Board.
- Waste disposal Services are provided to residents of the area south of Marten River and for the residents of Bear Island on a fee for service basis.

Recommendations for changes/reviews of the existing joint initiatives can be found elsewhere in this report. The Municipality should stay current with planning by neighbouring municipalities as there may be future opportunities to take advantage of economies of scale.

An example of a future joint initiative might be contracting for the use of waste disposal site compaction equipment. If enough municipalities express an interest in this service then there will be a contractor willing to provide it.

12.21 Public Involvement / Education

Promotion and education (P&E) is the single most important initiative a municipality can take to improve diversion and waste management program efficiency. The Municipality of Temagami should continue to make information on waste management programs readily available to residents through its web site, advertising, brochures and mailings. All promotional material – in print or on line – should be regularly reviewed for currency and clarity.

The Municipality should consider a wide spread promotion and education campaign relating to the implementation of this Solid Waste Management Plan. This campaign can begin with the public consultation program. A full P&E campaign can commence once Council has received this report and decided on a course of action.

In developing their P&E campaign, the Municipality should take advantage of resources from the Continuous Improvement Fund and Waste Diversion Ontario. CIF provides tools to create a customized P&E strategy geared towards smaller municipalities.

12.22 Other

Implementation of the types of initiatives that are envisioned by this plan should be by municipal by-law. The Municipality of Temagami should have a Waste Management By-Law. Model by-laws are available that can be easily amended to fit Temagami's needs.

12.23 Waste Management Program Review

Council of the Municipality of Temagami will be asked to receive this Solid Waste Management Plan as background and guidance for future waste management initiatives. Significant recommendations of this plan are to be brought back to Council for individual approval prior to implementation.

Municipal staff should review the status of implemented initiatives and recommendations on an annual basis. As part of this annual review, staff should prepare a brief report which would include information such as:

- Waste and recycling statistics from the previous year, including blue box and total diversion rate
- Comparison to the previous year and identification of any trends over several years
- Status of all recommendations and progress toward implementation
- Obstacles encountered
- Identification of new opportunities
- Recommended changes

The Plan should be thoroughly reviewed and updated every five years. The entire report need not be completely re-written, but the same research and review process undertaken in the development of this report should be followed. This review would consider changes to the municipality's population and service demands, local and regional opportunities, effectiveness of recommendations that have been implemented, and the status of diversion activities across the province. All of these topics can change substantially in five years and it is important to ensure that this document continues to be current, accurate, and relevant.

13. Conclusion

This Solid Waste Management Plan has included a thorough review of the Municipality of Temagami's existing practices, opportunities, and constraints. For the most part, this plan has observed that the Municipality's current waste management practices are environmentally sound, compliant with regulations, and financially responsible. The number of recommendations reflects the fact that the Municipality's current practices have evolved over time in response to changes to the waste management landscape.

Recommendations that involve change to the Municipality's current waste management practices are summarized below. The following recommendations meet the stated objectives of this plan in that they are:

- Environmentally sound
- Compliant with regulations
- Feasible and easy to implement
- Cost effective and affordable

13.1 Recommendations

1. ***Changes to status quo at Lake Temagami Access Point Waste Transfer Station -*** The Steering Committee recommends the following on a one year trial basis:
    - The site will remain unfenced.
    - Additional effort will be put into education, improved signage and enforcement.
    - An attendant will be provided for 40 hours per week during the summer months (about 10 weeks). Duties of the attendant will be well defined.
    - User groups will be requested to coordinate and provide one recommendation for the attendant's hours of work.
    - User groups will be requested to provide a volunteer attendant for ½ day per week during the off-months.

    The Committee recommends that the Municipality assess operation of the site again one year after the improvements are implemented. If non-compliance issues (as identified by the Ministry of the Environment) persist then further measures will be required. Further measures to be considered will include securing the site and limiting hours of operation.

2. ***Closure of Temagami Waste Transfer Station*** - The Steering Committee recommends the following on a one year trial basis:
    - The transfer station will be closed.
    - The Municipality will work with Lake residents to identify alternative arrangements.

    The Committee recommends that the Municipality assess the long term need for a permanent waste transfer station again after one year. A decision on re-opening or permanent closure of the transfer station should be made at that time.

3. ***Apply for expansion of Temagami Waste Disposal Site –*** There is sufficient approved capacity within the Municipality's three active waste disposal sites to serve Municipal needs for the next twenty years. However, most of the capacity is at the Marten River site which is not a convenient location for most Temagami residents. The very busy Temagami site, on the other hand, is at or near capacity. Preparation of an application to expand the Temagami site should commence immediately.

Briggs Waste Disposal Site is estimated to be full in eleven years. Preparations to expand Briggs Waste Disposal Site should commence three years in advance of it being full to ensure that the expansion is in place in time.

4. ***Improve operations at waste disposal sites –*** The Municipality of Temagami should arrange for good compaction of its sites, either by purchasing specialized landfill compaction equipment or by contracting for this service. The payback on this cost is longer lifespans which will defer the cost of capping a site and applications for expansion.

   Bears are a nuisance at all three of Temagami's waste disposal sites and at the waste transfer stations. The Municipality should take advantage of advice and Bear Wise funding offered by the Ontario Ministry of Natural Resources to help solve this issue.

5. ***Charge tipping fees for construction and demolition waste*** –Tipping fees on construction and demolition wastes should be reinstated as soon as supervision of the waste transfer stations is implemented.

6. ***Reduce frequency of curbside collection*** – Reducing the collection of commercial wastes from twice weekly to once a week in the off season is recommended.

In addition to the above, the Waste Management Plan Steering Committee recommends:

7. The Municipality should continue negations with MNR to take ownership of Briggs and Marten River Waste Disposal Sites.
8. The Municipality should continue negotiations with Temagami First Nations for disposal of Bear Island waste at Briggs Waste Disposal Site.
9. The Municipality should undertake a review of its current practice of retaining two agencies for collection and processing of blue box recyclables. There might be an opportunity to improve the level of subsidy if everything were under one contract.
10. The Municipality should continue discussions with Ontario Tire Stewardship towards providing residents with free disposal of used tires. The Municipality should consider entering into an agreement with Ontario Electronic Stewardship for disposal of e-wastes.
11. The Municipality should be constantly looking for ways to improve waste diversion. The following waste diversion initiatives are recommended for immediate implementation:
    - A dedicated bin for cardboard should be added at the Lake Temagami Access Point Waste Transfer Station.
    - The Municipality will encourage re-use initiatives such as community garage sales organized by residents.
    - The Municipality will provide residents with more information regarding diversion initiatives and practices including composting at home.
12. Over time, the Municipality should consider the following initiatives to encourage diversion of recyclable materials from its waste disposal sites (the following initiatives not proposed for implementation in the near term):
    - User fees (bag tags for example) on all waste disposal – user fees have been shown to be an effective means to encourage residents and ratepayers to recycle.
    - Prohibitions on disposal of materials, such as blue box recyclables, that do not need to be disposed of in the waste disposal site.
    - Required use of clear plastic garbage bags – clear garbage bags, in conjunction with a prohibition on recyclable materials, has been shown to encourage diversion.

13. The Municipality should be constantly looking for ways to improve its public involvement and education programs.
14. Municipal staff should undertake annual reviews of this program. Every fifth year staff should undertake a more thorough review equivalent to the review that has gone into this report.

13.2 Initiatives Considered but not Recommended

This plan has considered numerous waste management initiates. The following is a partial list of initiates considered but not currently recommended:

1. **Source Separated Organics (SSO)** – source separated organics programs have been implemented by larger centers such as Toronto and Ottawa and by one smaller municipality (Perth). Implementation of a SSO program in Temagami is considered cost prohibitive at this time, but may be considered in the future if changes to collection and processing technologies result in lower costs.

2. **Clear Plastic Garbage Bags** – mandatory use of clear plastic garbage bags, and prohibitions on disposal of recyclables, have been successfully implemented by a number of municipalities in Eastern Ontario. The mandatory use of clear plastic bags in Temagami may be considered if diversion targets cannot be met through other means.

3. **Emerging Technologies** – numerous technologies, including plasma-arc and bio-reactors, have been considered as part of this review but are not considered feasible or cost effective for Temagami at this time. Municipal staff should continue to stay abreast of new technologies for future consideration if conditions warrant.

Though not recommended at this time, the above initiatives could be implemented in the future if costs permit, or in response to changes to legislation, or if the Municipality of Temagami is unable to achieve acceptable waste diversion rates with current initiatives. Reconsideration of the above initiatives should be part of staff's annual review of this plan.

13.3 Implementation

The following implementation plan is proposed.

Table 13.1- Implementation Plan

Item	Timeframe
1. Changes to Status Quo at Lake Temagami Access Point Waste Transfer Station • Complete site improvements • Full implementation	 2012/13 Summer 2013
2. Close Temagami Waste Transfer Station	Fall 2012
3. Apply for Expansion of Temagami Waste Disposal Site	Immediate
4. Improve Site Operations	Immediate
5. Impose Tipping Fees on Construction and Demolition Wastes	Spring 2013
6. Reduce Frequency of Curbside Collection of Commercial Wastes	Fall 2012
7. to 14. All Other Initiatives	Ongoing

13.4 Conclusion

The Waste Management Plan Steering Committee will recommend that Council receive this report to guide Council and staff on waste management initiatives over the next twenty years. The recommendations of this report should be brought back to Council for approval on an individual basis. Implementation of many recommendations will also be subject to budget approval.

Appendix A

Technical Memos

AECOM
654 Norris Court
Kingston, ON, Canada K7P 2R9
www.aecom.com

613 389 3703 tel
613 389 6729 fax

Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Briggs Site		
From	Guy Laporte		
Date	October 31, 2011	Project Number	60224779
Updated	February 20 , 2012		

Basic Data

Cert. of Approval: A7206002 Dated: January 29, 1981
0.77ha landfill on 9.25ha property

Cert. of Approval: A7206002 Dated: March 7, 2008 (Notice No. 1)
8 page amendment to January 29, 1981 CofA
Issued to Ministry of Natural Resources, Box 38, Temagami ON
Key Conditions:
#14 – register Certificate of Prohibition
#20 – operate per documents in Schedule A
#22 – capacity of site is fixed at 40,000m^3
#24 – burning of clean brush and lumber allowed
#25 – install permanent markers at boundaries of waste area
#29 – apply "daily" cover once per month in summer (April 1 to December1), as required in winter
#33 – maintain written records
#34 – monitor ground water level in monitors three times per year. Monitor un-named lake levels every fall.
#38 – submit annual reports by May 31
#39 – submit closure plan two years in advance of closure
Schedule A:

1. application by Temagami, January 29, 2003
2. Hydro-g Report, August 2001
3. Operations Manual, August 2002
4. August 3, 2005 letter from Temagami to MNR which indicates interest in purchasing site
5. August 18, 2005 letter from Temagami to MNR indicating Council resolution to acquire site

The Certificates of Approval for Briggs and Sisk Landfill were issued on the same date and are almost identical – right down to monitoring water levels in lake to north and most of the documents in Schedule A.

Location:	Lake Temagami Access Road Former Township of Briggs, District of Nipissing
Survey:	No property survey Topographic surveys have been completed for recent annual reports.
Site Opened:	Unknown but pre - 1975
Hours of Operation:	Mon, Wed – 1 to 4:30 Thurs 8:30 to noon
Service Area:	Primarily residents of Lake Temagami including residents of Bear Island.
Size:	Approval is for 0.77ha in 9.25ha property. Current fill area (2010 AR) is 0.52
Capacity:	40,000 m^3 as set by CofA issued in 2008. Capacity was set to allow upgrades to occur under MNR Class EA Original approval is for 0.77ha which has a theoretical capacity of 28,000m^3 if you use area fill method alone, to achieve approved capacity will require combination of area fill and trench method.
Available Capacity:	16,138m^3 (2010 Annual Report)
Life Span:	About 12 years (based on 2010 usage and remaining capacity)
History:	Site had been used as a borrow pit First CofA was issued to MNR in 1975 – 0.4ha site Faskin Point Dump closed in 1981 – waste diverted to Briggs Several dumps on Lake Temagami and Lady Evelyn Lake closed in 1985 – waste diverted to Briggs. Municipality of Temagami has operated the site since 1998 Sites were unattended up to October 11, 2004 Bear Island dump closed 1995 – waste to Briggs

Reports Reviewed

Waste Management Master Plan, December 1998, by Trow

Hydrogeological Assessment, Briggs Township, MNR Landfill Site, Temagami, ON; August 2001 by Waters Environmental Geosciences Ltd. (referenced by CofA)

- site was monitored spring of 2001, Trow installed five wells.

Temagami Landfill Update, Briggs Township MNR Landfill, June 7, 2005 by Waters Environmental Geosciences Ltd.

Landfill Operations Manual, Briggs Township Landfill Site, Temagami, ON; July 26, 2002, by Waters Environmental Geosciences Ltd.

Landfill Operations Manual, Briggs Township Landfill Site, Temagami, ON; August 2002 by Waters Environmental Geosciences Ltd. (referenced by CofA)

Overview, Oct 29, 2007 by Story Environmental Services

2010 Annual Monitoring Report – Briggs Landfill Site, September 2011, by Story Environmental Inc.

- This is third annual report.
- Site is in Amphibolite Bay drainage area, which flows to Northeast Arm on Lake Temagami
- refuse in place is measured by total station, 1,316m^3 placed in 2010
- Total waste to date 23,862 m^3 – leaves 16,138m^3 for waste and cover
- Compliance with B-7 cannot be assessed due to lack of property boundaries and limited number of wells. Recommends two new wells downgradient.
- SW has not been sampled since 2001 – flows in stream not adequate. 2001 samples did not show impact.

Observations

1. Volume of waste on site was accurately determined by test pits in 2009. Story cautions regarding accuracy of 2010 calculation.
2. Environmental impacts appear to be minimal, new CofA does not require groundwater and surface water quality monitoring program, only water level measurements. Reference to unnamed lake to the north is wrong – this appears to be a copy of a condition for Sisk Landfill.
3. Site's property has never been surveyed. CofA refers to a 9.25ha property, but I found no record of where the 9.25ha property was intended to be.
4. CofA is issued to MNR and names MNR as operator, in spite of fact that Temagami has operated since 1998.

MOE Inspection Report by Brent Trach, December 2, 2011

- site serves Temagami and Temagami First Nation
- site is owned by MNR and operated by Temagami, transfer of ownership is pending
- references March 7, 2008 CofA
- fill area is to be marked, report states that "waste remains outside of landfill's fill area" although it is uncertain how the inspector determined this.
- noted that not all requirements of CofA have been adhered to because municipality was never given a copy, suggests that MNR may not have a copy either because address is wrong.
- Required Actions
    - correct MNR's address on CofA
    - gather up waste that has been carried into bush by bears, implement bear controls
    - establish a fire break around fill area
    - Update landfill operations manual

- define boundaries of fill area
- review record keeping requirements of CofA
- collect groundwater elevations per CofA
- continue current monitoring program with enhancements to ensure no adverse impacts
- continue efforts to transfer ownership, amend CofA when ownership has been transferred.

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Marten River (Sisk) Landfill		
From	Guy Laporte		
Date	November 10, 2011	Project Number	60224779
Updated	February 20 , 2012		

Basic Data

Cert. of Approval: A7134301 Date: February 3, 1981
1.02ha waste disposal site on 12.25ha property

Cert. of Approval: A7134301 Date: March 7, 2008 (Notice No. 1)
8 page amendment to February 3, 1981 CofA
Issued to Ministry of Natural Resources, Box 38, Temagami ON
Key Conditions:
#14 – register Certificate of Prohibition
#20 – operate per documents in Schedule A
#22 – capacity of site is fixed at 40,000m^3
#24 – burning of clean brush and lumber allowed
#25 – install permanent markers at boundaries of waste area
#29 – apply “daily” cover once per month in summer (April 1 to December1), as required in winter
#33 – maintain written records
#34 – monitor ground water level in monitors three times per year. Monitor un-named lake levels every fall. If the lake level is ever lower than the groundwater level then submit a groundwater and surface water monitoring program.
#38 – submit annual reports by May 31
#39 – submit closure plan two years in advance of closure
Schedule A:

1. Application by Temagami, January 29, 2003
2. Hydro-g Report, August 2001
3. Operations Manual, August 2002
4. August 3, 2005 letter from Temagami to MNR which indicates interest in purchasing site
5. August 18, 2005 letter from Temagami to MNR indicating Council resolution to acquire site

The Certificates of Approval for Briggs and Sisk Landfill were issued on the same date and are almost identical – right down to monitoring water levels in lake to north and most of the documents in Schedule A.

Location:	Highway 11, Marten River Lot 6, Con IV, former Towhship of Sisk Municipality of Temagami, District of Nipissing
Survey:	No property survey Topographic surveys have been completed for recent annual reports
Site Opened:	Site has operated since 1970's (2010 Annual Report)
Hours of Operation:	Tues, Thurs, Sat – 1 to 4:30
Service Area:	Primarily residents of Marten River area, including residents of the unincorporated area to the south of Temagami
Size:	Approval is for 1.02ha waste disposal site on 12.25ha property. Current fill area is 0.9ha ("as identified by tree line") (2010 Annual Report)
Capacity:	40,000 m^3 as set by CofA issued in 2008. Capacity was set to allow upgrades to occur under MNR Class EA Original approval is for 1.02ha which has a theoretical capacity of 43,000m^3 if you use area fill method alone, higher capacity can be achieved with a combination of area fill and trench method.
Available Capacity:	27,251m^3 (2010 Annual Report)
Life Span:	About 23 years (based on 2010 usage and remaining capacity)
History:	First CofA issued 1971 to Department of Lands and Forests, 0.45ha dump on 0.9ha property. Municipality took over operation in 1998, but ownership has not been transferred yet. Sites were unattended up to October 11, 2004

Reviewed Reports

Waste Management Master Plan, December 1998, by Trow

Hydrogeological Assessment, Sisk Township, MNR Landfill Site, Temagami, ON; August 2001 by Waters Environmental Geosciences Ltd. (referenced by CofA)

- Trow installed four wells and located two surface water sampling stations

Landfill Operations Manual, Sisk Township Landfill Site, Temagami, ON; August 2002 by Waters Environmental Geosciences Ltd. (referenced by CofA)

Overview, Oct 29, 2007 by Story Environmental Services

2010 Annual Monitoring Report – Sisk Landfill Site, September 2011, by Story Environmental Inc.

- This was third Annual Report
- GW flow is SE, away from unnamed lake and towards Marian Creek, 1.5km away.
- recycling containers have been installed at site
- refuse in place as measured by total station, was unrealistic in 2010. SEI estimated usage from attendant records
- SEI estimates 27,251 m^3 remaining capacity, while acknowledging this is inaccurate.
- Groundwater monitors have shown impact, but they are very close to waste area. Need to establish property boundaries and check groundwater impacts there.
- Un-named lake to north of site is upgradient, not impacted.

Observations

1. Existing waste quantity was accurately measured in 2009. Story (2010 AR) has remaining capacity at 27,251m^3, but cautions on accuracy of 2010 calculation.
2. Environmental impacts appear to be minimal, new CofA does not require groundwater and surface water quality monitoring program, only water level measurements.
3. Site property has never been surveyed and I found no record of where 12.25ha property was intended to be.
4. CofA is issued to MNR and names MNR as operator, in spite of fact that Temagami has operated since 1998.

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Temagami (Strathy) Landfill		
From	Guy Laporte		
Date	October 31, 2011	Project Number	60224779
Updated	February 20, 2012		

Basic Data

Other Names: Strathy Landfill

Cert. of Approval: A7249201 Date: September 26, 1986
2 page CofA issued to Township of Temagami
2.56ha landfill within 30.25ha site
Domestic and Commercial Waste
Burning of clean brush and lumber is allowed per C-7, and per MacLaren Development Plan, April 1986.
No waste disposal until MNR issues land use permit

Location: Milne-Sherman Road 4.5km west of Hwy 11
Parts of mining claims (7 claims), Township of Strathy, District of Nipissing

Survey: Nov 21, 1986 - H. Sutcliffe Ltd did surveys to confirm that site was not on leasehold claims, but did not complete a boundary survey. He notes that site is a square parcel, 540m sides (equates to 29.1ha)

Site Opened: Site was new in 1986

Hours of Operation: Mon, Tues, Wed, Sat – 8 to noon

Service Area: Temagami & Temagami North and north part of Lake Temagami that uses Temagami Transfer Station.

Capacity: 46,226m3 (1986 Development Plan)
2.56ha landfill has theoretical capacity of 170,000m3 as an area fill, but Development Plan that is referred to by CofA has site limited to 2m deep.

Available Capacity: 7,500 m^3 as of survey dated Nov 2006

	Based on recent usage this site is likely full.
Life Span:	2.5 years (per Oct 29, 2007 report by Story Env. Services)
History:	This was a new site in 1986. Site was unattended up to October 11, 2004

Reports Reviewed

Landfill Site Development Plan, MacLaren Engineers, April 1986 – *referred to by September 26, 1986 CofA.*

- to serve 1174 population for 35 yr. Design population is 1,481.
- surface drainage is to Link Lake, 750m away
- nearest wells 1.3km away, not at risk. Nearest homes, at Milne subdivision, 1.5km
- site has never been monitored.

2010 Annual Report, Strathy Waste Disposal Site, March 28, 2011 –

- April 2010 to Mach 2011 volumes - 2,498 m^3 domestic, 64 tires, 80 m^3 construction waste, 234 m^3 commercial, 509 m^3 clean wood, brush, 61 refrigerators, 217 m^3 metal, 300m^3 Temagami Transfer Station, total 3,963 m^3

Story Environmental Inc. presentation to Council, January 2011

- points out that expansion of Strathy site requires Xstrata to sign a Consent to the Disposition of Surface Rights form

Observations

1. I found no record that waste quantities at this site have ever been measured. A topographic survey of the site might establish more available capacity (or it might not).
2. Site is approved for 2.56ha of waste which is a large area – theoretical capacity is 170,000m^3, however, development plan is clear regarding the capacity that was applied for, 46,226m^3.
3. There has been no environmental monitoring (i.e. surface water and groundwater sampling). Environmental impacts should be minimal; site is remote from surface waters and residential development.
4. There is no property survey for the site but there is a sketch that shows where the 30.25ha is located.
5. This site is candidate for expansion – expansion would be on top of existing waste footprint which would make it easier to approve. A 40,000m^3 expansion to serve Temagami and Temagami North should be acceptable to MOE without an environmental assessment. MOE may require environmental monitoring and a property survey.

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Waste Transfer Stations		
From	Guy Laporte		
Date	October 31, 2011	Project Number	60224779
Updated	February 20, 2012		

Temagami Waste Transfer Station

Basic Data

Certificate of Approval: 2794-74ANVP Date: January 9, 2008
14 pages for 0.47ha transfer station
Waste has to be covered and site has to be properly drained
Annual Report required
Observation – CofAs for two transfer stations are almost identical.

Location: 7 Lakeshore Drive, Temagami

Reports

2010 Annual Report, Waste Disposal Transfer Station, March 28, 2011, by Temagami staff

- wastes are hauled to Strathy WDS
- 24 hour a day operation

Lake Temagami Access Point Waste Transfer Station

Basic Data

Certificate of Approval: 1814-74SQTD Date: January 9, 2008
14 pages for 0.46ha transfer station
Waste has to be covered and site has to be properly drained
Annual Report required

Location: Lake Temagami Access Point
Phyllis Township

Reports Reviewed

Interim Report Waste Management Master Plan Study, December 21, 1998 by Trow.

- This report predates transfer of transfer station from MNR to Temagami. CofA requires update. Service area is 950 cottages and 100 permanent residents. Site is 0.25ha and maintained by private operator. Open wagons need covers.

2010 Annual Report, Waste Disposal Transfer Station, March 28, 2011, by Temagami staff

- 2 domestic, one wood, one metal bin
- wastes are hauled to Briggs WDS
- 24 hour a day operation
- April 2010 to March 2011 volumes:
    - 1,446 domestic, 2 tires, 169 construction waste, 588 brush, lumber, 16 refrigerators, 251 metal, total 2,722 – *all units cubic meters.*

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Waste Management Needs Assessment		
From	Guy Laporte		
Date	November 9, 2011	Project Number	60224779

1. Population Data

The following information is available from Statistics Canada's web site.

Table 1.1 – Population Data

Population and dwelling counts	
Population in 2006	934
Population in 2001	893
2001 to 2006 population change (%)	4.6
Total private dwellings	1,325
Private dwellings occupied by year round residents	405
Population density per square kilometer	0.5
Land area (square km)	1,906.42

In 2006, 934 Temagami residents lived in 405 year round dwellings, an average of 2.3 residents per dwelling.

Of the total number of dwellings, 920 may be treated as seasonal. For this review we will assume that each seasonal dwelling is occupied by three residents for an average of four months per year. Thus each seasonal dwelling represents the equivalent of one year round resident.

The average rate of growth for year round residents was 0.9% between 2001 and 2006. For purposes of projecting future waste quantities we will assume a growth rate of 1.0% for both permanent and seasonal residents.

2. Waste Generation Rate

Historically, landfill designers have assumed a waste generation rate of 1.5 Kg/capita/day for design of landfill sites. More recent data indicates that waste generation rates are falling. Waste Diversion Ontario estimates waste generation rates for rural, northern municipalities at 1.05 Kg/capita/day. WDO' s rate is before waste diversion – allowing for 21% waste diversion gives a waste to landfill rate of 0.83 Kg/capita/day.

For this assessment we have assumed a waste generation rate of 1.2 Kg/capita/day. This is a compromise between historical and modern waste generation rates, and has been set slightly on the high side to account for commercial and institutional wastes.

3. Waste Disposal Site Capacity Requirements

Waste disposal site capacity requirements are a function of population served, waste generation rate, and the amount of compaction and cover applied at the landfill.

Waste disposal sites in Temagami are compacted by light bulldozer equipment. Waste compacted in this fashion is expected to result in 500 Kg of waste per cubic meter of landfill capacity.

Waste is covered with sandy soil on a scheduled basis. Cover material should amount to approximately 25% of the volume of waste in place.

Table 3.1, on the following page, summarizes the calculation of landfill capacity requirements for the next 20 years for the Municipality of Temagami. Approximately 50,000 m^3 of capacity will be required.

The Ontario Ministry of the Environment considers waste disposal sites of 40,000 m^3 or less to be small waste disposal sites. Temagami's needs over the next twenty years are approximately equal to one small waste disposal site.

4. Available Waste Disposal Capacity

The Municipality of Temagami operates three waste disposal sites. Capacity data for each site has been drawn from the 2010 Annual Reports and is summarized on Table 4.1 below. In total, the Municipality has approximately 50,000 m^3 available, approximately the same as projected needs, however:

- Remaining capacities are somewhat suspect – the author of the 2010 Annual Reports for Briggs and Sisk Landfills has cautioned that quantities of existing waste have never been accurately determined. Remaining capacity for Strathy Landfill is based on a 2007 "gap analysis" and has never been confirmed through topographic survey.

- More than half of the available capacity is at Sisk Landfill which located at the extreme south of the municipality, 40 Kilometres south of the village of Temagami. This site would be inconvenient for most users.

Table 3.1 – Waste Capacity Requirements

Year	Service Population			Waste		Cover Material (m^3)	Total Volume (m^3)	Cumulative Capacity (m^3)
	Permanent	Seasonal	Year Round Equivalent	(tonnes)	(m^3)			
2006	934	2,760	1,854					
2007	943	2,788	1,873					
2008	953	2,815	1,891					
2009	962	2,844	1,910					
2010	972	2,872	1,929					
2011	982	2,901	1,949					
2012	991	2,930	1,968	862	1,724	431	2,155	2,155
2013	1,001	2,959	1,988	871	1,741	435	2,177	4,310
2014	1,011	2,989	2,008	879	1,759	440	2,198	6,487
2015	1,022	3,019	2,028	888	1,776	444	2,220	8,685
2016	1,032	3,049	2,048	897	1,794	449	2,243	10,905
2017	1,042	3,079	2,068	906	1,812	453	2,265	13,148
2018	1,052	3,110	2,089	915	1,830	458	2,288	15,413
2019	1,063	3,141	2,110	924	1,848	462	2,310	17,700
2020	1,074	3,173	2,131	933	1,867	467	2,334	20,011
2021	1,084	3,204	2,152	943	1,886	471	2,357	22,344
2022	1,095	3,236	2,174	952	1,904	476	2,380	24,701
2023	1,106	3,269	2,196	962	1,923	481	2,404	27,082
2024	1,117	3,301	2,218	971	1,943	486	2,428	29,486
2025	1,128	3,334	2,240	981	1,962	491	2,453	31,914
2026	1,140	3,368	2,262	991	1,982	495	2,477	34,367
2027	1,151	3,401	2,285	1,001	2,002	500	2,502	36,844
2028	1,163	3,435	2,308	1,011	2,022	505	2,527	39,346
2029	1,174	3,470	2,331	1,021	2,042	510	2,552	41,873
2030	1,186	3,504	2,354	1,031	2,062	516	2,578	44,425
2031	1,198	3,540	2,378	1,041	2,083	521	2,604	47,003
2032	1,210	3,575	2,401	1,052	2,104	526	2,630	49,607

Table 4.1 – Available Landfill Capacity

Site	Approved Capacity (m^3)	Existing Waste Disposal (m3)	Available Capacity[1] (m^3)
Strathy Landfill	40,000	32,500	7,500
Briggs Landfill	40,000	23,862	16,138
Sisk Landfill	40,000	12,749	27,251
Totals	120,000	69,111	50,889

5. Opportunities for Expansion

All three of Temagami's waste disposal sites are well located on dry ground and remote from residential development. Expansion of any of the sites should be feasible.

Expansions of up to 40,000 m^3 to serve equivalent populations of less than 1,500 people can proceed without an environmental assessment or mandatory hearings. Although the equivalent population of Temagami is expected to grow to 2,400 over the next twenty years, none of the existing sites would service more than 1,500. Expansions of 40,000m^3 to 100,000m^3 can proceed through an environmental screening process.

Approvals for new or expanded waste disposal sites generally require the following, as a minimum:

1. An acceptable Design and Operation Plan.
2. An environmental monitoring program that has been in place long enough to show compliance with MOE guidelines regarding groundwater and surface water impacts.
3. A legal survey of property boundaries and confirmation of ownership, or confirmation that the current owner approves of the site usage.

Of the above, item 1 is the easiest. The Municipality has operating plans for each site that can be used as the basis for developing an operating plan for an expanded site.

The Municipality has been undertaking groundwater and surface water monitoring programs at Sisk and Briggs sites continuously since 2008. Surface water monitoring to date has not indicated an impact (primarily because there is no surface water in close proximity and downgradient of the sites). Groundwater monitoring has been inconclusive. Groundwater impacts have been observed close by the sites but impacts at the property boundaries cannot be assessed because the locations of the boundaries have never been established.

All of the Municipality's sites are on crown land managed by the Ministry of Natural Resources. Property surveys of the sites have never been completed.

6. Recommendation

Temagami should initiate an application to establish an additional 40,000m^3 of capacity at Strathy Waste Disposal Site. This would be to service Temagami and Temagami North (less than 1,500 people) and should fall within MOE criteria for a small expansion. With this additional capacity, and proper control of available capacity at Briggs and Sisk Landfills, the Municipality should be good for another 20 years. Expansion of Briggs will be required in 15 to 25 years.

An application to expand Strathy Landfill will require the following as a minimum:

- accurate topographic surveys of all three sites to establish existing waste on site to confirm need for additional capacity.
- updated site plans of all three sites to show existing wastes and final contours
- a new design and operation plan for Strathy

In addition to the above MOE may require a boundary survey and environmental monitoring at Strathy.

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Waste Disposal Site Key Statistics		
From	Guy Laporte		
Date	January 10, 2012	Project Number	60224779
Updated	February 20, 2012		

The Municipality of Temagami operates three active waste disposal sites. Key statistics are as follows:

Table 1.1 – Key Statistics

Item / Site	Briggs	Marten River (Sisk)	Temagami (Strathy)
Total Site Area (ha)	9.25	12.25	30.25
Area Approved for Waste Disposal (ha)	0.77	1.02	2.56
Current Waste Footprint (ha)	0.52	0.90	< 2.56
Total Capacity Plus Cover (m^3)	48,475	46,000	65,426
Allowance for Final Cover (m^3)	8,475	6,000	19,200
Total Capacity (m^3)	40,000	40,000	46,226
Existing Waste (m^3)	23,862	12,749	38,726
Remaining Capacity (m^3)	16,138	27,251	7,500
Lifespan (years)	11	22	1
Closure Date	2022	2033	2012
Closure Cost	$210,000	$280,000	$690,000

Key statistics have been sourced as follows:

- *Total site area* and *area approved for waste disposal* are listed on the front page of each of the site's Certificate of Approval.

- There is a sketch of the *current waste footprint* in the annual reports for Briggs and Sisk waste disposal sites, but the areas are irregular and no calculated area has been provided. The *current waste footprints* have been estimated by scaling the drawings. There is no current topographic survey of Strathy waste disposal site but it is believed that the current waste footprint is smaller than the approved area.

- The *total capacity* for each site is defined by the site's Certificate of Approval.

- The *allowance for final cover* is calculated by allowing for 600mm of clay and 150mm of topsoil over the approved waste footprint. This is an important number because supplying and placing cover materials represents most of the cost of closure.*Total capacity plus cover* is simply an addition of the above.

- *Existing Waste* has been estimated by SEI in the 2010 Annual Reports for Briggs and Sisk. Existing Waste for Strathy was determined by survey November, 2006.

- *Remaining capacity* is the difference between *total capacity* and *existing waste*.

- The following volumes of waste disposal have been reported by SEI for Briggs and Sisk and by municipal staff for Strathy in the 2010 Annual Reports:
    - Briggs 1,316 cubic meters
    - Sisk 1,142 cubic meters
    - Strathy 3,963 cubic meters

  Lifespan has been estimated by assuming that these rates of waste disposal, with a small increase for population growth, will continue. There has been no assumed transfer of waste, from Strathy to Briggs for example, when waste sites close. Estimating lifespans on one year of data is not good practice, the outcome in this case appears overly conservative. Capacity requirements by "empirical methods" (see memo on needs assessment) resulted in available capacity to 2032. *Closure Date* is determined by adding lifespan to the current year.

- Site closure involves litter collection and general site cleanup; final grading of the waste pile; application of 600mm of clay material to create an impermeable cap; 150mm of topsoil and hydro-seeding. *Closure Costs* are based on recent tender prices for similar work in other municipalities. *Closure Costs* for this calculation assume that the final waste footprint will be the same size as the *area approved for waste disposal*.

  The biggest component of closure cost is cover material and this is directly related to the *area of the waste disposal.* There are opportunities to reduce *closure costs* by limiting the area waste disposal to less than the approved area. This is particularly true of Strathy where the approved area for waste disposal is at least twice as large as required for the approved capacity.

  The biggest component of closure cost is cover material and the availability of cover material varies widely. To achieve these costs the municipality would want to source an economical supply of cover material before going to tender.

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Technical Memorandum

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CC			
Subject	Waste Disposal Site Operations - Compaction		
From	Guy Laporte		
Date	January 10, 2012	Project Number	60224779

1. Benefits of Compaction

Additional compaction extends the lifespan of a waste disposal site. With good compaction we can assume 750kg of waste per cubic meter of site capacity. Without compaction we assume 500Kg per cubic meter. Good compaction will add 50% to the lifespan of a site.

Current practice in Temagami is to grade and apply cover to sites with a light dozer (shown in photo). Dozers do not provide good compaction; they are specifically designed to float over poorly compacted material.

The Municipality of Temagami has 50,000 cubic meters of waste site capacity at three sites, enough to last 20 years with current operation. With better compaction the same capacity will last 30 years.

Closure costs for the three landfills are estimated at $1.2M. This equates to $60,000 per year for the next 20 years. If the lifespans can be extended to 30 years then closure costs will equate to only $40,000 per year.

Costs for new capacity can also be deferred. Costs for expansion applications for a small site (less than 40,000m^3) are much less than for a large site, but still significant, in the order of $100,000. The cost to prepare an application for a new site would be higher, say $250,000. This would be in addition to costs to acquire the land, to prepare the fill area and to construct access roads.

Good grading and compaction will result in a hard, relatively smooth surface that can be covered with a minimal amount of sand. Savings on purchase of cover material can be significant.

A used, rebuilt compactor can be purchased for less than $75,000. The payback on deferred expenditures is less than three years. Operating costs would be similar the cost of operating a dozer – any increase would be offset by savings in cover materials.

2. Example

The following is a photo of a compactor that was acquired by a small municipality in Eastern Ontario. It is a used, rebuilt machine and it was acquired for approximately $75,000. The unit has provided two years of relatively trouble free service at three small waste disposal sites.

In the first year of operation the unit was able to pack the existing waste such that the volume of available capacity at each site was greater at the end of the year than it was at the beginning.

Note the specialized chopper blades on the wheel drums. The blades alternate in a staggered chevron design and the front and rear drums track so that the waste material is chopped and compacted twice each pass.

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	User Fees Comparison		
From	Guy Laporte		
Date	February 24, 2012	Project Number	60224779

Background

Municipalities collect user fees to help offset the cost of operating a waste management system and to encourage diversion from waste disposal. For most municipalities user fees are not set high enough to allow for full cost recovery – user fees are supplemented by general taxation and special area charges.

In setting user fees, municipalities need to be aware of what their neighbors are charging. Setting fees that are too low will attract waste from residents and businesses of neighboring municipalities. Seasonal residents, in particular, have at least two options for waste disposal. Municipalities want to be fair to their seasonal residents, but at the same time they will not want to encourage seasonal residents to bring in wastes from their permanent residences.

The Municipality of Temagami will want to review its schedule of user fees from time to time. The following table is a comparison of current fees against those of nearby municipalities.

	Temagami	Temiskaming Shores	Latchford	North Bay
Residential Garbage	No charge	$2/cu. yd (2.63/$m^3$)	$2/cu. yd (2.63/$m^3$)	$5 minimum charge
Large loads, bulky Items	5.15/m^3	$4/cu. yd (5.26/$m^3$)	$4/cu. yd (5.26/$m^3$)	$75/tonne
Construction and Demolition	5.15/m^3	$4/cu. yd (5.26/$m^3$)	$4/cu. yd (5.26/$m^3$)	$75/tonne
Refrigerators	No charge	$85	$44	$25 in addition to tipping fee
Tires	$5.15 to $154.50	free	$5 (large tires not accepted)	No charge
Contaminated Fill	Individual quotes	$30/cu. yd ($39.47/m^3)	$25/cu. yd ($32.90/m^3)	$20/tonne

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Cost Estimates		
From	Guy Laporte		
Date	February 24, 2012	Project Number	60224779
Updated	April 11, 2012		

Introduction

The Solid Waste Management Plan, Final Draft, contains twelve recommendations. The purpose of this memo is to provide an approximation of cost impacts. Cost impacts are defined as the difference between current expenditures and future expenditures.

Recommendation No. 1 has been significantly revised and No. 13 has been added in response to public input. Costs are provided for both draft and revised recommendations.

	Recommendation	Cost Impacts - Capital	Cost Impacts - Ongoing
1.	***Take control of waste transfer stations (this recommendation has been revised)***		
	• Relocation of Temagami Waste Transfer Station to Public Works yard (one time expense) o Repairs to dock	• Allow $10,000 for relocation of the waste bins and clean up of old site. • Cost to repair docks has not been assessed.	• Additional operating cost should be negligible, supervision will be by current PW staff. • There should be cost savings due to reduced usage.
	• Relocation of Lake Temagami Access Point waste transfer station to fenced compound. o supervision by contract employee o anticipate additional cost for implementation (short term)	• Allow $40,000 for fencing, access roads and new or additional bins.	• Contract employee, twenty hours per week, allow $20,000 per year. • Notices, enforcement, additional clean-up – allow $5,000 average over first five years. • There may be cost savings if usage is reduced.

	Recommendation	Cost Impacts - Capital	Cost Impacts - Ongoing
1. Rev.	***Take Control of Waste Transfer Stations (Revised)***		
	• Close Temagami Waste Transfer Station o Work with Lake residents to find other arrangements. • Better supervision at Lake Temagami Access Point Waste Transfer Station o One new bin for cardboard	• Allow $5,000 for removal of old enclosure and clean up of site. • Allow $10,000 for purchase of bin	• Elimination of the waste transfer station will free up Public Works staff for other duties. • Allow $15,000 for contract summer employee. • Recycling costs may increase with increased volumes.
2.	***Expansion of Temagami Waste Disposal Site*** • Update of site plan, design and operation plan, preliminary hydrogeological assessment and preparation of application • Property survey • Environmental monitoring and annual reporting (ongoing, but may not be required)	• Allow $20,000 for engineering fees • Allow $5,000 for Ontario Land Surveyor fees. • MOE review fees will be $22,700.	• For ongoing monitoring and reporting - allow $40,000 in each of first two years for and $20,000 per year after that.
3.	***Improve operations at waste disposal sites*** • Better compaction o Purchase of waste compactor and larger float (one time expense) – or o Contract for compaction services (ongoing) Pay back is deferral of site closure costs and costs for site expansions. • Bear controls o In consultation with MNR, implement one program to deter bears at one waste disposal site.	• Allow $100,000 for purchase of new equipment – reconditioned compactors are available for $65,000 • Allow $10,000 – there may be Bear Wise funding for this expenditure	• For contract service - estimate $300 per site visit, 3 sites,10 visits per year – allow $9,000 per year
4.	***Charge tipping fees for construction and demolition waste*** • This is a cost saving/ waste diversion measure however, however, implementation cannot occur until transfer stations are brought under control.		• At, say, $8.00 per cubic meter, potential revenue is $5,000 to $10,000 per year.

	Recommendation	Cost Impacts - Capital	Cost Impacts - Ongoing
5.	***Reduce frequency of curbside collection*** • This is a cost savings measure		• Savings is staff time for two commercial pickups for 36 weeks, offset by additional time spent on Tuesday collection.
6.	***Continue negotiations to assume ownership of Briggs and Marten River sites*** • Temagami should insist that this occurs at no cost to the Municipality.	• Cost of negotiating is negligible • One time cost to update site plans, surveys and to submit application for CofA amendment is estimated at $25,000 for each of two sites. Municipality should seek MNR contribution to this cost.	
7.	***Continue negotiations with Temagami First Nations*** • The objective is to insure that Temagami is adequately compensated for providing waste disposal services to residents of Bear Island.	• costs impacts are negligible	
8.	***Review current practice of using two recycling processors*** • This review can be completed in house		• Cost savings may be available by committing to one processor.
9.	***Enter into agreements with waste diversion agencies*** • Enter into an agreement with Ontario Tire Stewardship (OTS)		• OTS will take tires for free, however, OTS will insist that municipality eliminate tipping fees currently charged for tires, which will negate the savings. Benefit is to residents who will no longer need to pay tipping fees.

	Recommendation	Cost Impacts - Capital	Cost Impacts - Ongoing
	• Enter into an agreement with Ontario Electronic Stewardship (OES)		• OES will provide bins and pay a commission for every bin full of electronics. Additional handling costs for municipality will be offset by preserved waste disposal capacity.
10.	***Waste Diversion Initiatives*** • proposed initiatives – bag tags, prohibitions, clear bags - are not for immediate implementation		• Cost impacts are increased user fee revenues and reduced consumption of landfill capacity.
11.	***Continued and Improved public involvement and public education programs*** • Mailings, notices, web site maintenance	• Subsidies are available from WDO. Benefits are improved diversion from waste disposal site.	
12.	***Annual and five year reviews*** • Periodic updates of waste management plan can be undertaken by municipal staff	• costs are negligible	
13.	***Enact a Waste Management By-Law*** • Model by-laws are available that can be configured to Temagami's unique requirements.	• costs are negligible	

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Technical Memorandum

To	Temagami Solid Waste Management Plan	Page	1
CC			
Subject	Recycling Service Providers		
From	Keir Thomas		
Date	March 7, 2012	Project Number	60224779

1. Background

The Municipality of Temagami currently operates four recycling depots. Two of the depots (Temagami and Temagami North) are serviced by the Cochrane-Timiskaming Waste Management Board (CTWMB), and two (Marten River and Mine Landing) are serviced by R&D Recycling, a private company based in North Bay.

Temagami has been a member of the CTWMB since its formation in 1995; however, since the CTWMB will not service the two most southerly sites, the municipality has been required to retain R&D to service those sites.

As part of the current Solid Waste Management Plan, AECOM has recommended that the Municipality consider the costs and benefits of consolidating recycling services with one provider.

We have prepared this technical memorandum summarizing available information to facilitate the Municipality's evaluation

2. Cost Estimates

The following table summarizes recycling costs for the Municipality in 2010.

	Recycling					
	R&D			CTWMB		
	Martin River	Mine Road	Total	Temagami	Temagami North	Total
Tonnage	55	105	160	-	-	158
Expenses						
Salaries	-	-	-	$420.00	$420.00	$840.00
Contracts	$3,291.70	$7,188.60	$10,480.30	$ 5,160.00	$5,160.00	$ 10,320.00
Total	$3,291.70	$7,188.60	$ 10,480.30	$5,580.00	$ 5,580.00	$ 11,160.00
Cost per Tonne	$59.85	$68.46	$65.50	-	-	$70.63

In 2010, recycling quantities were nearly identical between the R&D services sites and the CTWMB services sites. The operating costs, however, were lower at the R&D serviced sites. The resultant unit costs for recycling services were $65.50/tonne for R&D,and $70.63/tonne for the CTWMB.

3. CTWMB Agreement

The Municipality is currently under contract with the CTWMB. The agreement allows members to withdraw their membership at the end of any calendar year, provided that they provide notice of their intent to do so by June 1st of that year.

There are no penalties for withdrawing from the board.

4. Additional Considerations

There are several other factors that the Municipality should take into consideration in their decision:

- The Municipality owns the recycling bins at the Temagami and Temagami North depots. If the Municipality decides to contract with R&D for service at all depots, they may realize financial benefits either in the form of revenue generated from liquidation of the assets, or a reduced rate from R&D for providing their own bins.
- The CTWMB currently receives Waste Diversion Ontario (WDO) funding on behalf of its members. A credit for this funding is reflected in the fees paid to CTWMB by the Municipality. If the Municipality were to withdraw from the CTWMB, they would then be eligible to receive (WDO) funding directly. Such funding would further reduce recycling costs for the Municipality.

  There is no way to accurately predict WDO funding amounts, so it is difficult to quantify the potential benefit at this time.
- If the Municipality does not consolidate recycling services with R&D they may still be eligible to receive a portion of the WDO funding, given that the CTWMB, which receives funding on its behalf, does not process all of the Municipality's recyclables.
- Unit costs for R&D may be greater for the Temagami and Temagami North depots as compared with the sites they currently service, given their increased distance from R&D's recycling facility.
- Unit costs may vary from year to year, as recycling volumes and operating costs fluctuate.

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