



REPORT ON

**THE TOWN OF THE BLUE MOUNTAINS
WASTE DIVERSION PLAN**

Submitted to:

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Engineering and Public Works Department
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EXECUTIVE SUMMARY

The Town of The Blue Mountains (Town) retained Golder Associates Ltd., in association with 2cg Inc., to undertake the development of a Long Term Waste Management Solution (Solution) on their behalf. The purpose for developing this Solution is to address the challenge of ensuring that adequate waste management capacity is available for the Town's residential, agricultural, industrial, commercial and institutional, and construction and demolition sectors for the next 20 to 30 years.

The Waste Diversion Plan represents the second of several phases in the Solution, and was developed by:

- Reviewing the existing waste management system;
- Reviewing current waste disposal and diversion;
- Reviewing waste composition and diversion potential;
- Consulting with the public;
- Identifying future waste diversion initiatives;
- Developing alternative waste diversion systems; and
- Recommending a waste diversion system.

The Town's solid waste disposal site has a remaining capacity of approximately 4 – 5 years. Existing waste diversion programs, including Blue and Grey Box curbside recycling, and landfill drop-off recycling (scrap wood, scrap metal, appliances, propane tanks, e-waste, and bale wrap) and composting programs, as well as the use of the City of Owen Sound's household hazardous depot, provide the Town's residential, agricultural, industrial, commercial and institutional, and construction and demolition sectors with alternative options to landfill disposal.

The annual per person waste generation has decreased slightly from 1,150 kg/person/yr in 2004 to 1,064 kg/person/year in 2006. During this same period, waste diversion has demonstrated an increase from about 27% in 2004 to 37% in 2006.

In evaluating the opportunities for future diversion initiatives amongst the residential sector, the following factors were considered:

- Approximately 290 tonnes of Blue/Grey Box materials remain in the garbage stream and are available for recycling;
- Approximately 270 tonnes of waste could potentially be added to the current Blue/Grey Box program;
- Approximately 1,015 tonnes of organic wastes is potentially available for composting; and

- Approximately 150 tonnes of waste could potentially be diverted through other waste diversion programs, including textile, construction and demolition and e-waste recycling.

In the absence of waste audit data from the industrial, commercial and institutional, or construction and demolition sectors, detailed waste diversion potential could not be evaluated. However, it may be possible to develop future waste diversion initiatives to help attract waste from these sectors and minimize management of these materials outside of the Town's control.

Possible new diversion programs have been identified to develop a number of alternative waste management systems (Systems) in the Town. These include the following:

- System 1: Status Quo;
- System 2: Existing System with Enhanced Capture;
- System 3: Enhanced Blue/Grey Box;
- System 4: Centralized Composting of Source Separated organics and Leaf and Yard Wastes; and
- System 5: Enhanced Construction & Demolition Recycling.

The waste quantities that could be captured by the Systems 1 through 5 will vary. However, the overall waste diversion rate increases with the addition of each alternative waste management system. It is estimated that the cumulative impact of implementing all systems would be a potential overall waste diversion rate of 64%. The total estimated annual operating costs for each alternative waste management system are estimated to range from \$0.00/yr to maintain the status quo (System 1) to \$286,000/yr for System 4 in order to run a stand alone centralized composting system. The total costs and diversion rate for each system are summarized in the table below.

System	Total Cost	Tonnes Diverted	Diversion Rate	Diversion Increase	Cost Increase
	\$000s	tonnes	%	%	%
1	542	2,670	37	0	0.0
2	546	2,762	38	1	0.7
3	550	2,866	39	3	1.3
4	749	3,523	49	12	38.0
5	828	4,616	64	27	52.6

In terms of the associated reductions in greenhouse gas emissions, the increase in the waste diversion rate to 64% as demonstrated in System 5 will result in the most significant benefit in terms of a reduction of GHG. A measured reduction of 4951 tonnes eCO₂ was calculated for System 5 in comparison with a baseline scenario consisting of a zero diversion scenario, where all waste materials are sent to landfill.

LIST OF ABBREVIATIONS

BMR	Blue Mountain Resorts
C&D	Construction and Demolition
C&E	Communications and Education
EAA	Environmental Assessment Act
HSW	Household Special Waste
IC&I	Industrial, Commercial & Institutional
MOE	Ministry of the Environment
OWMA	Ontario Waste Management Association
SSO	Source Separated Organics

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1.0 INTRODUCTION

1.1 General

The Town of The Blue Mountains (Town) retained Golder Associates Ltd. (Golder), in association with 2cg Inc. to develop a Long Term Waste Management Solution (Solution) for the Town. The purpose of developing this Solution is to address the challenge of ensuring that adequate waste management capacity is available for the Town's residential, agricultural, industrial, commercial and institutional (IC&I), and construction and demolition (C&D) sectors for the next 20 to 30 years. The Solution will address all areas of the Town's waste management system, including waste collection, treatment, diversion and final disposal, along with the costs associated with implementing the Solution.

This Waste Diversion Plan represents the second of several phases in the Solution. Residual disposal options are not considered as part of this Waste Diversion Plan. The residual disposal component of the Solution is being undertaken separately as an Environmental Assessment Act (EAA) approval process. The waste diversion component of the Solution will not require EAA approval.

In 2004, the Minister of the Environment announced a 60% waste diversion goal by 2008 for the Province of Ontario. The Ministry of the Environment's (MOE) June 2004 document, "Ontario's 60% Waste Diversion Goal – A Discussion Paper," outlined some of its goals with regard to diversion targets and how to reach them.

In June 2007, the MOE released a draft "Policy Statement on Waste Management Planning: Best Practices for Waste Managers." It appears that the MOE will continue with its 60% waste diversion target but without a target year. As well, it proposes to compel all Municipalities to prepare a Municipal Waste Management Plan. Smaller municipalities, with populations less than 100,000, will have 2.5 years after the policy statement is finalized to complete this plan. This draft Policy Statement was reviewed during the preparation of this Plan.

The goal of the Waste Diversion Plan is:

"To define a system and criteria that will allow the Town to achieve or exceed the Provincial waste diversion target of 60%."

In setting this goal, the Town recognizes that additional waste diversion can come from:

- Strengthening existing waste diversion programs; and
- Identifying and developing new waste diversion programs.

To meet the diversion goal current and future initiatives that make up the waste diversion system must be able to divert a significant quantity of waste from disposal in a sustainable manner.

This Waste Diversion Plan focuses on developing initiatives that could capture additional quantities of wastes under the Town's control. It also includes consideration of how the waste not under the Town's control could be included in any new initiatives. Since there may be potential opportunities to create better economies of scale for future diversion initiatives, consideration is given to attracting agricultural, IC&I and C&D wastes currently not under the Town's control, to these initiatives.

This Plan was developed by:

- Reviewing the existing waste management system;
- Reviewing current waste disposal and diversion;
- Reviewing waste composition and diversion potential;
- Consulting with the public;
- Identifying future waste diversion initiatives;
- Developing alternative waste diversion systems (i.e. a number of waste diversion initiatives);
- Evaluating alternative waste diversion systems; and
- Recommending a waste diversion system.

Each is discussed in greater detail in the following sections.

2.0 EXISTING WASTE MANAGEMENT SYSTEM

A summary of the Town's Waste Management System is provided below, with a focus on waste diversion initiatives, compiled from this historical report. The Town's existing waste management system has been previously described by Golder as part of the initial phase of the Solution. For further details, refer to "The Town of The Blue Mountains Long Term Waste Management Solution Existing System Summary" report (Golder et al, 2007).

The existing Waste Management System consists of:

- Curbside waste collection and disposal;
- Curbside recycling program;
- Landfill recycling depot; and
- Back-yard composting program.

2.1 Waste Disposal

The Town established a curbside waste collection and recycling service for residents in September 2003. Residential and multi-residential waste collection services to all residents are provided by a private contractor. The collection contractor records the tonnage of recyclables, residential garbage and multi-residential garbage collected daily. An agreement was put in place between the Town and Contractor for the provision of residential and small IC&I garbage and recyclable collection service from September 29, 2003 to September 29, 2009.

Single family residential households are limited to a weekly maximum of one (1) bag as part of the service and a second bag which must contain a visible "Bag Tag". "Bag Tags" are available for purchase from the Town offices and selected retailers. Residents are required to place their bags at the curbside Monday to Thursday with no waste collection on Fridays. Fridays are reserved for multi-unit property recyclables cart collection and commercial cart collection.

Collected residential wastes and some IC&I and C&D wastes are disposed at the Town's solid waste disposal site (Landfill). Residents can also take wastes directly to the Landfill for disposal. The Landfill is located in the former Collingwood Township, approximately 4 km south of Thornbury. The Landfill has a remaining capacity of approximately 4-5 years.

2.2 Waste Diversion

The Town offers a curbside recycling program (Blue and Grey Box), landfill recycling depot and back-yard composting.

2.2.1 Blue and Grey Box

Residential recyclables are collected through the Blue and Grey Box system. Single family households receive Blue/Grey Boxes while multi-unit residential developments are supplied with Blue/Grey Recycling Carts.

Materials included in the residential recyclables program are depicted in Table 2.1. Blue Boxes/ Recycling Carts are for containers. Grey Boxes/ Recycling Carts are for paper. No limitation is placed on the amount of recyclables that a household can set out for collection. Alternatively, blue or clear bags may be used by residents, if their Boxes/Recycling Carts are full.

Table 2.1 Blue and Grey Box/ Recycling Cart Recyclable Materials

Blue Box/Cart	Grey Box/Cart
Glass Bottles and Jars	Paper Newspaper TV Guides Magazines Fax-paper Catalogues Paperback books Egg cartons Junk mail Coloured paper Glossy flyers
Aluminium Pop cans Clean rigid foil containers Clean aluminium foil	Boxboard Cereal Boxes Non-corrugated box board Gable top containers (e.g. milk containers) (NEW) Aseptic containers (e.g. tetrapak) (NEW)
Steel Cans Empty paint cans and aerosol cans (NEW)	Cardboard
Plastic Full range of plastics labelled 1-7 (no polystyrene or plastic bags)	

2.2.2 Landfill Recycling and Composting

Residents have the ability to divert the following wastes at the Landfill:

- Curbside recyclables;
- Scrap wood;
- Scrap metal;
- Concrete blocks and other masonry;
- Appliances;
- Propane tanks;
- E-waste;
- Bale wrap; and
- Leaf and yard wastes.

Residents are directed to an area at the Landfill to divert wastes. For instance, curbside recyclables, appliances and propane tanks are dropped off in designated areas close to the weigh-scale.

Leaf and yard wastes, some wood wastes dropped off by residents and the IC&I sector, and fruit wastes (i.e. apple) provided by the commercial sector (local processors) are currently diverted from the waste stream to the composting pad at the Landfill. The Town's composting pad was designed to accommodate at least 1,000 tonnes per year.

Household Special Wastes (HSW) generated in the Town are accepted on behalf of the Town at the City of Owen Sound Household Hazardous Waste Depot (HHW Depot) on selected Saturdays from April to October. The Town is currently developing its own HHW Depot to be located at the Landfill.

2.2.3 Back-yard Composting

Backyard composting is encouraged in the Town. Backyard composters are available to Town residents at the Town offices or Landfill at a cost of \$30 per unit. Information on how to use the composter is supplied with the unit to assist residents. Backyard composting is a prime example of "reduction at source". It is estimated by the Tow, that about 500 households make use of backyard composters. It has been shown that backyard composting can reduce a household's waste stream by 10% to 30%, if carried out properly.

3.0 CURRENT DISPOSAL AND DIVERSION

In this section, the Town's waste disposal and diversion data from 2004-2006 is reviewed. Understanding current waste disposal and diversion habits is critical in identifying opportunities to increase waste diversion.

3.1 Overall Waste Disposal and Diversion

The waste generated in the Town comes from three sectors:

- Residential (Single family and Multi-Residential);
- Institutional, Commercial and Industrial (IC&I); and
- Construction and Demolition (C&D) activities.

Table 3.1 summaries the waste tonnages generated by these sectors and managed by the Town from 2004-2006.

Table 3.1 Waste Disposal and Diversion Managed by the Town 2004 – 2006

	2004	2005	2006
	Tonnes		
Disposal			
Residential	1,951	1,929	1,922
IC&I	1,299	985	898
C&D	2,205	2,420	1,769
Total Waste Landfilled	5,455	5,334	4,589
Diversion			
Residential	1,235	1,385	1,352
IC&I	274	429	841
C&D	557	271	477
Total Waste Diverted	2,066	2,085	2,670
Total Waste Managed	7,521	7,419	7,259
Population	6,541	6,638	6,825
Waste Generated kg/person/year	1,150	1,118	1,064
Overall Diversion Rate (%)	27	28	37

The annual per person waste generation ranges from 1,064 to 1,150 kg/person/year. For all years this is higher than the average of 1,011 kg/person/year noted for Ontario residents during 2006

(Statistics Canada, 2008). As indicated in Table 3.1, waste generation appears to be decreasing and is likely a function of reduced disposal of both IC&I and C&D wastes and increased waste diversion of IC&I wastes. The reduced waste disposal may be attributed to the export of these wastes to other landfills outside the community.

The C&D sector is the primary contributor to overall waste generation in the Town. Figure 3.1 depicts average waste disposal by sector from 2004-2006, measured directly from available weigh-scale data.

Figure 3.1 Average Waste Disposal By Sector (2004-2006 average)

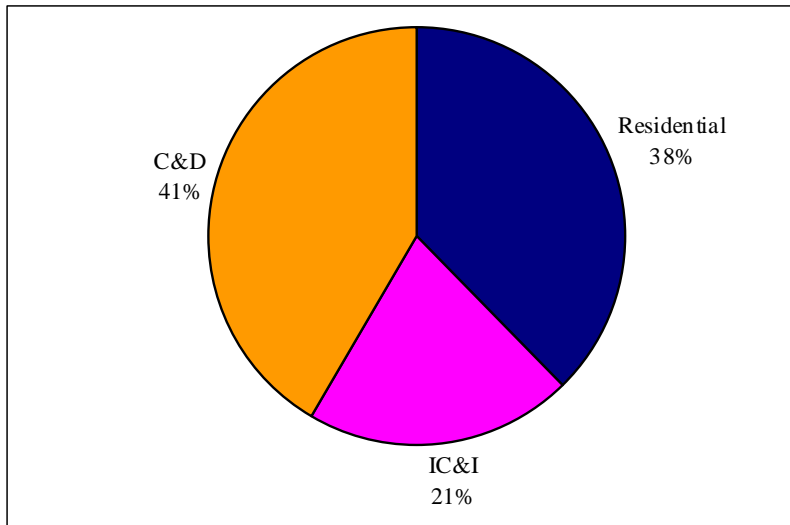


Figure 3.2 depicts waste disposal by sector. It is quite clear that this decrease can be attributed to reduced disposal from the IC&I and C&D sectors.

Figure 3.2 Waste Disposal Breakdown By Sector (2004-2006)

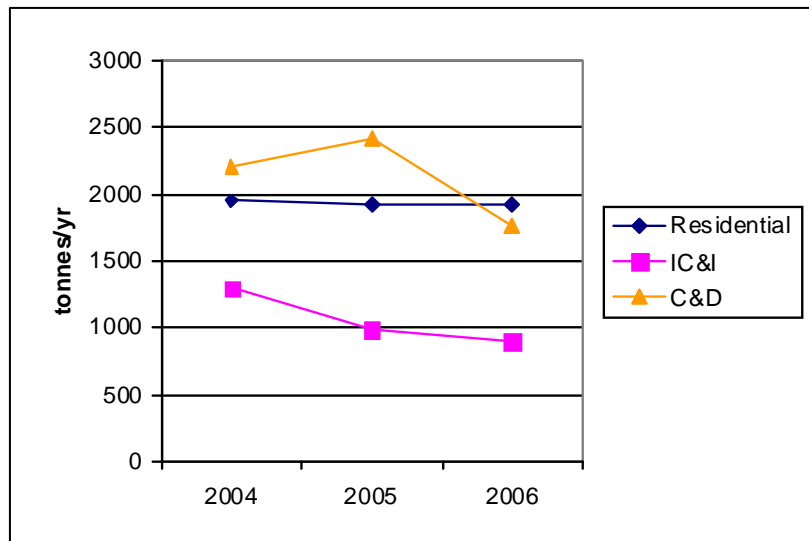
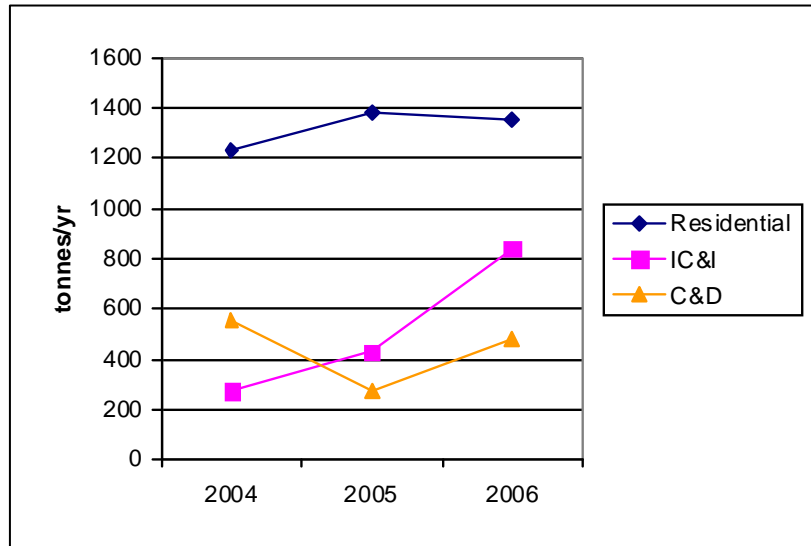


Figure 3.3 depicts waste diversion by sector for wastes managed by the Town on a weight basis.

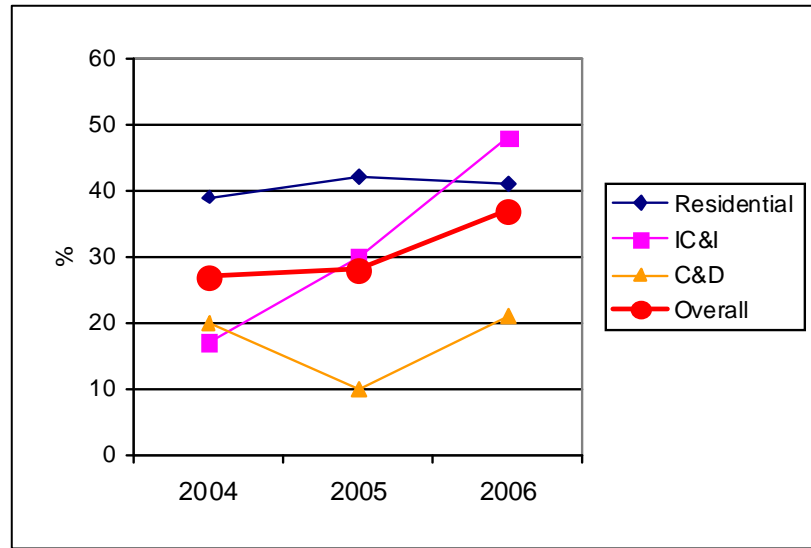
Figure 3.3 Waste Diversion Breakdown By Sector (2004-2006)



The waste diversion rate is determined by dividing the total quantity of waste diverted by the total amount diverted and disposed.

$$\text{Waste Diversion Rate [\%]} = \frac{\text{Waste Diverted}}{\text{Waste Diverted and Disposed}} \times 100\%$$

Figure 3.4 depicts the waste diversion rates for 2004-2006. There has been an overall increase in wastes being diverted. This can be attributed to an increase in diversion by the IC&I sector. This increase in IC&I diversion can be largely attributed to additional deliveries of brush.

Figure 3.4 Waste Diversion Rate By Sector (2004-2006)

The residential sector has had a waste diversion rate of about 40% from 2004-2006. The IC&I waste diversion rate has grown from less than 20% in 2004 to almost 50% in 2006. The C&D diversion rate has fluctuated between 10 and 20%. In overall terms and based on the available data the Town's waste diversion rate has grown from about 27% in 2004 to about 37% in 2006.

It should be noted that the Town does not have access to waste management data for all of the IC&I sector. This sector is largely serviced by private contractors and either disposed of in the Town's Landfill or hauled out of the Town and disposed of in other Ontario or US landfills. Although it is difficult to determine accurately, it is estimated that between 2,000 to 5,000 tonnes per year of IC&I waste could be exported out of the Town annually. This is also true for the C&D sector although it is difficult to determine the amount. Some of these wastes could be potentially attracted to future diversion initiatives.

4.0 WASTE COMPOSITION AND DIVERSION POTENTIAL

To identify future diversion initiatives it is critical to understand the effectiveness of current diversion programs as well as the composition and quantities of wastes presently being disposed. Future diversion initiatives will involve capturing wastes that are currently landfilled and will focus on waste streams with the largest available quantities.

4.1 Residential

Table 4.1 depicts residential wastes disposed and diverted from 2004-2006.

Table 4.1: Residential Waste Diversion and Disposal 2004 – 2006

	2004	2005	2006
	Tonnes		
Disposal			
Curbside Collection	1,865	1,885	1,887
Residential Drop-off	86	44	35
Residential Waste Landfilled	1,951	1,929	1,922
Diversion			
Curbside Recyclables	999	1,043	1,036
Other (i.e. tires, steel)*	40	55	80
Organics*	152	237	186
HHW Treatment	4	4	N/A
Backyard Composting**	40	46	50
Total Residential Waste Diverted	1,235	1,385	1,352
Total Residential Waste Generated	3,186	3,314	3,274
Permanent Population	6,541	6,638	6,825
Residential Waste Generated kg/person/year	487	499	480
Diversion Rate (%)	39	42	41

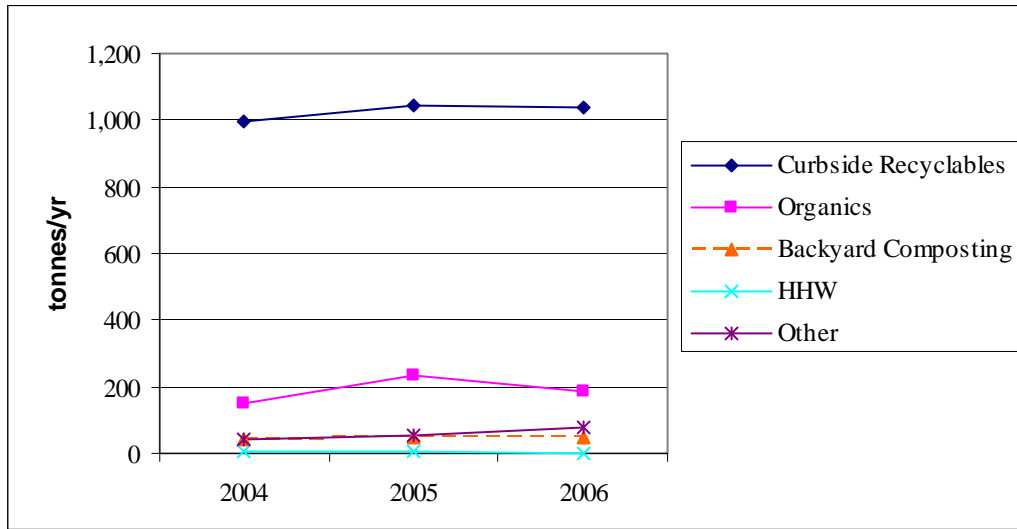
* Delivered to Landfill for recycling

** Values are based on 100 kg/unit, as noted in the Waste Diversion Ontario – User’s Guide To 2005 Data Call, March 2006.

The average residential waste generation total ranges from 480 to 499 kg/person/year. This is higher than the average of 363 kg/person/year (2002) noted for Ontario residents in Statistics Canada Document “Human Activity and the Environment-Annual Statistics 2005-Solid Waste in Canada (Catalogue 16-201-XIE)”. This is likely due to the significant influx and waste generation of seasonal populations throughout the year.

Figure 4.1 depicts the tonnes captured from the Town’s residential waste diversion initiatives.

Figure 4.1: Waste Diversion (2004-2006)



As discussed, the residential diversion rate has been steady from 2004-2006, varying between 39% and 42% (Figure 3.3). This diversion rate is comparable to other communities with similar recycling programs. It is estimated, based on other communities with similar waste diversion programs, that the diversion rate is reasonable.

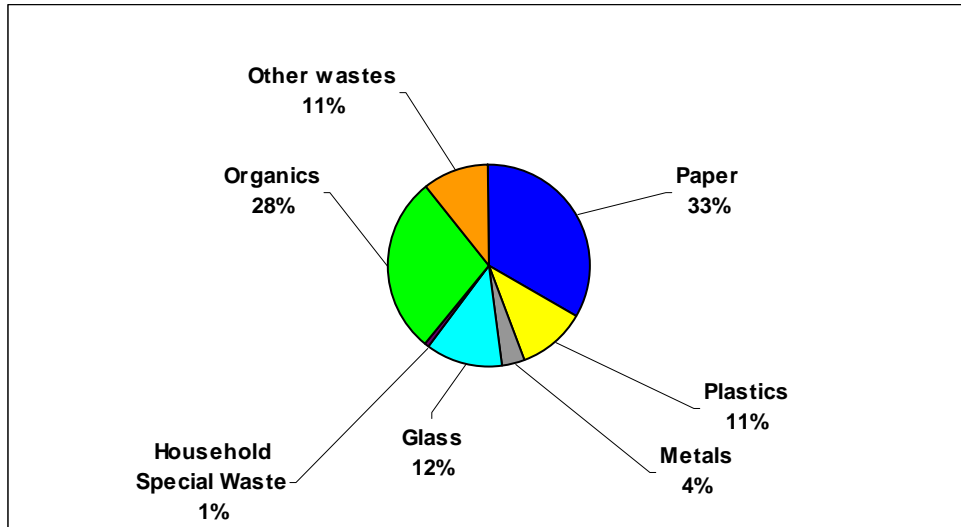
4.2 Residential Waste Composition

In 2006, comprehensive waste audits, funded by Stewardship Ontario, were undertaken in the Town. These waste audits used a common set of methodologies that were used in other communities across Ontario. Four two week audits involving 100 single family households were undertaken. One waste audit took place in each of the winter, spring, summer and fall seasons.

No waste composition data was collected from the multi-residential sector. The data collected in the 2006 audits was averaged and applied to the entire residential sector. It was used for all residential waste diversion calculations in this report.

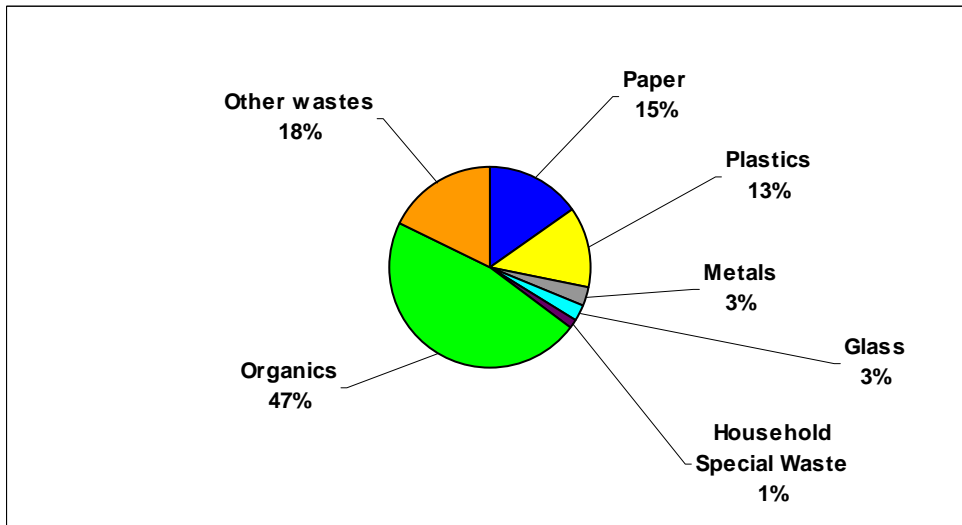
The composition of the single family residential waste stream (e.g. garbage and Blue/Grey Box) is shown in Figure 4.2. The component “organics” refers to food, yard and pet waste.

**Figure 4.2: Overall Residential Waste Composition 2006
(Garbage and Blue/Grey Box)**



The composition of the single family garbage stream (e.g. black garbage bag) is depicted in Figure 4.3. It is clear that there are considerable quantities of organics, other wastes, paper and plastics in the waste stream with lesser amounts of metals, glass and HSW. These all represent wastes which could potentially be captured in a waste diversion program.

Figure 4.3: Residential Waste Composition 2006 (Garbage)



4.3 Residential Capture Rates and Available Wastes

The capture rate is the total quantity of a recoverable waste that is diverted for reuse or recycling as a percentage of the total quantity of the recoverable waste generated.

$$\text{Capture Rate (material Y) [\%]} = \frac{\text{Quantity of Y Diverted}}{\text{Total Quantity of Y Generated}} \times 100$$

A capture rate can be used as a measure of the success of a recycling and/or reuse program. A higher capture rate is indicative of less reusable or recyclable waste being sent to landfill.

4.3.1 Recycling

Table 4.2 depicts the capture rates for the waste streams included in the Blue/Grey Box program. Based on waste audit data, it is estimated that the capture rate of these wastes is about 81%.

Table 4.2: Estimated Blue/Grey Box Recyclable Wastes in Garbage Stream

	Current Capture Rate	Per-Cent of Divertable Material in the Garbage Stream
	%	%
Paper	82	8.4
Plastic	57	3.4
Metal	70	1.3
Glass	90	1.9
Overall	81	14.9

As indicated in Table 4.2, it was estimated that about 15% or about 290 tonnes (i.e. 15%*1,922 tonnes landfilled) of potential Blue/Grey Box materials remain in the garbage stream (i.e. black bag).

It should be noted that the various percentages in Table 4.2 reflect recyclables accepted in the Blue/Grey Box whereas Figure 4.3 reflects all of this waste. For instance paper accepted in the Blue/Grey box makes up 8.4% of what is in the garbage stream but there is 15% of total paper in the garbage stream, 76% of which is not currently considered an acceptable paper type for recycling.

A further analysis of waste audit data indicates that there are a number of new waste types that could be candidates for the Blue/Grey Box. Table 4.3 depicts these wastes and the estimated tonnages that could be captured. It is estimated that up to 270 tonnes of wastes not currently captured by the Town's Blue/Grey Box system are available for recycling (based on current recycling programs).

Table 4.3 Potential Recyclables that Could be Added to the Town Blue/Grey Box System

	Per-Cent of Garbage Stream	Additional Blue/Grey Box Wastes
	%	tonnes/yr
Paper		
Paper Cups and Paper Ice-Cream Containers	0.5	10
Gable Top Cartons	0.5	9
Aseptic Containers	0.2	3
Tissue/Toweling	4.8	92
Other Paper	0.4	8
Total Paper	5.9	114
Plastics		
Polyethylene PE Plastic Bags & Film - Packaging	2.3	44
Polyethylene Plastic Bags & Film - Non-Packaging	2.8	53
Laminated/Other Plastic Bags & Film	1.6	30
Total Plastics	6.6	127
Metals		
Steel Aerosol Cans	0.1	3
Steel Paint Cans	0.02	0.4
Other Metal	1.2	24
Total Metals	1.4	27
Total	14.0	268

It should be noted that gable top cartons, aseptic containers, and steel paint and aerosol cans were added to the list of acceptable Blue/Grey box items in 2007 representing about 12 tonnes of new diversion potential.

4.3.2 Composting

In 2006 it was estimated that about 236 tonnes of residential organics (186 tonnes organics + 50 tonnes backyard composting) were diverted. The organics consisted mostly of leaf and yard waste brought to the landfill and composted on the composting pad. The residential sector also diverted some wood wastes.

An analysis of waste audit data suggests that about 48% of the garbage stream consists of organic wastes that could potentially be composted (i.e. food, leaf and yard waste, pet waste). Tissue/toweling, which account for another 4.8% of the garbage stream, is not readily recyclable in a Blue/Grey box program, but could be incorporated into an organics diversion program. Table

4.4 depicts organic wastes that are available for diversion. It is estimated that about 1,015 tonnes of organic wastes is potentially available for composting.

Table 4.4 Organic Wastes that Could be Composted

	Per-Cent of Garbage Stream	Organic Wastes
	%	tonnes/yr
Food Waste	39.5	766
Yard Waste	2.4	47
Pet waste	5.7	110
Tissue/Towelling	4.8	93
Total	52.4	1,015

4.3.3 Other Wastes

In 2006, it was estimated that at least 80 tonnes of other wastes including HSW, tires, scrap metal, scrap wood, bricks/masonry and refrigerators were diverted at the landfill or through other programs.

An analysis of waste audit data suggests that about 8% of the garbage stream consists of other wastes that could potentially be diverted. Table 4.5 depicts other wastes that are available for diversion including HSW and wastes such as textile, C&D and e-wastes. It is estimated that about 150 tonnes of these wastes are potentially available for waste diversion.

Table 4.5 Potential Other Wastes that Could be Diverted

	Per-Cent of Garbage Stream	Additional Wastes
	%	tonnes/yr
Household Special Waste		
Batteries	0.2	4
Paint & Stain	0.2	4
Motor Oil	0.0	0
Other HSW liquids	0.3	1
Other HSW	0.5	2
Total Household Special Waste	1.3	11
Other Materials		
Textiles	3.3	65
Construction & Renovation	2.7	53
E-Waste	1.0	20
Total Other Materials	7.0	138
Total	8.3	150

4.3.4 Summary

Table 4.6 presents a summary of wastes that could potentially be diverted from the garbage stream as calculated from waste audit data. Up to 90% of residential wastes going to landfill could be diverted. New initiatives can be put into place to capture these wastes. The capture of wastes is never 100% and is a function of resident participation and diligence.

Table 4.6 Summary of Wastes that Could be Diverted from the Garbage Stream

	Per-Cent of Garbage Stream	Additional Wastes
	%	tonnes
Existing Blue/Grey Box	15	287
Possible New Blue/Grey Box	14	268
Organic Wastes	52	1,015
Other Wastes	8	150
Total	90	1,720

4.4 Industrial, Commercial & Institutional Wastes

The tonnage of this waste being landfilled has been decreasing in recent years. This is due in part to it being landfilled outside of the Town. It is also due in part to increased waste diversion by this sector.

In 2006, it was estimated that about 841 tonnes of the 1,739 tonnes of IC&I wastes managed by the Town were diverted through Town programs for about a 48% diversion rate. Essentially all of this waste diversion took place at the Town's landfill and much can be attributed to the diversion of brush. Diversion has increased significantly from 2004-2006.

No waste auditing of this sector has been undertaken by the Town. The general waste composition of the IC&I sector is depicted in Figure 4.4 and is adapted from a 2005 Ontario Waste Management Association (OWMA) report. A rough estimate of the tonnages of various waste streams is estimated in Table 4.7.

Figure 4.4: Estimated IC&I Waste Composition 2006 (Garbage)

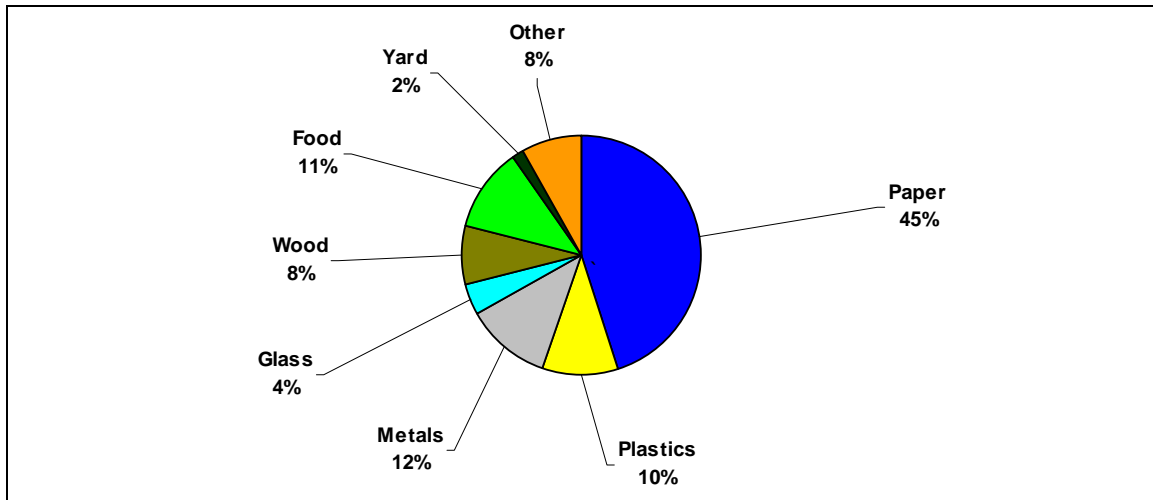


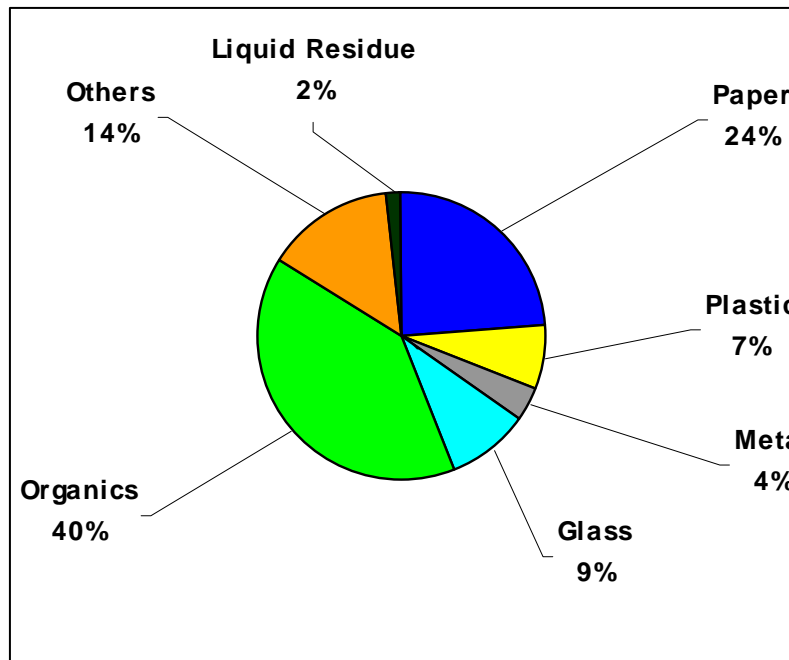
Table 4.7 Estimated IC&I Wastes Streams

Component	Per-Cent of Garbage	Wastes
	%	tonnes/yr
Paper	44.9	378
Plastics	10.3	87
Metals	11.8	99
Glass	4.2	35
Wood	7.8	66
Food	11.4	96
Yard	1.6	13
Other	8	67
Total	100	841

Wastes including Blue/Grey Box type wastes, wood, food and yard wastes could potentially be included in a diversion program and diverted. As noted previously, a considerable amount of IC&I wastes are being managed outside of the Town’s control. These are wastes that are being diverted and disposed.

Some IC&I facilities, such as Blue Mountain Resorts (BMR), have very well developed waste diversion programs. BMR undertook a waste audit in 2006. Figure 4.5 depicts the general results of this waste audit. It is clear that there is a significant amount of organic waste in this waste stream. BMR currently divert an estimated 66% of the annual 1,200 tonnes generated. BMR has aggressive recycling and composting initiatives.

Figure 4.5: Results of BMR Waste Audit (2006)



Club Intrawest (The Lodges at Blue Mountain), which own 50% of BMR and whose waste is collected on-site by BMR, handles its wastes using different contractors. They have a recycling program that results in a 20-25% diversion rate. They do not have a composting program. The tourism industry is a significant segment of the IC&I sector in the Town. The wastes generated at these facilities are similar to residential wastes except they focus on the consumption of food and therefore include food wastes (i.e. organics) and related packaging. It may be possible to attract some of the recyclable or compostable wastes in new Town waste diversion initiatives.

4.5 Construction and Demolition (C&D) Wastes

In 2006 it was estimated that about 477 tonnes of the 2,246 tonnes of C&D wastes managed by the Town were diverted through Town programs for about a 21% diversion rate. Essentially all of this waste diversion took place at the Town’s landfill.

The tonnage of this waste being landfilled has been fluctuating but generally decreasing in recent years. This is due to fluctuations in construction projects and in part to these wastes being landfilled outside of the Town.

No waste auditing of this sector has been undertaken by the Town. The general waste composition of the C&D sector is depicted in Figure 4.6. It was adapted from 2004’s Ontario’s 60% Waste Diversion Goal – A Discussion Paper. A rough estimate of the tonnages of various waste streams is estimated in Table 4.8.

Figure 4.6: Estimated C&D Waste Composition 2006 (Garbage)

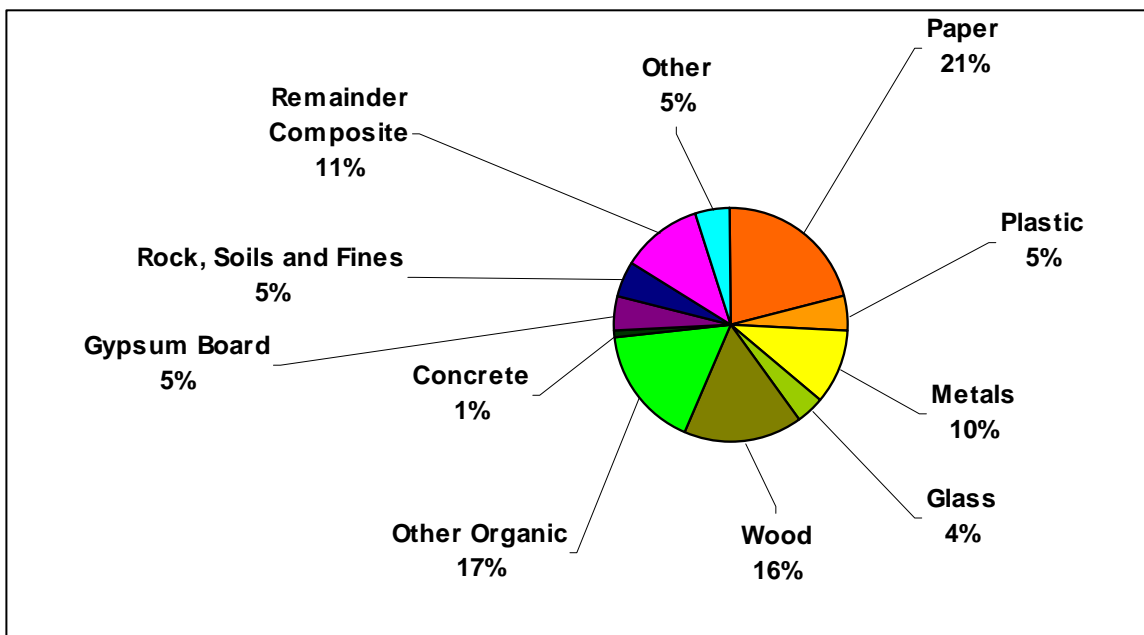


Table 4.8 Estimated IC&I Wastes Streams

Component	Per-Cent of Garbage Stream	Wastes
	%	tonnes/yr
Paper	21	371
Plastic	5	88
Metals	10	177
Glass	4	71
Wood	16	283
Other Organic	17	301
Concrete	1	18
Gypsum Board	5	88
Rock, Soils and Fines	5	88
Remainder Composite	11	195
Other	5	88
Total	100	1,769

Many of the wastes generated through C&D can be successfully diverted.

As noted previously, a considerable amount of C&D wastes are being managed (diverted or disposed) outside of the Town's control. As well, there is a considerable amount of construction taking place at the various resorts in the Town. It is expected that there will be considerable construction of new facilities until at least 2015. It may be possible to develop future waste diversion initiatives to help attract these wastes.

5.0 PUBLIC CONSULTATION

A foundational principle of sustainable communities is effective community engagement and participation in planning processes, such as this Solution. In February 2007, a consultation and communications plan was developed that would guide community engagement throughout the Solution process. To date, two public and stakeholder workshops and a survey have been conducted, the outcomes of which are summarized in this section. The detailed Workshop #1 and Workshop #2 consultation and communications reports are provided in Appendix A and Appendix B, respectively.

5.1 Workshop #1 (May 2007)

Residents and stakeholders were invited to participate in first of a series of workshops that took place on May 24, 2007 at the Marsh Street Centre in Claksburg, and on May 26, 2007 at the Blue Mountain Inn in Craighleith. The purpose of Workshop #1 was to introduce the waste management planning process, and to identify a community vision and goals for the next 30 years. Options for system improvements and criteria for choosing a new system were also explained.

Following a series of presentation, participants engaged in a discussion regarding the vision for the future of the Town's waste. The focus of the discussions included the following topics:

- Waste Management Vision Statement;
- System Components (both individual and collaborative); and
- Evaluation Criteria to Assess System Components.

Overall, participants indicated that the residents, businesses, the Town and tourists should reduce the overall amount of waste generated in the first place. What can't be reduced at the source should be handled through recycling, composting, and re-use programs to the extent possible. There was also a desire to manage waste within the community, rather than relying on the export of waste to other communities.

5.2 Resident Questionnaire

The Town conducted a survey to obtain information on residents' opinions and attitudes toward the Town's current waste management services and additional waste management services that could be considered for the future.

The survey was conducted online and was available in print at the L. E. Shore Memorial Library. It was completed by 297 respondents (268 surveys were completed online and 29 were handed in on hard-copy).

A full copy of the report entitled “Survey of Current Waste Management Practices” (August, 2007) details the full results of this survey. A summary is presented in the following sections.

5.2.1 Survey Metrics and Respondent Profile

This survey was completed by 297 respondents residing within the Town. Of these:

- 82% lived in single family dwellings;
- 10% lived in a townhouse, duplex or condo;
- 4% lived on a farm;
- 3% described their home as “other”; and
- Less than 1% lived in an apartment.

Nearly all of the survey respondents (98%) do not work for or are not affiliated with any Town Departments, Miller Waste Systems, or Town Council. It can be assumed that the low response rate from the agricultural community is likely due to the fact that rural residents can only access the internet via dial-up.

5.2.2 Summary of Findings

The summary of findings arising out of the survey results are presented below and are organized among the following topics:

- Use of services;
- Recycling;
- Backyard composting;
- White goods;
- Garbage collection;
- Access to information; and
- Opinions on managing and disposing of waste.

Each is discussed in more detail below.

Use of Services

- Blue/grey box recycling, curbside collection and the deposit return for beer and liquor bottles are among the Town’s most commonly used waste services.
- Many of the survey respondents are still self-hauling this waste to the local landfill.

Recycling

- Virtually all of the respondents recycle.
- The most common materials recycled include glass jars and bottles, cans, plastic containers, paper, and cardboard and boxboard.
- The majority of respondents are satisfied with the recycling program, but many wish it accepted more materials.
- Respondents generally have positive views toward recycling. They generally feel it is the right thing to do and that it protects the environment.
- The perspectives of neighbours about recycling behaviours does not seem to impact one way or the other on individual behaviours.

Backyard Composting

- Backyard composting is a popular activity in the Town, as more than half of respondents say they compost.
- Those respondents who said they compost, reported that they used their own container or a Town subsidized one.
- While relatively few concerns were raised, pests, difficulties in winter, and general inconvenience were the most common reported barriers to composting.
- Backyard composting is viewed to be an activity that is environmentally beneficial to the environment.
- There was support among most respondents for increased promotion of backyard composting.
- There was support from more than half of respondents for the Town to play a role in composting food and yard wastes.

White Goods

- A majority of the Town's residents use the landfill to drop off their white goods, metals and tires for recycling, and many felt that it is a good program.
- Some respondents were not aware of the program or find it inconvenient.

Garbage Collection

- The survey respondents were generally satisfied with the Town's garbage collection program.
- Some respondents expressed dissatisfaction with the bag limit or bag tag system.

- Few respondents report burning garbage, and those that do generally do so less than seasonally, and report burning primarily brush, other yard waste or waste wood.

Access to Information

- Most respondents appear to have enough information on recycling and garbage collection, but more information is required on composting and leaf and yard waste.
- Most frequent suggestions for improving information in the future included a waste management flyer, the newspaper, and a waste management calendar.

Opinions on Managing and Disposing of Waste

- Most respondents strongly support the principles of reduce, reuse and recycle.
- Most respondents feel that food and yard wastes should be composted.
- Respondents support reaching the provincial waste diversion goal of 60%.
- Respondents want the Town to manage its own garbage and oppose managing the waste of others. They reported wanting to manage their waste within the Town's boundaries, and they did not want to recycle, compost or landfill waste from outside communities.
- Respondents were generally in favour of expanding the Town's landfill, or locate a new one within Town boundaries to manage their own waste, but not for the waste of other communities.
- There was support among respondents for industry stewardship.

5.3 Workshop #2 (January 2008)

A second public and stakeholder workshop was held on June 26, 2008 at the Beaver Valley Community Centre in Thornbury. The purpose of this workshop was to approve a community vision and goals for waste management for the next 30 years, and to evaluate and provide advice on waste diversion and disposal options. In addition, an overview of the survey results and the proposed waste diversion plan was provided.

Following a review of the proposed vision and goals, as drafted based on the results of the initial workshop discussed in Section 5.1, participants made suggestions, as summarized below:

Vision

- Most participants were generally satisfied with the Vision Statement as drafted.
- Participants suggested that the Vision Statement be expanded to engage tourists.
- There was a request to eliminate the direct statement relating to composting and organics programming.

- Participants wanted evaluation criteria, or a statement that determines how the system can be determined to be successful, to be added.
- Participants questioned whether the Vision Statement should reflect a waste diversion target (e.g. 60% waste diversion by 2008).

Goals

- Participants wanted the first goal to be expanded to include visitors/tourists.
- Participants expressed concern that the goals, as presented, would place significant burden on small businesses and suggested that wording be revised to emphasize a working partnership between businesses and the Town to provide incentives and education aimed at waste reduction and diversion.
- Participants emphasized that the municipality will be required to demonstrate leadership to push waste reduction at the source.
- Participants were interested in having means of informing the public of community waste management leaders and being rewarded for their efforts.
- Participants supported placing a greater emphasis on toxic waste disposal and finding a local solution the management of this waste.

Overall, the majority of participants indicated that they supported waste reduction, enhanced recycling, and source separated organics collection as the preferred alternative system for the management of Town waste, with landfill mining to conserve the landfill space at the existing site. In addition, recycling of C&D waste was supported. It was emphasized that the Solution's focus should be on source waste reduction and extended producer responsibility. It was requested that further technical information on the environmental and social impacts of the proposed alternative systems be provided.

6.0 ALTERNATIVE WASTE MANAGEMENT SYSTEMS

Based on the analysis in the preceding Sections it is clear that there are current Blue/Grey box recyclables, possible new Blue/Grey box recyclables, HSW, organic wastes, other wastes and C&D wastes that could be captured in future diversion programs. Possible new diversion programs have been identified to develop a number of alternative waste management systems (Systems).

Five alternative Systems have been developed and are as follows:

- System 1: Status Quo;
- System 2: Existing System with Enhanced Capture;
- System 3: Enhanced Blue/Grey Box;
- System 4: Centralized Composting of SSO and Leaf and Yard Wastes; and
- System 5: Enhanced C&D Recycling.

These Systems have been developed sequentially. Each System adds on to the previous System and results in increased waste diversion.

Table 6.1 summarizes the impact on waste diversion of each System, using 2006 data as a starting point. The table provides information on:

- Sector – which sector a program relates to (e.g. residential, IC&I, C&D);
- Program- the proposed diversion program;
- Available Wastes – tonnes of available wastes as calculated in Sections 4.3-4.5;
- Reasonable Capture Rate – the percentage of available wastes that could be expected to be captured with the implementation of a new program;
- Estimated Captured Wastes – the weight (tonnes) of available wastes that could be expected to be captured with the implementation of a new program;
- Diversion within Sector – how much the added weight of captured wastes contribute to a sector's diversion rate; and
- Diversion - how much the added weight of captured wastes contribute to overall diversion rate.

Each of the five main waste management systems is discussed in greater detail in this Section.

Table 6.1 Overview of Alternative Waste Management Systems

System	Sector	Program	Available Wastes	Reasonable Capture Rate	Estimated Captured Wastes	Diversion Within Sector	Diversion Overall
			Tonnes	%	Tonnes	%	%
1. Status Quo	Residential, IC&I and C&D	All	7,259		2,670		37
2. Existing System and Enhanced Capture	Residential	Blue/Grey Box	287	30	86	2.6	1.2
	Residential	HSW	11	50	6	0.17	0.08
		Total	298		92	2.8	1.3
3. Enhanced Blue/Grey Box	Residential	Blue/Grey Box	173		104	3.2	1.4
4. Centralized Compositing of Food and Leaf and Yard Wastes	Residential	Curbside Collection of SSO and Leaf and Yard Wastes	1,015	60	609	19	8
	IC&I	Delivery of SSO Wastes to Compositing Facility	96	50	48	2.8	0.7
		Total	1,111		657	N/A	9
5. Enhanced C&D Recycling	Residential		53	60	32	1.0	0.4
	C&D		1,769	60	1,061	47.3	14.6
		Total	1,822		1,093		15.1
Grand Total			3,403		1,945		63.6

6.1 System 1 – Status Quo

System 1 is the existing system (using 2006 data) or Status Quo and includes the following components:

- Curbside collection of garbage;
- Curbside collection of recyclables (Blue/Grey Box);
- Communications and Education (C&E) program;
- Landfill recycling (curbside recyclables, scrap wood, scrap metal, concrete blocks and other masonry, appliance, propane tanks, E-waste, HSW, bale wrap);
- Landfill drop-off of leaf and yard and fruit wastes waste for composting; and
- Backyard composting.

Table 6.1 depicts the estimated waste diversion rate for this system, which is 37%

6.2 System 2 – The Existing System with Enhanced Capture

This System is based on maximizing the existing residential waste management system that is operating in the Town. It focuses on the increased capture of Blue/Grey Box recyclables and HSW. The intent of this system is to optimize the collection of key waste streams for which there is a curbside program and to reduce the amount of HSW being landfilled. This diversion would be stimulated through the development of an enhanced and sustained C&E program. The following components are included in System 2:

- All components of System 1; and
- **Enhanced capture of recyclables and HSW.**

Table 6.1 presents an overview of the estimated new waste diversion for this system. It is estimated that this System would result in an additional **2.8%** residential sector waste diversion and **1.3%** overall waste diversion. It is estimated that this would boost the overall diversion rate to **38%**.

6.3 System 3 – Enhanced Blue/Grey Box

This system would incorporate the same components as System 2, however additional recyclables would be added to the Blue/Grey Box. Proposed additional recyclables to be added include paper coffee cups/ice cream containers, other paper, plastic bags, and other metal. These recyclables were selected because there are available quantities and end markets. The following components are included in System 3:

- All components of Systems 1 and 2; and

- **Enhanced Blue/Grey Box.**

Table 6.1 presents an overview of the estimated new waste diversion. It is estimated that this System would result in an additional **3.2%** residential sector waste diversion and **1.4%** overall waste diversion. It is estimated that this would boost the overall diversion rate to **39%**.

6.4 System 4 – Centralized Composting of SSO & Leaf & Yard Wastes

System 4 includes the curbside collection and processing of residential Source Separated Organics (SSO) (i.e food and some non-recyclable paper wastes such as tissue) and the receipt of IC&I SSO and leaf and yard waste at the Town's composting facility.

The processing of these wastes could either be done by expanding the Town's windrow composting facility at the Landfill or by delivering these wastes to a third party compost facility. This System assumes that the Town's composting facility at the Landfill would be expanded to accommodate up to 3,000 tonnes/year of organic waste (i.e. currently has a capacity for 1,000 tonnes/year).

Residential- Curbside Collection

The Town would collect SSO and leaf and yard wastes from the curb at prescribed times (e.g. weekly) using side-loading co-collection compaction vehicles. SSO would be collected in a small cart. Leaf and yard wastes would be collected in resident owned receptacles (e.g. garbage can) or resident purchased compostable bags (e.g. Kraft paper). Alternately one large cart could be used for both SSO and leaf and yard wastes. These organic wastes would be taken to the Town's composting facility. Waste would be collected in the truck's other compartment and taken to the Landfill for final disposal.

IC&I- Delivery to Compost Facility

It is estimated that small amounts of IC&I wastes currently delivered to landfill could be diverted for composting through an organics diversion program.

Some IC&I facilities (e.g. Blue Mountain Resorts) separate out their food wastes for composting (i.e. about 400 tonnes/year). As well, apple processors currently divert some of their wastes to a compost facility. It may be possible to attract some of these wastes if the Town's composting facility is expanded. The IC&I sector would deliver these wastes to the Town's composting facility for a tipping fee (i.e. per tonne cost).

The following components are included in System 4:

- All components of Systems 1-3;

- **Curbside collection and processing of SSO wastes and leaf and yard wastes; and**
- **Delivery of IC&I SSO wastes and leaf and yard wastes at centralized composting facility.**

Table 6.1 presents an overview of the estimated new waste diversion. It is estimated that this System would result in an additional **19%** diversion of the residential sector, **2.8%** of the IC&I sector and **9%** overall waste diversion. This estimate is conservative because it has assumed only minimal capture of IC&I organic wastes. It is estimated that this would boost the overall diversion rate to **49%**.

6.5 System 5 – Enhanced C&D Recycling

In 2006 approximately 1,769 tonnes of the 4,589 tonnes landfilled (38.5% of total landfilled) was C&D wastes. This does not include smaller amounts disposed by the residential and IC&I sectors. This represents a significant amount of waste and many of these materials (e.g. wood, drywall, metal, masonry) could be separated, re-used and/or sold. There are current diversion programs for C&D wastes that arrive at the Landfill. Currently, there is no infrastructure for separating and sorting mixed loads. In System 5 it is proposed to add a C&D recycling facility at the Landfill to separate mixed loads of C&D wastes into components that can be recycled and to allow further processing of sorted loads of C&D wastes. Alternately C&D wastes could be delivered to a third party processor for a tipping fee.

This could be combined with increased fees for mixed loads of C&D wastes to stimulate diversion by this sector. This could also be combined with enforceable measures implemented by the Town (e.g bylaw) to compel the development of a waste diversion plan for new C&D projects and a requirement to recycle a portion of these wastes.

The following components are included in System 5:

- All components of Systems 1-4; and
- **C&D recycling facility at the Landfill.**

Table 6.1 presents an overview of the estimated new waste diversion. It is estimated that this System would result in an additional **1%** diversion of the residential sector, **47%** of the C&D sector and **15.1%** overall waste diversion. It is estimated that this would boost the overall diversion rate to **64%**.

6.6 Summary

The waste quantities that could be captured by the Systems 1 through 5 will vary. The success of a waste diversion program is dependant primarily upon the participation of the residents and businesses that generate the waste and the political will to promote the programs.

It is estimated in Table 6.1 that the cumulative impact of implementing all Systems would be a potential overall diversion rate of 64%, or an increase of about 27 percentage points from the present level.

Table 6.2 presents a summary of the impact that System would have on the individual sectors and on the overall waste diversion rate. As shown in Table 6.2 the overall waste diversion rate increases with the addition of each alternative waste management system. To get to an overall diversion rate of 40%, Systems 1-3 would have to be implemented. To get to an overall diversion rate of 50%, Systems 1-4 would have to be implemented. To get to an overall diversion rate of 60%, System 1-5 would have to be implemented.

Table 6.2 Summary of Waste Management System Diversion Rates (2006)

Component	System 1	System 2	System 3	System 4	System 5
	Status Quo	Existing System With Enhanced Capture	Enhanced Blue/Grey Box	Centralized Composting of SSO & Leaf & Yard Wastes	Enhanced C&D Recycling
Residential Waste Diverted	1,352	1,444	1,547	2,156	2,188
Residential Diversion Rate	41	44	47	66	66.8
IC&I Waste Diverted	841	841	841	889	889
IC&I Diversion Rate	48	48	48	51	51
C&D Waste Diverted	477	477	477	477	1,538
C&D Diversion Rate	21	21	21	21	68
Total Waste Diverted	2,670	2,762	2,865	3,522	4,615
Contribution to Diversion Rate	N/A	1.3	1.4	9.1	15.1
Overall Diversion Rate	37	38	39	49	64

A number of broad assumptions were made to arrive at these predicted diversion rates but in general this is what could be anticipated using the 2006 waste data.

7.0 ESTIMATED CAPITAL AND OPERATING COSTS

The total estimated annual costs were developed for each alternative waste management system. The detailed financial model for the proposed alternative waste management systems is provided in Appendix C.

System 1, which represents the existing system, uses 2006 cost data. The unit costs for this system were used to help estimate the impact of Systems 2-5 on overall waste management costs. The estimated costs of Systems 2-5 are presented in 2007 dollars, are preliminary in nature, should not be considered adequate for budgeting purposes and were calculated based on the following methodology:

- Capital costs for all equipment and operating costs necessary to implement the system were estimated using data provided by the Town, industry data and the Consultant Team's experience; and
- Financing charges for the capital expenditures were added to the capital costs using an interest rate of 6% annualized for 7 years.

A cost model was developed from which annual capital and operating costs were calculated. This cost model is attached in Appendix 1.

7.1 System 1 – Status Quo

System 1 is the existing system or Status Quo. The existing system annual cost was estimated to be just over \$540,000 in 2006. This works out to a net cost of \$74/tonne disposal and \$76/tonne diversion. The costs of other systems are added to this cost but take into account any additional revenues and any shifts in costs from disposal to diversion.

7.2 System 2 – The Existing System with Enhanced Capture

A C&E program would be developed and implemented to facilitate the increased capture of Blue/Grey Box recyclables and HHW. It is estimated that 92 tonnes of new recyclables and HHW will be captured with this system.

Assumptions:

- C&E program builds on current program; and
- C&E program delivered by Town staff.

7.2.1 Capital and Operating Costs

There are no capital costs for this System.

Operating costs include:

- Development of C&E program is \$25,000;
- Staff time to deliver C&E program is \$10,000/year.

When all costs are accounted for overall waste management costs increase to about \$546,000.

7.3 System 3 – Enhanced Blue/Grey Box

A C&E program would be developed and implemented to facilitate the capture of new Blue/Grey Box recyclables. An agreement would need to be negotiated with the service provider that collects and processes recyclable wastes to add new recyclables. It is estimated that 104 tonnes of new recyclables will be captured with this system.

Assumptions:

- C&E program builds on current program;
- C&E program delivered by Town staff; and
- Negotiate agreement with contractor to collect/process new Blue/Grey Box recyclables.

7.3.1 Capital and Operating Costs

There are no capital costs for this Scenario.

Operating costs include:

- Development of C&E program is \$25,000; and
- Staff time to deliver C&E program is \$10,000/year.

When all costs are accounted for overall waste management costs increase to about \$549,000.

7.4 System 4 – Centralized Composting of SSO & Leaf & Yard Wastes

A curbside collection program for SSO and leaf and yard wastes would be developed. The Town's windrow composting facility would be expanded to accommodate these wastes and potential additional wastes from the IC&I sector. It is estimated that 657 tonnes (609 tonnes residential; 47 tonnes IC&I) of new SSO and leaf and yard wastes will be captured with this system.

Assumptions:

- Households receive small cart for collection of SSO and portion of leaf and yard waste and small kitchen bin to collect SSO;
- Households use leftover space in cart, re-usable containers or compostable bags for the leaf and yard waste;
- Up to 80% of households (i.e. 5,619 hshlds*80%= 4,500) have direct access to the curbside program;
- The Town collects SSO and leaf and yard waste in a new vehicle(s);
- The Town expands the windrow composting facility at the Landfill and this includes;
 - A Mixer to mix incoming SSO and IC&I organic wastes;
 - Expanded outdoor pad for composting and curing; and
 - Loader to mix the organic feedstock during the composting process.

It may, however, be more economical for the Town to contract the collection and processing to the private sector. Cost estimates for a Town owned facility can be used as a comparison with contracting to the private sector.

7.4.1 Capital and Operating Costs

Capital costs include:

- 5,000-40 L carts for SSO at \$20/unit;
- 5,000-7 L kitchen bins at \$5/unit;
- 2-side loading collection vehicles at \$200,000/vehicle;
- Assumes use of loader presently on-site;
- Mixer at \$125,000; and
- Composting Pad at \$250,000.

This represents a total capital cost of approximately \$900,000.

Operating costs include:

- Development of ongoing C&E program of \$5,000/year;
- Staff time to administer System of \$5,000/year;
- Collection costs to collect food wastes and leaf and yard wastes of \$135/tonne;

- Processing costs to compost food wastes and leaf and yard wastes of \$55.00/tonne, including staff time to operate the System.

Table 7.1 presents a summary of annual costs. It would cost an estimated \$268,000/year to run this System as a stand-alone system (without accounting for reduced waste collection and processing costs).

Table 7.1 Overview of Costs – System 4 Centralized Composting of Food and Leaf and Yard Wastes

System 4 Centralized Composting	tonnes/year	\$/tonne	Annual Cost
Capital Costs		\$245	\$161,222
Collection (residential)		\$135	\$82,215
Processing		\$55	\$36,135
Communication and Education Program		\$15	\$10,000
Revenue (IC&I)		-\$65	-\$3,120
	657	\$436	\$286,452

When all costs are accounted for overall waste management costs increase to about \$749,000.

The costs to compost are relatively high, because of the relatively small tonnage of organic wastes. Costs can be reduced considerably by attracting additional IC&I wastes (e.g. from resorts, food processors). For instance Blue Mountain Resorts is currently diverting about 400 tonnes/year of food wastes and apple processors are diverting an unknown tonnage of apple wastes to processors outside of the region. If an additional 500 tonnes of these wastes were attracted at \$65/tonne it would reduce total costs to \$254,500 and per tonne costs to \$220/tonne (i.e. 657 tonnes+500 tonnes = 1,157 tonnes). It is envisaged that the Town would attempt to attract these additional wastes.

Furthermore, there is the potential to generate some revenue from finished compost products. The extent of this revenue is difficult to predict and takes some years to develop so has not been included in this assessment of costs.

7.5 System 5 – Enhanced C&D Recycling

A C&D Recycling facility, capable of processing mixed loads of C&D wastes would be established at the Landfill. Wastes would be delivered directly to this facility by the waste

generator. It is estimated that 1,093 tonnes (1,061 tonnes C&D; 33 tonnes residential) of new C&D wastes will be captured with this system.

Assumptions:

- The Town establishes a C&D waste recycling facility at the Landfill and this includes;
 - Excavator;
 - Trommel Screen;
 - Magnet/Generator;
 - Conveyor;
 - Outdoor pad for receipt of C&D wastes; and
 - Loader to load trammel screen and maintain facility; and
- The facility can process mixed loads and further process sorted loads of C&D wastes received at the Landfill.

It may, however, be more economical for the Town to contract the transfer and processing to the private sector. Cost estimates for a Town owned facility can be used as a comparison with contracting to the private sector.

7.5.1 Capital and Operating Costs

Capital costs include:

- Excavator at \$400,000;
- Trommel screen at \$200,000;
- Conveyor at \$85,000;
- Magnet/Generator at \$45,000; and
- Pad at \$100,000.

This represents a total capital cost of approximately \$830,000.

Operating costs include:

- Development of C&E program of \$5,000/yr;
- Staff time to deliver C&E program of \$5,000/yr;
- Processing costs \$40/tonne; and
- Revenues from C&D of \$65/tonne for 1,061 tonnes.

Table 7.2 presents a summary of annual costs. It would cost an estimated \$112,000/year to run this System as a stand-alone system (without accounting for reduced waste collection and processing costs).

Table 7.2 Overview of Costs – System 4 Enhanced C&D Recycling

System 5 Enhanced C&D Recycling	tonnes/year	\$/tonne	Annual Cost
Capital Costs		\$122	\$133,660
Processing		\$40	\$43,320
Communication and Education Program		\$4	\$4,000
Revenue (IC&I)		-\$65	-\$68,965
	1,093	\$102	\$112,015

When all costs are accounted for overall waste management costs increase to about \$828,000 per year.

7.6 Results of Financial Modelling

The cost of the existing waste management system in the Town is estimated to be about \$75/tonne or about \$540,000/year.

The total costs and diversion rate for each system are highlighted in Table 7.3. To achieve a 60+ diversion rate would result in an estimated 49% increase in overall waste management costs. This will result in additional costs of about \$286,500 annually. It will result in approximately 1,950 less tonnes being disposed annually in the Town's landfill. This will result in the extended life of the landfill. The benefit of extending the life of the landfill has not been calculated as part of this analysis.

Table 7.3 Overview of Costs and Waste Diversion Rates

System	Total Cost	Tonnes Diverted	Diversion Rate	Diversion Increase	Cost Increase
	\$000s	tonnes	%	%	%
1	542	2,670	37	0	0.0
2	546	2,762	38	1	0.7
3	550	2,866	39	3	1.5
4	749	3,523	49	12	38.0
5	828	4,616	64	27	52.6

8.0 ESTIMATED GREENHOUSE GAS CONTRIBUTIONS

Increasing concern with climate change is driving growing demand for information on carbon footprints. A carbon footprint, also named carbon profile, is a measure of the overall amount of carbon dioxide (CO₂) and other greenhouse gas (GHG) emissions (e.g. methane, landfill gas etc) associated with a product or system along its supply-chain and function, including end of life recovery and disposal. Causes of GHG emissions are for example, electricity production in power plants, heating with fossil fuels, transport operations, waste treatment, and disposal processes in landfills or dumps.

A carbon footprint is quantified using indicators such as the Global Warming Potential (GWP) expressed in a common unit of equivalents CO₂ (eCO₂). As defined by the Intergovernmental Panel on Climate Change (IPCC), a GWP is an indicator that reflects the relative effect of a GHG in terms of climate change considering a fixed time period. The GWPs for different emissions expressed in eCO₂ can then be added together to give in one single unit the expression of the overall contribution to climate change of particular emissions.

In addition to achieving higher waste diversion and extending landfill life, GHG emission reductions can be realized by the Town with the development of the possible new waste diversion programs previously described. Quantification of the contributions in terms of GHG generation per System will be described by Golder as the next phase of the Solution. A summary of the preliminary findings is provided below.

The GHG emission factors employed in the calculations were developed by Environment Canada (ICF, 2005) and only provide a general indication of GHG implications of waste management choices. Environment Canada factors give a good approximation of the GHG implications of waste management choices in Canada. However, for the quantification of the organic fraction, factors have been based on the Alberta Environment calculator model of the Quantification Protocol for Aerobic Composting (2007), which is better applied. For the purposes of the analysis carried out, a baseline scenario was added. The baseline scenario consists in a Zero diversion rate, where all materials are sent to disposal.

Table 8.1 presents the final GHG values expressed in eCO₂ that are expected per System. It is clear that the increase in the overall waste diversion rate to 64% as demonstrated in System 5 will result in the most significant benefit in terms of a reduction of GHG. A measured reduction of 4951 tonnes eCO₂ was calculated for System 5 in comparison with the baseline scenario.

Table 8.1 Greenhouse Gas Emissions per System

Systems	Results in eCO2
Baseline	2404
Status Quo	-2976
System 2	-3169
System 3	-3447
System 4	-3642
System 5	-4951

As discussed, the emission factors developed by Environment Canada (ICF, 2005) only provide a general indication of GHG implications of waste management choices. However, despite the uncertainty in the emission factors they provide a reasonable estimate of the overall GHG impacts associated with waste management options in Canada.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Alternative Waste Management Systems were developed in a sequential fashion. If a goal of 40% waste diversion is desired Systems 1-3 would need to be implemented. To achieve a goal of 50% Systems 1-4 would need to be implemented.

There appears to be support as evidenced through the survey and public meetings to aim for a 60% waste diversion goal.

The various Systems described in Section 6 and 7 details the path to 60% diversion including costs. Higher waste diversion comes with additional costs but the added bonus of extended landfill life and GHG emissions reductions. It is recommended that the Town proceed with Systems 1-5 to achieve a 60% waste diversion goal.

10.0 REFERENCES

- Alberta Environment (2007). “Quantification Protocol for Aerobic Composting Projects,” version 1. Province of Alberta, September 2007.
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- ICF Consulting (2005). “Determination of the Impacts of Waste Management Activities on Greenhouse Gas Emissions: 2005 Update Final Report,” prepared for Environment Canada and Natural Resources Canada, October 2005.
- Ontario Ministry of the Environment (2004). “Ontario’s 60% Waste Diversion Goal – A Discussion Paper”, PIBS4651e. Queen’s Printer of Ontario, June 2004.
- Ontario Ministry of the Environment (2007). “Policy Statement on Waste Management Planning: Best Practices for Waste Managers”. Minister of the Environment, June 2007.
- RIS International Ltd. (2005). “The Private Sector IC&I Waste Management System in Ontario”, prepared for the Ontario Waste Management Association, January 2005.
- Statistics Canada (2005). “Human Activity and the Environment - Annual Statistics 2005”. Feature Article Solid Waste in Canada (Catalogue No. 16-201-XIE). Minister of Industry, November 2005.
- Statistics Canada (2008). “Waste Management Industry Survey: Business and Government Sectors 2006” (Catalogue No. 16F0023X). Environmental Accounts and Statistics Division, Statistics Canada, Ministry of Industry, June 2008.

11.0 CLOSURE

We trust that this report meets your immediate requirements. If you have any questions regarding the content of this report, please do not hesitate to contact this office.

GOLDER ASSOCIATES LTD.

2cg INC.



Michael Cant, Associate
Canadian Waste Sector Leader


061182176R0001003

Paul van der Werf, B.Sc.(Agr), M.Sc. MCIWM
President

MC/AB:mc/ab/jh

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APPENDIX A

PUBLIC AND STAKEHOLDER WORKSHOP #1 SYNOPSIS



Public and Stakeholder Workshop #1

Thursday, May 24, 2007
7:00 p.m. - 9:00 p.m.
Marsh Street Centre
187 Marsh Street
Clarksburg, Ontario

Saturday, May 26, 2007
1:00 p.m. - 3:00 p.m.
Blue Mountain Inn - Senator Room
110 Jozo Weider Blvd
Craigleith, Ontario

Meeting Purpose

The purpose of the meeting was to introduce the waste management planning process, and to identify a community vision and goals for the next 30 years. Options for system improvements and criteria for choosing a new system were also explored.

Welcome and Introductions

Councillors Gamble (May 24) and Martin (May 26) each hosted one meeting. Councillors welcomed participants to the meeting and stressed that because there is only 5 years of space left in the Town's landfill; steps need to be taken quickly to develop a new long term waste management solution.

Jeffery Fletcher, Town of The Blue Mountains. Welcomed participants to the meeting and thanked them for their interest in the process.

Michael Cant, Golder Associates provided a review of the proposed meeting agenda and format. A copy of the agenda is included in Appendix A.

The Blue Mountains Waste Management Planning Process - Michael Cant

Michael indicated that the purpose of the study is to assess the current system and develop an integrated waste management plan. He noted that the approach includes: 1) System Assessment and Future Options; 2) selecting the future system; and 3) approval Process - Terms of Reference. Michael indicated that public engagement will occur at each step of the process. In addition, Michael provided an overview of the study area.

Current Waste Management System - Michael Cant, Golder Associates.

Michael presented information about the current waste management system in the Town. The following notes provide highlights about his presentation (full presentation is attached in Appendix B).

- Waste is currently managed in the Town through Diversion Programs and the Town's Waste Disposal Site.
- Residential, Industrial, Commercial and Institutional (IC&I) and Construction and Demolition (C&D) are the kinds of waste that are currently managed.
- In 2006, 6,780 tonnes of waste was managed in the Town. Between 2,000 and 5,000 tonnes is exported yearly.
- The Town's Waste is Managed in the following way:

	2004	2005	2006
Total Waste Landfilled (tonnes)	5,736	5,333	4,583
Total Waste Diverted (tonnes)	1,826	2,051	2,197
Total Waste (tonnes)	7,562	7,385	6,780
Permanent Population	6,541	6,683	6,825
Kg/person/year	1,156	1,105	993

Waste Disposal

The Blue Mountains' Landfill

- 5 Years Licensed Capacity remaining in March 2006
- Total waste landfilled in 2006: 4,583 tonnes
- Per capita disposal rate in 2006: 590 kg/person/year

Waste Diversion

- Blue and Grey Box
 - Paper, boxboard, cardboard
 - glass, metals, plastics etc
- Landfill Depots
 - Tires,
 - Household Hazardous Waste
 - Other materials; bulky items, scrap
 - metal and appliances

- Composting
 - Landfill Composting
 - Backyard Composting

Residential Waste Diversion

- Overall residential capture rate per capita in 2006: 245 kg/person/year
- The majority diverted through the Blue and Grey Box
- A total of 470 households participated in Backyard composting

Cost

The following table provides an overview of the cost per tonne from 2004-2006:

	Gross	Revenue	Net
2004	\$121	\$73	\$48
2005	\$115	\$85	\$30
2006	\$150	\$70	\$80
Average	\$128	\$76	\$52

Future Waste Management System

The following tables outline the potential waste management options for the future of the Town's Waste Management System.

Future Waste Generation

- Population Projections

Population	2010	2011	2016	2021	2040
Permanent	7,051	7,108	7,403	7,711	9,000
Seasonal	13,088	13,772	17,768	22,923	60,352

- Average generation factor of 1,150 kg/person/year
- Diversion rate of 60%
- The Town will require disposal capacity of approx. 130,000 tonnes or 230,000 tonnes to 2040

Potential Options - Reduce, Reuse, Recycle

- Waste Reduction
- Waste Reuse
- Public Education and Awareness
- Optimize Blue and Grey Box
- Household Hazardous Waste Depot
- Leaf and Yard Waste Collection
- Source Separation Organics Collection
- Landfill Bans
- User Pay

Potential Disposal Options

- Expanded existing landfill
- Mine existing landfill
- Energy from Waste
- Siting study for new landfill
- Export of waste outside the municipality
- Collaborate with other local municipalities to locate a disposal facility

Environmental Assessment Process

Michael provided an overview of the Environmental Assessment Act and the Environmental Protection Act.

Vision for the Future of The Town's Waste Management System - Sally Leppard/Liz Nield, Lura Consulting and Paul van der Werf, 2cg Inc.

Following the presentation, participants discussed the Vision for the future of the Town's Waste. Participants indicated that the following elements should be included in the Vision Statement. Using the information below, a Vision will be drafted in the fall 2007.

By 2015 The Town's Waste Management will ...

Meeting on May 24

- Include individual responsibility as a major component
 - Consider incentives and fines
- Consider a regional solution
- Avoid landfill processing-reduce/divert
- Need municipal leadership
- Be economically Feasible
- Focus on sustainability at the local level
- Include no exporting of waste, waste should be dealt locally
- Function at all levels (business, residential, institutional, municipal)
- Provide links and partnerships with commercial players
- Include Town and private leadership
- Educate public regarding hierarchy of waste management
- Involve mixing waste in existing landfill
- Include set and established goals
- Include responsibility of producers to reduce packaging
- Involve more community composting and organics program
- Be revenue generating
- Have increased public awareness and education
- Established partnerships with other communities
- Eliminate plastic bags
- Consider Energy from Waste
- Use all tools to end up with as little to dispose of as possible
- Be an environmentally responsible solution
- Hold businesses responsible for their waste reduction

The Blue Mountains Solid Waste Solution
Public and Stakeholder Workshop #1

- Follow best practice models (e.g. Yellowknife landfill and organic bags/newspaper for pet waste not plastic bags)
- Create a philosophy within the community about managing waste and resources

Meeting on May 26

- Be environmentally responsible and safe
- Focus on user accessibility to services
- Reduce at the point of generation
- Focus on 3Rs
- Involve accountability (no exporting of waste) for what we produce
- Get rid of plastic bags, bottles
- Involve a program for electronics and appliances e.g. Extended Producer Responsibility
 - Appliance program i.e. you make it/you take it
- Explore partnership options with other Municipalities
- Be efficient and effective
- Reduce costs to tax payers
- Will not be too restrictive in regard to what can be disposed
- Offer incentives for waste reduction
- Involve waste re-use and goods exchange days, where people could get in the habit of exchanging used goods
- Involved thermal disposal
- Eliminate construction waste from landfill
- Use creative approaches (e.g. Guelph Wet/Dry System)

System Components

Following the discussion in regard to the future of the Town’s Waste. Participants discussed system components that could be included.

Waste Minimization	Individual Measures <ul style="list-style-type: none"> • Reduction at source • Backyard composting Collaborative Measures <ul style="list-style-type: none"> • Policy instruments/incentives • Education
Resource Recovery	Collaborative Measures <ul style="list-style-type: none"> • Curbside Collection Recyclables • Curbside Collection Compostables (Organics) Public or Private Sector/Town of The Blue Mountains and/or area Partners: <ul style="list-style-type: none"> • Recycling Facility • Composting Facility (Source Separated Organics)
Waste Disposal	Public or Private Sector/Town of The Blue Mountains and/or area partners: <ul style="list-style-type: none"> • Local area landfill • Energy from Waste and ash disposal • Special wastes (e.g. Household Hazardous Waste) • Landfill with pre-processing • Export to outside area landfill
Additional	May 24 Meeting

The Blue Mountains Solid Waste Solution
Public and Stakeholder Workshop #1

system components	<ul style="list-style-type: none">• Locally supported & sustainable• Involves individuals responsibility• Ease of use• Cost effective• Education re extent of problem & what our input will mean• Convenience & education for seasonal• Curbside collection• Garbage audits• Dealing locally with special waste• Organic waste-curb-side pick-up & make it economically feasible• Composting plant• Provide services to commercial sector (barrier is cost at landfill)• Consider issues with vermin (composting) <p>May 26 Meeting</p> <ul style="list-style-type: none">• Incentives (e.g. encourage people to recycle, compost)• Accessible drop-off sites• Energy from waste might not work (lack of volume), unless partner with other municipalities, counter productive• Bulk collection, town wide yard sale day (waste exchange)• Include Household hazardous waste• Composting, possible interest in green bin• Education and communication, train people to do the right thing• Add more recyclable materials to existing program
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Criteria

Following the discussion about System Components. Participants discussed the criteria that should be used to assess and select the system components?

May 24 Meeting

- Sustainability
- No ducking the issues or passing on the problems
- Consider environmental effects and impacts
- Ease of implementation and convenience
- Cost
- Responsibility of individual
- Make organics marketable
- 100% of “our” waste should be handled locally
- Work to achieve 100% diversion

May 26 Meeting

- Flexibility of the component
- Ease of implementation
- Partnership possibilities
- Environmental effects
- Social impact and acceptability
- Cost

- Marketability of materials and products
- Compliance with legislation (this could be a constraint)
- Time
- Cost
 - Include cost of environmental effects
- Education and communication around the options, people need to know the information

Highlights

Overall, there was one strong message at both meetings: residents, businesses, the Town and tourists, should create much less waste in the first place. What can't be reduced at source should be handled through recycling, composting and re-use to the extent possible. There was also a desire to manage waste within the community rather than relying on the export of waste to other communities.

In addition, participants stressed that we all need to change our behaviour. Responsibility for waste reduction should come from all levels of government, businesses and the public.

Next Steps

Michael provided an overview of next steps for the Town's Waste Management process.

- | | |
|--------------------------------------|-------------|
| • Develop Waste Diversion Plan | August 07 |
| • EA/Environmental Screening Process | August 07 |
| • Prepare Draft Terms of Reference | August 07 |
| • Workshop #2 | Sept/Oct 07 |

Closing Remarks

Jeffery Fletcher, Town of The Blue Mountains closed the meeting by thanking everyone for participating in the process. He asked that everyone continue to participate and provide feedback.

APPENDIX A: AGENDA

Public and Stakeholder Workshop #1 Town of The Blue Mountains Waste Management Planning Process

Purpose of the Meeting:

- The purpose of this meeting is to introduce the waste management planning process, and to identify a community vision and goals for the next 30 years. Options for system improvements and criteria for choosing a new system will be explored.

7:00p.m. Opening Remarks

- Welcome - Councillor
- Introductions Purpose of Meeting- Michael Cant, Golder Associates

7:15 p.m. Presentation

- Town of The Blue Mountain's Waste Management System - Michael Cant
- Discussion

7:30 p.m. Working Session #1 - Vision for the Future

- Group Brainstorming Session Facilitator Sally Leppard, Lura Consulting and Paul van der Werf, 2cg Inc.

7:50 p.m. Working Session #2

- Small Group Discussion on Options and Criteria for Selecting the Future System

8:40 p.m. Closing Remarks and Next Steps

- Provincial Approvals Process and Next Steps - Michael Cant
- Closing Remarks

APPENDIX B: PRESENTATION

APPENDIX B

PUBLIC AND STAKEHOLDER WORKSHOP #2 SYNOPSIS



Public and Stakeholder Workshop #2

Saturday January 26, 2008

10:00AM - 12:00PM

Beaver Valley Community Centre (Large Hall)
Thornbury, Ontario

Meeting Purpose

The purpose of this meeting was to approve a community vision and goals for waste management for the next 30 years, and to evaluate and provide advice on waste diversion and disposal options.

Highlights

- Approximately 25 people signed in at the meeting.
- Most people indicated that they supported waste reduction, enhanced recycling, source separated organics collection as the preferred system, with landfill mining to conserve the landfill space at the existing site. In addition, recycling of construction and demolition waste was supported. One individual developed a “hybrid” plan, including maximizing waste reduction and recycling, and implementing recycling of C & D wastes, based on cost efficiency and availability of composting facilities elsewhere.
- Participants advised that the Town consider the merits of other facilities in the region, if they come on line (for example if new facilities are built around the area, e.g. composting plant, EFW).
- There is a need to carefully consider environmental and social effects when considering mining the landfill.
- Focus has to be on waste reduction and extended responsibility, and people reducing waste at source.
- Participants would like to see an educational component included.
- People need more technical information on the environmental and social impacts of the proposals.

Welcome and Introductions

Deputy-Mayor McKinlay welcomed participants to the meeting and thanked them for attending.

Jeffery Fletcher, Town of The Blue Mountains. Welcomed participants to the meeting and thanked them for their interest in the process.

Michael Cant, Golder Associates provided a review of the proposed meeting agenda and format. A copy of the agenda is included in Appendix A.

Review of Vision and Goals - Sally Leppard

Sally Leppard, Lura Consulting (meeting facilitator) presented the following draft vision for review:

The Town of The Blue Mountains waste management is a system that is in harmony with its beautiful four season's environment. This system functions and involves people at all levels of business, residential, institutional and municipal and works successfully with full time and seasonal residents. While reducing and diverting the use of waste, the system improves the quality of the area's environment, at a reasonable cost for the Town.

Led by the community as a whole and the municipality -- this system offers significant new directions and opportunities for education and increased public awareness, it is in partnership with other communities, and has followed best practices from sustainable communities worldwide. It is promoting an environmentally-aware community composting and organics program.

In regard to the vision, participants made the following suggestions:

- The vision is good
- The vision needs to engage tourists
- Remove specifics regarding the organics program
- What determines that the system will be successful?
- The vision should reflect a waste diversion target e.g. 60% diversion by 2008

Goals

Following the vision, Sally Leppard presented the draft goals for review:

- The system will function at all levels (business, residential, institutional, municipal)
- It will include individual responsibility as a major component towards waste reduction
- It will consider a regional solution, waste should be dealt with locally
- Involves partnerships with commercial and private sectors, hold businesses accountable for their waste reduction
- Follows best practice models and creative approaches
- Has created a philosophy within the community about managing waste and resources, and has fostered as sense of accountability whereby people take responsibility for what they produce
- Is as environmentally responsible and safe as possible
- Is accessible and easy to use
- Reduces at the point of generation whenever possible
- It is an efficient and effective system
- **Community**
 - Involve waste re-use and goods exchange days, where people could get in the habit of exchanging used goods
 - Increased public awareness and education
 - Established partnerships with other communities
 - Involve more community composting and organics program

- **Economic**
 - Provides services at a reasonable cost to the taxpayers
 - Is revenue generating where possible
- **Natural Environment**
 - Is an environmentally responsible solution

Participants made the following suggestions:

- Include visitors/tourists in the first goal
- “Hold businesses accountable for waste reduction” - concern that this could pose some significant burdens on small businesses. This should be done carefully. Suggest the following wording: Town can work with businesses to provide incentives and education and to help them achieve waste reduction and diversion.
- Everybody needs to contribute to this (e.g. Staples has recycling)
- Organizational/Industry/Business Stewardship
- Leadership of municipalities to push waste reduction at source
- Make all plastic recyclable, we would divert a lot of waste
- Community should be kept informed about how people are showing leadership in the community, and are provided with reward for them who do a great job (look at Hamilton Gold Box)
- We need a greater emphasis on toxic waste disposal since most do not risk driving to Owen Sound with paint cans, batteries, computer components; we need a centre at our landfill to accept this material. Could it be collected?

It was agreed that the comments and advice received would be incorporated into the vision and goals.

Additional Comments:

- C: Businesses do need to be involved (IC&I Sector). The Municipality is involved with the residential component of the waste. 30% of the waste that is generated in the town comes from businesses;
- C: Currently, businesses are required to have a waste reduction plan, and meet provincial guidelines. Ministry of the Environment is implementing this regulation, and imposing additional fines on businesses.
- A: *The Town does pick up recycling and waste, small cart program. There is a certain tipping point where the Municipality is responsible in regard to businesses.*

Results of Survey - Sally Leppard

Sally presented an overview of the survey results.

There were 297 respondents to the survey.

Use of Services

- Blue/grey box recycling, curbside collection and the deposit return for beer and liquor bottles are most commonly used.

Recycling

- Virtually all of the respondents recycle
- Common materials recycled: glass jars and bottles, cans, plastic containers, paper, and cardboard and boxboard.
- Satisfied with the recycling program
- Wish it accepted more materials.

Backyard Composting

- Backyard composting is a popular activity in the Town of The Blue Mountains, as more than half of respondents say they do so.

Access to Information

- More information is required on composting and leaf and yard waste.
- Suggestions for improving information included a waste management flyer, the newspaper, and a waste management calendar.

Opinions on Managing and Disposing of Waste

- Support the principles of reduce, reuse and recycle.
- Food and yard wastes should be composted.
- Support reaching the provincial waste diversion goal of 60%.
- Town should manage its own garbage and oppose managing the waste of others.
- Generally in favour of expanding the Town's landfill, or locate a new one within Town boundaries
- Support among respondents for industry stewardship.

Following the presentation, participants provided the following comments:

- Suggest that the survey is available on the website
- Consider student involvement, and surveying students
- Look at Simcoe Calendar -- -we should get together and develop a calendar that is as informative as Simcoe's
- In regard to user fees, we need to ensure that the program is fair and equitable - there is a difference with people living on their own and people with large families.
- There may be advantage in partnering with other Municipalities to provide waste services.
- Would like to see access to information expanded a bit so that there is more information about disposing bulk goods
- Generally, participants recognized their opinions in the survey results.

Overview of Waste Diversion Plan - Paul van der Werf, 2cg Inc.

Paul presented on overview of the proposed waste diversion plan for the Town. The following notes provide highlights about his presentation (full presentation is attached in Appendix B).

Paul indicated that Ontario's waste diversion goal is 60%, and that the Town's current waste diversion rate varies between 27-37%. The goal of the Waste Diversion Plan is: *"To define a system and criteria that will allow the Town to achieve or exceed the Provincial waste diversion target of 60%."*

Paul indicated that in setting the above goal, the Town recognizes that additional waste diversion can come from 1) strengthening existing waste diversion programs; and 2) identifying and developing new waste diversion programs.

He indicated that the existing waste management system consists of:

- Curbside waste collection and disposal;
- Curbside recycling program;
- Landfill recycling depot; and
- Back-yard composting program.

Alternative Systems

Paul provided an overview of the five alternative systems have been developed and are as follows:

- System 1 Status Quo;
- System 2 Existing System with Enhanced Capture;
- System 3 Enhanced Blue/Grey Box;
- System 4 Centralized Composting of SSO and Leaf and Yard Wastes; and
- System 5 Enhanced C&D Recycling;

System 1 - Status Quo includes the following:

- Potential of 37% Waste Diversion;
- Curbside collection of garbage;
- Curbside collection of recyclables (Blue/Grey Box);
- Communications and Education (C&E) program;
- Landfill recycling (curbside recyclables, scrap wood, scrap metal, concrete blocks and other masonry, appliance, propane tanks, E-waste, HHW, bale wrap);
- Landfill drop-off of leaf and yard and fruit wastes waste for composting; and
- Backyard composting.

System 2 -- Existing System with Enhanced Capture

- Potential of 38% Waste Diversion;
- System 1;
- This System is based on maximizing the existing residential waste management system that is operating in the Town;
- It focuses on the increased capture of Blue/Grey Box recyclables and HHW.
- This diversion would be stimulated through the development of an enhanced and sustained Communications and Education (C&E) program.

System 3 Enhanced Blue/Grey Box

- Potential of 39% Waste Diversion
- System 1 and 2
- Additional recyclables would be added to the Blue/Grey Box.
- Proposed additional recyclables to be added include paper coffee cups/ice cream containers, other paper, plastic bags, steel aerosol cans, steel paint cans and other metal.
- These recyclables were selected because there are available quantities and end markets.

System 4 Centralized Composting of SSO and Leaf and Yard Wastes

- Potential of 49% Waste Diversion
- System 1,2 and 3
- Includes the curbside collection and processing of residential Source Separated Organics (SSO) (i.e. food and some non-recyclable paper wastes such as tissue)
- The receipt of IC&I SSO and leaf and yard waste at the Town's composting facility.
- The processing of these wastes could either be done by expanding the Town's windrow composting facility at the Landfill or by delivering these wastes to a third party compost facility, for a transport/tipping fee.
- This System assumes that the Town's composting facility at the Landfill would be expanded to accommodate up to 3,000 tonnes/year of organic waste (i.e. currently has a capacity for 1,000 tonnes/year).

- **Residential- Curbside Collection**
 - The Town would collect SSO and leaf and yard wastes from the curb at prescribed times (e.g. weekly)

- **IC&I- Delivery to Compost Facility**
 - It may be possible to attract some of these wastes if the Town's composting facility is expanded.
 - The IC&I sector would deliver these wastes to the Town's composting facility for a tipping fee (i.e. per tonne cost).

System 5 Enhanced C&D Recycling

- Potential of 64% Waste Diversion
- System 1,2, 3 and 4
- There are current diversion programs for C&D wastes that arrive at the Landfill in a segregated fashion.
- At this point there is no infrastructure for mixed loads.
- It is proposed to add a C&D recycling facility at the Landfill to separate mixed loads of C&D wastes into components that can be recycled and to allow further processing of sorted loads of C&D wastes.
- Alternately C&D wastes could be delivered to a third party processor for a tipping fee.
- This could be combined with increased fees for mixed loads of C&D wastes to stimulate diversion by this sector.
- This could be combined with enforceable measures implemented by the Town (e.g. bylaw) to compel the development of a waste diversion plan for new C&D projects and a requirement to recycle a portion of these wastes.

Estimated Capital and Operating Costs

System	Total Cost	Tonnes Diverted	Diversion Rate	Diversion Increase	Cost Increase
	\$000s	tonnes	%	%	%
1	542	2,670	37	0	0.0
2	546	2,762	38	1	0.7
3	550	2,866	39	3	1.3
4	729	3,523	49	12	34.3
5	807	4,616	64	27	48.9

In conclusion, Paul indicated the following:

- Present waste diversion is about 37%
- Provincial goal is 60%
- System 4 will help achieve 50% with a 34.3% increase in costs
- System 5 will help achieve 60% with a 48.9% increase in costs

Questions of Clarification

Throughout the presentation, participants asked questions. The following summarizes participants' questions (identified with 'Q') or comments (identified with 'C'), and responses from the project team or The Town in *italics* (identified with 'A') where provided.

Q: Is apple waste included in the diversion estimates for the IC&I program?

A: *Not currently. However, additional wastes can be collected from the IC&I sector.*

C: Suggest that the study team and interested participants review CCME reports around National and International packaging practices and protocol (several reports can be obtained at: www.ccme.ca).

Q: What does the Town do with recyclable materials?

A: *The Town currently has a recycling depot at the landfill. Jeffery Fletcher invited participants to contact him should they be interested in finding out more about it.*

Q: Can meat etc. be included as IC&I waste?

A: *Yes*

Q: There is a large composting facility in Arthur and Meaford used to have one. What is happening with the Meaford composting facility? Would the Town consider partnering with another Municipality?

A: *Currently looking in that. However, Meaford's message is that you don't need to be a large Municipality to have a composting facility.*

Q: Who is going to pay for a cost increase? Who generates in the first place

A: *When the final cost is determined the Town will need to make the decision about who pays for it. It is important to note that Waste Diversion costs money - this could be tax based, user pay etc. In addition, fill costs will need to be factored in as well.*

Q: Did you look at Energy from Waste facility?

A: *That is covered under the presentation about Waste Disposal.*

C: Suggest looking at the Guelph Wet Dry system.

Q: Concern about transfer stations - there was nothing in the presentation about them, they are horrible. Suggest that we need to rid ourselves of Transfer Stations.

A: *The Town has had a lot of requests about the Transfer Station - however, the question that we need to consider is how do you site it?*

Overview of Waste Disposal Options - Michael Cant, Golder Associates

Michael Cant provided an overview of the Waste Disposal Options. The following section provides an overview of the presentation (full presentation is attached in Appendix B).

Michael indicated that even with 60% diversion the municipality will require residual disposal capacity of 120,000 tonnes or approximately 200,000 cubic metres over the next 20 years

Michael indicated that the following options had been considered:

- Energy from Waste (EFW)
- Export to another Landfill in Ontario
- New Greenfield Landfill within the Town boundaries
- Expansion of Existing Site
- Mining of Existing Site

In addition, Michael provided an overview of the Environmental Assessment Act, the Environmental Protection Act, and the Environmental Screening Process, to provide participants with an understanding of the approval process required

Questions of Clarification

Throughout the presentation, participants asked questions. The following summarizes participants' questions (identified with 'Q'), and responses from the project team or The Town in *italics* (identified with 'A').

Q: How many tonnes currently go into the Town's landfill?

A: *Approximately 5000 tonnes per year are disposed of into the Town's landfill.*

Q: My street has gone from 6-12 houses, more apartments going up, are we prepared for our growth?

A: *Yes, the projections have included growth, population, etc.*

Discussion

Following the presentation, participants discussed the Waste Diversion plans and provided the following comments; in addition participants provided workbooks at the end of the meeting (workbooks can be found in Appendix C):

What option do you prefer?

- System 1 Status Quo;
- System 2 Existing System with Enhanced Capture;
- System 3 Enhanced Blue/Grey Box;
- System 4 Centralized Composting of SSO and Leaf and Yard Wastes; and
- System 5 Enhanced C&D Recycling;

Many participants preferred Systems 4 and 5, and provided the following comments:

- System 4 covers the bulk of our garbage
- There is a lot of potential for waste diversion with C&D recycling
- Suggest including everything we can! Let's divert whatever we can from landfills.

Some participants indicated the following preferences:

- The enhanced blue/grey box recycling option is the most economical. Where can we put the paper bags with the plastic lining?
- One person against 4 and 5, and suggested #3, plus C&D. Suggest that by enhancing existing system that we have now will help to divert waste.

In addition, participants urged the following:

- The system must be easy to use, or people will not use it
- Educate people about waste diversion - design and implement a very strong educational program around waste diversion. Otherwise, it won't work. (One participant noted that the educational campaign should depict how people should sort their recyclables and waste - her opinion is that people don't know where things go, and thus they throw them in the garbage).
- Implement an economic instrument or fees. If people do recycle, they should have some benefit or a reward.
- Improvements to the BVO centre -- could provide them with the space to collect more, and as such we could divert more waste.
- Values base - we are such a throw away society. Suggest looking at how we replace everything.
- Need to select the system that has the maximum effectiveness
- Food attracts insects and animals -- is there a negative social impact about having untreated food in the bins?
- *Need to collect the bins in a timely fashion - currently there have not been any negative experience.*
- There is a great re-store in Collingwood n--more communication and partnerships might get people to use it. What about at the landfill site - a specialized area, re-use depot that could be sent off to the charities.

Waste Disposal Options

- We should be responsible for what we produce (educate, process);
- Several participants indicated that a local solution is important;
- Make sure there is protection of ground water at the existing operation as well as during mining;

- This should be designed on an affordable level;
- There should be a lot of consultation on mining before it is approved - not sure if this is the best idea;
- Participants supported mining in principal, however there is a need to identify and discuss social and environmental impacts before a decision is made; and,
- EFW shouldn't be out of the question. Materials that burn the best in the incinerators are often the best to recycle. You can really maximize their value; you can get money for generating electricity. There is a potential economic advantage with EFW.

Questions:

Q: If the site was mined -- would the height of the landfill increase?

A: *We can look into that.*

Q: How much time left do we have with our existing landfill?

A: *4-5 years left in the existing site, the mining option represents approximately 20 years of additional capacity.*

Q: If the site is mined, will leachate be monitored?

A: *Yes, that will be monitored. The landfill site performs to Ministry regulations around leachate.*

Q: Have the consultants compared the costs of Energy from Waste (EFW) against the cost of the landfill?

A: *Costs could be approximately 20, 80 or 200K. Landfill is the cheapest option. EFW cost always comes down to a function of the size of the facility.*

C: We could mine our site, and export waste for gasification then landfill the ashes?

Q: How significant will the advice of the public be in the decision making? Concern that there has not been enough technical information provided to the community about mining the site.

A: *We are taking input, and go forward to the committee, and include technical viewpoint, and a potential course of action. Ultimately the Council will decide.*

C: Suggest that the public could have another look at the waste report.

C: Would like to see an implementation plan.

In addition, participants indicated that they would like the Town to consider the following:

Organics

- Reduce the prices for backyard composters
- Keep the yard waste area in the landfill
- Investigate the use of green bins and sink containers for organic waste that are being used in the GTA

Hazardous Waste

- Get a local area to receive toxic waste (paint cans, batteries, computers, etc.) - Owen Sound is too far and has limited days to receive these materials

- Open up a hazardous waste disposed at current landfill site

Timing

- 20 years is a short time in the big picture

Industry

- Ignoring the construction industry does not make sense to me - it is big percentage of waste stream
- Until we engage the construction industry at the contractor level, progress will be slow

Additional Advice

- Please examine the Guelph system
 - No “black” bags
 - Organic waste separated by individual
 - Recyclable material cans, etc.
 - Non-recyclable, i.e. plastic/ saran
 - (Three bags transparent: blue, green, clear)
- Ensure that all existing and new apartments (multiple dwellings) recycle
- Consider - mini electrical power generation (maybe attract private money, hydro-one pays \$0.42/kwk for 20 years)
- Methane extraction
- Clean incineration
- Take a look at treehugger.com

Next Steps

Michael provided an overview of next steps for the Town’s Waste Management process.

- Incorporate Public Input into Diversion Plan
- Present results to Committee and Council with recommended course of action
- Initiate Pilot Composting Study
- Begin Disposal Option Environmental Work

Closing Remarks

Jeffery Fletcher, Town of The Blue Mountains closed the meeting by thanking everyone for participating in the process. He asked that everyone continue to participate and provide feedback.

APPENDIX A: AGENDA

APPENDIX B: PRESENTATION

APPENDIX C: WORKBOOKS

Is the Vision accurate? What changes can be made?

- “Success” needs to be measured using criteria:
 - Is it reducing garbage? →60% by 2008
 - Is it easy enough to do?
 - I.e. Toxic waste (ie.permit) is not easy - must be now driven to Owen Sound
 - Does it encourage people to reach stated goals?
- Add visitors (x2)
- Construction industry
- Processing industry
- Does it precede some option - gasification
- 60% by 2008 is provincial target

Are the goals accurate? What changes can be made?

- We need a greater emphasis on toxic waste disposal since most do not risk driving to Owen Sound with paint cans, batteries, computer components; we need a centre at our landfill to accept this material. Better still can it be collected? Otherwise, I know people hide it in regular garbage
- Leadership of municipalities to push at source reduction
- Rewards/incentives
- 30% business, 60% pick-up some of business
- Current 37%, Prov 60%, System 4: 34.5%, System 5: 48%
- Municipality show leadership
- Provincial leadership in reduction packaging
 - All plastic recyclable?
- Education and information programs
 - Teach kids - influence family -Many households do not have kids
- Some businesses are keeping packaging at store, staples has bins for ink cartridges, batteries
- Own need and play leadership role

Evaluating Alternative Waste Management Systems. Review the following list of Diversion Options proposed to guide development of the Town’s Plan. For each option check off the criteria that applies.

	Evaluation Criteria		
	Cost/ Affordability	Environmental Effects	Social Impact and Acceptability
Status-Quo	<ul style="list-style-type: none"> Okay for current tax structure 	<ul style="list-style-type: none"> Need to get rid of plastic grocery bags in garbage Need to make a case to the public, industry, construction, agriculture that these are valid, responsible and sustainable Acceptable 	<ul style="list-style-type: none"> Transitional only A good entry position
Existing System and Enhanced Capture	<ul style="list-style-type: none"> A steady move in the right direction 	<ul style="list-style-type: none"> X 	<ul style="list-style-type: none"> Short-term only Need to educate the public - individuals need to be accountable
Enhanced Blue/Grey Box	<ul style="list-style-type: none"> Shouldn't be significant we have the technology and equipment 	<ul style="list-style-type: none"> X Good move up 	<ul style="list-style-type: none"> Mid-term only (10-15years or less) For 2% reduction - it's a good deal
Source Separated Organics Collection	<ul style="list-style-type: none"> Greater cart but worth it Green boxes would be alright if done properly Could we not cooperate with Southgate An acceptable cost Currently all of my organics are recycled and I'm not sure that most (excepts 300) households would do too much about anything 	<ul style="list-style-type: none"> Lower greenhouse gases X 	<ul style="list-style-type: none"> Special containers needed Will take some work for people to learn to do it-Need educational programs Depend on public participation and economic goal Absolutely vital to the success of the program
Enhanced C&D Recycling	<ul style="list-style-type: none"> Construction industry needs encouragement to get this done How to share? 	<ul style="list-style-type: none"> It has to be cost effective X Have the contractor waste 	<ul style="list-style-type: none"> Make it worthwhile to companies to do it Depend on public participation and

The Blue Mountains Solid Waste Solution
Public and Stakeholder Workshop #2

	Evaluation Criteria		
	Cost/ Affordability	Environmental Effects	Social Impact and Acceptability
<ul style="list-style-type: none"> Work at all options for maximum benefits 	<ul style="list-style-type: none"> Limit contractor waste - get them to recycle 	<ul style="list-style-type: none"> separated at contract site 	<ul style="list-style-type: none"> economic goal I had an old chalet demolished - all the wood was recycled - none to landfill - this is possible on a higher scale Would reduce volume

Evaluating Waste Disposal Options

Review the following list of Disposal Options proposed to guide development of the Town's Plan. For each option check off the criteria that applies.

	Evaluation Criteria		
	Cost/ Affordability	Environmental Effects	Social Impact and Acceptability
Incineration and ash disposal (Energy from Waste)	<ul style="list-style-type: none"> Not affordable at our level, maybe in part 	<ul style="list-style-type: none"> You should have to look after your own garbage, not ship it out Need to be explored - advanced technology showed minimize environmental impact Not currently an option 	<ul style="list-style-type: none"> Depends on area of incinerator The fury's still out on the efficacy of the strategy
Landfill (export)	<ul style="list-style-type: none"> Will be too expensive with political consequences Local NOT an option No we must process what we produce We should find a strategy in the Town of Blue Mountains 	<ul style="list-style-type: none"> We can or should manage our own waste 	<ul style="list-style-type: none"> Not acceptable Do able
Landfill (local)	<ul style="list-style-type: none"> After moving to level 4&5 of diversion - should be less costly 20year if mined is good 	<ul style="list-style-type: none"> With mining should be okay with the environment Minimal effect, good 	<ul style="list-style-type: none"> Least costly → least environment negative effects

The Blue Mountains Solid Waste Solution
Public and Stakeholder Workshop #2

	Evaluation Criteria		
	Cost/ Affordability	Environmental Effects	Social Impact and Acceptability
(mining)	<ul style="list-style-type: none"> • Teach people to recycle 60% • First choice (4 years left on current site, mining could add 20 years) • Reasonable • Design system to limited “affordable” level 	<ul style="list-style-type: none"> • We can or should manage our own waste 	<ul style="list-style-type: none"> • Comprehensive plan - BVO • Good • Do able

Are there specific opportunities you would like to see considered if the Town moves forward with implementation of the diversion or disposal options?

- Try reduced prices for backyard composters
- Keep the yard waste area in the landfill as I could compost all yard waste. I.e. Weeds chunks of sod etc.
- Investigate the use of green bins and sink containers for organic waste that are being used in the GTA - everyone I talk to agrees with it. -investigate a regional compost area for organic waste
- Get a local area to receive toxic waste (paint cans, batteries, computers, etc.) - Owen Sound is too far and has limited days to receive these materials
- Open up a hazardous waste disposed at current landfill site
- 20 yeast is a short time in the big picture
- Ignoring the construction industry does not make sense to me - it is big % of waste stream
- Paul's presentation does partly address but until we engage the construction industry at the contractor/foreman level charge will be slow
- Please examine the Guelph system
 - No "black" bags
 - Organic waste separated by individual
 - Recyclable material cans, etc.
 - Non-recyclable, i.e. plastic/ saran
 - (Three bags transparent: blue, green, clear)
- Ensure that all existing and new apartments (multiple dwellings) recycle
- Consider - mini electrical power generation (maybe attract private money, hydro-one pays \$0.42/kwk for 20 years)
- Methane extraction
- Clean incineration
- Take a look at treehugger.com

POINTS

- Why leave out construction industry?
- How can we be confident of real benefit of recycling efforts? Plan towards revealed loads of recycling go to landfill due to minor contamination
- Deal with equity - family or big rental could pollute more because "family" has no legal status in law (defeats limits) i.e. "single detached vs. single family"
- Was historically tons of good lumber, furniture, appliances and goods reused from landfill site by pickers - now banned at advice of professors - seems counter to goals
- Compost - I believe Southgate would take any over capacity volumes now
- Could we mine, export for gasification then landfill ashes
- Technical review of all wastes produced regardless of current disposal then analysis of cost/benefit of each identifiable or separated component and reduction option
- Mining - not enough information

APPENDIX C
FINANCIAL MODEL

System 1 Status Quo

	Tonnes/Year	Comments
Residential Waste Collection	1,887	2006 data
Reduction in Residential Waste Collection	0	
Total Collected	1,887	
Total Waste Disposal	4,589	2006 data
Reduction in Waste Disposal	0	
Total Landfilled	4,589	
Total Waste Diversion	2,670	2006 data
Additional Waste Diversion	0	
Total Diverted	2,670	

	tonnes/yr	\$/tonne	Annual Costs
Waste Disposal			
Waste Collection			
Operational Expenses		\$120	\$226,440
Capital Expenses		\$0	\$0
Collection Revenue		-\$6	-\$10,850
Subtotal Waste Collection	1,887	\$114	\$215,590
Landfill Operation			
Operational Expenses		\$60	\$275,340
Capital Expenses		\$30	\$137,670
Revenue – Landfill Operation		-\$63	-\$289,107
Capital Revenue		\$0	\$0
Subtotal Disposal	4,589	\$27	\$123,903
Total Disposal	4,589	\$74	\$339,493
Waste Diversion			
Status Quo (e.g. Blue Box, HHW etc.)			
Operational Expenses		\$112	\$299,040
Capital Expenses		\$30	\$80,100
Revenue – Env. Initiatives		-\$66	-\$176,220
Capital Revenue		\$0	\$0
Sub-Total Diversion	2,670	\$76	\$202,920
System 2 Enhanced Capture			
Communication and Education Program			
System 3 Enhanced Blue/Grey Box			
Communication and Education Program			
System 4 Centralized Composting			
Capital Costs			
Collection (residential)			
Processing			
Communication and Education Program			
Revenue (IC&I)			
System 5 Enhanced C&D Recycling			
Capital Costs			
Processing			
Communication and Education Program			
Revenue (IC&I)			
Total Diversion	2,670	\$76	\$202,920
Total	7,259	\$75	\$542,413

System 2 Existing System With Enhanced Capture

	Tonnes/Year	Comments
Residential Waste Collection	1,887	2006 data
Reduction in Residential Waste Collection	92	
Total Collected	1,795	
Total Waste Disposal	4,589	2006 data
Reduction in Waste Disposal	92	
Total Landfilled	4,497	
Total Waste Diversion	2,670	2006 data
Additional Waste Diversion	92	
Total Diverted	2,762	

	tonnes/yr	\$/tonne	Annual Costs
Waste Disposal			
Waste Collection			
Operational Expenses		\$120	\$215,400
Capital Expenses		\$0	\$0
Collection Revenue		-\$5.75	-\$10,321
Subtotal Waste Collection	1,795	\$114	\$205,079
Landfill Operation			
Operational Expenses		\$60	\$269,820
Capital Expenses		\$30	\$134,910
Revenue – Landfill Operation		-\$63	-\$283,311
Capital Revenue		\$0	\$0
Subtotal Disposal	4,497	\$27	\$121,419
Total Disposal	4,497	\$73	\$326,498
Waste Diversion			
Status Quo (e.g. Blue Box, HHW etc.) (includes tonnes diverted through System 2)			
Operational Expenses		\$112	\$309,344
Capital Expenses		\$30	\$82,860
Revenue – Env. Initiatives		-\$66	-\$182,292
Capital Revenue		\$0	\$0
Sub-Total Diversion	2,762	\$76	\$209,912
System 2 Enhanced Capture			
Communication and Education Program		\$109	\$10,000
System 3 Enhanced Blue/Grey Box			
Communication and Education Program			
System 4 Centralized Composting			
Capital Costs			
Collection (residential)			
Processing			
Communication and Education Program			
Revenue (IC&I)			
System 5 Enhanced C&D Recycling			
Capital Costs			
Processing			
Communication and Education Program			
Revenue (IC&I)			
Total Diversion	2,762	\$80	\$219,912
Total	7,259	\$75	\$546,410

System 3 Enhanced Blue/Grey Box

	Tonnes/Year	Comments
Residential Waste Collection	1,887	2006 data
Reduction in Residential Waste Collection	196	
Total Collected	1,691	
Total Waste Disposal	4,589	2006 data
Reduction in Waste Disposal	196	
Total Landfilled	4,393	
Total Waste Diversion	2,670	2006 data
Additional Waste Diversion	196	
Total Diverted	2,866	

	tonnes/yr	\$/tonne	Annual Costs
Waste Disposal			
Waste Collection			
Operational Expenses		\$120	\$202,920
Capital Expenses		\$0	\$0
Collection Revenue		-\$5.75	-\$9,723
Subtotal Waste Collection	1,691	\$114	\$193,197
Landfill Operation			
Operational Expenses		\$60	\$263,580
Capital Expenses		\$30	\$131,790
Revenue – Landfill Operation		-\$63	-\$276,759
Capital Revenue		\$0	\$0
Subtotal Disposal	4,393	\$27	\$118,611
Total Disposal	4,393	\$71	\$311,808
Waste Diversion			
Status Quo (e.g. Blue Box, HHW etc.) (includes tonnes diverted through Systems 2 and 3)			
Operational Expenses		\$112	\$320,992
Capital Expenses		\$30	\$85,980
Revenue – Env. Initiatives		-\$66	-\$189,156
Capital Revenue		\$0	\$0
Sub-Total Diversion	2,866	\$76	\$217,816
System 2 Enhanced Capture			
Communication and Education Program		\$109	\$10,000
System 3 Enhanced Blue/Grey Box			
Communication and Education Program		\$96	\$10,000
System 4 Centralized Composting			
Capital Costs			
Collection (residential)			
Processing			
Communication and Education Program			
Revenue (IC&I)			
System 5 Enhanced C&D Recycling			
Capital Costs			
Processing			
Communication and Education Program			
Revenue (IC&I)			
Total Diversion	2,866	\$83	\$237,816
Total	7,259	\$76	\$549,624

System 4 Centralized Composting of SSO and Leaf and Yard Wastes

	Tonnes/Year	Comments
Residential Waste Collection	1,887	2006 data
Reduction in Residential Waste Collection	805	609 tonnes of residential SSO
Total Collected	1,082	
Total Waste Disposal	4,589	2006 data
Reduction in Waste Disposal	853	Includes 48 tonnes IC&I SSO
Total Landfilled	3,736	
Total Waste Diversion	2,670	2006 data
Additional Waste Diversion	853	
Total Diverted	3,523	

	tonnes/yr	\$/tonne	Annual Cost
Waste Disposal			
Waste Collection			
Operational Expenses		\$120	\$129,840
Capital Expenses		\$0	\$0
Collection Revenue		-\$5.75	-\$6,222
Subtotal Waste Collection	1,082	\$114	\$123,619
Landfill Operation			
Operational Expenses		\$60	\$224,160
Capital Expenses		\$30	\$112,080
Revenue – Landfill Operation		-\$63	-\$235,368
Capital Revenue		\$0	\$0
Subtotal Disposal	3,736	\$27	\$100,872
Total Disposal	3,736	\$60	\$224,491
Waste Diversion			
Status Quo (e.g. Blue Box, HHW etc.) (includes tonnes diverted through Systems 2 and 3)			
Operational Expenses		\$112	\$320,992
Capital Expenses		\$30	\$85,980
Revenue – Env. Initiatives		-\$66	-\$189,156
Capital Revenue		\$0	\$0
Sub-Total Diversion	2,866	\$76	\$217,816
System 2 Enhanced Capture			
Communication and Education Program		\$109	\$10,000
System 3 Enhanced Blue/Grey Box			
Communication and Education Program		\$96	\$10,000
System 4 Centralized Composting			
Capital Costs		\$245	\$161,222
Collection (residential)		\$135	\$82,215
Processing		\$55	\$36,135
Communication and Education Program		\$15	\$10,000
Revenue (IC&I)		-\$65	-\$3,120
	657	\$436	\$286,452
System 5 Enhanced C&D Recycling			
Capital Costs			
Processing			
Communication and Education Program			
Revenue (IC&I)			
Total Diversion	3,523	\$149	\$524,268
Total	7,259	\$103	\$748,758

System 5 Enhanced C&D Recycling

	Tonnes/Year	Comments
Residential Waste Collection	1,887	2006 data
Reduction in Residential Waste Collection	837	Estimated 32 tonnes residential IC&I
Total Collected	1,050	
Total Waste Disposal	4,589	2006 data
Reduction in Waste Disposal	1,946	
Total Landfilled	2,643	
Total Waste Diversion	2,670	2006 data
Additional Waste Diversion	1,946	
Total Diverted	4,616	

	tonnes/yr	\$/tonne	Annual Costs
Waste Disposal			
Waste Collection			
Operational Expenses		\$120	\$126,000
Capital Expenses		\$0	\$0
Collection Revenue		-\$5.75	-\$6,038
Subtotal Waste Collection	1,050	\$114	\$119,963
Landfill Operation			
Operational Expenses		\$60	\$158,580
Capital Expenses		\$30	\$79,290
Revenue – Landfill Operation		-\$63	-\$166,509
Capital Revenue		\$0	\$0
Subtotal Disposal	2,643	\$27	\$71,361
Total Disposal	2,643	\$72	\$191,324
Waste Diversion			
Status Quo (e.g. Blue Box, HHW etc.) (includes tonnes diverted through Systems 2 and 3)			
Operational Expenses		\$112	\$320,992
Capital Expenses		\$30	\$85,980
Revenue – Env. Initiatives		-\$66	-\$189,156
Capital Revenue		\$0	\$0
Sub-Total Diversion	2,866	\$76	\$217,816
System 2 Enhanced Capture			
Communication and Education Program		\$109	\$10,000
System 3 Enhanced Blue/Grey Box			
Communication and Education Program		\$96	\$10,000
System 4 Centralized Composting			
Capital Costs		\$245	\$161,222
Collection (residential)		\$135	\$82,215
Processing		\$55	\$36,135
Communication and Education Program		\$15	\$10,000
Revenue (IC&I)		\$65	-\$3,120
	657		\$286,452
System 5 Enhanced C&D Recycling			
Capital Costs		\$122	\$133,660
Processing		\$40	\$43,320
Communication and Education Program		\$4	\$4,000
Revenue (IC&I)		-\$65	-\$68,965
	1,093	\$102	\$112,015
Total Diversion	4,616	\$134	\$616,282
Total	7,259	\$114	\$827,606