

Municipality of Trent Lakes

Waste Audit Report

County of Peterborough

12/20/2016

Background

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On August 1, 2016 County of Peterborough summer staff collected garbage and recycling from participating residents from 2 Transfer Stations located in the Municipality: Cavendish and Crystal Lake. The sorting was completed on August 2 and 3, 2016 by County of Peterborough staff, summer staff and one Trent Lakes administrative staff person.

The following summary report is intended to provide insight into the results of this waste audit. If the Municipality is interested in more details, please contact Catrina Switzer at cswitzer@county.peterborough.on.ca or 705-775-2737 x313.

Purpose

The purpose of performing a waste audit is to determine current participation rates, provide insight into seasonal waste variability, capture rates (amount of recycling found in blue box versus garbage), residue rates (amount of garbage in recycling), and to assess where there is a need for further education and communication. The audit was focused on residential waste only.

Methodology

Participants were asked at the entrance of the transfer station if they would voluntarily provide their waste materials for a waste audit. Materials were not collected from businesses.

The total waste collected was equivalent to 30 households producing one week's worth of waste. To determine this, residents were asked how many weeks worth of waste they were depositing. If a resident brought in 2 weeks worth of materials, this counted as 2 households.

Staff collected garbage and blue box recyclables (containers and fibres) from all participants.

Garbage and recycling collected from participants was transferred to a sorting location and all materials were sorted into categories. Materials from each sorted category were weighed to determine percent composition.

Auditing Results and Observations

Composition Study

During the audit a total of 593.89 kilograms of materials were collected, sorted, and weighed. The tables below highlight the composition of the waste from each site and the performance of the recycling and garbage systems at each site.

In Table 1, the results of the August 2016 audit are compared to the results of an audit conducted in November 2015. The August 2016 audit was comprised of 90% seasonal residents and the November audit was comprised 87% of permanent residents. This may assist in targeting education initiatives across the seasons.

Waste composition is defined as the percentage amount, in kilograms, of the entire sample of waste comprised by each waste category.

Table 1: Comparison Chart - % Composition (All Waste Categories)

	Fibres	Containers	Organics	HHW	Other Recyclable	Garbage
Crystal 2015 (87% permanent)	25%	14%	35%	2%	9%	16%
Crystal 2016 (10% permanent)	15%	22%	43%	1%	2%	17%
Cavendish 2015 (87% permanent)	26%	14%	32%	1%	17%	10%
Cavendish 2016 (10% permanent)	9%	17%	50%	1%	5%	18%

Observations:

The results for some categories are similar and some are not. The composition of waste at the 2 transfer stations is very similar. The 'Other Recyclable' category includes items that may be recyclable at the transfer station now such as scrap metals and waste electronics or items such as textiles, hard plastics or construction materials that may not have a program in place.

The percent composition of Household Hazardous Waste (HHW) is essentially the same for both sites in both seasons. The Crystal Lake site also had similar composition of Garbage in both seasons.

The differences are very marked in the sites when looking at the percent composition of Fibres and Containers for both sites in both seasons, and particularly for the Cavendish Fibres. There was also a large increase in the amount of organics.

Blue Box Recycling

Table 2: Recycling Stream – Containers Capture Rate

Material	Cavendish 2016 (10% Permanent)	Crystal 2016 (10% Permanent)	Cavendish 2015 (87% permanent)	Crystal 2015 (87% permanent)
Glass– Clear–Food & Beverage	76%	91%	89%	85%
Glass – Coloured-Food & Beverage	83%	97%	100%	95%
#1 Plastic	73%	60%	72%	89%
Aluminum Food and Beverage	94%	88%	75%	81%
#2 Plastic	92%	82%	93%	94%
Yogourt & Margarine type containers	81%	54%	41%	100%
Milk and Juice Cartons, Juice boxes	67%	72%	44%	87%
Steel Food & Beverage	69%	92%	74%	95%
Paper Cups	21%	20%	37%	13%
Contamination				
Contamination – All other Waste Categories	5%	7%	10%	14%
Cross Contamination of Recyclable Fibres	13%	12%	1%	10%
Total Contamination	18%	19%	11%	24%

Table 3: Recycling Stream – Fibres Capture Rate

Material	Cavendish 2016 (10% permanent)	Crystal 2016 (10% permanent)	Cavendish 2015 (87% permanent)	Crystal 2015 (87% permanent)
Cardboard Boxes and Paper Bags	44%	54%	93%	95%
Newspapers and Phone books	6%	77%	100%	91%
Other Boxes, Coffee Trays, Paper Egg Cartons, Tubes	40%	21%	72%	66%
Magazines and Catalogues	100%	94%	98%	78%
Polyethylene Bags and Film	1%	2%	24%	15%
Mixed Fine Paper & Shredded paper	42%	54%	64%	71%
Contamination				
Contamination – All other Waste Categories	3%	3%	3%	1%
Cross Contamination of Recyclable Containers	27%	3%	1%	0%
Total Contamination	30%	6%	4%	1%

Observations: Blue Box Recycling

The Capture Rate identifies the amount of a material that is in the correct material stream. Therefore, at Cavendish in 2016, 44% of the cardboard boxes and paper bags are being correctly deposited into the fibre bins. The other 66% may be in the container stream or in the garbage. The capture rate is a measure of performance of a recycling system and is helpful in determining where education may be needed by residents and/or staff.

Cross Contamination refers to those materials that should not be in that particular recycling stream such as cardboard in the container bin or a pop can in the fibre bin. This type of contamination is referred to as ‘cross contamination’. These items do have a chance of being recycled at the Materials Recycling Facility (MRF), however, may still end up in the landfill.

The Contamination Rate may also identify other categories of waste such as MHSW, organic materials, and garbage. This type of contamination may lead to higher collection costs and processing costs as the materials collected are charged by weight. Total contamination should be 5% or less.

The actual levels of cross contamination may be slightly lower at sites where the depot attendants actively monitor the bins for contamination and remove it prior to the bins being collected.

The audit may not accurately reflect the habits of the residents or depot attendants as audit staff collected materials from the residents before the sorting that may normally have occurred at the bins by the residents or by the attendants.

Contamination Comparison:

Audit	Cavendish		Crystal	
	Containers	Fibres	Containers	Fibres
November 2015 (87% permanent)	11%	4%	24%	1%
August 2016 (10% permanent)	18%	30%	19%	6%

Contamination in the Container bins shows MHSW is entering the container stream in Crystal (0.5%), and Cavendish (0.2%).

Other items noted in the container stream from all sites are: polystyrene foam and trays, textiles, hard plastics and other metals such as cutlery and pots and pans.

The audit data shows that there are improvements that can be made in capturing (making sure recyclables are recycled) certain container and fibre items. Both sites in both seasons show a very low rate of recycling paper cups and film plastics. This may be an opportunity for depot attendants and County staff to educate both seasonal and permanent residents on the recyclability of these packages in the County.

Compared to the Crystal Lake site and the previous fall audits, Cavendish had a lower capture rate of clear and coloured glass however does qualify as ‘very good’ according to Blue Box Performance Indicators (BBPI) provided by Waste Diversion Ontario.

The categories of milk and juice cartons and yogourt-type containers have what appears to be a low capture rate (except for Crystal Lake in November 2015), however both score a ‘very good’ in the BBPI. It is obvious that Crystal Lake permanent residents

are aware of the recyclability of these packages. Although both categories currently show a 'very good', there is an opportunity for more education of all residents.

Almost all Fibre categories at both sites in both seasons can be improved upon. Boxes of all types should be at 80% and higher to achieve 'good' therefore at a 40% capture rate, this category is 'very poor' according to the BBPI. Paper products are a highly recyclable material and should be widely recognizable as recyclable, having been part of the blue box program for over 25 years. A capture rate of only 40% means that 60% of boxes that should have been recycled ended up in the garbage!

Paper cups is a relatively new recyclable item in the County. This is seen in the low capture rates for both sites in both seasons. One issue is likely the advertising campaign from the City of Toronto which tells residents to put them in the garbage. Education from the County and depot attendants may help bring up the capture rate of this material in the future.

Another category that is very low and scores as 'very poor' in the BBPI is film plastic. This includes grocery bags, bread and milk bags and paper towel/toilet paper overwrap. There is an obvious need here for education on where to place film plastics for both seasonal and permanent residents.

The current Deposit Return program in Ontario is operated by The Beer Store. Therefore all deposit return bottles and cans must go to The Beer Store rather than to the outlet where the item was purchased. Many residents do not take their bottles and cans back to The Beer Store as it may not be convenient (over 30 minutes drive) so will drop off in the container bins. Although these materials are recyclable, glass is a problematic material across all recycling programs and municipalities are not funded for Deposit Return material in the same manner as Blue Box materials.

In 2015, Trent Lakes implemented its own Deposit Return program at 3 of the transfer stations offering local charity groups the opportunity to run the program and collect the funds from the bottles and cans as a means of fundraising for the groups. This program continued through 2016 and is now offered at all 4 transfer stations.

In comparing the data from 2015 to 2016 the following results were found:

- 41% of the container stream at Crystal Lake Transfer Station was deposit return in August compared to 3% in November 2015
- 13% of the container stream at Cavendish Transfer Station was deposit return in August compared to 3% in November 2015

Garbage

Table 4: Garbage Composition

Material	Cavendish 2016 (10% permanent)	Crystal 2016 (10% permanent)	Cavendish 2015 (87% permanent)	Crystal 2015 (87% permanent)
Backyard Compostable & Organics	46%	42%	41%	44%
Food Waste	15%	19%	7%	8%
Recyclable Containers	4%	6%	5%	3%
Recyclable Fibres	6%	7%	7%	7%
MHSW	2%	1%	2%	1%
Other Divertable (WEEE, textiles, media)	6%	3%	25%	14%
Garbage	21%	22%	13%	23%

Observations: Garbage

Overall for the two transfer stations, 6% of the garbage is Fibres and 5% of the garbage is Containers. In the fibre category the 6% is largely made up of boxes, fibre tubes such as toilet paper rolls, newspapers and paper. The container category is mostly plastic water and pop bottles, aluminum cans, steel cans, juice boxes or soup containers and yogurt containers. It is interesting to note that 1% of the garbage was composed of deposit return materials.

During the audit, hazardous waste was found in the garbage bags that were collected. This consisted of a can of paint with paint still in it (Cavendish), batteries, motor oil and personal care products from both sites.

Wasted Food

A growing problem in waste management is the landfilling of food waste. This refers to uneaten food that was unnecessarily sent to the garbage stream. Examples include unopened yogurt containers, candy, bread, uneaten take out food and produce. In contrast, banana peels, apple cores and vegetable scraps would be considered unavoidable food waste and would be included in the Backyard Compostable category. Wasted food needs to be considered when planning a municipal organics program, as this waste stream adds a great deal of avoidable cost to managing organics. To measure how much food waste is being unnecessarily generated in the community, a new audit category was created in 2015 titled 'Food Waste'.

The photo below was taken at the August 2016 audit.



The August 2016 audit found a total of 75.92 kgs of Food Waste in the waste stream for the two sites. To determine how much wasted food is being generated in Trent Lakes annually, the following method was used:

There was an equivalent of 60 households of waste collected from the two sites. When 75.92 kgs is divided by 60 then 1.26 kg per household per week is Food Waste. In Trent Lakes, according to household data from the Municipal Property Assessment Corporation, there are 2,361 permanent households and 3,726 seasonal households. As there was 90% participation of seasonal households for this audit 3,353 seasonal

households or 90% of 3,726 was utilized in this calculation. The total households are then 2,361 plus 3,353 for a total of 5,714 households.

The November 2015 audit found a total of 93.18 kgs of Food Waste in the waste stream for all four sites in Trent Lakes. There was an equivalent of 120 households of waste collected from the sites. When 93.18 kgs is divided by 120 then 0.78 kg per household per week is Food Waste. In Trent Lakes, according to household data from the Municipal Property Assessment Corporation, there are 2,361 permanent households and 3,726 seasonal households. As there was only 16% participation of seasonal households for this audit only 596 seasonal households or 16% of 3,726 was utilized in this calculation. The total households are then 2,361 plus 596 for a total of 2,957 households.

If the data is combined and an assumption made that the August 2016 audit is representative of 6 months of the year and the November 2015 audit is the other 6 months then the following calculation applies.

August 2016 = Number of kilograms per household multiplied by the number of households multiplied by 26 weeks

November 2015 = Number of kilograms per household multiplied by the number of households multiplied by 26 weeks

Total = August plus November

Therefore, with the variation in seasonal residents and variation in the generation of Food Waste, there is the potential for 247 tonnes or more of Food Waste to go to the landfill every year. This is equivalent to all the waste sent to the landfill from the Crystal Lake Transfer Station in 2015.

Conclusions and Recommendations

Table 1 illustrates the composition of waste at the sites. The categories of 'Organics' and 'Other Recyclables' have the potential to increase diversion and reduce the amount of waste going to landfill.

Organics is divided into the sub-categories of Backyard Composting, Food Waste, Organics, Leaf and Yard and Pet Waste. The results of combined Crystal Lake and Cavendish 2016 audits shows that 62% of the Garbage was Organic materials.

Composition of Organics

Type of Organics	% of Garbage
Backyard Composting	19%
Food Waste	24%
Organics	17%
Leaf & Yard	1%
Pet Waste	1%

The County and Trent Lakes already actively promote and sell backyard composters and digesters to residents. The County is also continuing the Garbage to Garden composter installation program where residents purchase a composter and/or digester and County staff deliver and install them.

The County and Trent Lakes staff may work together to promote the use of the Buckhorn Moloks. There is the potential to draw attention County wide to the issue of Food Waste. Although an organics system can handle this material it is an expensive alternative to residents buying and eating their food and not paying for disposal as well.

Other Recyclables is another category that Trent Lakes may wish to expand services to residents. As indicated below the categories of Construction and Demolition and Textiles were the largest contributors to garbage in the larger category of Other Recyclables.

Composition of Other Recyclables

Other Recyclables	% of Garbage
Construction and Demolition	4%
Textiles	3%
Media (cd's, dvd's, tapes)	0.3%
WEEE	0.7%
Hard Plastics	1%

The County provided a pilot program through the summer of 2015 collecting hard plastics at the Buckhorn and Bobcaygeon sites collecting over 7 tonnes of materials in 3 months. The County is working to bring back this program for the start of the 2017 summer season through to Labour Day.

In the past, Media recycling has only been available at County Environment Days. In 2017, the County is working towards having Media recycling and Child Safety Restraint recycling available at the Buckhorn site when the Hazardous Waste Site is open.

As shown in Table 2 and 3, there is opportunity to capture more recycling particularly glass, plastic water and pop bottles, yogurt containers, milk and juice cartons, paper take out cups, boxes and paper tubes, paper and plastic bags.

There is an opportunity for Trent Lakes and the County to educate staff and residents on Blue Box recycling and how to use the current recycling system. The County will be offering training in Spring and Fall 2017 to all Townships.

As was noted earlier, the actual levels of cross contamination may be lower. However, given the high amount of fibre materials in the container bins, cross contamination is likely still an issue. Both depot attendants and residents may be educated on what can and cannot go in the container and fibre bins. County staff may provide a training session to Trent Lakes staff as part of a regular meeting. This information may then be provided to residents on an on-going basis as they visit the sites.

In particular, the high contamination rates shown in Table 2 indicate that there is some education to be done at both sites during the summer months in relation to what can go into the containers bins with an emphasis on reducing the amount of MHSW, fibres and garbage in the container bins. This will help create a more safe, efficient, and cost effective recycling system.

To also determine a more accurate blue box contamination rate, the County may schedule a recycling audit in 2017 specifically for the container and fibre recycling bins.

It is important that residents be screened when entering the waste sites to ensure that there is no Hazardous Waste in the recycling or garbage. Residents have access year round to the Household Hazardous Waste facility operated by the City of Peterborough at 400 Pido Road. There are locations scattered throughout the County and City of Peterborough for dropping off household batteries. The County operates a Hazardous Waste facility at the Buckhorn Transfer Station from June 1 to Thanksgiving each year.

The County completed a bin painting and labelling project at the Bobcaygeon and Buckhorn Transfer Stations during the summer of 2016. Cavendish and Crystal Lake are tentatively scheduled for summer 2018 pending budget approvals.

The Deposit Return program implemented by Trent Lakes in 2015 and expanded to include all 4 sites in 2016 has most certainly diverted these materials out of the container and garbage streams. More education is needed (by the Beer and LCBO Stores in particular) to ensure that the materials are taken back to The Beer Store or dropped off for a local charity.

Trent Lakes is also working with The Salvation Army by installing donation bins at the 4 transfer sites primarily for clothing donations. This will help the overall amount of textiles being thrown away by giving residents the chance to easily donate on their regular 'garbage run' rather than having to make a special trip.

Trent Lakes will be implementing a Clear Garbage Bag policy in 2017. With the implementation of the program it is anticipated that the amount of recycling in the garbage will be decreased.

The County and Trent Lakes have an opportunity to work together on many initiatives to reduce waste and to improve the recycling systems already in place.