

# Queen's University

## Waste Audit Summary

### Date: January 2011

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#### Introduction

The University conducted a waste audit of the campus solid non-hazardous waste in January of this year. The last detailed waste audit was conducted by the University in 2005.

According to Ontario Regulation 102/94, educational institutions are required to update their waste audit information and work plans on a regular basis. There are several advantages to conducting regular waste audits which include; assessing the effectiveness of current campus waste diversion initiatives; providing recommendations for improvement and cost savings; and establishing new waste diversion targets.

#### Methodology

The methodology of the 2011 audit is different from those conducted in previous years in the following ways:

- Waste was collected from all campus buildings as opposed to a representative sample from specific building types;
- University staff did not participate in the preparation of the waste sampled.

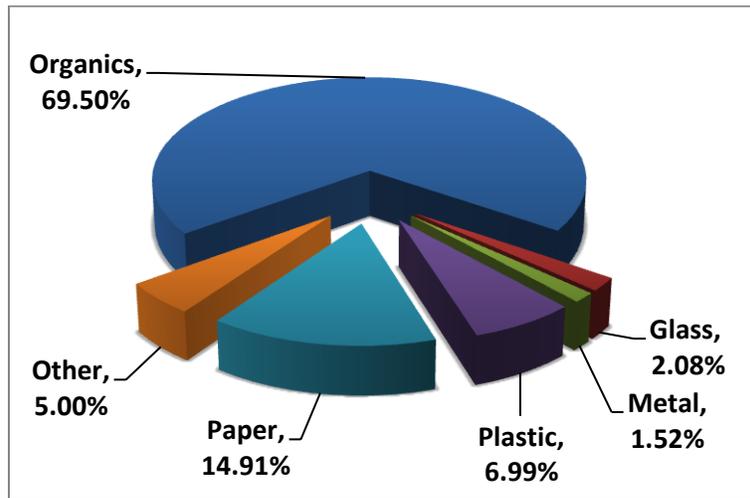
Garbage collection for the waste audit took place on Wednesday January 26 and Thursday January 27 from all waste containers on campus. The university's waste hauler collected waste from the campus and removed it to an off-site location for sorting and weighing. The study examined garbage collected from every building on campus and can, therefore, be said to be representative of the average annual campus operations.

The quantity and type of waste produced by Queen's fluctuates daily and seasonally. Therefore, this audit represents only a snapshot of the campus waste sent to landfill. The information revealed through an audit can, however, be used to make rough estimations on the University's annual waste diversion rate, the success of campus diversion initiatives and help to identify where diversion activities can be improved.

#### Results

According to the results of the 2011 audit, it is estimated that the university is generating approximately 2,838 metric tonnes (t) of solid, non-hazardous waste annually and recycling approximately 966 (t) of the annual total. Based on these measurements, the current diversion rate for the university is 34%. These results, however, do not include other university waste

diversion programs such as furniture reuse (11 t), electronic waste recycling (40 t), leaf and yard waste (32 t) which increases the campus waste diversion rate to approximately 43%.



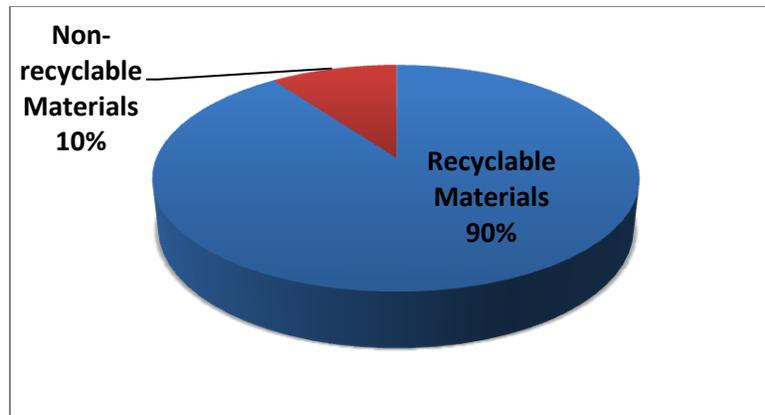
Campus waste stream by category According to the 2011 audit, food waste now makes up the largest portion of campus waste, at 69.5% of the landfill stream.

While significantly less, paper made up 14.91% of the waste stream making it the second largest waste component Queen's sends to landfill. This category includes materials such as cardboard, boxboard, newspapers, books, junk mail, Kraft paper.

Plastic materials accounted for 6.99% of the audited waste stream and included items such as PETE beverage bottles, PVC bottles, #1 plastic food and beverage containers, #2 plastics jugs, #4 and #5 squeezable containers and shopping bags. The 6.99% also included plastic items that are currently not recyclable on campus such as polystyrene, shrink wrap and PVC#3 containers.

2.08% of the audited waste consisted of recyclable glass food and beverage bottles. While metals made up only 1.52% of the material that could have been recycled.

Approximately 5% of the audited material included a mixture of items, some of which could be recycled such as electronics, tires, and others that are waste such as diapers, furnace filters and carpet.



Campus waste stream by recyclable content

In summary, the results of this year's waste audit show that 90% of the university's current waste stream consists of materials that are recyclable. While this suggests there is room for improvement, significant progress has been made, and will continue to be made on campus waste diversion. Since the last waste audit in 2005, the University has seen the development of a number of different waste diversion programs that have significantly changed the composition of waste at Queen's, including:

- Organics collection program
- Comingling of cans, glass, plastic
- Electronic Waste collection program
- Increased awareness

The positive effects of this programming are demonstrated in a reduction of common recyclable material from the 2005 to the 2011 audit. Perhaps most notably, campus paper recycling dropped from 36% to 15%. Plastic dropped from 12% to 7%, the glass category decreased from 15% to 2% while metal stayed close to the same.

The significant increase to the organics portion is largely due to the proportional reduction in the waste stream content by the other primary materials mentioned above. It is also noted that due to expanded campus enrollment, operations and space there was an approximate 400 metric tonne (t) increase to the overall campus waste from 2005 to 2011, which is also contributing to the larger organic material portion. Clearly, successful future measures to improve the waste diversion rate will need to address the organics content.

## Conclusion

The results of this year's waste audit have provided the university with an opportunity to assess the effectiveness of campus programs and to look at ways they can be expanded. Some examples include:

- examination of the current organics program for the potential to capture food waste from other public areas on campus used by students, staff and faculty;
- provision of outdoor recycling containers for cans, glass and plastic and paper recycling;
- implementation of a fluorescent lamp recycling program;
- book donations through Better World Books;
- furniture reuse through the Queen's Freecycle@work application;
- And continued participation in annual waste reduction and diversion awareness campaigns, such as Waste Reduction Week in October and the 8-week Recyclemania competition.

It is essential for Queen's to continue to find ways to dispose of campus waste in environmentally responsible ways. Ultimately, however, the success of these programs is dependent upon effective communication and the active participation of all campus users. While waste diversion programs will continue to be monitored and reported on annually by the university, waste management services remain a "work in progress". Existing campus waste programs are always being evaluated for improvement and new ones will be introduced in response to new legislation, environmental discoveries, and improved waste management technology.