FINAL
Waste Audit and Waste Reduction Work Plan

Humber College

March 2017

Prepared by:

159 Ridout Street South, London, Ont. N6C 3X7
Paul van der Werf Tel: 519-645-7733
Email: paulv@2cg.ca

Table of Contents

1.0 Introduction 1
1.1 Legislative Requirements 2
2.0 Current Situation 2
2.1 Description of Waste Generation 2
2.2 Current Source Separation Programs 5
2.3 Current Waste Handling 7
2.4 Overview of Waste Generation 8
3.0 Methodology 9
3.1 Waste Auditing 9
3.2 Development of Waste Reduction Work Plan 11
4.0 Waste Audit Results 11
4.1 North Campus 12
4.1.1 North Campus Common Areas 12
4.1.2 North Campus Food Serving Areas 13
4.1.3 North Campus Residence 14
4.2 Lakeshore Campus 16
4.2.1 Lakeshore Common Areas 16
4.2.2 Lakeshore Food Serving Areas 17
4.2.3 Lakeshore Residence 18
4.3 Overall Waste Stream 19
4.4 Recycling 20
5.0 Data Analysis 22
5.1 North Campus 22
5.2 Lakeshore Campus 23
5.3 Overall (North and Lakeshore Campus) 23
5.4 Comparison to 2014 and 2015 Waste Audits 24
6.0 Waste Reduction Work Plan and Recommendations 24
6.1 General Initiatives 25
6.2 Reduction Initiatives 26
6.3 Re-Use Initiatives 26
6.4 Recycling Initiatives 26
6.5 Implementation Plan 26
Appendix 1 Detailed Waste Audit Results
Appendix 2 Ministry of Environment Reporting Forms

Location of Ministry of the Environment Waste Form Waste Audit Information

Required Information	Section in Report	Comments
I General Information	• Cover sheet • Section 1.0	
II. Description of Entity	• Section 1.0	
III. How Waste is Produced And Decisions Affecting the Production of Waste	• Section 2.1	
IV. Management of Waste	• Section 2.0	
V. Estimated Quantity of Waste Produced Annually	• Section 2.4 • Section 4 • Section 5	Gross annual tonnage data Waste composition data Data analysis
VI. Extent to Which Materials or Products Used Or Sold By the Entity Consist of Recycled or Reused Materials or Products	• Section 2.1	

1.0 Introduction

2cg Inc. was retained by Humber College (Humber) to update a waste audit and waste reduction work plan from 2015 for Humber College in Toronto, Ontario.

Humber, a member of Polytechnics Canada, offers a broad range of career-focused, educational programs (more than 350) that include: apprenticeships, certificates, diplomas, bachelor's degrees and postgraduate certificates. Humber has 28,575 full-time and 11,000 part-time students.

As noted in Humber's 2013 – 2018 Strategic Plan, a key Value is:

"**Sustainability**: We preserve our collective future by embracing the social, ecological and economic impact of our decisions."

Humber has a North Campus (Photo 1) as well as a smaller Lakeshore Campus (Photo 2), which have different waste management systems.

The North Campus has 18,600 full-time students. Wastes are collected by private contractors.

The Lakeshore Campus has about 11,000 full-time students. It is located in a historical setting, along Lake Ontario. It consists of an older east campus and newer west campus as well as a number of nearby buildings along Lakeshore Blvd West.

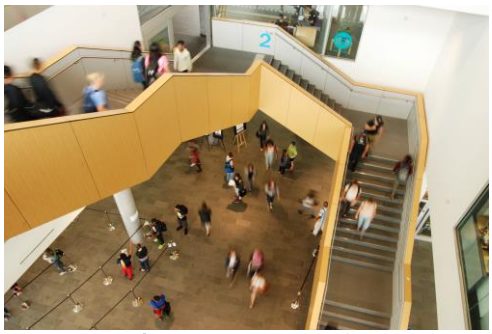


Photo 1. Humber- North Campus

Photo 2. Humber- Lakeshore Campus

This waste audit included a full review of waste handling, waste generation and waste composition. The goal was to determine the success of current recycling programs and to identify possible improvements and additional wastes which could be recycled.

1.1 Legislative Requirements

Humber fits the definition of an Educational Institution with an enrollment of greater than 350 students.

According to ONTARIO REGULATION 102/94 "Waste Audits and Waste Reduction Work Plans" the following must be completed at an "Educational Institution" (i.e. facilities with enrolment greater than 350 people):

> **57.** (1) The owner shall conduct a waste audit covering the waste generated by the operation of the establishment at the site. The audit shall also address the extent to which materials or products used or sold consist of recycled or reused materials or products.
> (2) After conducting the waste audit, the owner shall prepare a written report of the audit.
> (3) In every year following the initial waste audit, the owner shall update the audit and prepare an updated written report. O. Reg. 102/94, s. 57.
>
> **58.** (1) The owner shall prepare a written waste reduction work plan, based on the waste audit, to reduce, reuse and recycle waste generated by the operation of the establishment.
> (2) In every year following the preparation of the initial waste reduction work plan, the owner shall prepare an updated written plan. O. Reg. 102/94, s. 58.
>
> **59.** The owner shall implement the waste reduction work plan as updated. O. Reg. 102/94, s. 59.
>
> **60.** The waste reduction work plan shall include measures for communicating the plan to the owner's employees who work at the site and, as a minimum, those measures shall require,
> (a) that the plan or a summary be posted in places where most employees will see it; and
> (b) if a summary is posted, that any employee who requests to look at the plan be allowed to do so. O. Reg. 102/94, s. 60.

According to ONTARIO REGULATION 103/94 "Industrial, Commercial and Institutional Source Separation Programs" "Educational Institutions" need to have a source separation program.

2.0 Current Situation

2.1 Description of Waste Generation

Waste is produced through normal and typical student and staff activities. A key management decision that affects the production of waste has been to try and divert wastes from landfill, to the extent possible through various waste diversion programs (e.g. recycling and composting). Where possible, materials used by Humber consist of recycled or reused materials or products.

There are a number of events and educational information regarding waste programs available to students. During Earth Week in 2016 at the end of March, the annual campus cleanup was held to get students involved in the various waste programs available at the school. This events gets students and staff together to clean up their shared space on campus and in the community at both the North and Lakeshore campuses. Information about the waste programs is also available on the Humber website and articles about waste programs are often written in the student newspaper. In 2016, Humber started a paper use campaign to reduce the amount of

paper that was being used at printing labs, offices, and other areas on campus. This included decals with the message “paper can’t save itself”.

There are a number of areas at Humber that result in waste generation.

Common Areas
Wastes that are generated by students and staff are discarded at centralized areas in the common areas (Photo 3). This includes wastes that are generated in classes (i.e. typically no waste bins in classes) as well as from consumption of food and some waste from offices. The three-in-one waste bins (garbage, recyclables, and paper) that were installed in 2009 and with coloured decals are still in use as they have led to good feedback and participation.

There are also waste bins in outdoor common areas. In some, but not all cases, these outdoor bins are twinned with recycling bins (Photo 4).

Photo 3. Common Area Waste and Recycling Bins

Photo 4. Common Area Outdoor Waste and Recycling Bins – Lakeshore Campus

Food Court and Food Outlets

There are a number of food court areas and food outlets at both campuses (Photo 5). In these areas, the 3- in-1 bins are also used to collect waste and recyclables, along with a number of custom recycling stations that collect waste, recycling, paper, and liquids. These recycling stations are in the cafeterias of both campuses (Photo 6).

Photo 5. Cafeteria Area – North Campus

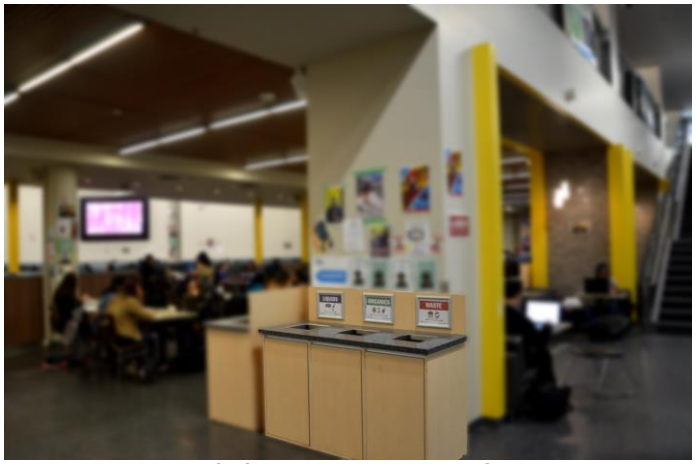


Photo 6. Composting by Food Outlets

Kitchens

At the North Campus, there are extensive teaching kitchens for the Hospitality, Recreation and Tourism programs (e.g. culinary management, culinary skills). There is a composting program in place to collect pre-consumer organic wastes from these kitchens. As well, pre-consumer food waste from the various kitchens of food serving areas is also collected for composting both in the North and Lakeshore Campuses and the Tim Hortons and Starbucks locations on campus. Photos 7 and 8 depict the types of carts used to collect food wastes and the types of food wastes collected in these carts.

Photo 7. Food Collection and Recycling Bins

Photo 8.Food Wastes in Cart

Offices

Typical office waste (paper products, meal leftovers) are produced in the offices. Most desks have small blue bins to collect recyclables such as paper. In some cases, these wastes and recyclables are collected in the office. In other cases, staff brings wastes and recyclables to common areas (described above) for disposal. A small number of offices have been using organic waste collection bins in their kitchens.

Residences

Humber has a number of student residences. Residential type waste is produced including various paper streams, beverage containers and organic wastes.

Waste and recyclables are collected by janitorial staff and directed to the central waste areas. Pre-consumer food waste is collected in the North Campus Residence, which has one cafeteria in the building with its own recycling centre with separated liquid and recycling collection.

2.2 Current Source Separation Programs

Humber has an extensive source separation program in place that goes beyond regulatory requirements. Table 2.1 depicts the types of wastes for which Humber has a source separation program and compares them to Regulation 103/94 requirements.

In February 2016, Humber switched waste service providers and garbage and recycling at the Lakeshore Campus which is now collected by Canada Fibers. This is the same collection provider as the North Campus. Recycling is all single stream and the dual stream containers in use around campus (fibers and containers) are combined in the receiving areas.

Table 2.1 Wastes Source Separated at Humber

	Category	Humber	Reg. 103/94	Method of Collection
1.	Cardboard (corrugated) (OCC)	✓	✓	Directed to compactors at North Campus Directed to front end bins at Lakeshore Campus
2.	Fine paper	✓	✓	Directed to 360 litre carts at both North and Lakeshore campuses Also directed to compactor at North Campus Carts and compactors emptied by Canada Fibers at both campuses
3.	Newsprint	✓	✓	Directed to 360 litre carts at both North and Lakeshore campuses Also directed to compactor at North Campus Carts and compactors emptied by Canada Fibers at both campuses
4.	Aluminum Beverage and Food Containers	✓	✓	Directed to a bin Compactors at north Front end bins at Lake
5.	Steel Beverage and Food Containers	✓	✓	Directed to a bin Compactors at north Front end bins at Lake
6.	Glass Beverage and Food Containers	✓	✓	Directed to a bin Compactors at north Front end bins at Lake
7.	Plastic Beverage and Food Containers	✓	✓	Directed to a bin Compactors at north Front end bins at Lake
8.	Food waste	✓		Directed to wheeled carts (both campuses pre and post-consumer)
9.	Waste Cooking Oil	✓		Directed to Waste Cooking Oil Bin (both campuses)
10.	Metal	✓		Directed to Metal bin (North campus only) As needed on call at Lakeshore
11.	Wood	✓		Directed to Wood bin (North campus only) As needed on call at Lakeshore
12.	Computers (E-Waste)	✓		Initiated a program in 2008 to divert computers and other college e-waste for re-use. Computers generated at Lakeshore Campus taken to North Campus for recycling. Twice a year e-waste collection week done for community drop off.
13.	Toner	✓		Empty toner cartridges are collected and sent away for recycling
14.	Batteries	✓		Batteries are collected at North and Lakeshore campus for recycling
15.	Leaf and Yard Waste	✓		Collected by maintenance staff for on-site composting and reuse
	Pen recycling	Yes		Use teracycle program
	Textbooks	Yes		Use Textbooks for change for collection

2.3 Current Waste Handling

Wastes are collected from their generation points by Humber janitorial staff and taken to central waste management locations.

At the North Campus and Lakeshore Campus there are two main areas each where wastes are gathered prior to removal from the site. These are described in Table 2.2. Lift frequency has been tracked since switching to a private hauler for all waste and recycling.

Waste removal has been consolidated for the two campuses. At both the North and Lakeshore Campuses, wastes and recyclables are removed by a private sector contractor. Some equipment may have been changed between contractors.

Table 2.2 Overview of Waste Removal from Humber in 2016

Depot	Material	Equipment	Lift Frequency (#/year)	Contractor
	North Campus			
Depot # 1 (110 Carrier Dr)	Garbage	8 cu. yd. open top bin	46	Canada Fibers
	Cardboard	8 cu. yd. slot bin	18	Canada Fibers
	Mixed Containers	20 cu. yd. side door bin	3	Canada Fibers
	Wood	8 cu. yd. open top 6 cu. yd. open top	29 24	Canada Fibers Canada Fibers
	Metal	20 cu. yd. open top	12	Canada Fibers
	Sawdust	8 cu. yd.	12	Canada Fibers
	Waste Cooking Oil	2-45 gal drums	2	Rothsay
Depot # 2 (205 Humber College Blvd)	Garbage	40 cu. yd. compactor screw 20 cu. yd. open top bin (furniture) 30 cu. yd. compactor (res)	73 32 19	Canada Fibers Canada Fibers Canada Fibers
	Cardboard	40 cu. yd. compactor 40 cu. yd. compactor (res)	22 3	Canada Fibers Canada Fibers
	Mixed Containers	40 cu. yd. compactor 20 cu. yd. compactor (res)	24 17	Canada Fibers Canada Fibers
	Organic Waste	20-32 Gal totes 3-32 Gal totes	Daily Daily	Canada Fibers Canada Fibers
	Waste Cooking Oil	1-2.5cu. yd. bin 1-45 Gal barrel (res)	2 4	Rothsay Rothsay
	Wood	14 cu. yd. open top bin	19	Canada Fibers
	Metal	14 cu. yd. open top bin	15	Canada Fibers
	Yard Waste	14 cu. yd open top bin	~10	Canada Fibers
	Shredded Paper	47- 65 gal totes	~40	Iron Mountain
	Carpet	By project	Varies	Malton Flooring
	Sweepings/Grounds	1 cu. yd locked bin	~13	Canada Fibers
	Lakeshore Campus			
Depot # 1 West Campus	Garbage	2-3cu. yd. front end bins (compacted) 3-8 cu. yd. front end bins	104 104	Canada Fibers

Depot	Material	Equipment	Lift Frequency (#/year)	Contractor
	Recycling (single stream)	3-3 cu. yd. front end bins (compacted) 2-8 cu. yd. front end bins	52 52	Canada Fibers
	Paper	13-95 Gal totes	weekly	Canada Fibers
	Waste Cooking Oil	1-200 gal bin	2	Rothsay
	Organic Waste	10-32 Gal totes	2x/week	Canada Fibers
	Shredded Paper	17- 65 gal totes	~40	Iron Mountain
Depot #2 East Campus	Garbage	5-6 cu. yd. front end bins	52	Canada Fibers
	Recycling (single stream)	3-8 cu. yd. front end bin	52	Canada Fibers
	Organic Waste	10-32 Gal totes	2x/week	Canada Fibers
	Paper	7-95 Gal totes	Weekly	Canada Fibers
	Waste Cooking Oil	1-200 gal bin	2	Rothsay

***Note: U Pak was waste hauler until February 2016, then switched to Canada Fibers**

2.4 Overview of Waste Generation

Annual waste generation at Humber is depicted in Table 2.3. This table is split into the North Campus, Lakeshore Campus and Total waste and recyclables generation. Weight data was provided for the North and Lakeshore campuses for waste to landfill and some waste diversion activities. Some weights for waste diversion activities were estimated such as yard waste. Some volumes were estimated from the Lakeshore campus from October to February when Canada Fibers was not in charge of their waste removal. In that case, estimated volumes removed and waste densities were used to help develop estimates as required.

In 2016, Humber will have generated an estimated 1,948 tonnes of waste (disposed and recycled). Of that, an estimated 1,231 tonnes was recycled and 717 tonnes sent to landfill. This works out to an average of 14 tonnes of waste and 24 tonnes of recyclables generated weekly.

Table 2.3 Summary of Waste Generation in 2016

	Tonnes 2014			Tonnes 2015			Tonnes 2016		
	North Campus	Lakeshore Campus	Total	North Campus	Lakeshore Campus	Total	North Campus	Lakeshore Campus	Total
Waste	**523.1**	**395.5**	**918.6**	**514.7**	**305.5**	**820.2**	**506.3**	**211.0**	**717.3**
Recyclables									
Cardboard	79.3	3.3	82.6	83.0	0.0	83.0	73.0	6.6	79.6
Mixed Containers	11.1	-	11.1	0.0	0.0	0.0	46.4	104.6	151.0
Fine Mixed Papers	57.3	-	57.3	59.6	4.0	59.6	164.3	49.6	213.9
Single Stream Recycling	101.8	190.4	292.2	107.0	103.9	210.9	0.0	0.0	0.0
Shredded Paper	79.2	19.6	98.8	85.2	21.3	106.6	112.8	24.1	136.9
Organic Waste	162.6	54.5	217.1	244.7	79.1	323.8	261.0	0.6	261.6
Waste Cooking Oil	4.3	0.7	4.9	4.1	1.2	5.3	3.6	0.8	4.4
Wood	57.3	1.0	58.3	82.2	0.0	82.2	107.2	0.0	107.2
Metal	41.1	0.7	41.9	35.5	0.0	35.5	64.4	0.0	64.4
Yard Waste/Clean Fill	1.8	65.4	67.2	2.2	0.0	2.2	25.0	0.0	25.0
E-Waste	19.4	5.6	25.0	19.3	6.4	25.7	18.5	13.3	31.8
Lamps	1.7	0.6	2.3	0.3	0.2	0.5	0.3	0.2	0.5
Carpet	1.3	-	1.3	13.7	0.0	13.7	6.0	6.0	12.0
Batteries	0.1	-	0.1	0.2	0.0	0.2	0.1	0.1	0.2
Toner	2.2	0.5	2.6	1.5	0.8	2.3	1.7	1.2	2.8
Donations	52.9	51.6	104.5	49.3	0.0	49.3	34.5	34.5	69.1
C&D Waste			0.0	1.0	0.6	1.6	49.55	20.83	70.4
Total	**673**	**394**	**1067.3**	**789**	**218**	**1006.2**	**968**	**262**	**1230.9**
Grand Total	**1,196.6**	**789.4**	**1,986.0**	**1,303.3**	**523.1**	**1,826.4**	**1,474.7**	**473.4**	**1,948.2**
Diversion Rate (%)	**56.3**	**49.9**	**53.7**	**60.5**	**41.6**	**55.1**	**65.7**	**55.4**	**63.2**

Based on available data the North Campus has a higher waste generation and waste diversion rate (66%) than Lakeshore Campus (55%). Both campuses have the same waste and recycling programs and the difference can be attributed to natural variability and student engagement. Overall, Humber has a greatly improved waste diversion rate of about 63% compared to 55% in 2015. Waste generation has decreased with better measurement. There was also a slight increase in recycling.

3.0 Methodology

3.1 Waste Auditing

On 5-6 November 2016 a waste audit was undertaken to assess the composition of waste and recyclables from a one day period (4 November from both the North and Lakeshore Campuses). As depicted in Table 3.1, representative samples of wastes and recyclables were collected from the North Campus and Lakeshore Campus, by Humber staff, and delivered to a sorting area at North Campus.

The waste audit focused on understanding the waste composition at three main waste generating areas:

- Common areas;
- Food preparation areas; and
- Residences.

All data was compiled to provide an overall overview of waste composition.

Table 3.1 Waste Generating Areas and Samples Collected

NORTH CAMPUS					
		2016			
Generating Area	Specific Location	Number of Trisorter bins	Number of each stream to be collected from this bin		
A: Common Areas			Waste	Recycling	Paper
Athletics	Near ping pong tables, 2nd floor and near gym 1st floor	3	3	3	3
Building L	Anywhere	3	3	3	3
Building N	Anywhere	3	3	3	3
Building D	Registration: D-129 OR D-128 OR D-130	3	3	3	3
Building B	B-104 and B second floor	3	3	3	3
Guelph Humber	Second floor near study area	3	3	3	3
	Extra bags to be put in any of the above locations	-	5	5	4
B: Food Areas			Waste	Recycling	Paper
Food Emporium/Cafeteria	Any	4	4	4	4
Ackee Tree (food café)	E building First floor	2	2	2	2
Java Jazz	Bookstore and/or HSF side	3	3	3	3
Guelph Humber	Second floor near Williams café/sutdy area	3	3	3	3
Athletic Building A	Near Second Cup & Pizza Pizza	2	2	2	2
	Extra bags to be put in any of the above locations	-	5	5	4
C: Residence			Waste	Recycling	Paper
Cafeteria "food area"	1st floor	4	4	4	4
Common Area R Building	6th floor	all bins	all	all	all
Common Area S Building	any	all bins	all	all	all
	Extra bags to be put in any of the above locations	-	3	3	3
LAKESHORE CAMPUS					
Generating Area	Sepcific Location	Number of Trisorter bins	Number of each stream to be collected from this area		
A: Common Areas			Waste	Recycling	Paper
Building H	Anywhere	3	3	3	3
Building L (not cafeteria)	Computers/study common area	3	3	3	3
Building B	Anywhere	3	3	3	3
Building C	Hallway	3	3	3	3
	Extra bags to be put in any of the above locations	-	3	3	3
B: Food Areas			Waste	Recycling	Paper
Building A Cafeteria	Anywhere in this area	3	3	3	3
Building L Cafeteria	Anywhere in this area	4	4	4	4
Building F	Basement Café	2	2	2	2
	Extra bags to be put in any of the above locations		3	3	3
C: Residence			Waste	Recycling	Paper
Building R	Any lounge areas	all bins	all	all	all
	SUM TOTAL	57	73	73	71

**the colours in the table indicate the color of bag used for each location*

The following equipment was utilized to undertake waste auditing:

- Sorting table;
- 30 blue boxes;
- Black plastic bags;
- Exacto-knives;
- Weigh scale; and

- Safety equipment (Tyvek suits, cut resistant gloves, safety boots, safety glasses, hearing protection).

Table 3.2 depicts general waste auditing categories. Waste was identified and sorted into various categories to mimic O. Reg. 103/94 source separation requirements, current recycling programs and other common waste types.

A waste auditing crew of three people was used to sort wastes. Weights of each category were taken and recorded. Data was entered into a spreadsheet for data analysis. All weighing was completed in kilograms.

Table 3.2 Description of Waste Auditing Categories

Number	Main Category	Sub Categories
1.	Paper	Newsprint Office (fine) paper Mixed paper (Office) Paper beverage cups Tissue/paper toweling Mixed paper (food) Other paper Gable top & aseptic beverage containers
2.	Cardboard/Boxboard	
3.	Plastic	Plastic beverage bottles Rigid Plastic Recyclables Polystyrene Garbage Bags Other Plastic
4.	Glass	Bottles and Jars
5.	Metal	Steel cans Aluminum cans Other metal
6.	Organics	Food waste
7.	Other Waste	Floor sweepings, textiles, miscellaneous waste

3.2 Development of Waste Reduction Work Plan

Using the results of this waste audit and other information, a new waste reduction work plan was developed.

4.0 Waste Audit Results

It should be noted from the outset that these results represent a “snap-shot” in time. Any extrapolations of this data are indicative rather than absolute. A representative sample of waste generated on 4 November and destined for the landfill or recycling was fully audited. A total of approximately 199 kg of waste and 178 kg of recyclables were sorted.

4.1 North Campus

4.1.1 North Campus Common Areas

Figure 4.1 depicts the waste composition of the Common Areas' waste stream. Table 4.1 depicts the waste audit results in Appendix 1. Approximately 34 kg of waste was audited.

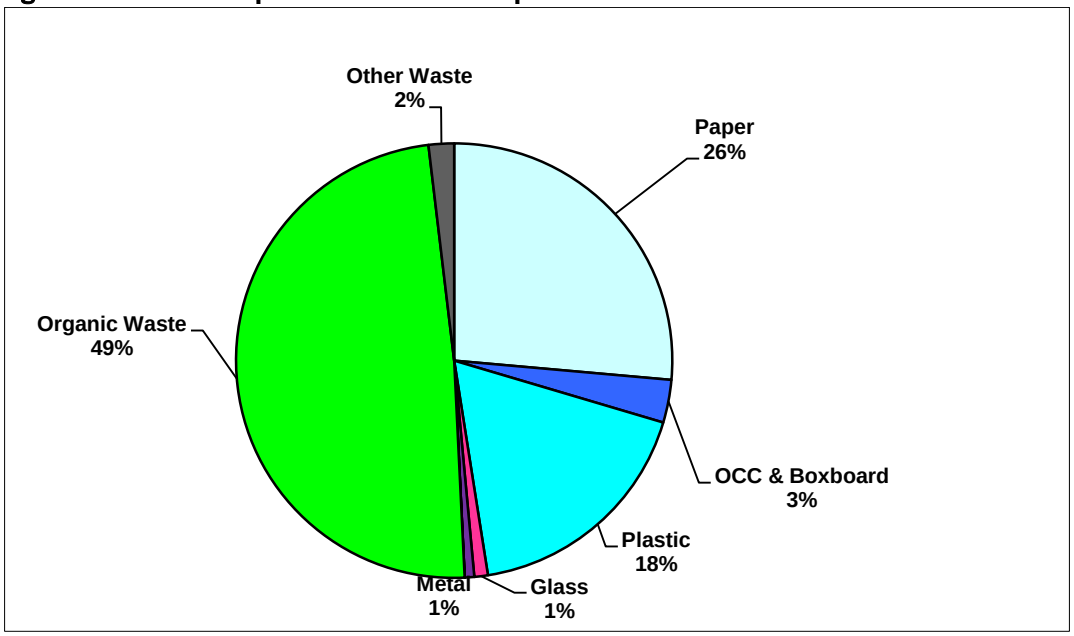
The most prevalent wastes included organics, paper and plastic.

The organic waste consisted of avoidable food waste such as beverages, leftover lunches, and snacks, and the unavoidable food waste such as tea bags. The paper sorted consisted mainly of paper towels (Photo 13), food paper, and beverage cups. The plastics category consisted of "other plastic", rigid plastic recyclables, and garbage bags.

The remainder of the waste consisted of cardboard/boxboard, "other" waste (dust and sweepings, vinyl gloves), metal and glass.

Photo 13. Paper Towels

Figure 4.1 Waste Composition for North Campus Common Areas



4.1.2 North Campus Food Serving Areas

Figure 4.2 depicts the waste composition of the Food Serving Areas' garbage stream. Table 4.1 depicts the waste audit results in Appendix 1. Approximately 58 kg of waste was audited.

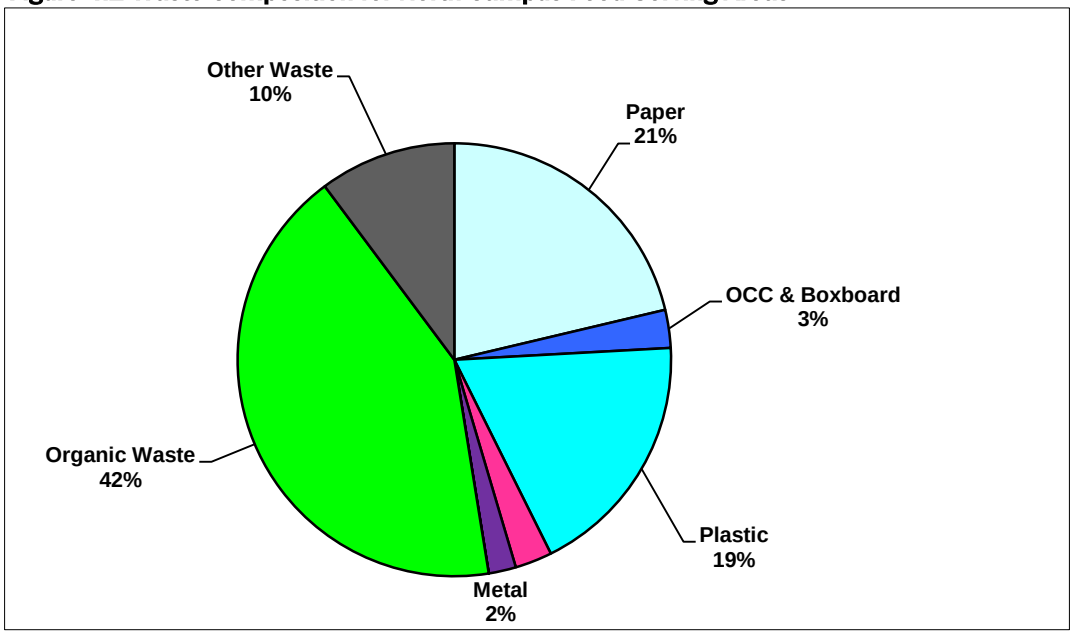
The most prevalent wastes included organics, paper, plastic and other waste.

The organic waste consisted of avoidable food waste such as unfinished lunches, whole fruit including bananas and apples, and beverage liquids, and unavoidable food waste such as fruit peelings, and coffee grounds. The paper sorted consisted of mixed food paper, paper towels, beverage cups (Photo 14), and office (fine) paper. Most of the plastics category consisted of rigid plastic recyclables, garbage bags and "other" plastic.

The remainder of the waste consisted of other waste (mop, textiles, gloves, pens), cardboard/boxboard and metal.

Photo 14. Beverage Cups

Figure 4.2 Waste Composition for North Campus Food Serving Areas



4.1.3 North Campus Residence

Figure 4.3 depicts the waste composition of the Residence waste stream. Table 4.1 depicts the waste audit results in Appendix 1. Approximately 47 kg of waste was audited.

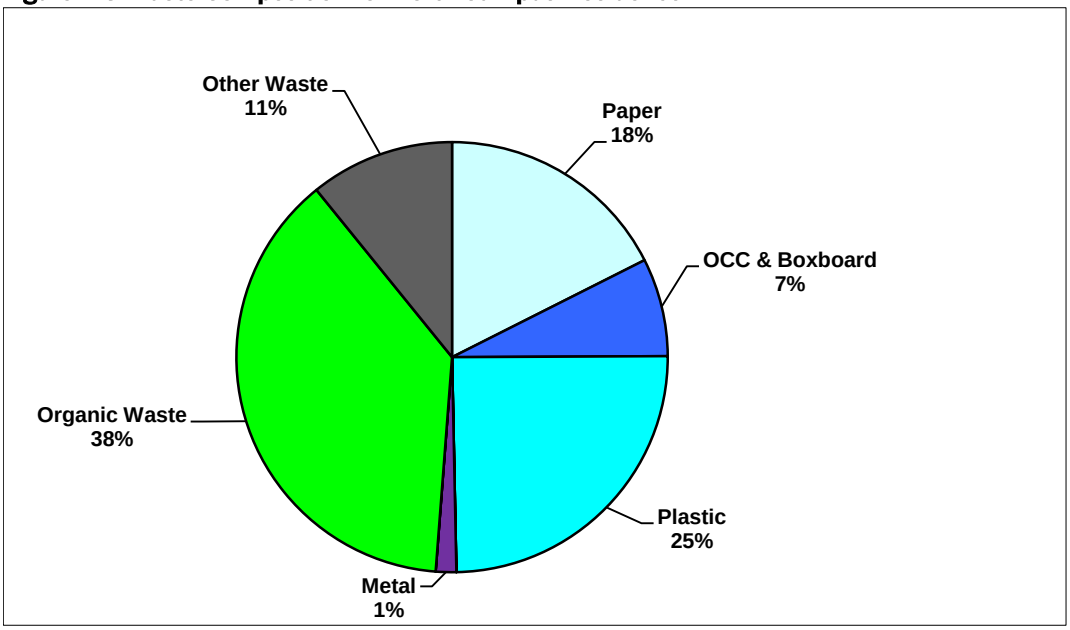
The most prevalent wastes included organic waste, plastic, paper and other waste.

The organic waste consisted of avoidable food waste such as leftover rice and bakery products and beverage liquids (Photo 15), and unavoidable food waste such as fruit and vegetable peels. The plastic sorted consisted of other plastic, rigid plastic recyclables, garbage bags and plastic beverage bottles. The paper sorted consisted of paper towels, mixed food paper, beverage cups, and gable top & aseptic containers. The other waste consisted of shoes, textiles, and floor sweepings.

The remainder of the waste consisted of cardboard/boxboard and metal.

Photo 15. Avoidable Food Waste

Figure 4.3 Waste Composition for North Campus Residence



4.2 Lakeshore Campus

4.2.1 Lakeshore Common Areas

Figure 4.4 depicts the waste composition of the Common Areas' garbage stream. Table 4.2 depicts the waste audit results in Appendix 1. Approximately 20 kg of waste was audited.

The most prevalent wastes included organics, paper, and plastic.

The organics consisted of avoidable food waste such as snacks, fruit, and fries, and unavoidable food waste such as fruit peelings and coffee grounds. The paper sorted consisted of mixed food paper, beverage cups, paper towels and fine office paper (Photo 16). The plastics category consisted of other plastic, garbage bags, rigid plastic recyclables and plastic beverage bottles.

The remainder of the waste consisted of cardboard/boxboard, "other" waste and metal.

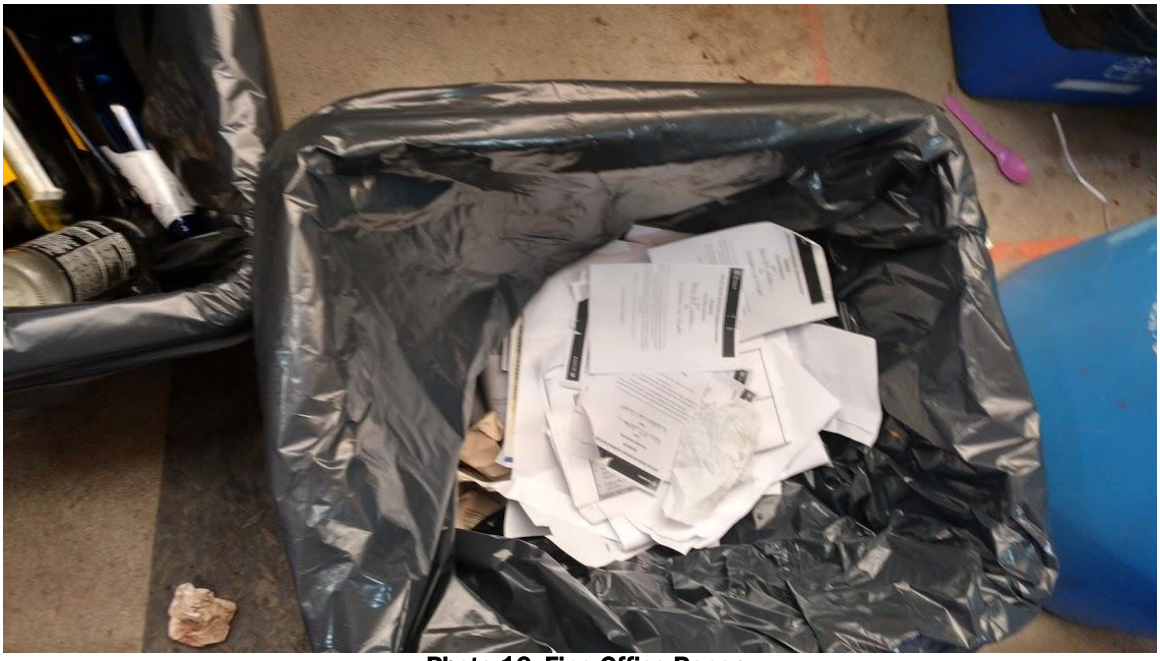
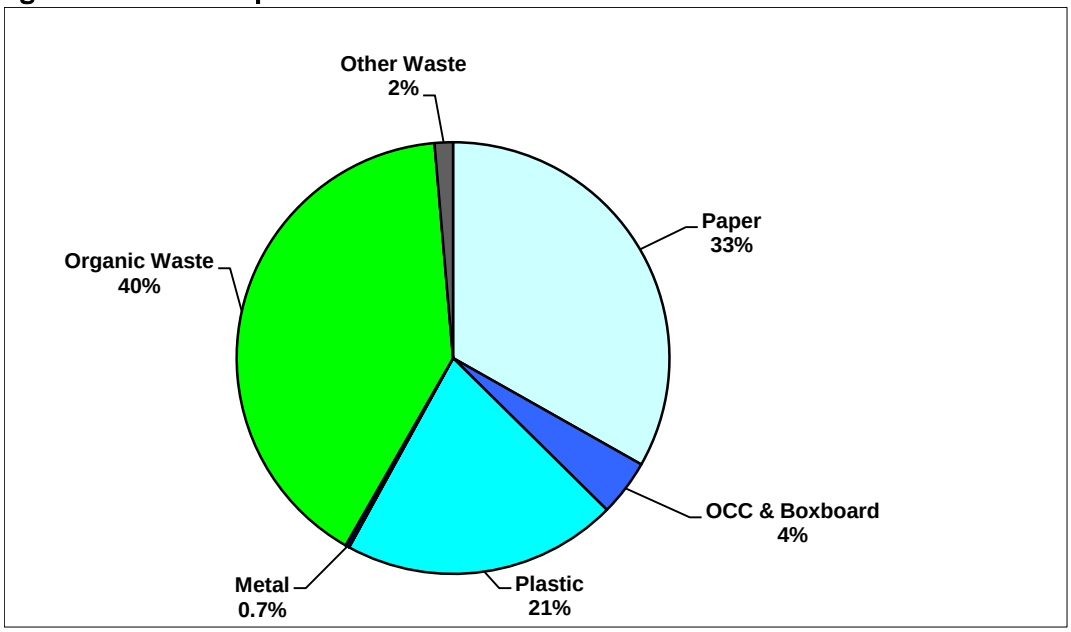


Photo 16. Fine Office Paper

Figure 4.4 Waste Composition for Lakeshore Common Areas



4.2.2 Lakeshore Food Serving Areas

Figure 4.5 depicts the waste composition of the Food Areas' waste stream. Table 4.2 depicts the waste audit results in Appendix 1. Approximately 28 kg of waste was audited.

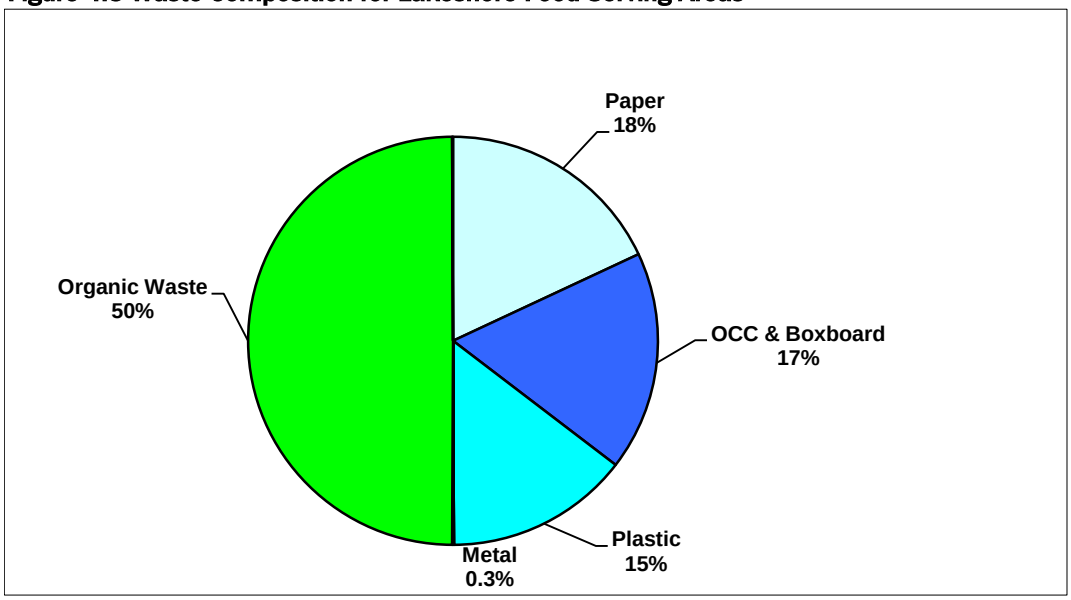
The most prevalent wastes included organics, paper, cardboard/boxboard, and plastic.

The organic waste consisted of avoidable food waste such as leftover bread products from lunches (Photo 17) and unavoidable food waste such as fruit peels and tea bags. The paper consisted of mixed food paper, paper towels and beverage cups. The plastics category consisted of "other" plastic, garbage bags and rigid plastic recyclables.

The remainder of the waste consisted of a small amount of metal (one aluminum can).

Photo 17. Avoidable Food Waste

Figure 4.5 Waste Composition for Lakeshore Food Serving Areas



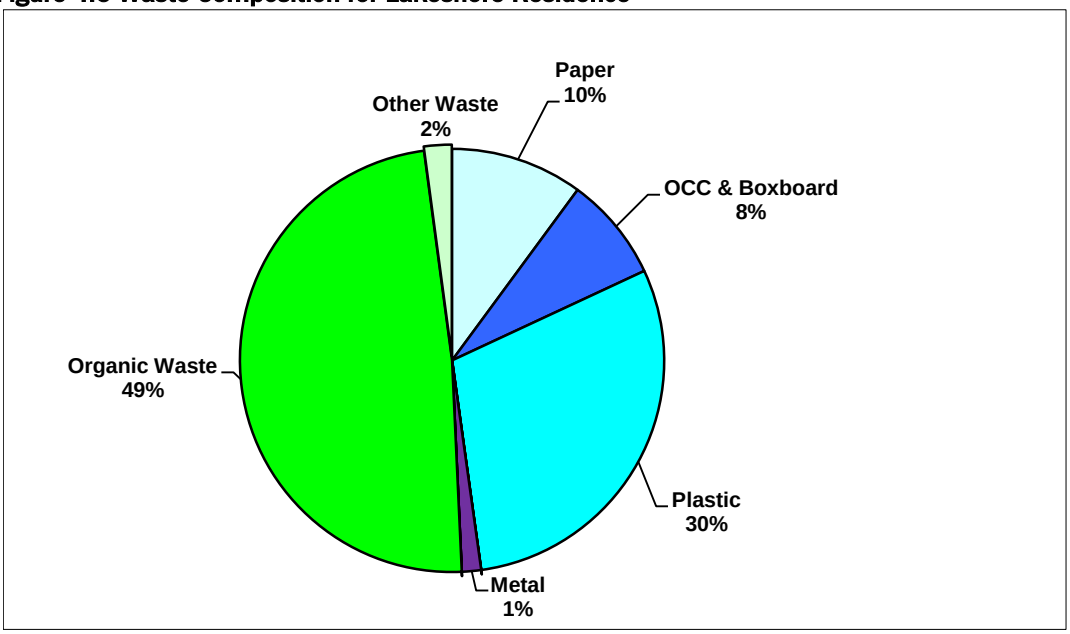
4.2.3 Lakeshore Residence

Figure 4.6 depicts the waste composition of the Residence waste stream. Table 4.2 depicts the waste audit results in Appendix 1. Approximately 12 kg of waste was audited.

The most prevalent wastes included organic waste, plastic, and paper.

The organic waste consisted of avoidable food waste such as beverage liquids and left over lunches, and unavoidable food waste such as fruit peelings. The plastic sorted consisted of garbage bags and other plastic. The paper sorted consisted of paper towels, beverage cups and mixed food paper.

Figure 4.6 Waste Composition for Lakeshore Residence



4.3 Overall Waste Stream

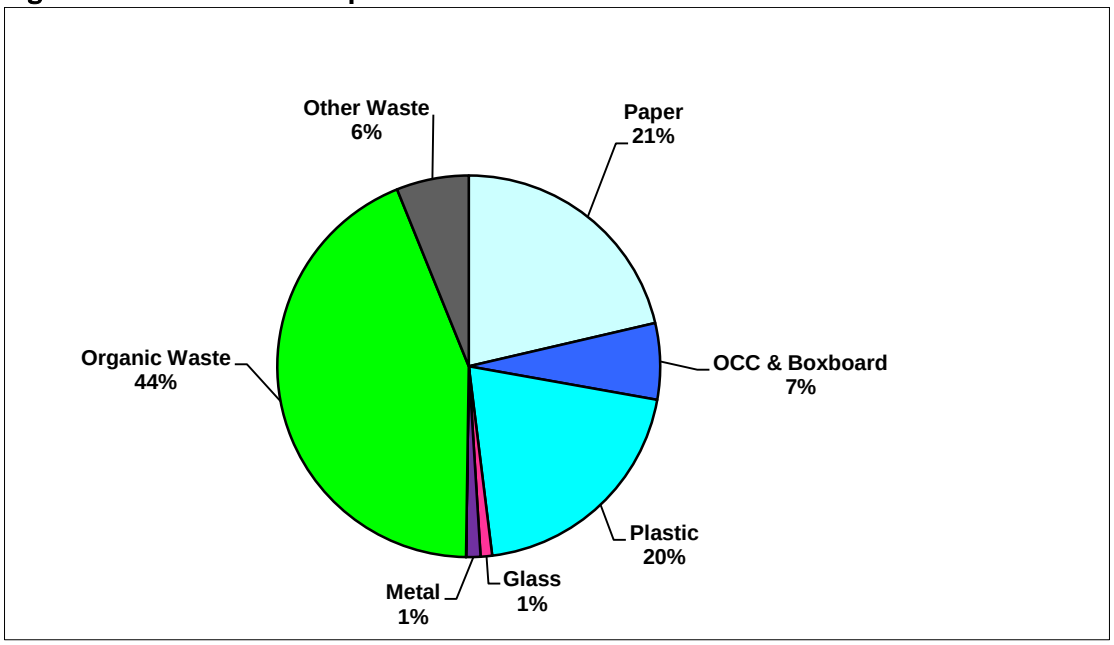
Figure 4.7 depicts the waste composition of the overall waste stream for both campuses. Table 4.3 depicts the waste audit results in Appendix 1. Approximately 199 kg of waste was audited.

The most prevalent wastes included organics, paper and plastic.

The organic waste consisted of avoidable food waste such as unfinished meals, fruit and bakery items, and beverage liquids, and unavoidable food waste such as fruit peelings and coffee grounds. The paper consisted of mixed food paper, paper towels, and beverage cups. The plastic consisted of "other" plastic, garbage bags, rigid plastic recyclables and plastic beverage bottles.

The remainder of the waste consisted of cardboard/boxboard, "other" waste, glass and metal.

Figure 4.7 Overall Waste Composition



4.4 Recycling

A total of 178kg of recyclables (paper and containers) was sorted from both campuses.

Table 4.1 depicts overall recycling composition at North and Lakeshore Campus on a percentage basis.

Overall the recycling consisted of 18% recyclable paper, 9% cardboard/boxboard, 22% recyclable food and beverage containers and 52% other waste (i.e. contamination). All locations had fairly high contamination rates (other waste) consisting of organic wastes, non-recyclable plastics, and non-recyclable paper .

Table 4.1 Recycling Composition for North and Lakeshore Campus

	North Campus			Lakeshore Campus			Overall
	Common Areas	Food Areas	Residence	Common Areas	Food Areas	Residence	
	%			%			%
Paper	27.5	26.1	4.5	23.6	12.2	9.6	**17.9**
OCC & Boxboard	5.4	2.4	13.6	5.8	15.4	8.2	**8.7**
Plastic	13.7	21.6	11.4	15.1	13.0	20.8	**15.2**
Glass	4.0	6.8	6.4	0.0	0.8	15.7	**4.5**
Metal	0.9	2.3	2.3	1.3	0.7	13.1	**2.0**
Other Waste	48.5	40.8	61.8	53.9	58.0	32.6	**51.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Figure 4.8 and 4.9 depict recycling composition for North Campus and Lakeshore Campus respectively. In particular the recyclables from the Lakeshore campus had very high contamination (i.e. other waste).

Figure 4.8 Recycling Composition for North Campus

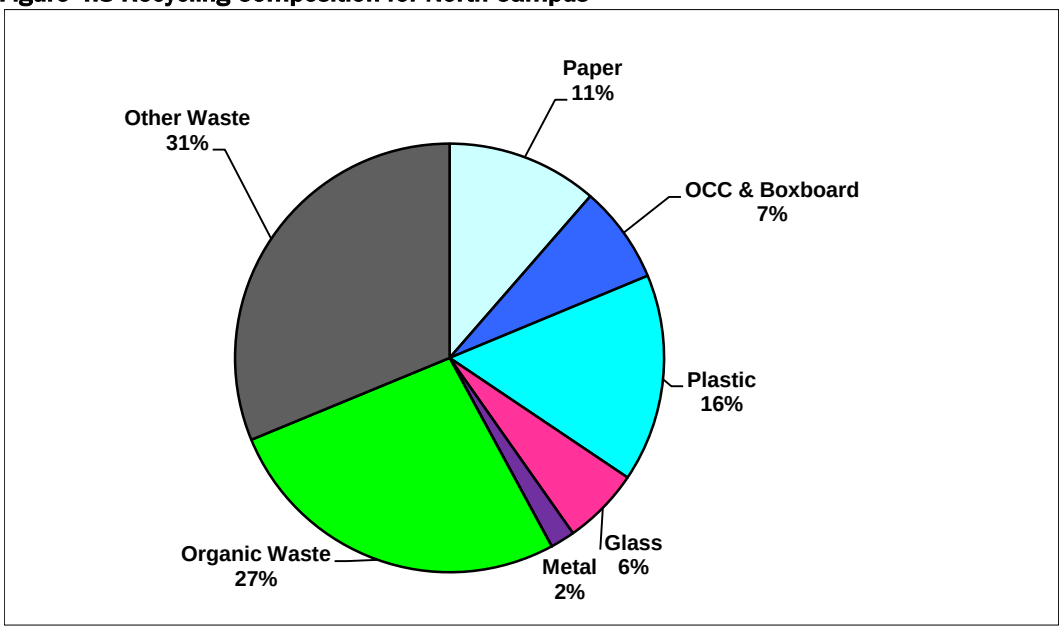
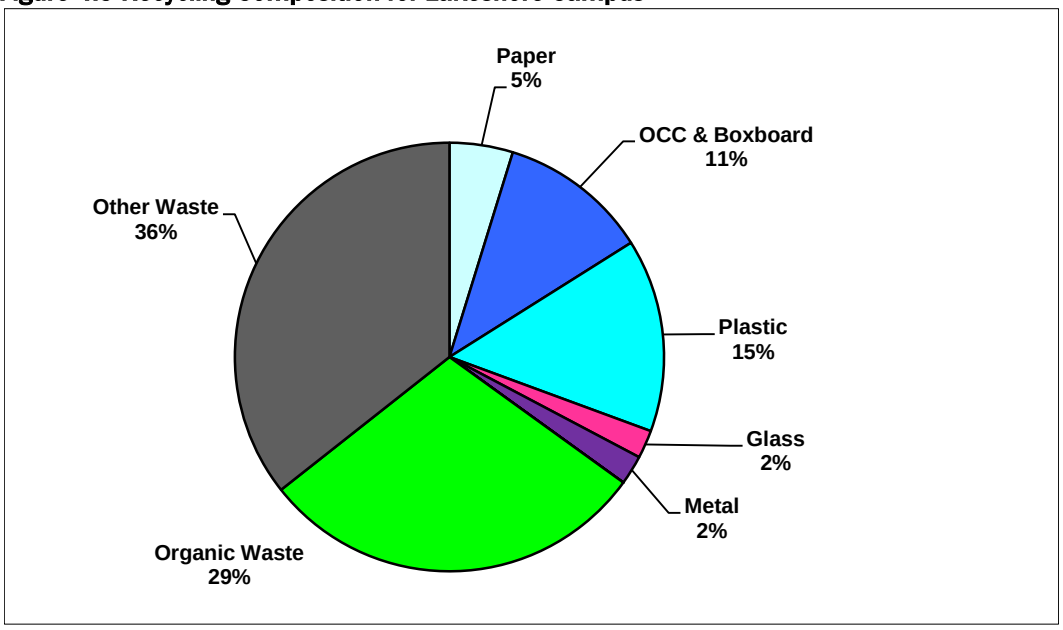


Figure 4.9 Recycling Composition for Lakeshore Campus

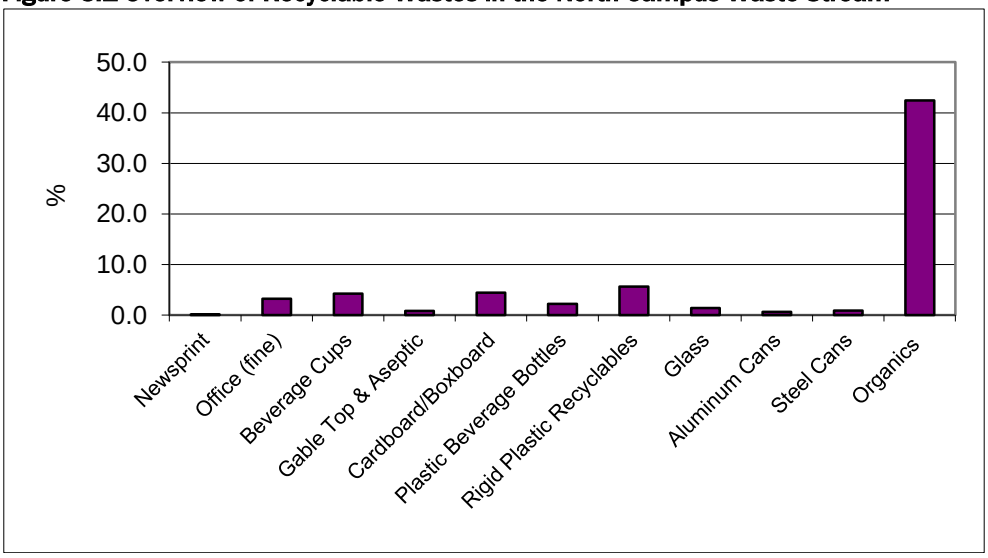


5.0 Data Analysis

5.1 North Campus

Wastes for which there are recycling programs are depicted in Figure 5.1. It was estimated that approximately 66% (error rate) of wastes audited had established recycling programs. Most of this consisted of organics (food wastes) and rigid plastic recyclables, cardboard/boxboard and coffee cups.

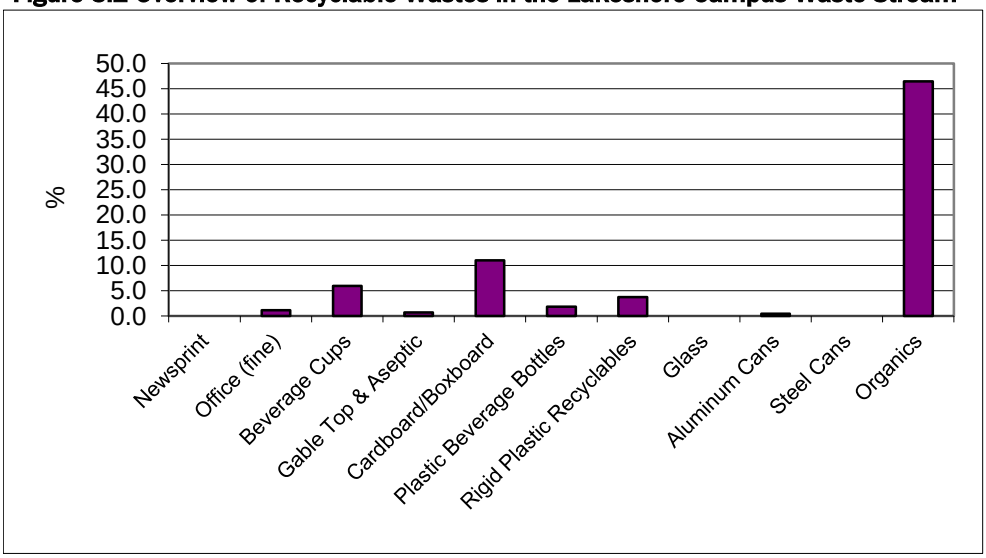
Figure 5.1 Overview of Recyclable Wastes in the North Campus Waste Stream



5.2 Lakeshore Campus

Wastes for which there are recycling programs are depicted in Figure 5.2. It was estimated that approximately 71% (error rate) of wastes audited had established recycling programs. There was a significant amount of organic waste (46%) and cardboard/boxboard (11%) present in the waste stream.

Figure 5.2 Overview of Recyclable Wastes in the Lakeshore Campus Waste Stream



5.3 Overall (North and Lakeshore Campus)

Figure 5.3 depicts wastes for which there are recycling programs for both campuses. It was estimated that approximately 68% (error rate) of wastes audited had established recycling programs. There was a significant amount of organic waste (44%) present in the waste stream.

Figure 5.3 Overview of Recyclable Wastes in the Overall Waste Stream

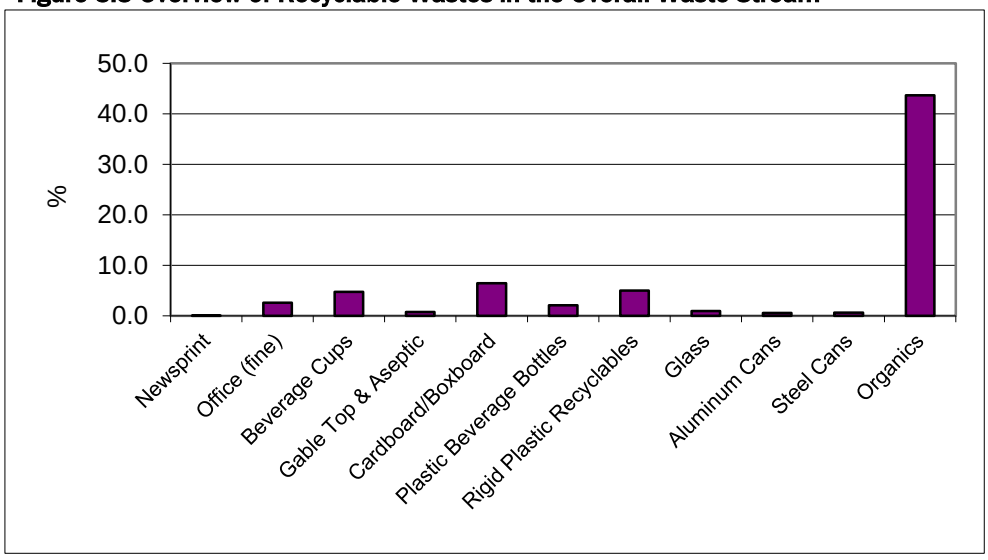


Table 5.1 depicts the current capture rate of various waste streams for which there are recycling programs. It is estimated that approximately 486 tonnes of potential recyclables are found in the waste stream annually and landfilled. It is possible to divert up to an additional 313 tonnes of organics annually through a more efficient composting program across both campuses.

Table 5.1 Estimated Capture Rates of Recyclables

	Recycled	Landfilled (Audit)	Capture Rate (%)	Landfilled (Audit)
	kg/day			tonnes/year
Cardboard	218.1	126.9	63.2	46.3
Paper	960.9	53.0	94.8	19.4
Food & Beverage Containers	413.7	292.5	58.6	106.8
Organics	716.8	858.0	45.5	313.2
Total				**485.6**

5.4 Comparison to 2014 and 2015 Waste Audits

The total amount of waste generated over the past three years was 1,986 tonnes in 2014, 1,826 tonnes in 2015 and 1,948 tonnes for this waste audit. The estimated waste diversion rate for the 2016 waste audit was 63% across both campuses compared to 54% in 2014 and 55% in 2015. The increase can be attributed to an improvement in sorting and diversion, along with better tracking of weights through a new private collections contractor.

In terms of waste composition the results of both campuses were improved from 2015. In 2016, there were less waste sent to landfill although there was less organic waste diverted through composting programs. There were more donations, electronic waste, construction and demolition waste, metal and wood that were diverted through school programs. Recyclable containers and paper have essentially remained the same.

6.0 Waste Reduction Work Plan and Recommendations

The time-line for the previous waste reduction work plan was from **1 January 2014 to 1 January 2017.**

The following goals were set:

- Decrease overall waste generation by **20%**
- Increase waste diversion rate to **60%**

As of 2016, overall waste generation was reduced by **3%** so the overall waste generation goal was not achieved. It is important to note, however, that the amount of waste to landfill was reduced by approximately **13%** and the amount of wastes recycled increased by almost **12%** from 2015.

A new waste reduction work plan has been developed for **1 January 2017 to 1 January 2019.**

The tracking of garbage and recycling has improved since 2012. As well, Humber has implemented some new waste diversion opportunities and created educational material to inform students about waste management and diversion programs.

To facilitate continuous improvement, it is **recommended** that Humber set a goal and engage in a process to:

- Decrease waste generation by **10%** (using this waste audit as a baseline)
- Increase waste diversion rate to **65%**

This work plan sets out the framework to meet this goal.

6.1 General Initiatives

In 2016, it was estimated that Humber generated an estimated 1,948 tonnes of waste (disposed and recycled). Of that, an estimated 1,231 tonnes was recycled and 717 tonnes sent to landfill. Based on this data, Humber has a waste diversion rate of about 63%.

In 2016 it is estimated that approximately 66% of wastes at North Campus and 25% of wastes at the Lakeshore campus destined for landfill are readily recyclable with existing programs. Based on the waste audit results, an estimated 486 tonnes of wastes which are currently landfilled is potentially available for additional diversion. This includes 313 tonnes of organic waste that could be diverted through an improved organic waste composting program.

Estimates continue to be generated for some waste and recyclable streams at the Lakeshore Campus (construction and demolition waste, yard waste, metal and wood waste). This is due to a lack of infrastructure and space at the Lakeshore Campus. All other streams and locations have documentation of weights in place. For the Lakeshore Campus location, it is **recommended** that Humber staff continue to improve the documentation these waste diversion activities to improve the accuracy of future waste diversion rate calculations as much as possible.

In general, it is **recommended** that Humber continue to update its communications and education material annually (e.g. for Earth Week). It is important that Humber report on progress and provide a "call to action" for students and employees on how they can best participate.

According to Ontario Regulation 102/94 the waste reduction work plan should have regard to:

- Reduction as the first objective;
- Re-use as the next objective; and
- Recycling as the final objective.

To facilitate continuous improvement it is **recommended** that Humber undertake the following efforts to reduce, re-use and recycle wastes:

6.2 Reduction Initiatives

A key waste stream that could be targeted for reduction could be:

Organic wastes make up about **44%** of the waste stream. While considerable amounts of food waste are unavoidable (e.g peelings, trimmings) a considerable amount of edible food waste could be reduced. It is **recommended** that a communications and education program be developed to encourage their reduction through better use/consumption of food.

Recyclable Beverage and food containers currently make up about **9%** of the waste stream. This includes coffee cups, gable top and aseptic containers, as well as plastic, glass and metal containers. It is **recommended** that a communications and education program be developed to encourage their reduction through the use of re-usable beverage containers.

6.3 Re-Use Initiatives

In 2016, Humber reused as much old furniture and renovation materials as possible before sending them for reuse through their private contractor.

It is **recommended** that Humber continue to identify and implement re-use opportunities within the Humber community as well as the broader community.

6.4 Recycling Initiatives

The greatest unrealized recycling opportunity is with organic wastes. While programs are in place, only an estimated 43% is currently captured. It is **recommended** that communications and education materials be developed that specifically addresses using available recycling opportunities when disposal is unavoidable (this would complement the program developed for reducing food waste as noted in Section 6.2).

It is **recommended** that the existing composting program at both campuses be improved. Pre consumer food waste is collected in food preparation areas. Organic bins are available at food outlets and in the cafeteria, along with some offices, to capture post-consumer food waste. Students need to be made aware of this opportunity and the impact it has on waste diversion as a whole. Additionally, waste bins need to be emptied regularly so overflow does not get placed in the recycling or organic bins, thus contaminating these diversion streams. It is **recommended** that Humber focus on improving the usage of the composing programs at both campuses.

It is **recommended** that communications and education materials continue to be developed, implemented and improved to promote Humber's various recycling programs.

6.5 Implementation Plan

The work will be coordinated by:

Ms. Lindsay Walker, Sustainability Manager, Humber College

The work includes Humber staff meeting with relevant staff to update the plan to reduce, re-use and recycle wastes and to update communications and education material by **1 May 2017.** This should include a summary of waste audit results.

A summary of these waste audit results and waste reduction work plan will be posted for staff to see by **1 April 2017**.

The results of the waste audit are summarized in the signed Ministry of the Environment Waste Form Report of a Waste Audit (Appendix 2). Humber has indicated that they will work to address the recommendations set out in this Waste Reduction Work Plan and has signed the Ministry of Environment Waste Reduction Work Plan form in Appendix 2 indicating same.

Appendix 1

Detailed Waste Audit Results

Table 4.1 Detailed Waste Audit Results (North Campus)

		North Campus Common Areas		North Campus Food Areas		North Campus Residences		Total	
Material Category	Accepted in Recycling Program (X)	Weight per Category	%	Weight per Category	%	Weight per Category	%	Weight per Category	%
Paper									
Newsprint	X	0.2	0.6	0.0	0.0	0.0	0.0	0.2	0.1
Office (fine) paper	X	0.4	1.1	2.0	3.5	0.5	1.1	2.9	2.1
Mixed (office) Paper	X	0.1	0.2	1.3	2.2	0.2	0.5	1.6	1.1
Beverage Cups	x	2.1	6.3	2.2	3.8	1.6	3.4	5.9	4.3
Paper Towels/Tissue		3.1	9.0	2.9	5.0	3.3	6.9	9.2	6.6
Mixed paper (food)		2.8	8.3	3.4	5.9	1.8	3.9	8.0	5.8
Other Paper		0.2	0.5	0.1	0.2	0.3	0.6	0.5	0.4
Gable Top & Aseptic Containers	X	0.2	0.6	0.4	0.7	0.5	1.2	1.1	0.8
Total Paper		**9.0**	**26.4**	**12.3**	**21.3**	**8.2**	**17.6**	**29.5**	**21.3**
OCC & Boxboard									
Total OCC & Boxboard	X	**1.1**	**3.2**	**1.6**	**2.8**	**3.5**	**7.4**	**6.2**	**4.5**
Plastics									
Plastic Beverage Bottles	X	0.4	1.2	0.6	1.1	2.0	4.3	3.0	2.2
Rigid Plastic Recyclables	X	1.3	3.9	3.4	5.9	3.0	6.5	7.8	5.6
Polystyrene (expanded foam)		0.3	0.9	1.1	1.8	0.2	0.3	1.5	1.1
Garbage Bags		1.0	2.9	2.9	5.0	2.3	4.8	6.2	4.4
Other Plastic		3.1	9.1	2.7	4.6	4.2	8.9	9.9	7.2
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Plastic		**6.1**	**17.9**	**10.7**	**18.5**	**11.6**	**24.8**	**28.4**	**20.5**
Glass									
Total Glass	X	**0.3**	**1.0**	**1.6**	**2.8**	**0.0**	**0.0**	**1.9**	**1.4**
Metal									
Aluminum Cans	X	0.2	0.7	0.3	0.6	0.3	0.7	0.9	0.6
Steel Cans	X	0.0	0.0	0.9	1.5	0.4	0.9	1.3	0.9
Other Metal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Metal		**0.2**	**0.7**	**1.2**	**2.0**	**0.7**	**1.5**	**2.1**	**1.5**
Organic Waste									
Edible Food Waste	X	13.1	38.5	19.9	34.3	16.1	34.4	49.1	35.4
Inedible Food Waste	X	3.5	10.4	4.6	8.0	1.7	3.6	9.8	7.1
Total Organic Waste		**16.6**	**48.9**	**24.5**	**42.3**	**17.8**	**38.0**	**58.9**	**42.5**
Other Waste									
Total Other Waste		**0.6**	**1.9**	**5.9**	**10.2**	**5.1**	**10.8**	**11.6**	**8.4**
Total		**33.9**	**100.0**	**57.9**	**100.0**	**46.9**	**100.0**	**138.7**	**100.0**

Table 4.2 Detailed Waste Audit Results (Lakeshore Campus)

		Lakeshore Campus Common Areas		Lakeshore Campus Food Areas		Lakeshore Campus Residences		Total	
Material Category	**Accepted in Recycling Program (X)**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**
Paper									
Newsprint	X	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Office (fine) paper	X	0.3	1.5	0.1	0.3	0.0	0.0	0.4	0.6
Mixed (office) Paper	X	0.2	1.0	0.0	0.1	0.1	0.7	0.3	0.5
Beverage Cups	x	2.3	11.1	1.0	3.6	0.3	2.6	3.6	5.9
Paper Towels/Tissue		1.5	7.4	1.6	5.6	0.4	3.3	3.5	5.7
Mixed paper (food)		2.4	11.8	2.2	7.7	0.3	2.3	4.8	8.0
Other Paper		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gable Top & Aseptic Containers	X	0.1	0.5	0.2	0.6	0.2	1.3	0.4	0.7
Total Paper		**6.8**	**33.2**	**5.0**	**18.0**	**1.2**	**10.1**	**13.1**	**21.5**
OCC & Boxboard									
Total OCC & Boxboard	X	**0.9**	**4.2**	**4.9**	**17.4**	**1.0**	**8.0**	**6.7**	**11.0**
Plastics									
Plastic Beverage Bottles	X	0.4	2.1	0.4	1.3	0.4	2.9	1.1	1.9
Rigid Plastic Recyclables	X	0.8	3.8	0.9	3.4	0.5	4.4	2.3	3.7
Polystyrene (expanded foam)		0.1	0.3	0.0	0.1	0.2	1.3	0.3	0.4
Garbage Bags		1.4	6.9	1.3	4.5	1.7	14.0	4.4	7.2
Other Plastic		1.5	7.5	1.5	5.2	0.9	7.2	3.9	6.4
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Plastic		**4.2**	**20.6**	**4.1**	**14.5**	**3.7**	**29.8**	**11.9**	**19.6**
Glass									
Total Glass	X	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Metal									
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aluminum Cans	X	0.1	0.3	0.0	0.1	0.2	1.5	0.3	0.46
Steel Cans	X	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Other Metal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Total Metal		**0.1**	**0.3**	**0.0**	**0.1**	**0.2**	**1.5**	**0.3**	**0.46**
Organic Waste									
Edible Food Waste	X	5.6	27.3	12.3	43.8	4.1	33.5	22.0	36.2
Inedible Food Waste	X	2.7	13.0	1.7	6.0	1.9	15.1	6.2	10.2
Total Organic Waste		**8.2**	**40.4**	**13.9**	**49.9**	**6.0**	**48.6**	**28.2**	**46.4**
Other Waste									
Total Other Waste		**0.3**	**1.4**	**0.0**	**0.1**	**0.3**	**2.1**	**0.6**	**0.9**
Total		**20.4**	**100.0**	**28.0**	**100.0**	**12.3**	**100.0**	**60.7**	**100.0**

Table 4.3 Waste Audit Results (Overall)

		North Campus Common Areas		North Campus Food Areas		North Campus Residences		Lakeshore Campus Common Areas		Lakeshore Campus Food Areas		Lakeshore Campus Residences		Total	
Material Category	**Accepted in Recycling Program (X)**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**	**Weight per Category**	**%**
Paper															
Newsprint	X	0.2	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
Office (fine) paper	X	0.4	1.1	2.0	3.5	0.5	1.1	0.3	1.5	0.1	0.3	0.0	0.0	3.3	1.6
Mixed (office) Paper	X	0.1	0.2	1.3	2.2	0.2	0.5	0.2	1.0	0.0	0.1	0.1	0.1	1.9	1.0
Beverage Cups	x	2.1	6.3	2.2	3.8	1.6	3.4	2.3	11.1	1.0	3.6	0.3	2.6	9.5	4.8
Paper Towels/Tissue		3.1	9.0	2.9	5.0	3.3	6.9	1.5	7.4	1.6	5.6	0.4	3.3	12.7	6.4
Mixed paper (food)		2.8	8.3	3.4	5.9	1.8	3.9	2.4	11.8	2.2	7.7	0.3	2.3	12.9	6.5
Other Paper		0.2	0.5	0.1	0.2	0.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3
Gable Top & Aseptic Containers	X	0.2	0.6	0.4	0.7	0.5	1.2	0.1	0.5	0.2	0.6	0.2	1.3	1.6	0.8
Total Paper		**9.0**	**26.4**	**12.3**	**21.3**	**8.2**	**17.6**	**6.8**	**33.2**	**5.0**	**18.0**	**1.2**	**10.1**	**42.6**	**21.4**
OCC & Boxboard															
Total OCC & Boxboard	X	**1.1**	**3.2**	**1.6**	**2.8**	**3.5**	**7.4**	**0.9**	**4.2**	**4.9**	**17.4**	**1.0**	**8.0**	**12.9**	**6.5**
Plastics															
Plastic Beverage Bottles	X	0.4	1.2	0.6	1.1	2.0	4.3	0.4	2.1	0.4	1.3	0.4	2.9	4.2	2.1
Rigid Plastic Recyclables	X	1.3	3.9	3.4	5.9	3.0	6.5	0.8	3.8	0.9	3.4	0.5	4.4	10.0	5.0
Polystyrene (expanded foam)		0.3	0.9	1.1	1.8	0.2	0.3	0.1	0.3	0.0	0.1	0.2	1.3	1.8	0.9
Garbage Bags		1.0	2.9	2.9	5.0	2.3	4.8	1.4	6.9	1.3	4.5	1.7	14.0	10.5	5.3
Other Plastic		3.1	9.1	2.7	4.6	4.2	8.9	1.5	7.5	1.5	5.2	0.9	7.2	13.8	6.9
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Plastic		**6.1**	**17.9**	**10.7**	**18.5**	**11.6**	**24.8**	**4.2**	**20.6**	**4.1**	**14.5**	**3.7**	**29.8**	**40.3**	**20.2**
Glass															
Total Glass	X	**0.3**	**1.0**	**1.6**	**2.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.9**	**1.0**
Metal															
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Aluminum Cans	X	0.2	0.7	0.3	0.6	0.3	0.7	0.1	0.3	0.0	0.1	0.2	1.5	1.2	0.58
Steel Cans	X	0.0	0.0	0.9	1.5	0.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.63
Other Metal		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
Total Metal		**0.2**	**0.7**	**1.2**	**2.0**	**0.7**	**1.5**	**0.1**	**0.3**	**0.0**	**0.1**	**0.2**	**1.5**	**2.4**	**1.21**
Organic Waste															
Edible Food Waste	X	13.1	38.5	19.9	34.3	16.1	34.4	5.6	27.3	12.3	43.8	4.1	33.5	71.0	35.6
Inedible Food Waste	X	3.5	10.4	4.6	8.0	1.7	3.6	2.7	13.0	1.7	6.0	1.9	15.1	16.0	8.0
Total Organic Waste		**16.6**	**48.9**	**24.5**	**42.3**	**17.8**	**38.0**	**8.2**	**40.4**	**13.9**	**49.9**	**6.0**	**48.6**	**87.1**	**43.7**
Other Waste															
Total Other Waste		**0.6**	**1.9**	**5.9**	**10.2**	**5.1**	**10.8**	**0.3**	**1.4**	**0.0**	**0.1**	**0.3**	**2.1**	**12.2**	**6.1**
Total		**33.9**	**100.0**	**57.9**	**100.0**	**46.9**	**100.0**	**20.4**	**100.0**	**28.0**	**100.0**	**12.3**	**100.0**	**199.4**	**100.0**

Appendix 2
Ministry of Environment Reporting Forms

Ministry of the Environment Waste Form

Report of a Waste Audit

Industrial, Commercial and Institutional Establishments

As required by O. Reg. 102/94

- ***This report must be prepared 6 months after becoming subject to O. Reg. 102/94 and a copy retained on file for at least five years after it is prepared, and be made available to the ministry upon request.***
- ***For large construction and demolition projects, please refer to the forms included with "A Guide to Waste Audits and Waste Reduction Work Plans for Construction and Demolition Projects as Required Under Ontario Regulation 102/94"* (revised July 2008)**

I. General Information

Name of Owner and/or Operator of Entity(ies) and Company Name: Humber Institute of Technology and Advanced Learning (Humber College)		
Name of Contact Person: Ms. Lindsay Walker, Sustainability Manager, Humber College	**Telephone #:** 416.675.6622 x5829	**Email address:** Lindsay.Walker@humber.ca
Street Address(es) of Entity(ies): 205 Humber College Boulevard, Toronto, M9W 5L7 (North Campus), 3199 Lakeshore Blvd West, Toronto M8V 1K8 (Lakeshore Campus)		
Municipality: Toronto, ON		

Type of Entity (check one)			
Retail Shopping Establishments		Hotels and Motels	
Retail Shopping Complexes		Hospitals	
Office Buildings		Educational Institutions	x
Restaurants		Large Manufacturing Establishments	

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF ENTITY

Provide a brief overview of the entity(ties):
Humber College, a member of Polytechnics Canada, offers a broad range of career-focused, educational programs (more than 350) that include: apprenticeship, certificates, diplomas, bachelor's degrees and postgraduate certificates. Humber has 29,000 full time and 23,000 part time students.

III. How Waste is Produced And Decisions Affecting the Production of Waste

For each category of waste that is produced at the entity(ies), explain how the waste will be produced and how management decisions and policies will affect the production of waste.	
Categories of Waste	**How Is the Waste Produced and What Management Decisions/Policies Affect Its Production?**
Example: Disposable Food Packaging	***Generated by customers eating inside restaurant. Food packaging is used for health reasons. Reusable mugs for customers consuming coffee/tea inside restaurant is being reviewed.***
Paper	
Newsprint	Generated by student newspaper and staff/students that bring in newspapers to read. Recycling program in place.
Office (fine) paper	Generated by students/staff as part of studies/job. Recycling programs in place.
Mixed paper	Generated by students/staff as part of studies/job. Recycling programs in place.
Beverage cups	Generated by students/staff consuming beverages. Recycling program in place.
Paper Towels/Tissue	Generated by students/staff in washrooms and food areas. Compost program available in North Campus food areas.
Mixed paper (food)	Generated by food outlets and students/staff bringing in food. No recycling program in place.
Other paper	Generated by students/staff as part of studies/job. Recycling programs in place.
Gable Top & Aseptic Containers	Generated by students/staff as part of studies/job. Recycling programs in place.
Cardboard	Generated from receipt of supplies. Recycling program in place.
Plastics	
Plastic Beverage Bottles	Generated by students/staff consuming beverages. Recycling program in place.
Rigid Plastic Recyclables	Generated by students/staff. Recycling program in place.
Polystyrene	Generated by students/staff bringing to work and food areas. No recycling program in place.
Garbage Bags	Generated by staff. No recycling program in place.
Other plastic	Generated by students/staff. No recycling program in place.
Glass bottles and jars	Generated by students/staff consuming beverages. Recycling program in place.
Metal	
Aluminum cans	Generated by students/staff consuming beverages. Recycling program in place.
Steel cans	Generated by students/staff consuming beverages. Recycling program in place.
Wood	Generated in wood shops. Recycling program in place.
Organics	Generated in cafeteria and administration areas. Composting program in place in cafeteria and kitchens in North Campus and kitchens in Lakeshore Campus.
Other Waste	
Ewaste	Generated during IT upgrades. Recycling program in place.
Batteries	Generated from students/staff. Recycling program in place.
Lamps	Generated when by janitorial staff. Recycling program in place.
Toner	Generated from printers. Recycling program in place.

Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

IV. MANAGEMENT OF WASTE

For each category of waste listed below, indicate which waste items will be disposed or reused/recycled and how each item will be managed at the entity(ies).

Category	Waste to be Disposed	Reused or Recycled Waste
Example: Beverage cans	***Staff/clients may place in garbage bins***	***Staff/clients place cans in recycling receptacles. Collection staff later collect cans. Those in garbage are disposed; those in recycling receptacles are recycled.***
Paper		
Newsprint	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Office (fine) paper	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Mixed paper	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Beverage cups	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Paper Towels/Tissue	Some may end up in garbage bins.	Placed in composting bins where available. Emptied by janitorial staff.
Mixed paper (food)	Placed in garbage bins.	n/a
Other paper	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Gable Top & Aseptic Containers	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Cardboard	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Plastics		
Plastic Beverage Bottles	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Rigid Plastic Recyclables	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Polystyrene	Some may end up in garbage bins.	Lakeshore- placed in recycling bins North- placed in garbage bins
Garbage Bags	Placed in garbage bins.	n/a
Other plastic	Placed in garbage bins.	n/a
Glass bottles and jars	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Metal		
Aluminum cans	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Steel cans	Some may end up in garbage bins.	Placed in recycling bins that are emptied by janitorial staff.
Wood		
Organics	Some may end up in garbage bins.	Placed in composting bins where available. Emptied by janitorial staff
Other Waste		
Ewaste	n/a	Recycling program in place.
Batteries	n/a	Recycling program in place.
Lamps	n/a	Recycling program in place.
Toner	n/a	Recycling program in place.
Carpet	n/a	Recycling program in place.

Note: When completing this form, write "n/a" in the columns where the entity will not produce any waste for a category of waste.

See also Waste Audit and Waste Reduction Work Plan Report December 2016)

	Estimated Amount of Waste Produced kgs or tonnes (t)											
	Generated			Reused			Recycled			Disposed		
Categories of Waste	"A" Base Year	"B" * Current Year	"C" * Change (A-B)	"A" Base Year	"B" * Current Year	"C" * Change (A-B)	"A" Base Year	"B" * Current Year	"C" * Change (A-B)	"A" Base Year	"B" * Current Year	"C" * Change (A-B)
1. Paper												
Newsprint										10.9	0.7	10.2
Office (fine) paper										29.7	11.8	17.9
Mixed paper (office)							136.1	350.7	-214.6	12.6	6.8	5.7
Coffee Cups										56.6	34.2	22.3
Paper Towels/Tissue										95.3	45.6	49.6
Mixed paper (food)										192.9	46.3	146.5
Other Paper										9.8	1.9	7.8
Gable Top & Aseptic							0	7.6	-7.6	0.0	5.7	-5.7
Total	**543.7**	**511.4**	**32.2**				**136.1**	**358.3**	**-222.2**	**407.6**	**153.2**	**254.4**
2. Cardboard	**135.8**	**125.9**	**9.9**				**114.1**	**79.6**	**34.5**	**21.7**	**46.3**	**-24.6**
3. Plastics												
Plastic Beverage Bottles							41.4	105.7	-64.3	39.6	15.0	24.5
Polyethylene jugs, pails, crates, totes, drums (HDPE)										4.3	36.1	-31.8
Polystyrene (expanded										5.2	6.4	-1.2
Garbage Bags										32.3	37.9	-5.6
Other Plastic										115.6	49.6	66.0
Total	**238.4**	**250.8**	**-12.4**				**41.4**	**105.7**	**-64.3**	**197.0**	**145.1**	**51.9**
4. Glass												
Bottles and Jars							41.4	7.6	33.8	9.5	7.0	2.5
Total	**50.9**	**14.5**	**36.4**				**41.4**	**7.6**	**33.8**	**9.5**	**7.0**	**2.5**
5. Metal												
Aluminum/Steel Cans							41.4	30.2	11.2	13.0	8.7	4.3
Other Metal								64.4	-64.4	0.3	0.0	0.3
Total	**54.7**	**103.3**	**-48.6**				**41.4**	**94.6**	**-53.2**	**13.3**	**8.7**	**4.6**
6. Wood	**52.0**	**107.2**	**-55.2**				**52.0**	**107.2**	**-55.2**	**0.0**	**0.0**	**0.0**
7. Organics												
Food Waste								**261.6**			**313.2**	
Leaf and Yard								**25.0**			**0.0**	
Cooking Oil								**4.4**			**0.0**	
Total	**829.5**	**604.2**	**225.3**				**344.5**	**291.1**	**53.4**	**485.0**	**313.2**	**171.8**
8. Other Waste												
E Waste								**31.8**				
Lamps								**0.5**				
Carpet								**12.0**				
Batteries								**0.2**				
Toner								**2.8**				
Miscellaneous waste					**69.1**			**70.4**			**43.8**	
Total	**124.6**	**230.7**	**-106.1**		**69.1**		**72.2**	**117.8**	**0.0**	**52.4**	**43.8**	**8.6**
Total	***2030***	***1948***	***81***	***0***	***69***	***0***	***843***	***1162***	***-218***	***1186***	***717***	***469***
Percent Change (total C ÷ total A x 100)	*0*	*0*					*0*	*0*		*0*	*0*	

Note: When completing this form, write "n/a" in the "Estimated Amount of Waste Produced" column where the entity will not produce any waste for a category of waste.

* Fill out these columns each year following the initial waste audit or baseline year to determine the progress that is being made by your waste reduction program.

VI. EXTENT TO WHICH MATERIALS OR PRODUCTS USED OR SOLD BY THE ENTITY CONSIST OF RECYCLED OR REUSED MATERIALS OR PRODUCTS

Please answer the following questions:

1. Do you have a management policy in place that promotes the purchasing and/or use of materials or products that consist of recycled and/or reused materials or products? If yes, please describe.

   There is currently no management policy in place that promotes the purchasing and/or use of materials or products that consist of recycled and/or reused materials or products

2. Do you have plans to increase the extent to which materials or products used or sold* consist of recycled or reused materials or products? If yes, please describe.

   Humber will investigate using recycled or re-used materials to the extent possible, where it is economically feasible to do so.

   * Information regarding materials or products "sold" that consist of recycled or reused materials or products is only required from owner(s) of retail shopping establishments and the owner(s) or operator(s) of large manufacturing establishments.

Please attach any additional page(s) as required to answer the above questions.

I hereby certify that the information provided in this Report of Waste Audit is complete and correct.		
Signature of authorized official: x	**Title:** Sustainability Manager	**Date:** **X**

Ministry of the Environment Waste Form

Report of a Waste Reduction Work Plan

Industrial, Commercial and Institutional Establishments

As required by O. Reg. 102/94

This report must be prepared 6 months after becoming subject to O. Reg. 102/94 and a copy retained on file for at least five years after it is prepared, and be made available to the ministry upon request.

I. GENERAL INFORMATION

Name of Owner and/or Operator of Entity(ies) and Company Name: Humber Institute of Technology and Advanced Learning (Humber College)		
Name of Contact Person: Ms. Lindsay Walker, Sustainability Manager, Humber College	**Telephone #:** 416.675.6622 x5829	**Email address:** Lindsay.Walker@humber.ca
Street Address(es) of Entity(ies): 205 Humber College Boulevard, Toronto, M9W 5L7 (North Campus), 3199 Lakeshore Blvd West, Toronto M8V 1K8 (Lakeshore Campus)		
Municipality: Toronto, ON		

Type of Entity (check one)			
Retail Shopping Establishments		Hotels and Motels	
Retail Shopping Complexes		Hospitals	
Office Buildings		Educational Institutions	x
Restaurants		Large Manufacturing Establishments	

Note: O. Reg. 102/94 does not apply to multi-unit residential buildings.

II. DESCRIPTION OF THE ENTITY

Provide a brief overview of the entity(ties):
Humber College, a member of Polytechnics Canada, offers a broad range of career-focused, educational programs (more than 350) that include: apprenticeship, certificates, diplomas, bachelor's degrees and postgraduate certificates. Humber has 29,000 full time and 23,000 part time students.

III. PLANS TO REDUCE, REUSE AND RECYCLE WASTE

For each category of waste described in Part V of "Report of a Waste Audit" (on which this plan is based), explain what your plans are to Reduce, Reuse and Recycle the waste, including: 1) how the waste will be source separated at the establishment, and 2) the programs to reduce, reuse and recycle all source separated waste.	
Waste Category (as stated in Part V of your "Report of a Waste Audit")	**Source Separation and 3Rs Program**
Example: fine paper (e.g. from an office)	*<u>"Fine Paper 3Rs Program"</u>* *<u>Reduce:</u> Staff will be encouraged to print on both sides of each sheet.* *<u>Reuse:</u> Discarded paper with print only on one side will be used for note pads/scrap.* *<u>Recycle:</u> Staff will be provided with instructions via email. Receptacles will be provided beside each desk. Staff will empty receptacles into centralized containers. Custodial staff will empty centralized containers into bulk container at loading dock for collection by recycling company.*
General	Improve data collection Improve communications and education program
Paper	Reduce – double sided photocopying Reduce- consider eliminating paper towels through installation of hand dryers Recycling- maximize use of existing recycling infrastructure
Cardboard	Recycling- maximize use of existing recycling infrastructure
Plastic	Recycling- maximize use of existing recycling infrastructure
Glass	Recycling- maximize use of existing recycling infrastructure
Metal	Recycling- maximize use of existing recycling infrastructure
Organic Waste	Recycling- maximize use of existing recycling infrastructure Recycling- consider adding post consumer organic waste program
Waste Cooking Oil	Recycling- maximize use of existing recycling infrastructure
Wood	Recycling- maximize use of existing recycling infrastructure
Yard Waste	Recycling- maximize use of existing recycling infrastructure
E-Waste	Recycling- maximize use of existing recycling infrastructure

IV. RESPONSIBILITY FOR IMPLEMENTING THE WASTE REDUCTION WORK PLAN

Identify who is responsible for implementing the Waste Reduction Work Plan at your entity(ies). If more than one person is responsible for implementation,

identify each person who is responsible and indicate the part of the Waste Reduction Work Plan that each person is responsible for implementing.		
Name of Person	**Responsibility**	**Telephone #**
Lindsay Walker	Sustainability Manager	416.675.6622 x5829

V. TIMETABLE FOR IMPLEMENTING WASTE REDUCTION WORK PLAN

Provide a timetable indicating when each Source Separation and 3Rs program of the Waste Reduction Work Plan will be implemented.	
Source Separation and 3Rs Program	**Schedule for Completion**
Example: Fine Paper 3Rs Program	*"Deskside receptacles and centralized containers to be purchased in March. New collection contract for recycling to be arranged for April Kick off for program and instructions to staff regarding 3Rs program to occur in April"* ***OR*** *"3Rs Program currently in place."*
General	The time-line for this waste reduction work plan is from **1 January 2017 to 1 January 2019.** This work plan sets out the framework to meet this goal. To facilitate continuous improvement it is **recommended** that Humber set a goal and engage in a process to: • Decrease overall waste generation by 10% (using this waste audit as a baseline) • Increase waste diversion rate to 65%
General	In general, it is **recommended** that Humber continue to update its communications and education material annually (e.g. for Earth Week). It is important that Humber report on progress and provide a "call to action" for students and employees on how they can best participate.
Data collection	To help develop a more accurate estimate of waste diversion it is **recommended** that the tracking of specific waste streams at the Lakeshore Campus (yard waste, construction and demolition waste, metal, and wood waste) be improved in 2017.
Reduction- Organic Waste	Organic wastes make up about **44%** of the waste stream. While considerable amounts of food waste are unavoidable (e.g peelings, trimmings) a considerable amount of edible food waste could be reduced. It is **recommended** that a communications and education program be developed to encourage their reduction through better use/consumption of food.
Reduction- Recyclable Food	Recyclable Beverage and food containers currently make up about **9%** of the waste stream. This includes coffee cups,

and Beverage Containers	gable top and aseptic containers, as well as plastic, glass and metal containers. It is **recommended** that a communications and education program be developed to encourage their reduction through the use of re-usable beverage containers.
Reuse	In 2016 Humber continues to partner with an organization and donates all reusable furniture. It is **recommended** that Humber continue to identify and implement re-use opportunities within the Humber community as well as the broader community.
Recycling	It is **recommended** that Humber continue to improve its composting program at both campuses.
	The work includes Humber staff meeting with relevant staff to update the plan to reduce, re-use and recycle wastes and to update communications and education material by **1 May 2017.** This should include a summary of waste audit results.

VI. COMMUNICATION TO STAFF, CUSTOMERS, GUESTS AND VISITORS

Explain how the Waste Reduction Work Plan will be communicated to employees, customers, tenants, guests/visitors and students:
A summary of these waste audit results and waste reduction work plan will be posted for staff to see by **1 April 2017**.

VII. Estimated Waste Produced By Material Type and The Projected Amount

Material Categories *(as stated in Part III)*	**Estimated Annual Waste Produced *** *(kgs or tonnes)*	**Name of Proposed 3Rs Program** *(as stated in Part III)*	**Projections to Reduce, Reuse or Recycle Waste** *(kgs or tonnes)*			**Estimated Annual Amount to be Diverted **** (%)
			Reduce	**Reuse**	**Recycle**	
Example: Fine Paper	*1.8 tonnes*	*Fine Paper 3Rs Program*	*200 kg*	*100 kg*	*1.2 tonnes*	*83*
Paper	**511.4**	**Paper**			**332.4**	**65**
Cardboard	**125.9**	**Cardboard**			**125.9**	**100**
Plastic	**250.8**	**Plastic**			**150.5**	**60**
Glass	**14.5**	**Glass**			**14.5**	**100**
Metal	**103.3**	**Metal**			**103.3**	**100**
Organic Waste	**604.2**	**Organic Waste**			**483.4**	**80**
Wood	**107.2**	**Wood**			**107.2**	**100**
Other Waste	**230.7**	**Ewaste** **Lamps** **Carpet** **Batteries** **Toner** **Donations**			**161.5**	**70**

* Estimated Waste Produced = Waste Diverted (3Rs) + Waste Disposed

** Estimated Waste Diversion Rate = Amount of Waste Diverted (3Rs) ÷ Estimated Waste Produced x 100%

I hereby certify that the information provided in this Waste Reduction Work Plan is complete and correct.		
Signature of authorized official: x	**Title:** Sustainability Manager	**Date:** **x**