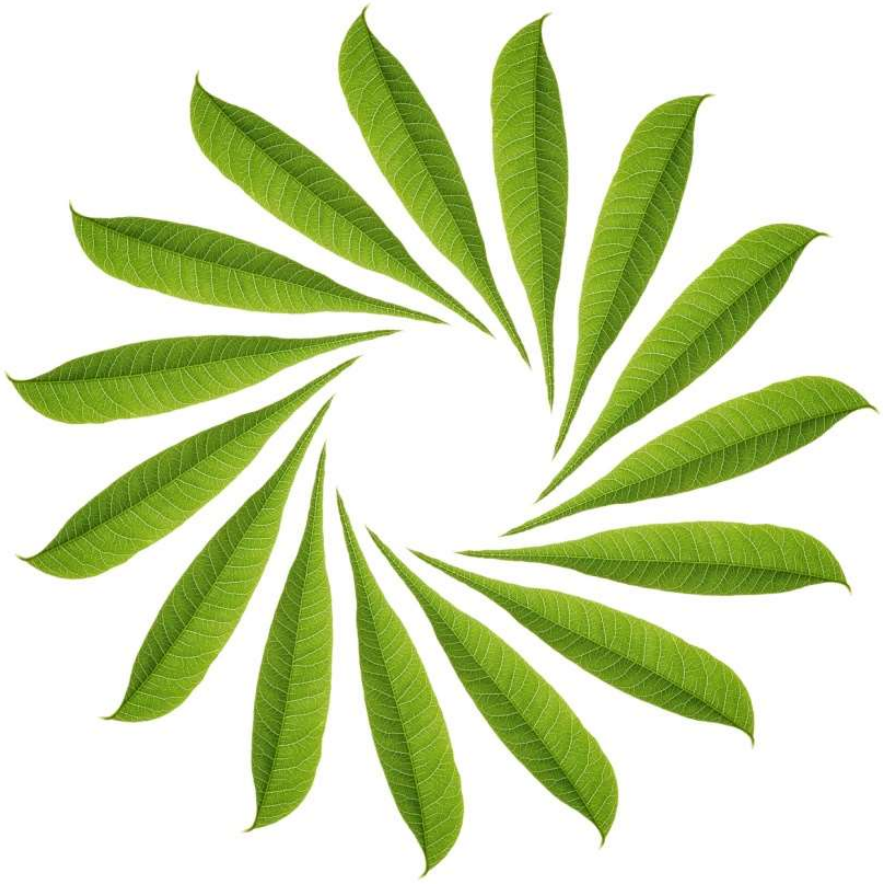
Waste Management | Sustainability Services

Waste to Resource Assessment - Summary



Prepared for:

University of Victoria

University of Victoria
3800 Finnerty Road, Victoria, BC, Victoria, British Columbia
March 5th, 2018

WASTE MANAGEMENT

THINK GREEN®

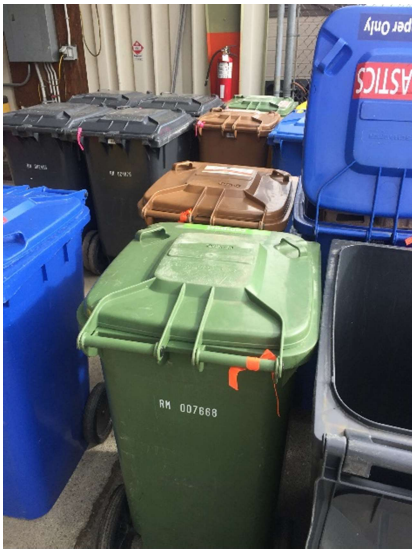
Executive Summary

Overview

On March 5, 2018, Sustainability Services conducted a Waste to Resource™ assessment for University of Victoria located at 3800 Finnerty Road, Victoria, BC in Victoria, British Columbia.

During this assessment, landfill samples were collected from 20 unique source areas throughout the university over a 24-hour period for the physical audit and qualified assumptions were made to include another 20 areas. The materials were sorted and divided into waste categories and weights of each material sub-category were recorded.

Photographs 1 & 2 – Examples of Waste Collected for Assessment Period



Assessment Information

Table 1 – Facility Information

Item	Comments
Facility Name	University of Victoria
Description	Educational Institution & Research Facility
Address	3800 Finnerty Road, Victoria, BC, Victoria, British Columbia
Contact Name	Nadia Ariff
Contact Number	T: 250-853-3160

Assessment Findings and Goal Alignment

Goals, Objectives, and Other Factors

The following is a list of goals, objectives, or other factors considered during this assessment.

- Apply findings from the waste audit to reduce waste, maximize collection of recycling materials and optimize waste management efficiencies
- Streamline and standardize handling routines of materials throughout the university
- Reduce waste spend and disposal costs
- Provide ongoing and improved employee training and education avenues
- Identify areas of new or enhanced diversion opportunity
- Increase capture rate of divertible materials and reduce overall generation of non-recyclable materials

Year Over Year Audit Comparison

The facility generated a combined 1,884.87 tonnes of waste and recyclables last year. The current diversion rate for your facility is 71%.

An assessment was completed at the university in 2014; 1,948.97 tonnes of combined waste and recyclables were generated that year resulting in a diversion rate of 68%.

It is estimated that 537.40 tonnes of waste and 1,344.19 tonnes of recyclables will be generated from your university in the current year. Compared to 2014, where the university had generated 614.91 tonnes of waste and 1,334.06 tonnes of recyclable materials. The university hasn't experienced a change in recyclable materials diverted from landfill; the main contributor of the increase in diversion is the decrease in landfill materials.

The university saw an increase of 3% in their overall diversion rate between 2014 and this year's audit, due to the improvements and efforts to the recycling program.

Table 2 – Materials Generation 2014 vs. 2018

	2014	2018
WASTE (Kgs)	614,910	537,440
RECYCLING (Kgs)	1,334,060	1,344,193
TOTAL MATERIAL (Kgs)	1,948,970	1,881,633
DIVERSION RATE	68%	71%

Material Composition Breakdown

Waste Material Comparison by Category

This section displays a breakdown of material categories as identified through the waste audit process.

Table 3 – Waste Material Comparison by Category 2018

Waste Category	Total Audited Waste (kg)	Material Composition (%)	Annual Projected Volume (kg)
Total Papers	643.03	30.0%	161,044
Total Organics	514.33	24.0%	128,813
Total Other	430.21	20.0%	107,744
Total Plastics	376.53	17.5%	94,301
Total Wood	39.63	1.8%	9,924
Total Textiles	38.71	1.8%	9,695
Total Glass	34.47	1.6%	8,633
Total Rubber	32.38	1.5%	8,110
Total Metals	31.86	1.48%	7,978
Total Electronic Waste	4.79	0.2%	1,198
Total	2,145.92	100.0%	537,440

Table 4 – Waste Material Comparison by Category 2014

Waste Category	Total Audited Waste (kg)	Material Composition (%)	Annual Projected Volume (kg)
Total Other	1015.63	38.5%	236,954
Total Organics	692.40	26.3%	161,542
Total Papers	660.02	25.0%	153,988
Total Plastics	181.70	6.9%	42,392
Total Metals	24.53	0.9%	5,723
Total Textiles	23.82	0.9%	5,557
Total Glass	20.81	0.8%	4,855
Total Wood	9.80	0.4%	2,286
Total Electronic Waste	4.31	0.2%	1,006
Total Rubber	2.60	0.1%	607
Total	2635.62	100.0%	614,910

Please note: for the purpose of the audit in 2014 the Contaminated – Non-Recyclables category listed within the Other Material category included but was not limited to materials such as polyfoam containers, foil bags, some soft plastics, waxed paper, mixed material containers and otherwise recyclable materials contaminated with liquids or organic waste. In the 2018 audit, polyfoam, foil bags, some soft plastics, and plastic containers were included in the plastics category where wax paper was included in the paper category, followed by liquid waste being included in the 'other' category.

Papers

Paper materials sent to landfill accounted for 30.0% of your total waste; nearly 161.04 tonnes of paper will be sent to landfill annually. This compared to 153.99 tonnes of paper materials found in 2014's audit which represented 25% of the audited sample. Paper towel and paper cups accounted for 16.8% of the waste sent to landfill, this compared to 20% in 2014 for these two materials.

The most predominant paper materials found in the landfill waste stream was paper towel representing 9.9% of the entire landfill waste stream.

Organics

Organics materials sent to landfill accounted for 24.0% of your total waste; nearly 128.81 tonnes of Organics will be sent to landfill annually in this year's audit. Notably, Organics made up 26.3% of the waste sent to landfill in 2014.

Organic materials were identified primarily as Post Consumer Food Waste, pre-consumer food waste, compostable containers, yard waste, coffee grinds representing 24% of the entire landfill waste stream and one of the most significant material category in the audited sample this year When combined with other potentially compostable materials in the sample such as paper towels, paper cups, paper plates, wax paper, and stir/ chop sticks, these materials accounted for 43.6%, less than half of the waste stream. To compare, organic materials such as paper toweling, paper cups, food waste, and coffee grounds had made up 46.7% of all audited landfill materials in the past waste audit in 2014.

Other Materials

Other (Non-Recyclable) Materials sent to landfill accounted for 20.0% of your total waste; nearly 107.74 tonnes of this category of material will be sent to landfill annually in 2018. This compared to 236.95 tonnes of waste was identified in the 2014 audit which represented 38.5% of the sample.

Other items like waste bin (loose items/ hygiene products), liquids, disposable diapers, binders, condiment containers, vacuum bags, single use beverage pods, and other unrecyclable materials were found in this year's assessment. The sample of unrecyclable materials were larger in 2014 due to the inclusion of unrecyclable paper and plastic materials. In this year's assessment, paper and plastic materials were kept in their respected categories unless heavily contaminated with liquids and other waste.

Plastics

Plastic materials account for 17.5% of your waste stream composition; 94.30 tonnes of plastic materials will be sent to landfill this year from your university. In 2014, plastic materials made up 6.9% of the landfill waste and accounted for 42.39 tonnes.

The most predominant plastic material identified in the audited landfill sample was #4 LDPE Film Bags accounting for 4.5% of the plastic materials destined for the landfill from your university. Polystyrene food packaging was the main plastic contributor which represented 29% of all plastics audited or 2% of all materials overall in the 2014 waste audit.

Textiles

Textiles materials sent to landfill accounted for 1.8% of your total waste; nearly 9.70 tonnes of Textiles will be sent to landfill annually. In 2014, 0.9% of your landfill waste were made up of textile materials; nearly 5.56 tonnes were sent to landfill.

There is currently a program in place to capture some these materials; a clothing donation program. Some textiles identified in the landfill waste stream are not currently recyclable.

Glass

Glass materials sent to landfill accounted for 1.6% of your total waste; nearly 8.63 tonnes of Glass will be sent to landfill annually. In 2014, the same materials sent to landfill accounted for 0.9%; an estimated 4.86 tonnes of glass was sent to landfill.

Glass bottles all recyclable materials, clearly labeled and easily accessible recycling receptacles are key to ensure that employees, contractors, and students can participate.

Diverted Opportunities

Increased diversion opportunities represent the largest potential cost savings and landfill diversion opportunity for University of Victoria. While diversion programs are currently in operation, the audit shows that they are not working at their optimal efficiency. Based on the diversion program currently in place 71% of the material sent to landfill is recyclable or divertible. Therefore, there is room for improvement within the diversion program where most staff, contractors, and students at the university handle their waste.

The following tables outline the materials captured through the facilities recycling program. The largest increase in recycling volumes was seen in the cardboard recycling program, from 85.98 tonnes captured in 2014 to 102.20 tonnes of material captured this year.

Table 6 - Diverted Material Comparison 2018

Diverted Materials	Annual Projected Volume (Kg)	% of Diverted Materials
Total Organics	507,335	37.7%
Yard Waste & Garden Waste	298,600	22.2%
Mixed Paper	183,820	13.7%
Total OCC	104,240	7.8%
Wood	64,420	4.8%
GPT/ Mixed Beverage Containers	54,180	4.0%
Metal	42,997	3.2%
Glass	37,500	2.8%
E-Waste/ Small Appliances/ Batteries	25,099	1.9%
Concrete	12,160	0.9%
Donations (Clothing)	5,160	0.4%
Building/ Reno	4,650	0.3%
Mattresses	2,940	0.2%
Lamps	885	0.1%
Batteries	207	0.02%
Total	**1,344,193**	**100.0%**

Table 6 - Diverted Material Comparison 2014

Diverted Materials	Annual Projected Volume (Kg)	% of Diverted Materials
Total Organics & Yard Waste	784,040	58.8%
Mixed Paper	223,400	16.7%
Total OCC	85,980	6.4%
Metal	69,170	5.2%
Mixed Beverage Containers Totes	54,420	4.1%
Wood	50,250	3.8%
E-Waste	45,410	3.4%
Building/Reno Material	15,620	1.2%
Mattresses	2,010	0.1%
Drywall	1,340	0.1%
Light Tubes	1,290	0.1%
Batteries	1,130	0.1%
Total	**1,334,060**	**100.0%**

Recommendation Overview

Several options have been identified that can help University of Victoria make its operations more sustainable. Each option should be carefully reviewed for operational, financial, social, and strategic fit.

♻ Increase Awareness of Current Recycling Programs

Papers

It is recommended that the facility regularly check with their waste hauler to confirm recyclability of some paper materials like courier/ shipping packages, label paper, and other papers. As some of these materials may be integral to the operations of the facility, it is recommended that they regularly review opportunities to reduce or substitute these materials in their operations.
Awareness should be increased around less recognizable recyclables such as Boxboard.

Organics

Food service staff who work on campus should be made aware of the program requirements through signage and targeted education to ensure that the program will be successful. Increased education and employee/ student awareness would be essential for the program to succeed. Moreover, the facility could develop relationships with local shelters or charities to donate leftover foods if health and safety provisions are met.
Operations should always ensure that appropriate bins are used in key areas where these materials are generated such as food prep areas in kitchens and cleaning areas in cafeterias.

Plastics

All plastic material will be marked with a number indicating the type of plastic that was used to make the item. This number can be used to determine if recycling programs exist for that item. Most commonly, recycling programs will exist for #1, #2, & #5. Limited recycling programs exist for #3, #4, #6, and #7 plastics. Education and promotion is important for employees and students in the facility so that they are aware of all recyclable materials, especially those which are less commonly handled.
Food vendors should be encouraged to provide recyclable or compostable options for the products they bring into the campus.

Textiles

There is currently a program in place to capture some these materials; a clothing donation program. Some textiles identified in the landfill waste stream are not currently recyclable. Ensure janitorial staff are trained to fully use all resources such as mop heads and rags prior to disposal.

♻ Campus Community

The success of a Diversion Program is driven by user participation. If those who generated the waste are not utilizing diversion programs success will never be achieved, it is not enough to simply implement programs and expect those programs to be effective. There are two critical factors to necessary to ensure that diversion programs are effective. These factors are education and engagement; as well as providing a program infrastructure that is set up for success. As many different stakeholders are involved and contribute to the waste and recycling program it is important to target education towards each group.

♻ Continual Improvement and Additional Recommendations

The following are suggested actions to help the facility improve their internal processes and strive to reach higher diversion rates and maintain a strong, efficient diversion program.

I. All university service providers should be aware of the facility's environmental goals and be active participants.
II. Work with the custodial staff to ensure that resources are fully used before being replaced; identified in the audit sample were unused toilet paper rolls and hand soap dispenser.
III. UVIC should continue to provide receptacles in areas where they are needed. As well, it is important to maintain consistency in station or receptacle design and in signage.

A good waste diversion program is one that provides the user with an easy to understand system for managing their waste materials. A great waste diversion program is one that provides them with the same easy to use system but also helps the user by providing pictorial signage to direct their disposal choice. The best waste diversion program provides all the benefits of a great program and makes the necessary adjustments for continual improvement upon the current diversion activities.