2015 University of Guelph
Waste Reduction Work Plan

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Executive Summary
The university offers a comprehensive and diverse blue box program, tailored in some cases to special areas on campus, such as undergraduate residences. The University of Guelph currently recycles electronic waste, printer cartridges, cell phones, light bulbs and lamps, batteries, wood, scrap metal, manure/animal bedding, and runs a small-scale composting program. There is also a small clothing exchange, furniture exchange, and year-end Move Out Madness donation program.

Recycling and waste management guidelines are available online to all members of the campus community. Waste audits and studies are conducted on a monthly to semesterly basis, and made available online as well. Key findings from the research into residence and outdoor recycling have been:

- further increase the volume capacity of recycling collection infrastructure,
- contamination rates of recycling are very low
- providing blue recycling containers in residence rooms often increases recycling rates
- students are willing to recycle and have a basic knowledge thereof
- lack of convenience is a significant barrier to recycling participation

Progress has been made on the 2014 recommendations by increasing the capacity of the coffee to compost program, secured funding for a used industrial composter, and expanding the capacity of the furniture swap program.

Recommendations moving forward include finding funding for a large scale on campus organics diversion program, creating donation locations in Family Housing, expanding the furniture swap program, and increasing the recycling collection in undergraduate residences.
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Introduction
The University of Guelph conducted a campus-wide waste audit and formed a comprehensive Waste Reduction Work Plan in 2007. This document builds directly on the summary of programs, findings and recommendations from the subsequent plans and sets a direction for program expansion. Updates are included on the 2014 recommendations, and further waste audit data helps to shape the forwarding-planning 2015 recommendations.

Definitions
Waste Reduction Work Plan (WRWP): A plan to reduce, reuse and recycle waste based on the continuous improvement of current practices, and information from a waste audit.

Waste audit: A study relating to waste, where the samples of garbage or recycling are collected from a specific locations, the material in the sample is separated into categories, and the categories are weighed to get a distribution of materials in each sample of waste.

Waste diversion rate: The amount of waste which is being diverted from landfill through reuse, recycling, or composting. It is expressed as a percent of the total waste generated.

Recyclables: Materials which are collected to be reprocessed into new items. There must be a market for these materials.

Garbage: Materials which are collected to be disposed in a landfill.

Compostables: Organic-based material which can decompose into the form of compost to be used in landscaping or gardening.

Blue Box Recycling Program
Traditional blue-box recycling is implemented in nearly every building on campus, with blue recycling containers provided free of charge to departments. Campus community members are expected to sort their recycling from their garbage as per the guidelines in PR 2.041 (available on the Physical Resources website). Collection is by custodial staff or hospitality services staff on a weekly basis from offices, and daily from corridors, cafeterias washrooms and laboratories. All recycling is commingled and collected in transparent blue bags. Garbage (including organics) is collected in transparent colourless bags. Blue recycling containers are paired with garbage containers in offices, classrooms, and at outdoor recycling locations (dumpsters included).
Custodians take all indoor bagged garbage (and flattened cardboard) to outdoor front-load dumpsters (blue for recycling, black for garbage, green for cardboard, brown for manure) which are collected by a university-owned and operated vehicle, which then takes the sorted waste on separate, designated runs to the City of Guelph Waste Resource Innovation Centre. The WRIC receives the garbage stream at its Transfer Station, the recycling stream (commingled and cardboard mixed) at its Material Recovery Facility, and the manure is sent to local farms with whom the University has a partnership.

Exceptions to the broad-scale implementation of the standard commingled recycling program are as follows:

**Hospitality Services**
Front- and back-end cafeteria operations have slightly different operational procedures due to both being highly susceptible to contamination. Front-end areas are supplied with covered containers labelled for containers only (“Bottles and Cans”) to decrease customer misuse. Back-end areas are trained and signed for the targeted collection of cardboard, boxboard, steel tins (rinsed) and large plastic food buckets (rinsed).

**Biomedical/Anatomical/Clinic Areas**
These areas are not supplied with blue bins due to the risk of contamination from biohazardous, unsanitary or non-recyclable materials.

**Undergraduate Residences**
Blue bins are provided in central collection points, and custodians do not collect from individual rooms. Building occupants must take their room recycling and garbage to a collection point where custodians collect and transport the building waste to the outdoor dumpsters. Some undergraduate residences are provided with individualized blue bins (see Figure 1) for resident convenience in sorting and transporting recycling to the central locations.
Other Recycling and Reduction Programs
Currently, there are programs in place for the recycling of electronic waste, printer cartridges, cell phones, light bulbs and lamps, batteries, wood, scrap metal, manure/animal bedding, as well as a small-scale composting program. There is also a small clothing exchange and informal furniture exchange, tied to the year-end Move Out Madness donation program. The composting program is of importance because a large quantity of waste diversion is the manure and bedding, and waste could be further diverted through the implementation of composting in cafeterias on campus.

Computer and electronic waste
There is an unstaffed drop-off area at the MacNaughton (073) loading dock, marked with a sign. If the load is too large, people are to email the Recycling Co-ordinator indicating the quantity and type of equipment, and detailing its location. Acceptable items include computers, printers, fax machines, keyboards, and most other computer peripherals. Materials collected are sent to Production Works Co-operative, a local computer and electronics recycling company which provides employment experience to people with intellectual disabilities. Employees disassemble the hardware down to component parts for recycling.

Monitors and televisions (CRTs, LCDs)
The process for disposal is the same as that for the other electronic waste; however, the material is picked up by Electroshred to be recycled.

Used inkjet and laser printer cartridges
There are three options for disposing of cartridges for recycling at the University. Cartridges collected via the university run system are recycled with Staples.

a. Refilling at the CSA office: The CSA offers a program for the professional refilling of inkjet printer cartridges. A drop-off container and information sheet are available outside the CSA main office on UC Level 2, as well as at the Bullring.
b. Pick up by the Sustainability Office: When the department has collected a small boxful, they are to call or email the office for pick-up.
c. Using the process for e-waste.

Cell phones
Cell phones are recycled through special e-waste programs. Cell phones collected via the university run system are recycled with Greentec.

a. Drop-off location at the CSA office (Level 2, UC).
b. Drop-off location at the Bullring – student-run fundraiser for gorilla conservation
c. Using the process for e-waste
**Fluorescent light bulbs and lamps**
Spent lamps must be kept intact to avoid mercury vapour, and other components; and preventing damage or leaks by properly packaging mercury-containing equipment and products prior to transport for recycling or disposal.

Boxes labelled “Light bulbs Only” are located in several locations and collect fluorescent light bulbs. The locations include the undergraduate residence desks, CSA office, and the Sustainability Office. The light bulbs from these locations are collected monthly by the Sustainability Office for remittance to EHS. Environmental Health and Safety accepts light bulbs for which a form has been filled out. Custodians and supervisors in charge of relamping follow Policy PR2.016 in the handling of spent fluorescent lamps.

Fluorescent tubes are dealt with in one of three ways:
   a. Lamps are collected by Custodial Services (CS) employees in their building of origin and stored, then collected on an as-necessary basis through the hazardous waste pick-up system by Environmental Health and Safety.
   b. Non-custodial lamp replacement is handled through the hazardous waste pick-up system by the Environmental Health and Safety. Individuals must repackage the spent bulbs and fax the form noted above to EHS.
   c. Electrical Shop employees and Building Mechanics store spent lamps in their buildings. They will also be responsible for faxing the pick up request form to EHS.

**Batteries**
Red containers labelled “Batteries Only” are located in several locations including the undergraduate residence desks, CSA office, and the Sustainability Office. Batteries from these locations are collected monthly by the Sustainability Office to be remitted to EHS.

Environmental Health and Safety also accepts institutional source batteries for which a Surplus Chemical and ‘Sharps’ Disposal Request form has been filled out.

**On-campus backyard composting**
The Animal Science and Nutrition building on campus has a composting facility; however, the composter has depreciated over time and the capacity is limited to a single barn’s operations. Manure from OVC facilities is sent to Woodrill Farms.

Currently there are 30 backyard composters on campus. Participation is voluntary, and promoted by the Composting Coordinator, who also maintains the composters and monitors the decomposition. Other areas in residence or departments interested in composting can contact the Composting Coordinator. See Appendix A for a list of materials that may be composted in the on-campus composters.
Scrap metal and wood
Campus community members with appliances, large metal or wood items can have their items picked up and recycled via special bins. Large scrap metal cannot go in the regular blue recycling dumpsters. Individuals are to call ext. 53854 and specify that the item is for scrap metal or wood recycling. The Sustainability Program often assists campus departments in diverting their scrap items by facilitating the work order process. Appliances like refrigerators are decommissioned by Physical Resources before being sent for recycling. The central campus red scrap metal bins are primarily used by Physical Resources shop employees.

Move Out Madness
During March and April, the Sustainability Office partners with the Office of Off-Campus Living, the City of Guelph, Meal Exchange and other community partners to offer students moving out of residences on- and off-campus a diverse array of free services. Off-campus students are offered free pick up of un-needed furniture, and have an opportunity to donate clothing and food to local food banks. On-campus students are encouraged to donate surplus food, clothing and household supplies at various donations stations strategically placed in the undergraduate residences and central courtyard of the University Centre building. For two weeks, a free yard-sale style “Stuff Swap” is run in the University Centre enabling students and community members alike to drop off unwanted items and “shop” for “new-to-me” items. For a detailed report on the success of this program, visit the Sustainability Office website.

Beverage Cup Reduction
Hospitality Services and other on campus eateries offer several incentives to reduce waste. Some of the more popular ones are outlined below.

a. Coffee Discount: In any Hospitality Services outlet on campus, coffee purchased in any size of reusable mug will only incur a charge for a small coffee. The Bullring extends the same offer for using provided mugs, as well as travel mugs.
b. Hot Water Discount: In any Hospitality Services outlet on campus, a purchase of hot water in any kind of reusable mug, you will only incur a charge of 10¢ (plus HST), whereas hot water purchased in a disposable cup costs 25¢ (plus HST).
c. Free Coffee: the first coffee in a newly purchased U of G travel mug from Hospitality Services is free.

Muggy Mondays and Wasteless Wednesdays
Hospitality Services provides two stamps to all users of travel mugs and the Hospitality Services hot beverage card who purchase coffee on all Mondays. Guelph Students for Environmental Change promote the use of reusable mugs by providing free coffee and tea to anyone with a reusable mug each Wednesday during the school year.
Waste Audits and Performance
A campus-wide cross-sector waste audit was performed in the summer of 2006 and winter of 2007, analysing the waste from targeted sectors of campus, including classrooms, labs, cafeterias, office areas, residences, clinics and outdoors.

Waste Audit Methodology
Procedure was standardized in 2009 to conduct bi-monthly (in the summer) and monthly (in the academic year) waste audits at the building level to update the initial data on a continual basis, as well as monitor improvement. Data from these audits is used to monitor performance, provide realistic targets for improvement, as well as provide feedback to building occupants and community members.
A day’s waste is retained in the outdoor dumpsters, weighed in entirety, then a 10 to 25% sample is taken randomly and sorted for waste composition. Data sheets are then produced and recorded on the building’s overall diversion rate, recycling composition, and waste composition.

Waste Audit Results

<table>
<thead>
<tr>
<th>Building</th>
<th>Recycle Rate (%)</th>
<th>Recycling Contamination Rate (%)</th>
<th>Ideal Recycling Rate (%)</th>
<th>% of waste compost</th>
<th>Ideal Diversion Rate (%)</th>
<th>Key Items (misdisposed or recoverable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JD MacL and Reynolds (2009)</td>
<td>15%</td>
<td>2%</td>
<td>29%</td>
<td>54%</td>
<td>84%</td>
<td>Fish (research waste), coffee grounds</td>
</tr>
<tr>
<td>Crop Science (2009)</td>
<td>31%</td>
<td>8%</td>
<td>41%</td>
<td>30%</td>
<td>71%</td>
<td>Fine paper, soil</td>
</tr>
<tr>
<td>Library (2009)</td>
<td>25%</td>
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<td>73%</td>
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<td>86%</td>
<td>Books</td>
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<tr>
<td>SCIE/MacN (2009)</td>
<td>35.8%</td>
<td>7%</td>
<td>49%</td>
<td>28%</td>
<td>77%</td>
<td>Soil/plant waste</td>
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<tr>
<td>MacK/JHall/Drew (2009)</td>
<td>58%</td>
<td>2.7%</td>
<td>75%</td>
<td>10%</td>
<td>89%</td>
<td>Fine paper</td>
</tr>
<tr>
<td>Lambton (2009)</td>
<td>23%</td>
<td>18%</td>
<td>44%</td>
<td>34%</td>
<td>89%</td>
<td>Boxboard, PET plastic, liquid</td>
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<tr>
<td>Maritime Hall (2010)</td>
<td>17%</td>
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<td>44%</td>
<td>36%</td>
<td>82%</td>
<td>PET plastic, cardboard</td>
</tr>
<tr>
<td>- Seaway</td>
<td>--</td>
<td>37%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Building</td>
<td>Recycle Rate (%)</td>
<td>Recycling Contamination Rate (%)</td>
<td>Ideal Recycling Rate (%)</td>
<td>% of waste compost</td>
<td>Ideal Diversion Rate (%)</td>
<td>Key Items (misdisposed or recoverable)</td>
</tr>
<tr>
<td>--------------------------------</td>
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<td>--------------------</td>
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<td>----------------------------------------</td>
</tr>
<tr>
<td>- Schooner*</td>
<td>--</td>
<td>15%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>- Harbour*</td>
<td>--</td>
<td>4%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>- Cove</td>
<td>--</td>
<td>26%</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Lennox-Addington (2010)</td>
<td>24%</td>
<td>25%</td>
<td>26%</td>
<td>37%</td>
<td>87%</td>
<td>PET plastic, cardboard</td>
</tr>
<tr>
<td>Library (2010)</td>
<td>39%</td>
<td>10%</td>
<td>47%</td>
<td>31%</td>
<td>79%</td>
<td>Coffee grounds, fine paper</td>
</tr>
<tr>
<td>MacDonald Inst. (2010)</td>
<td>43%</td>
<td>12%</td>
<td>59%</td>
<td>20%</td>
<td>79%</td>
<td>Fine paper, compost</td>
</tr>
<tr>
<td>Hersey/Security (2010)</td>
<td>69%</td>
<td>2%</td>
<td>72%</td>
<td>23%</td>
<td>76%</td>
<td>Paper towels</td>
</tr>
<tr>
<td>Day Hall and Bullring (2010)</td>
<td>46%</td>
<td>6%</td>
<td>53%</td>
<td>28%</td>
<td>89%</td>
<td>Compost liquids</td>
</tr>
<tr>
<td>78 Collage Avenue (2011)</td>
<td>21%</td>
<td>2%</td>
<td>32.5%</td>
<td>55%</td>
<td>88%</td>
<td>Compost</td>
</tr>
<tr>
<td>Landscape Architecture (2011)</td>
<td>12%</td>
<td>0.5%</td>
<td>29%</td>
<td>62%</td>
<td>91%</td>
<td>Yard Waste</td>
</tr>
<tr>
<td>University Centre (2012)</td>
<td>29%</td>
<td>16%</td>
<td>36%</td>
<td>48%</td>
<td>84%</td>
<td>compost</td>
</tr>
<tr>
<td>Athletic Centre (2012)</td>
<td>22%</td>
<td>9%</td>
<td>39%</td>
<td>12%</td>
<td>71%</td>
<td>Liquids</td>
</tr>
<tr>
<td>Pathobiology (2012)</td>
<td>47%</td>
<td>7%</td>
<td>47%</td>
<td>5%</td>
<td>52%</td>
<td>Plastics</td>
</tr>
<tr>
<td>Wellington Woods (2012)</td>
<td>28%</td>
<td>27%</td>
<td>50%</td>
<td>28%</td>
<td>78%</td>
<td>Books, Ceramics</td>
</tr>
<tr>
<td>SCIE/MacN (2012)</td>
<td>51%</td>
<td>4%</td>
<td>51%</td>
<td>20%</td>
<td>71%</td>
<td>Compost, Dirt</td>
</tr>
<tr>
<td>Small Animal Clinic (2013)</td>
<td>43%</td>
<td>3%</td>
<td>48%</td>
<td>25%</td>
<td>77%</td>
<td>Compostables, water</td>
</tr>
<tr>
<td>East Towers (Summer 2013)</td>
<td>29%</td>
<td>27%</td>
<td>44%</td>
<td>11%</td>
<td>70%</td>
<td>E-waste, liquids</td>
</tr>
<tr>
<td>Building</td>
<td>Recycling Rate (%)</td>
<td>Recycling Contamination Rate (%)</td>
<td>Ideal Recycling Rate (%)</td>
<td>% of waste compost</td>
<td>Ideal Diversion Rate (%)</td>
<td>Key Items (misdisposed or recoverable)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>--------------------</td>
<td>----------------------------------</td>
<td>--------------------------</td>
<td>-------------------</td>
<td>--------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>Central Utilities Plant (2013)</td>
<td>25%</td>
<td>3%</td>
<td>36%</td>
<td>42%</td>
<td>80%</td>
<td>Off campus waste</td>
</tr>
<tr>
<td>Creelman Hall (2013)</td>
<td>22%</td>
<td>20%</td>
<td>23%</td>
<td>64%</td>
<td>89%</td>
<td>Compost</td>
</tr>
<tr>
<td>Maritime Hall (2014)</td>
<td>27%</td>
<td>32%</td>
<td>54%</td>
<td>23%</td>
<td>82%</td>
<td>Paper, Off campus waste</td>
</tr>
<tr>
<td>Lifetime Learning Centre (2014)</td>
<td>17%</td>
<td>10%</td>
<td>26%</td>
<td>56%</td>
<td>83%</td>
<td>Compost</td>
</tr>
<tr>
<td>Lennox Addington (2016)</td>
<td>24%</td>
<td>20%</td>
<td>40%</td>
<td>42%</td>
<td>87%</td>
<td>Compost</td>
</tr>
</tbody>
</table>

**Total Waste Management Performance Data**
The data for all tracked or monitored waste streams is collected on annual basis.
The data for each calendar year since 1997 is available on our website
www.uoguelph.ca/sustainability/our-progress
Recommendations

2014 Recommended Areas for Program and Performance Improvement
The primary identified opportunities for increased waste diversion in the 2014 WRWP included: continuing to extend the residence recycling program to include personal recycling containers, increased composting of organic waste (especially from cafeterias), the addition of special waste streams for laboratory waste including the addition of more soil/plant diversion bins, evaluating and upgrading the furniture swap site, improving waste diversion at the family housing residences, and re-evaluating the electronic waste program and implementing a policy. Other areas for improvement include reducing the weight in dumpsters by drilling holes in the bottom of the dumpsters and adding lids so as to not include rainwater in the weight of waste.

Progress on 2014 Recommendations

Residence recycling program
- Personal recycling bins have been added into individuals residence rooms in South Residence.
- A re-evaluate of the recycling infrastructure in all the residences still needs to be done.

Increased composting of organic waste
- The coffee to compost program was expanded to it’s foreseeable operating capacity.
- The coffee to compost program diverted 39 tonnes of coffee grounds in 2015 there are currently 9 coffee shops in the program.
- Funding was secured for purchasing a used industrial composter

Addition of special waste streams (laboratory waste, furniture)
- The campus furniture swap website has been improved and use has increased

E-waste
- Research was done into increasing reuse of old university computer equipment both on and off campus.
2015 Recommendations

Residence recycling program
- Increase volume of recycling containers, decrease garbage containers in South residence
- Install blue personal recycling bins consistent with the ones installed in South in all other residences
- re-evaluate the recycling infrastructure in East residence.

Increased composting of organic waste
- Create and implement a plan for a large-scale composting program for the campus cafeterias.
- Investigate how the coffee to compost program could be integrated into the planned large scale composting program
- Investigate improvements to the backyard composting infrastructure.

Reduce the number of open top dumpsters
- Remove Dumpsters that go mostly unused especially in unmonitored areas to reduce opportunities for illegal dumping

Addition of special waste streams (laboratory waste, furniture)
- Install an additional soil/herbaceous plants bin for the greenhouse operation at the Science Complex
- re-evaluate the Laboratory waste program
- Create policy regarding furniture reuse and disposition to support the furniture swap

Family housing
- Create a family housing donation program/swap for unwanted items
- Stop the dumping of construction waste in the family housing dumpsters

E-waste
- Create an electronic waste policy,
- Create programs to get more of the computer waste reused both on and off campus.

Construction and Demolition
- Arrange for all Construction and Demolition waste numbers to be reported to the Recycling Co-ordinator
Appendix A – Composting Guidelines

Compost

Grain Products
* cereal
* bread
* flour
* oatmeal
* rice

Fruits and Vegetables
* all peels
* melon rinds
* corn cobs (broken up)
* rotten fruits and veggies
* seeds and cores
* citrus fruit - crushed or chopped

Others
* all-natural fibres (e.g. cotton)
* clean wood ash (small quantities)
* coffee grounds and filters
* dead insects
* egg shells (crushed)
* napkins (shredded)
* nut shells
* paper towels (shredded)
* tea bags

Yard Waste
* grasses (non-chemically treated)
* leaves
* pine needles
* potting soil and dead plants

Garbage - Do NOT Compost

Meat Products
* beef
* bones
* chicken
* fish
* luncheon meats
* pork

Dairy Products
* butter
* cheese
* milk
* yogurt

Grease, Fat and Oil
* vegetable oils
* shortening
* lard
* bacon grease
* peanut butter

Chemical Products
* fertilizers
* pesticides

Treated Wood Products
* painted wood
* pressure treated lumber
* particle board
* plywood

Other
* plastic and metal
* plastic bags (empty the rotten produce!)
* diseased plants
* sanitary pads and tampons
* "biodegradable" food containers - they don't biodegrade quickly enough