



**Faculty of Environmental Studies**

## **Off-Campus Paper Distribution Audit**

Helping the University of Waterloo Comply with Stewardship Ontario

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## **1.0 Introduction**

The University of Waterloo strives to be progressive in its fields of study to prepare students for the changing world. It also attempts to foster conscientious students by encouraging them to better the world around them, both on the large and local scale. Although the University already operates waste reduction and recycling programs on campus, faculties such as Environmental Studies are encouraged to incorporate studies for further improvement into their wider education programs. As part of broadening our understanding of concepts and practices in waste management, our group focused on gathering information on paper waste sent out into the wider Ontario community by the University of Waterloo. The goals of this project were to identify relevant contacts on campus, determine the sources of out-going paper products, better define estimates on the weight of that waste, and make preliminary suggestions for improvements.

## **2.0 Background**

### **2.1 Stewardship Ontario Overview**

On June 27, 2002 The Waste Diversion Act (WDA) was passed into law by the Ontario government (WDO 2005). The Act established Waste Diversion Ontario (WDO), a non-share, non-government corporation, to ‘develop, implement and operate’ a waste diversion program for ‘designated wastes’ (SO 2005, 1). WDO in turn created an Industry Funding Organization known as Stewardship Ontario to handle blue box wastes (glass, metal, paper, plastic and textiles). Stewardship Ontario’s Blue Box Program Plan (BBPP) is designed to “increase the diversion of municipal Blue Box materials in an economically sustainable manner” (WDO 2005).

In order to stay in compliance with the WDA, all companies ("Stewards") that introduce packaging and printed paper into the Ontario consumer marketplace are required to pay fees to Stewardship Ontario based on the quantity and type of materials they introduce (SO 2005, 1). These funds are then distributed among municipalities based on a formula outlined in the BBPP (CNW 2004). In this way, brand owners and first importers will be responsible for providing 50% of the funding needed to run all of Ontario’s municipal recycling programs (SO 2005, 1).

“Companies will be responsible for weighing the materials in which their products are shipped and charged for the weight of their packaging. In addition to packing and shipping materials, companies also will be responsible for paper inserts, instruction manuals and fliers” (Harrison 2003). The Stewardship Ontario fees are based on the payments to municipalities, the costs of program delivery and enforcement, the costs involved in developing markets for

recycled materials, and WDO and Stewardship Ontario start-up and administration costs (WDO 2005, 7). Marketers selling U.S. packaged goods in Ontario will also be responsible for paying fees (Bell 2003). However, a “de minimus” rule exempts any business earning less than \$2 million in revenue or generating less than 15 tonnes of blue box wastes from paying fees (WDO 2005, 11).

The WDO project has been in development for 15 years and is based on the notion of ‘product stewardship’ whereby businesses are made to accept responsibility for the management of wastes generated by their products (Harrison 2003; Fishlock 2004). “It's the first time that a law has required [industry] to track and weigh printed paper... [and Ontario is] the first province or state to enforce a producer-responsibility law on all types of packaging in North America. Weight-based fees are common in Europe and Asia” (Harrison 2003). Similar stewardship levy legislation is scheduled to start in Quebec this year (Bell 2003).

A discussion of benefits and problems of Stewardship Ontario and the WDA can be found in Appendix A.

## **2.2 The University of Waterloo’s Participation**

On April 15, 2004, Stewardship Ontario sent a letter to all Ontario universities advising them of their obligation to pay fees to Stewardship Ontario based on the weight of printed materials they mailed off-campus in 2002/2003. At this early stage in the program, “A benchmark of 2.73 kg/full time student (fte) was decided upon for reporting 2002 printed paper data” (SO 2004). This was to encompass the distribution of course calendars, alumni publications, university marketing and registrar mailings. Using this basic formula and the provided “printed paper weight generator” (see Appendix C), the University of Waterloo

calculated that it was responsible for approximately 50 tonnes of off-campus printed paper in 2002/2003 and about 57 tonnes in 2003/2004 (Cook 2005).

This simplified standard was only accepted as an interim solution. Stewardship Ontario now requires each university to accurately record and report on the weight of material it sends into Ontario communities and pay a fee per kilogram based on the type of material. As Stewardship Ontario moves to a more dynamic pricing structure for printed material waste, Patti hopes to refine the University of Waterloo's estimates for her 2005 report (covering the 2004 calendar year). Collecting this improved information is the main rationale for undertaking this study. For the time being, Patti plans to use the 2.73 kg/fte and to report Waterloo's mail as falling under the category of "Other Printed Material" and pay 9.029 cents/kg of paper. Paying this, the highest paper fee charged by Stewardship Ontario, should at least guarantee that Waterloo will be in compliance with the WDA.

### **2.3 Other Universities' Participation**

Some of the first universities to undertake data collection in 2004 related to Stewardship Ontario were Ottawa, Queen's and Brock (Cook 2005). Queen's identified course calendars as one of the largest sources of paper products it distributed off-campus. On the other hand, a representative of Lakehead expressed a reluctance to register with Stewardship Ontario (Palowski, 2004). Also, Ottawa and Queen's wondered why they had to pay fees since they operated their own blue box programs. They argued that like municipalities, they should be entitled to receive funding from Stewardship Ontario (Morrow 2004; Workman 2004). Lakehead and Queen's ended up being the two last universities to file a 2004 steward report (SO 2005).

Nevertheless, by December 2004, all major Ontario universities were registered with Stewardship Ontario and had filed their 2003/2004 reports (SO 2005). Only Lakehead, Laurentian and Trent reported less than 15 tonnes of off-campus waste. Brock, Carleton, McMaster, Ottawa, Queen's, Ryerson, Toronto, Western Ontario, Wilfrid Laurier and York all reported more than 15 tonnes, requiring them to pay fees (SO 2005). As of March 11 2005, Queen's, Ryerson and York have already filed their 2005 reports.

## **3.0 Methodology**

### **3.1 Proceedings**

From the beginning, our project was based on the snowball effect: the information collected from one key informant would lead us to more information from another person or another source, such as the internet. The principal reason for adopting this research method was that it was particularly conducive for collecting large amounts of inter-related data from various primary sources. It should be noted that most of the data had to be collected from primary sources, since no previous studies of this specific nature had been carried out on the University of Waterloo campus.

At the beginning of the study, an in-class discussion of project topics led to the formation of a group of five students with a common research interest. A brief brainstorming session led to a project title (“Off Campus Paper Distribution Audit”), an exchange of contact information, and a convenient group meeting time – Thursdays at 4:30pm in the Environmental Studies Coffee Shop.

The Thursday group meetings provided an opportunity for each group member to report back to the others with their findings and thoughts from the previous week. It was also used as a planning period for the next steps in the research process.

Primary research began with a meeting with Patricia (Patti) Cook, the campus’ waste-management coordinator. This meeting was arranged for Tuesday, January 25th. The meeting worked to create a rough boundary for the project, and a tentative direction for the research. An initial list of key informants was also obtained from Patti (See Appendix H).

Next, a tour of Central Stores was scheduled for Friday, February 4th with Carmen Jaray, the facility's supervisor of operations. The visit outlined three major mailing activities, including Bulk Mail, First Class, and Courier. Questions were asked on an informal basis throughout the visit. The questions were loosely based upon those provided to Carmen before the pre-arranged meeting time (See Appendix B).

The visit to Central Stores led us to contact two major mailing departments: the Registrar's Office and Alumni. Patti Cook's ongoing comments, advice, and expertise were used to provide direction and focus to the project. She also helped us to get in touch with Barbara (Barb) Trotter at the Registrar's Office.

Barb Trotter, from the Marketing and Recruitment division of the Registrar's Office, agreed to meet with group members on Monday, March 7th. At this meeting, she described a fourth mailing system, exclusively used by their department: Go Letters.

Due to the lack of a mailings contact, a few group members visited the Alumni office. After some initial concern over the Privacy Policy, Robert (Bob) Copeland, in the Development and Alumni Affairs office, briefly outlined the department's four major mailing sections.

Throughout the interview stage, a series of secondary literature and data reviews were performed. A background on Ontario Stewardship and a detailed review of its workings, including pros and cons at the provincial level, can be found in Appendix A. Other universities' initiatives, with regards to compliance with Ontario Stewardship regulations, were also briefly examined. Unfortunately, due to time constraints, an in depth analysis of the data collected for the University of Waterloo could not be performed. This included data from both past years' Bulk Mail listings (2003-04), and from Central Stores' filing system.

### **3.2 Key Informants**

Most of the key informants for this project were provided to the group through Patti Cook's network of contacts. From Central Stores, these included: Carmen Jarray, supervisor of operations, Antonio (Tony) Chaves, bulk mail and Patti's main data supplier, Peter Tytko, working on courier packages, and Joel Norris, supervisor of Central Stores. The main contact within the Registrar's Office was Barb Trotter, in Marketing and Recruitment. The Alumni contact was Robert Copeland, from the Office of Development and Alumni Affairs. Key informants were reached via e-mail, often followed up with a phone call to confirm meeting arrangements. A brief project description and a rough question outline were provided to the informants prior to the meetings. As questions were kept strictly professional in nature, not asking personal opinion, it was decided that ethics clearance would not be required.

### **3.3 Limitations**

Due to the term's strict time constraints, the project had approximately nine weeks to be carried out. Further allowances had to be made to accommodate both group member schedules and people being interviewed. While not all members of the project team were required to be present for an interview with a particular key informant, it was agreed that a minimum of two should be present with a stronger preference for three. The presence of multiple group members ensured good note-taking for future reference of information gathered and a broader range of questions at the time of the interview, because of multiple perspectives.

Like time constraints, communication was a severe limitation when relying on key informants to supply raw data, requested from the interviews. These data were mostly in the form of Excel files. In one case, though the key informant supplied data promptly, it was discovered some time later, on closer analysis, that the wrong files had been sent. It was hoped that the requested files would help determine where the current filing system could be improved for more efficient and accurate record taking.

The ability to collect precise data was limited by the time available, and especially the University's lack of accurate record keeping concerning the types and total weight of mail they send off-campus. A close monitoring of a full year's worth of mail flow with a direct focus on Stewardship Ontario would have been ideal. Due to this constraint, it was decided that the report would rely heavily on estimated values.

### **3.4 Boundaries**

Various physical boundaries were drawn up for the project. Since residences have their own recycling system, they were not included in the study. Furthermore, the colleges have their own mailing systems, and therefore have obligations to Stewardship Ontario that are separate from the University's. The geographical boundaries include almost all facilities contained within Ring Road, in addition to Columbia Ice Fields, Optometry, and East Campus Hall.

Though Stewardship Ontario deals with a variety of recycled products, the group's main concern was paper waste sent off-campus. Furthermore, per Stewardship Ontario's legislative guidelines, only mail delivered within the province of Ontario was examined. As previously discussed, the project's time frame had a significant bearing on the depth of the

project and the level of detail of collected data. For these reasons, this report may only be taken as a preliminary study, outlining basic trends and offering guidance for further projects.

## **4.0 Results**

The results obtained in this project have been categorized by the departments and contacts approached during the course of this study. These departments include: Waste Management (Patti Cook), Registrar's Office (Barb Trotter), and Central Stores (Carmen Jaray and Joel Norris). At the conclusion of this section, a rough estimate of annual weight for each type of mail is summarized in Table 1.

### **4.1 Waste Management - Patti Cook**

Patti Cook is the Waste Management Coordinator for the University of Waterloo. She is also the WATGreen and Project Advisor for various Environment and Resource Studies classes. Patti played an essential role in this project, both as an advisor and a valuable source of information. She was our first contact and provided us with the names of other key informants. Patti has also been responsible for compiling and processing the data required by Stewardship Ontario. She provided us with links to Stewardship Ontario reference material, their annual levy fees per grade of material (See Appendix C), and data files that she had begun to compile on outgoing mail.

Patti's continued work in establishing and maintaining outgoing mailing records will be instrumental in providing data for later studies, as well as records for Stewardship Ontario. The goal of this project is to begin to clarify current mailing initiatives and to identify areas for development (e.g., record keeping).

## 4.2 Registrar's Office – Barb Trotter

Barb Trotter works for the Marketing and Recruitment Section of the Registrar's Office, which promotes the University of Waterloo to prospective students. Throughout the course of a year, there are several information packages mailed to prospective students; these are as follows:

1) The first piece of mail that Registrar's Office sends is a preliminary information brochure on the University of Waterloo. The brochure is sent out at the request of high school students and/or their parents. These brochures are also available at the visitor centre on campus. Recently, the brochure has been reduced from 80 to 40 pages in length.

2) After a prospective student has applied to the University of Waterloo, a postcard with website links is sent out. The links provide further information about the University. Approximately 27,000 postcards are mailed out annually. According to the Registrar's Office, the use of electronic information sources plays a significant role in reducing the reliance on paper products. Two years ago, all information was sent on printed paper, and in large packages. The Registrar's Office then gradually adopted newsletters, and finally postcards. It was clearly stated in our interview with Barb Trotter that this trend towards web-based information is a result of budget cuts rather than an environmental concern initiative.

3) The third mailing sent out to prospective students, who are now successful applicants, is the offer package "You're In". The package contains: a letter of acceptance, a newsletter, and residence information. The weights of these packages vary depending on Faculty. The majority of Faculties send an offer package that is roughly 100 grams. However, Faculties such as Math and Engineering send offer packages averaging 252 grams. The Arts

Faculty package weighs approximately 200 grams, but due to its large student body, Arts packages account for the greatest overall share of weight.

#### “GO” Envelopes

The “Your In” packages, mentioned above, are mailed to students using a “GO” envelope. Once filled, the envelopes are sent to Central Stores for pick-up by Canada Post. The envelopes are prepaid for by the Registrar’s Office for a unit of 500 grams. Though more expensive than other forms of delivery, the “GO” envelope is used by the Registrar’s Office because it guarantees a two-day delivery. The University of Waterloo sends out acceptance packages during the month of May, with most acceptance packages being sent out during the last week of May. One reason for this late mailing is due to the Math and Engineering Faculties' reliance on Descartes Contest results in deciding admissions. The Math Faculty also waits to receive the prospective students’ last possible marks (high school midterm grades), which are not available until May. Approximately 20,000 acceptance offers are sent out annually; 8,000 of these are sent in “GO” envelopes. The Registrar’s Office estimated a weight of **2,656 kg for outgoing “GO” envelopes in 2004** addressed to Ontario addresses (See Appendix G).

#### Poly-bags

Acceptance packages mailed prior to the last week in May are sent out in poly-bags and processed through Central Stores. Poly-bags are less expensive than “GO” envelopes, as they do not guarantee a two-day delivery. Thus, “GO” envelopes are reserved for rapid deliveries. Most Faculties try to mail out the majority of acceptances prior to the last week of May to take advantage of the cheaper poly-bag rates. It is therefore not surprising that the busiest time for outgoing mail within the Registrar’s Office is mid-May. Of the 20,000

acceptance offers, only 5,000 students decide to attend the University of Waterloo and receive the final mailing.

4) The final mailings sent out are the course selection calendars. In the past, course selection calendars were mailed out to every accepted student. Now, calendars are only mailed to students who have accepted the offer of admission from the University. Certain Faculties, such as Engineering, pre-select and automatically enrol students into first-year courses. Students enrolled in Faculties such as this, no longer receive calendars since they would have no use for them.

Despite a lack of record-keeping regarding paper entering the Ontario waste stream, Barb Trotter indicated that the amount of paper sent out by the Registrar's Office is decreasing. This trend can be explained by the introduction of postcards. Though the postcards do not contain the same quantity of information in themselves, they do provide links to websites that do. Pages in the calendars are thus decreased. Since a main goal of the Registrar's Office is to make information easily accessible to the public, such as to prospective students and their parents, surveys are sent out asking students whether they would like to receive information through an electronic source or in printed copy. The results of these surveys are consistent for the most part, with students requesting to receive both electronic and print copies of information. Barb Trotter states the reason for this is "many people still need that printed copy in their hands".

Yet changes are occurring that limit the possibility of obtaining paper copies. For instance, most forms required by the University of Waterloo are available online and only first-year students receive course calendars. Current students use an online system for course selection. As stated previously, this decline in outgoing mail is not necessarily motivated by

environmental reasons as much as it is a solution to accommodate reduced budgets. The budget for this department includes graphic design, paper, print, packaging and postage.

#### **4.3.0 Central Stores – Carmen Jaray**

Carmen Jaray is the supervisor of operations for Central Stores. Central Stores is a mailing outpost for the University of Waterloo and other facilities such as Wilfrid Laurier University. In theory, all outgoing mail is sent through Central Stores for packaging and/or processing; Central Stores is the pick up location for Canada Post. Carmen explained that there are three outgoing mail classifications within Central Stores: (1) First Class mail, (2) Bulk or Admail and (3) Courier. There are two types of first class mail, regular and research, with domestic mailings through Canada Post and international mailings through Spring (formerly TNT International Mail).

#### **4.3.1 First Class Mail**

The current record-keeping system used to trace outgoing mail consists of basic Microsoft Excel files that show a department's accumulating total cost. Once it reaches \$10, the total is deleted from the Excel spreadsheet and copied to another file where department billing commences. Carmen provided us with printouts of graphic trends for courier and First Class mail, by the number of mailings over the past two years. She also supplied us with recent calculations on First Class weights for the first three months of 2005 (see Appendix D). Calculating First Class mail weights is a new initiative being undertaken at the request of Patti

Cook. Carmen informed us that by 2006, they were hoping to transfer everything to a digital system for easy monitoring since labour and time are major constraints at Central Stores.

While historical records were limited at best, Carmen was able to provide us with accurate First Class mail weights for January (783.7 kg) and February (2,049.7 kg) of 2005 (Jaray 2005). Since February is one of Central Stores' busiest months, we effectively assumed March to be the same as January and created a three month average of 1,205.7 kg/month. If this three month average weight is extrapolated for the year, then **an extremely rough projection of the University of Waterloo's 2005 First Class mailings within Ontario is 14,500 kg**. Another estimate would be to assume that January to June are at 12,000 kg/month and July to December are at 800 kg/month. Now that accurate monthly records are being kept it will be interesting to see if this projection mirrors reality.

#### **4.3.2 Bulk Mail**

Bulk mail is mail that is sent out as a minimum unit of 1000 pieces at a time. Central Stores deals mainly with Addressed mail, which means each individual piece is labeled with an identifying address. Bulk mail is sorted at Central Stores by postal code and delivered via Canada Post. Depending on the location that the mail is being sent, the cost varies from 36 to 50 cents per piece or is charged per weight (specific charge unknown).

Carmen indicated that bulk mail increases in volume during the summer months but overall the volume of outgoing bulk mail is relatively constant. The two departments that send the greatest volume of outgoing bulk mail are Alumni, with approximately 80,000 pieces being delivered three to four times a year, and the Registrar's Office. Based on Canada Post billing receipts, **773,450.78 kg of bulk mail was sent out in 2003** from the University of

Waterloo to Ontario addresses by Central Stores (Cook 2005). See Appendix E for a detailed breakdown of the primary senders of bulk mail on campus.

### **4.3.3 Couriers – Joel Norris**

Joel Norris is Supervisor of Central Stores and was able to provide us with a great deal of information on the courier system. While courier mail can consist of large items such as computer components, textbooks or scientific samples, Joel estimated that 90% of courier shipments are paper products. He was able to make this estimate because each package is accompanied by a form that lists a description of the item. This form is filled out by the department and often does not state if the package contains printed material. However, in cases where the provided description is insufficient, Joel said an educated guess could be made since most packages of printed material do not weigh more than 1 kg. This problem may also resolve itself in time since the shipping order form will become obsolete in a few years as the courier system goes online and the forms are completed electronically. This shift to online service is a result of decreasing equipment costs for electronics.

Currently, Central Stores has no system for recording the total weight of printed material sent out and Joel stated any totals could fluctuate greatly from day to day. He was able to estimate 150-500 printed paper shipments occur daily. These shipments are handled by several courier companies. Central Stores' main courier companies are: Purolator, UPS, FedEx, Spring (TNT), DHL and Crown. However, Joel indicated that Purolator handles 95% of the shipments (including almost all Ontario shipments) and serves domestic deliveries. Crown deals solely with local shipments. International shipments are handled by FedEx and TNT. Shipment costs through the University are much lower than through individuals. Due

to the reduced cost, in theory, all packages to be couriered should be sent through Central Stores. However further research revealed that occasionally packages are sent out via courier either directly from departments or from professors. These occurrences are mainly because of the greater flexibility in 'last minute' pickup times or for other reasons. The percentage of independent courier use is nevertheless relatively small and thus will not receive further discussion in this report.

Joel indicated June and February are the busiest months for processing and mail outs for Central Stores. He stated the reason for this trend was that these periods had more resident professors conducting research. Joel also stated that the overall volume of courier shipments has increased and is likely to continue to do so as courier prices become more competitive with First Class mail deliveries. When asked if he felt a shift towards electronically distributed information would affect courier use, Joel did not believe it would. Like other contacts interviewed earlier, he shared the opinion that people still like to have printed copies of information.

In order to try to estimate a weight for courier mailings, the group was permitted access to Central Stores' shipping forms. These shipping forms listed the weight of the package, the destination and a description of the item. The group decided to select a sample month in order to estimate the annual weight of courier shipments. April 2003 was selected as a representative month because it was a time of 'average' courier volume. While 2004 shipping forms were available, Joel suggested these would not be as accurate as 2003 data. This is because customers began switching to online forms in 2004, and these shipments would not be accounted for in the paper records.

By totalling the weights listed on individual Ontario shipment forms that met the description of a paper product, we were able to get the total paper mailings for April 2003. When the description was non-specific as to the packages contents, but the recorded weight was not greater than 1 kg, it was assumed to be a paper product based on Joel's statement. It is also important to note that courier shipments of textbooks were excluded from the observations. This exclusion was decided by the group because these materials were printed by a source outside of Waterloo (another Ontario brand owner or first importer would have already been charged Stewardship Ontario fees for these books) and textbooks also traditionally have a lifespan of several years.

This exclusion also prevented any unnecessary skewing of the data that may have resulted from the occasional, but significantly heavy, textbook shipments. Other materials included within Stewardship Ontario were also omitted from this data since our primary focus was printed materials.

Our observations found 344 paper packages were shipped within Ontario in April 2003 with a combined weight of 251 kg. Assuming April was a typical month and 2003 was a typical year, then approximately **4,128 packages weighing about 3,010 kg (251 x 12) are mailed by courier** annually to Ontario addresses. However, this is a conservative estimate since it does not factor in the higher volumes which Joel indicated occur in February and June. This estimate of outgoing mail could also be considered especially conservative because of the total number of packages recorded. The entire month of April 2003 had only 344 packages, while Joel indicated Central Stores sends between 150-500 printed paper shipments daily. Thus, additional months would need to be tallied to determine which estimate of monthly outgoing mail is more accurate. Our data also indicated four relatively

heavy shipments occurred in Weeks 4 and 5. Joel suggested one reason for these outlying values might be the material distributed for math competitions or the yearly mail outs by Graphic Services. Joel estimated 30,000 pieces/year are distributed by these two departments to high schools across Canada.

#### **4.4 Alumni - Robert “Bob” Copeland**

At the Alumni Office, we spoke to Bob Copeland who told us that it would be difficult to determine an exact number of printed materials sent off campus. Their system was partially decentralized, in that the mail delivered to Central Stores from Alumni came from numerous venues. Within the Alumni Office itself, there are several departments that send mail off-campus: Communications and Public Affairs, Donor Relations and Alumni Affairs.

Our contact within Communication and Public Affairs was Martin Van Nierop. This department is responsible for distributing the bi-annual UW Magazine and special publications. The UW Magazine alone accounts for more than 100,000 pieces of paper material sent out a year.

Annette Trudelle was our contact within Donor Relations. This department includes a poly-bag insert within the UW Magazine, the “Donor Report”. It is distributed once a year and contains invitations to various events.

Our contact within Alumni Affairs was Jason Coolman. Alumni Affairs also distributes event invitations as well as surveys and other similar material.

In addition to the main Alumni Office, each Faculty has its own Alumni department, fully supported by that Faculty. Each Faculty distributes materials to its alumni, often consisting of newsletters. The implication was that the main Office for Alumni Affairs would

only be used to send out Alumni address lists, whereas the various other Alumni departments would send the actual materials to Central Stores themselves.

**Table 1:** Summary of Results for Weight of Mailings

<b>Type of Mail</b>	<b>Rough Estimate of Annual Weight (kg)</b>	<b>% of Total Weight</b>
Bulk Mail	773,450	97.46
First Class Mail	14,468	1.82
Courier	3,012	0.38
Go Envelopes	2656	0.33
<b>Total</b>	<b>793,586</b>	<b>100</b>

## 5.0 Discussion

This research project set out to determine exactly how much printed material is being sent off-campus. In the process of gathering information we realized that this would prove to be more difficult than anticipated. We discovered that the University of Waterloo does not have an all-encompassing system for monitoring its outgoing mail. Instead, they have numerous different systems for tracking the different types of mail, but as of yet no means of piecing this data together. Synthesizing this information should be a goal of the university, since it would prove beneficial for determining budgets and also serve the purpose of meeting Stewardship Ontario's requirements. We also realized that although some departments keep track of their own outgoing mail, they do not always share this information with Central Stores, the main mailing centre for the campus.

Because of the challenges presently involved in trying to determine the total weight of outgoing mail, we decided to focus more of our attention on developing a system that would make it easier for the University to keep track of their mail in the future. Only when the University begins to keep accurate records of their mailings will subsequent studies be able to significantly assist them in reducing "unnecessary" mail-outs. This report may act as a good starting point for future student projects wishing to obtain more precise data.

We gathered numerous pieces of information throughout the project. Central Stores informed us that the Registrar's Office and Alumni were the two largest contributors to the Bulk Mailing system. For this reason, many trends and improvements are based upon these two departments.

## 5.1 Improvements to date

Although the University of Waterloo has had difficulty keeping track of outgoing mail, they are working towards making improvements. For the first time, Central Stores is now beginning to specifically keep a record of the First Class mail that is being sent out to Ontario addresses, which is what Stewardship Ontario is concerned with. This was achieved through the efforts of Patti Cook (Waste Management Coordinator) by asking Carmen Jaray (Supervisor of operations at Central Stores) to begin recording this information. Carmen now gathers all First Class mail being sent within Ontario and weighs it at the end of each day. The First Class mail records will help to obtain a more precise overall weight to submit to Stewardship Ontario and thus the corresponding price for tonnage. Previously, Central Stores did track their First Class outgoing mail but never distinguished between mail being sent to Ontario, other provinces or internationally.

Barb Trotter in the Marketing and Recruitment Section of the Registrar's Office informed us of a recent improvement made to outgoing mail being sent to prospective students. These students are asked via survey if they would like to receive information about the university through the web or by printed mail. Although most people still select the printed material option, it is still an improvement on the Registrar's part to offer this innovative option. It was speculated that many potential students would begin to select electronic mailings as successive generations are becoming more computer-literate. Unfortunately, this has not happened yet. Some possible motives for why people are more likely to choose printed materials rather than information through the web are as follows:

1. Parents may not always trust computers – they prefer a hand held copy.

2. Web information is easier to ignore and to forget about. Paper copies are a more conductive reminder, for example, of approaching deadlines.
3. E-mails are often lost or overlooked through e-mail filtering systems, due to the increasing amounts of spam and viruses.

From a waste management perspective, it is interesting to note that hard copies have a higher chance of being kept longer. Web print outs, feeling less official, have a potentially higher chance of going into the waste stream sooner. Hard copies on the other hand may be kept until a return to campus, where other copies are then available. As a result, hard copies would be disposed of in the campus waste stream and not in that of the Ontario community at large. A good example, are the folders sent out by the Registrar's Office, which many students have kept throughout their entire academic career. If people are not already familiar with how the web-based system functions, specific university information can often be difficult to locate. For instance, the University of Waterloo's Quest system was notoriously user un-friendly for first time users, resulting in many students requesting paper copies.

Also, even if additional students choose to receive web-based information, this does not necessarily imply that overall printed material waste would be reduced in the long run. Although the amount of printed material sent off-campus may be reduced, the propensity for people to print multiple copies of electronic information from their home may, in the end, increase the amount of material entering the waste stream. If someone were to have a hard copy of something they would be more likely to refer back to that one official source. An example of this is the undergraduate calendar that has recently become electronic. Many students may still print off multiple copies for easy viewing, whereas a hard copy might have minimized this paper waste. However, the fact that electronic mail is not counted by

Stewardship Ontario means it is the preferable option if the sole objective is to reduce steward fees.

Another positive waste paper reduction initiative that the Registrar's Office has incorporated is that after receiving a potential students' application, they send out a postcard with web links, directing them to University of Waterloo information online. Up until two years ago, students received this information through a pamphlet. Though this initiative was undertaken as a result of budget cuts as opposed to user preferences, this has greatly decreased the amount of printed material being sent out.

The Alumni Department has also made several improvements to reduce outgoing paper. Bob Copeland informed us that they too have switched over to distributing more information through the web. Like the Registrar's Office, they now send out a postcard with a web site link to most of their information and the services they provide. The postcard also has a URL directing the user to a page where s/he can “opt-out” of any information being sent. This is another positive aspect because it allows users to personalize the material being received, thus filtering out unsolicited information, and consequently reducing waste. Bob also informed us that Waterloo is one of the few universities to only send their university magazine (UW Magazine) twice a year. This trend is a drop from their previous tri-yearly mail outs.

## **5.2 Recommendations**

The University of Waterloo still needs to greatly improve their monitoring system for off-campus mailings. Central Stores is in an ideal position to act as a centralized monitoring and record-keeping organism, but still has work to do to become more organized at gathering

the needed information. Most of the data is readily available and can be gathered on location. It is also important that the different departments communicate their mailing procedures with Central Stores and let them know about the individualized systems which they are using.

For instance, because they did not process them, Central Stores did not include the Registrar's Office's "Go" letters as part of their system, even though these were sent out through their facilities. Since only Central Stores had been asked to monitor its mailings for Stewardship Ontario, Barb Trotter, from the Registrar's Office was only able to give us a rough estimate of the weight of "Go" envelopes sent out. Since the "GO" envelopes are prepaid, there is no incentive from Central Stores to weigh these. It might be preferable if the departments let Central Stores handle all mailings, so that all "waste" that is relevant to Stewardship Ontario can be managed in one area. This centralization would hopefully streamline the data collection process.

Payment per weight of mailing is not a foreign concept. One optional payment model could be based off of the Stamp procedure. Departmental users could be required to purchase an appropriate "Stewardship Ontario stamp" from Central Stores corresponding to the weight of the mailing they are sending off-campus. This would provide an efficient method of collecting both weights and funds on the spot. Costs would simply get absorbed within the various departments' billings. Equally, the cost of manual labour and time could be factored into the "stamp" equation.

A centralized system has its advantages in that all data is guaranteed to be collected on a uniform basis and collected from a central location; it does present issues in terms of manual labour, and funds to support the initiative. Central Stores claims to be already short-staffed as it is. On the other hand, a de-centralized approach, perhaps including "Stewardship Ontario"

stamps, would spread out the responsibility among all the departments, minimizing negative impacts. A de-centralized system could achieve greater detail in data collection since collecting agencies would have less material to handle at one time. It would also allow for appropriate billing to each department based on the potential waste they generate under Stewardship Ontario. A de-centralized, hands-on approach could, in theory, provide the necessary education regarding waste issues to promote waste reduction initiatives at the departmental level. Currently, though documentation about Stewardship Ontario was circulated to most departments, very few of these have any firm grasp or willingness to comply, since costs are externalized and being charged to the Sanitation Budget, where they are covered as a “utility”. This de-centralized approach is known in the Waste Management world as “extended producer responsibility”.

In either a centralized or a de-centralized approach, a consistent basis of record keeping must be established. With the use of a simple database (e.g., in Access), a code convention could be adopted so as to create a common record keeping language across the campus. For instance, unique identifiers (number format is assumed the most versatile) could be given to each mailing department. Another ID number could be given for each material classification (e.g., 001 refers to “Magazine and Catalogue”, 002 refers to “Telephone Directories”, 003 refers to “Other Printed Material”, etc.). These IDs would eliminate misunderstandings in code conventions. They would also be an initial step towards a more detailed record-keeping system. Official code definitions could be easily and quickly looked up in either a table or in a query based search.

As the system stands, despite the uncertain ramifications for the community at large, another recommendation is for the University to move more of its printed material to an

electronic system. Though in a sense this is a loophole in Stewardship Ontario's objectives to reduce overall waste in the community, this does provide budgetary appeal on a University campus level. In order for this conversion to be maximally achieved, the University would have to stop giving the public a choice of whether they prefer to receive a printed copy of the information or access it on the web. It is theorized that only through actions can views be changed. It is conceded that this market-based proposition may be undemocratic in nature, and open to theological debate and opposition.

A compromise approach would be for the University to either distribute all newsletters in an electronic format, or post them in a central location for the public to view at their own discretion. Online news agencies are very common in the current world. They provide an ideal system of cataloguing information for easy and frequent access. A review of 2003's Bulk mail billing forms revealed that at least 25% of the total weight of mailings were newsletters. It is speculated that most departments within the University of Waterloo mail a large portion of their newsletters.

The University of Waterloo is portrayed as a leader in innovation and computer based technology. It stands to reason that it should continue to strive for a more technologically based approach to disseminating its information packages in the wider community. It is anticipated that other universities will eventually follow Waterloo's example in order to conserve their marketing edge. Consequently, it is speculated that with a wider adoption of the electronic system over the paper one, public concern over the option will gradually subside.

If the University of Waterloo stands as a test case, one aspect that may force universities to change to electronic mail is reductions in their budget. Though this might not

seem like an ideal motivating factor, budget cuts often compel rigid institutions to explore options they would not normally consider. When Stewardship Ontario fees are coupled with existing mailing costs, electronic mail may come to be seen as a viable cost saving opportunity. Already in the Registrar's Office, they have had to deal with a budget decrease which prompted their search for alternatives. If every department had a limited budget for mail outs, it would force them to be more conscious of what they were sending out and look into making better use of electronic resources.

Another recommendation is that the University of Waterloo could develop various incentives to encourage departments to use the cheapest paper possible (based on Stewardship Ontario's fee structure - see Appendix C). They could also encourage departments to implement innovative technology-based techniques such as the electronic formats previously discussed. Stricter purchasing guidelines could be implemented, examining not only outgoing materials, but incoming as well, as ultimately even these would return to the main waste system. An internal campus tax or reward system could motivate departments to purchase cheaper paper, or even invest further in recycled and environmentally friendly products.

A final recommendation is a continuation of this project. We realized mid-way through our research that our initial goal of obtaining exact figures of weight for printed material sent off-campus was not going to be met. We were able to establish a starting point for determining this digit in the future. The project determined viable sources of information, such as key informants, and the types of data that they currently offer.

Future groups of students could focus on introducing an actual system that might obtain more precise numbers for Stewardship Ontario. A good place to start would be to examine the Excel spreadsheets at Central Stores and determine how best to integrate

Stewardship Ontario without causing too many disruptions within Central Stores' regular procedures. One basic addition could be to go through the Bulk mail's billing files and add a "Dates" column to our 'proposed spreadsheet'. This would facilitate the creation of graphs showing trends for both pieces and weight of Bulk mail. We realize that this is an ongoing project that has the potential to span a few terms before a fully functional monitoring system is operational.

## 6.0 Conclusion

The initial objective of this study was to calculate the exact weight of printed material being sent off-campus in order to help the University of Waterloo meet its reporting obligations to Stewardship Ontario. Our ensuing primary research quickly revealed the difficulty of this task given the time and resources available combined with the lack of adequate records. Consequently, the focus of this study shifted to gathering baseline data concerning how the University's assorted mail systems presently operate, and the relevant departments and actors involved. Nevertheless, an attempt was made to estimate the annual printed material weight for each type of mail. In keeping with the generalized nature of this study, secondary research was simultaneously carried out on the benefits and drawbacks of Stewardship Ontario as a waste management organization. This study then made preliminary recommendations about how the university's system of record-keeping could be improved, as well as highlighting some early opportunities for reducing future mail-outs.

In the end, this study will hopefully serve as the foundation for future research on this subject, since there still remain significant gaps in knowledge. Two areas for subsequent studies to concentrate on are: 1) deriving an exact weight of total mail sent out by the University of Waterloo, and 2) identifying areas where the university can reduce its mailings so as to save on Stewardship Ontario fees and, more importantly, reduce its environmental impact on Ontario communities.

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**Appendix A**  
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**STEWARDSHIP ONTARIO**

## **Benefits of Stewardship Ontario and the WDA**

### **1) Reliable source of Funding for Municipalities**

Through Stewardship Ontario, Ontario businesses will cover 50% of the cost of municipal recycling programs, giving local government a stable source of funding that will rise or fall in proportion to the amount of waste actually being generated by industry (SO 2004). This follows a period of funding uncertainty, when the former provincial government downloaded all responsibility for waste management onto municipalities. Since early 2004 about \$3 million per month has been collected from industry stewards, revealing that the annual cost of recycling across Ontario is approximately \$72 million (ONEIA 2004). The 50/50 funding of recycling provides municipalities with an incentive to use previously allocated funding to increase the amount of waste they divert away from landfills in order to reach the province's goal of 60% diversion by 2008 (CNW 2004). There are also built-in incentives for municipalities to increase the efficiency of their recycling operations (RCO 2003).

### **2) Makes the Producer Pay**

Traditionally, a private producer in Ontario has enjoyed the profits from selling their product, while all of society is forced to shoulder the costs of disposing of that product. Even people who don't buy or use the product have to pay. The WDA takes steps to correct this inequitable situation by enforcing "extended producer responsibility" for some of the materials companies distribute in Ontario. After all, it is only fair that the sources of the waste problem should shoulder some of the resulting costs they helped create.

### **3) Provides Economic Incentives to Reduce Waste**

The fees levied by Stewardship Ontario serve as an economic incentive for companies to reduce the amount of packaging and printed materials they release into the province. In this way the fees help to "internalize" the environmental costs of a firm's products so these costs are taken into account when the firm is making decisions. If fees are passed on to consumers in the form of higher prices for some goods, this will help ensure households also pay the true cost of the products they buy. This incentive system is probably better than trying to meet the

same objectives through government regulation, because incentives work through market mechanisms and hence have a higher chance of generating an economically efficient outcome. Now that Ontario is a leader in instituting “extended producer responsibility”, other Canadian provinces will likely follow its example.

#### **4) Improves Businesses’ Reputation**

Membership in Stewardship Ontario may also enhance the reputation of a firm among its Ontario consumers and society at large. Such “corporate social responsibility” can lead to higher sales, especially when environmentally conscious consumers are choosing between a business located in Ontario and one elsewhere (e.g. through mail order). Membership may also increase company morale (some employees like to know they work for an ethical company). Exempt firms who voluntarily join Stewardship Ontario will likely enjoy the largest boost to their image. Likewise, companies found in violation of the WDA may suffer negative publicity in the press, as well as financial penalties.

#### **5) Creates an Inventory of Material Flow in Ontario**

As a result of the WDA’s requirement for companies to audit the material they distribute through the province, for the first time ever Ontario has an up to date assessment of the overall flow of packaging and printed materials in the province (RCO 2003). This inventory should prove very useful for research purposes and will aid the province in improving its future waste management policies.

### **Problems with Stewardship Ontario and the WDA**

#### **1) Business Discontent**

There seems to be a moderate level of dissatisfaction with Stewardship Ontario among business stakeholders being affected (PPSRReview 2003). A number of lobby groups including the Canadian Plastics Industry Association, Ontario Restaurant Hotel and Motel Association, Packaging Association of Canada, Retail Council of Canada, and especially the Canadian Federation of Independent Business are worried about the impact of WDO initiatives on the

profitability of their respective industries and their ability to compete internationally (Shammas 2004; Mundell 2003; Dworkin 2003; RCC 2005; Andrew 2003).

These and other groups think the Stewardship fees are too high and amount to little more than a “recycling tax”, and they question the basis for the levy rates being charged (Andrew 2003, 4; Mundell 2003). The substantial paperwork necessary to become compliant with the WDA (i.e. auditing and weighing packaging and printed materials) could also prove burdensome for small and medium sized enterprises (Andrew 2003, 3). Finally, some businesses think the WDA does not put enough pressure on Ontario municipalities to make their recycling systems more efficient, and as a result they say Stewardship fees have the potential to spiral out of control (Mundell 2003; Shammas 2004).

## **2) Insufficient Educational Programs**

“Already Stewardship Ontario is running into a number of problems in administering the Blue Box Program. Part of the problem is the need for business education. Most businesses, understandably, are under the impression that unless they sell most of their products to the retail consumer, the program and its fees do not apply” (Fishlock 2004). Indeed, “Stewardship Ontario has not identified how they will make stewards aware of the economic and environmental benefits of reducing their waste. This could take the form of industry workshops, newsletters, award recognition etc.” (RCO 2003). Furthermore, WDO is not aggressively targeting Ontario households in its plans to reduce waste, even though consumers make the final decision about how and when waste will be disposed. Hence the WDO should develop a better program to educate businesses and households about the importance of both “extended producer responsibility” and “extended product responsibility”.

## **3) Possible Lack of Enforcement**

Some industry and environmental groups worry that the requirements of the WDA will not be adequately enforced by Stewardship Ontario, which is in charge of a fund to sue non-compliant firms (Betts 2003). If free riders are allowed to go unchallenged, they may gain an unfair advantage over their competitors (PPSReview 2003). WDO originally estimated the rate of firm compliance with Stewardship Ontario would be 60%, but then revised this projection upward to 95%, which may be unrealistic based on evidence in other

countries with similar programs. If the 95% rate is not reached, Stewardship Ontario may be unable to raise the fees necessary to fund 50% of municipal recycling costs (RCO 2003). Nevertheless, in 2004 over 1,640 companies registered as stewards, providing 91% of the total fees Stewardship Ontario needed to pay industry's share for that year (CNW 2004).

#### **4) Loopholes**

Some feel that small business gets off too easily under the “de minimus” rule (SO 2004, 3). Others fear this exemption for firms earning less than \$2 million may be open to abuse. “An offshore exporting firm doing \$25-million in Ontario can create numerous numbered companies, each doing slightly less than \$2-million to get a free ride” (Dworkin 2003).

#### **5) No Incentive for Recycled Content**

The fees charged for various types of packaging and printed materials do not give special treatment to materials made from recycled content (Mundell 2003). Hence the Stewardship Ontario model provides little incentive for firms to increase their use of recycled content, neglecting an important component of waste management (RCO 2003).

#### **6) Undesirable Incentives**

“It may be assumed that incentives for steward reduction initiatives are inherent in this program because reducing packaging will mean lower fees for stewards. Unfortunately, this is not always the case” (RCO 2003). Because the current fee structure is based on weight, it disadvantages heavier recyclable packaging material like steel, boxboard and glass. While Stewardship Ontario classifies lighter materials like plastic and laminates as “blue box waste”, a number of municipalities do not recycle these materials, so if companies switch to them in order to pay lower fees, there may be an overall increase in municipal waste (RCO 2003).

Moreover, “Brand owners who choose highly recyclable packaging pay more than those who choose non-recyclable packaging... This provision creates an economic disincentive for brand owners to choose recyclable packaging over non-recyclable packaging.” (RCO 2003). Stewardship Ontario recognizes this problem and has built into its

funding formula several measures to offset it; nevertheless, an incentive to use non-recyclable materials like Styrofoam still exists because of WDO's rules.

### **7) Possible Lack of Accountability**

The "Recycling Council of Ontario shares concerns with some industry stakeholders that municipally reported recycling tonnage may not always represent how much material was actually recycled" (RCO 2003). Also, Stewardship Ontario "intends to charge for a level of service that is not available in every municipality throughout the province... all material should not carry a levy if it is not collected in all municipalities" (Mundell 2003). Provision for recycling needs to be addressed in enforcing the Stewardship Ontario guidelines.

### **8) Does Not Go Far Enough**

Stewardship Ontario only considers packaging and printed materials to be blue box waste and hence subject to its fees. It does not charge companies for all the other durable goods they sell, even though these end up in the waste stream eventually. As a result, companies are currently given no incentive to improve the lifespan or reusability of their actual products (RCO 2003). Also, some believe WDO's current short term goal of diverting 50% of residential waste from landfills is too low of a target in the interests of achieving real sustainability (RCO 2003).

# **Appendix B**

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## **INTERVIEW QUESTIONS**

## **Sample Interview Questions**

1. In your professional experience have you noticed an increase or decrease in the amount of outgoing mail at the University of Waterloo over the last 5 years? Over the last 20 yrs? By how much would you say the mail has increased or decreased?
2. Could you explain the difference between first class mail, bulk mail, and the mail sent out by Purolator? Is there any other type of mail being sent out that we have not mentioned above?
3. Of the types of mail mentioned in the previous question (Q2) what type(s) of mail do you see coming through Central Stores?
4. Do Central Stores receive mail from the residence, alumni and/or the Registrar's Office? If yes, do you classify these as departments? If no how do you classify mail from these UW sections?
5. In your professional opinion could you list the top five University of Waterloo departments that have the greatest amount of outgoing mail?
6. What is the current system at Central Stores for recording outgoing University of Waterloo mail for Patti Cook?
7. How does Central Stores do their record keeping? Can you see your system being adopted by other departments at the University of Waterloo? Where can you see any room for improvements with the record keeping system?
8. Would you know of any contacts that would help us with our project? For example, would you happen to know the contacts for the suggested top departments that have the greatest outgoing mail?

# **Appendix C**

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**STEWARDSHIP ONTARIO FEES**

## Stewardship Ontario's 'Fees Payable'

(i) Stewards shall pay fees to Stewardship Ontario in accordance with these Rules. The amount of fees payable shall be the sum for categories set out in the Steward's Report of the product of the amount of each such Designated Blue Box Waste set out in a Stewards' Report multiplied by the rates set out in the table of fees attached as Table 2 to these rules.

**Table 2:** Table of Fees January 1 to December 31, 2005

Category / Material	Annualized Fee
<b><i>Printed Paper</i></b>	
Newspaper CAN/OCNA Members	0.271 ¢/kg
Newspaper Non CAN/OCNA	0.786 ¢/kg
Magazine and Catalogues	0.862 ¢/kg
Telephone Directories	1.302 ¢/kg
Other Printed Paper	9.029 ¢/kg
<b><i>Packaging</i></b>	
Paper based packaging	7.904 ¢/kg
Plastic packaging	13.907 ¢/kg
Steel packaging	4.745 ¢/kg
Aluminium packaging Food and beverage cans	-1.093 ¢/kg
Foil and other aluminium packaging	5.502 ¢/kg
Glass packaging: Clear	3.761 ¢/kg
: Coloured	4.432 ¢/kg

## Overview of Results Information

**Table 3:** 2002/2003 Printed Paper Weight Generator

Number of students (full time equivalent)	19,009.7
Estimated generation per student	2.73
Total Kilograms	51,896.48

**Table 4:** 2003/2004 Printed Paper Weight Generator

Number of students (full time equivalent)	20,750.6
Estimated generation per student	2.73
Total Kilograms	56,649.14

# **Appendix D**

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**FIRST CLASS MAIL**

## Central Stores: First Class Mail Weights (2005)

**Table 5:** First Class Mail Weights

### Jan-05

Date	Weight (kg)	Category	Price / kg	Total Price
17-Jan-05	43.08	Paper based Packaging	0.09029 \$ / kg	\$3.89
18-Jan-05	79.646	Paper based Packaging	0.09029 \$ / kg	\$7.19
19-Jan-05	52.221	Paper based Packaging	0.09029 \$ / kg	\$4.72
20-Jan-05	66.282	Paper based Packaging	0.09029 \$ / kg	\$5.98
21-Jan-05	107.872	Paper based Packaging	0.09029 \$ / kg	\$9.74
24-Jan-05	64.034	Paper based Packaging	0.09029 \$ / kg	\$5.78
25-Jan-05	70.347	Paper based Packaging	0.09029 \$ / kg	\$6.35
26-Jan-05	109.14	Paper based Packaging	0.09029 \$ / kg	\$9.85
27-Jan-05	51.771	Paper based Packaging	0.09029 \$ / kg	\$4.67
28-Jan-05	54.628	Paper based Packaging	0.09029 \$ / kg	\$4.93
31-Jan-05	84.658	Paper based Packaging	0.09029 \$ / kg	\$7.64
<b>TOTAL =</b>	<b>783.679</b>			<b>\$70.76</b>

### Feb-05

Date	Weight (kg)	Category	Price / kg	Total Price
01-Feb-05	69.299	Paper based Packaging	0.09029 \$ / kg	\$6.26
02-Feb-05	49.61	Paper based Packaging	0.09029 \$ / kg	\$4.48
03-Feb-05	51.895	Paper based Packaging	0.09029 \$ / kg	\$4.69
04-Feb-05	71.913	Paper based Packaging	0.09029 \$ / kg	\$6.49
07-Feb-05	39.025	Paper based Packaging	0.09029 \$ / kg	\$3.52
08-Feb-05	140.28	Paper based Packaging	0.09029 \$ / kg	\$12.67
09-Feb-05	111.587	Paper based Packaging	0.09029 \$ / kg	\$10.08
10-Feb-05	110.127	Paper based Packaging	0.09029 \$ / kg	\$9.94
11-Feb-05	89.513	Paper based Packaging	0.09029 \$ / kg	\$8.08
14-Feb-05	102.362	Paper based Packaging	0.09029 \$ / kg	\$9.24
15-Feb-05	139.638	Paper based Packaging	0.09029 \$ / kg	\$12.61
16-Feb-05	94.217	Paper based Packaging	0.09029 \$ / kg	\$8.51
17-Feb-05	128.028	Paper based Packaging	0.09029 \$ / kg	\$11.56
18-Feb-05	140.33	Paper based Packaging	0.09029 \$ / kg	\$12.67
21-Feb-05	126.473	Paper based Packaging	0.09029 \$ / kg	\$11.42
22-Feb-05	227.887	Paper based Packaging	0.09029 \$ / kg	\$20.58
23-Feb-05	197.849	Paper based Packaging	0.09029 \$ / kg	\$17.86
24-Feb-05	46.098	Paper based Packaging	0.09029 \$ / kg	\$4.16
25-Feb-05	43.658	Paper based Packaging	0.09029 \$ / kg	\$3.94
28-Feb-05	69.897	Paper based Packaging	0.09029 \$ / kg	\$6.31
<b>TOTAL =</b>	<b>2049.686</b>			<b>\$185.07</b>

### Mar-05

Date	Weight (kg)	Category	Price / kg	Total Price
01-Mar-05	239.385	Other printed paper	0.09029 \$ / kg	\$21.61
02-Mar-05	170.409	Other printed paper	0.09029 \$ / kg	\$15.39
03-Mar-05	65.304	Other printed paper	0.09029 \$ / kg	\$5.90
04-Mar-05	68.562	Other printed paper	0.09029 \$ / kg	\$6.19
07-Mar-05	48.983	Other printed paper	0.09029 \$ / kg	\$4.42
08-Mar-05	142.652	Other printed paper	0.09029 \$ / kg	\$12.88
09-Mar-05	300.152	Other printed paper	0.09029 \$ / kg	\$27.10
10-Mar-05	94.888	Other printed paper	0.09029 \$ / kg	\$8.57
11-Mar-05	84.575	Other printed paper	0.09029 \$ / kg	\$7.64
14-Mar-05	56.957	Other printed paper	0.09029 \$ / kg	\$5.14
15-Mar-05	44.574	Other printed paper	0.09029 \$ / kg	\$4.02
16-Mar-05	58.684	Other printed paper	0.09029 \$ / kg	\$5.30
17-Mar-05	52.267	Other printed paper	0.09029 \$ / kg	\$4.72
18-Mar-05	55.492	Other printed paper	0.09029 \$ / kg	\$5.01
21-Mar-05	69.444	Other printed paper	0.09029 \$ / kg	\$6.27
22-Mar-05	42.174	Other printed paper	0.09029 \$ / kg	\$3.81
23-Mar-05	79.644	Other printed paper	0.09029 \$ / kg	\$7.19
24-Mar-05	51.304	Other printed paper	0.09029 \$ / kg	\$4.63
25-Mar-05	HOLIDAY	Other printed paper	0.09029 \$ / kg	HOLIDAY
28-Mar-05	49.441	Other printed paper	0.09029 \$ / kg	\$4.46
29-Mar-05	83.637	Other printed paper	0.09029 \$ / kg	\$7.55
30-Mar-05	--	Other printed paper	0.09029 \$ / kg	--
31-Mar-05	--	Other printed paper	0.09029 \$ / kg	--
<b>TOTAL =</b>	<b>1858.528</b>			<b>\$167.81</b>

# **Appendix E**

**BULK MAIL**

## Central Stores: Bulk Mail Weights (2003)

**Table 6: Bulk Mail Weights for 2003**

Contract No.	Customer Reference	Pieces	Total Weight (kg)	Description
40065122	applied health science	6,435	386.1	news letter
40065122	accounting	3,148	110.18	news letter
40065122	accounting	3,901	140.44	news letter
40065122	accounting	3,597	143.88	news letter
40065122	accounting	911	63.77	
40065122	alt 2 s/l	2,148	47.26	
40065122	alt s/l	9,935	218.57	
40065122	alternatives	1,885	367.57	journal
40065122	alternatives	1,578	244.59	journal
40065122	alternatives	1,795	263.87	journal
40065122	alternatives	1,811	362.2	journal
40065122	alternatives	1,740	330.6	journal
40065122	alternatives	83	16.18	journal
40065122	alternatives	102	23.46	journal
40065122	alumni 1	32,533	3,806.36	
40065122	alumni 2	19,132	2,238.44	
40065122	alumni 3	32,673	3,822.74	
40065122	alumni arts	3,954	19.77	
40065122	alumni eng	17,976	2,175.10	annual report
40065122	alumni orien	1,188	5.94	
40065122	arts	27,011	2,295.94	news letter
40065122	athletics	3,484	104.52	
40065122	athletics	3,458	152.15	news letter
40065122	athletics	3,472	156.24	
40065122	calgary	1,958	9.79	
40065122	CE	6,967	487.69	calendar
40065122	CE	637	93	
40065122	chem 13	819	45.05	news letter
40065122	chem 13	794	44.46	news letter
40065122	chem 13	809	37.21	news letter
40065122	chem 13	667	40.69	news letter
40065122	chem 13	809	37.21	news letter
40065122	chem 13	743	33.44	news letter
40065122	chem 13	792	55.44	news letter
40065122	chem 13	663	29.84	news letter
40065122	chem 13	682	30.69	news letter
40065122	chem 13	742	40.81	news letter
40065122	COOP	2,475	49.5	

Contract No.	Customer Reference	Pieces	Total Weight (kg)	Description
40065122	correspondence	8,672	260.16	
40065122	correspondence	11,206	336.18	
40065122	correspondence	10,531	315.93	
40065122	CR network	1,037	95.4	
40065122	dist ed	8,545	128.18	
40065122	dist ed 1	3,385	67.7	
40065122	dist ed cal	9,802	1,960.40	
40065122	dist ed cal	9,809	1,961.80	
40065122	dist ed doub	899	221.15	
40065122	dist ed doub	647	111.28	
40065122	dist ed doub	835	121.08	
40065122	dist ed eval	2,496	49.92	
40065122	dist ed lett	4,999	654.87	
40065122	dist ed sing	2,405	288.6	
40065122	dist ed sing	7,272	509.04	
40065122	dist ed sing	6,851	479.57	
40065122	dist evaluat	3,007	75.17	
40065122	drama	896	37.63	
40065122	french conta	2,141	406.79	
40065122	french title	2,471	247.1	
40065122	graphics h.s	1,564	86.02	
40065122	highschools	2,076	736098	
40065122	highschools	896	448	
40065122	housing	2,401	456.19	
40065122	housing	3,798	18.99	
40065122	IIQP	4,023	164.94	news letter
40065122	insights	5,398	107.96	
40065122	insights	5,304	132.6	
40065122	keystone	1,339	21.42	campaign
40065122	keystone	1,355	51.49	news letter
40065122	keystone	1,347	20.2	news letter
40065122	math piday	6,795	33.98	
40065122	math ties	15,142	863.09	
40065122	mobile life	7,171	215.13	
40065122	ODAA Tor	1,184	5.92	
40065122	optometry	690	50.37	news letter
40065122	optometry	1,094	79.86	news letter
40065122	optometry	1,290	19.35	
40065122	optometry	1,090	16.35	
40065122	optometry	2,019	111.04	

Contract No.	Customer Reference	Pieces	Total Weight (kg)	Description
40065122	parents	5,374	564.27	
40065122	parents eng	475	58.42	annual report
40065122	parents weal	687	48.78	news letter
40065122	physics	671	40.26	
40065122	physics 13	670	40.87	news letter
40065122	physics 13	670	40.87	news letter
40065122	physics 13	669	40.14	news letter
40065122	physics 13	669	40.14	news letter
40065122	physics 13	669	40.14	news letter
40065122	ploughshares	4,251	331.58	monitor
40065122	ploughshares	4,568	342.6	monitor
40065122	ploughshares	4,387	329.02	
40065122	ploughshares	4,222	316.65	
40065122	pts double	907	68.93	
40065122	pts singles	7,028	253.01	
40065122	registrar	923	4.62	postcard
40065122	registrar	8,657	51.94	postcard
40065122	registrar	1,195	7.17	postcard
40065122	registrar	15,715	94.29	postcard
40065122	retirees	919	18.38	
40065122	retirees	1,293	51.72	news letter
40065122	retirees	1,281	70.45	
40065122	retirees	1,281	65.33	news letter
40065122	rez registra	9,140	411.3	
40065122	rez registra	9,136	411.12	
40065122	rez registra	9,138	411.21	
40065122	school board	1,528	76.4	
40065122	shad	7,468	351	
40065122	shad contact	4,191	968.12	
40065122	shad library	1,409	77.5	
40065122	shad S_L	2,404	43.27	
40065122	shad titles	3,812	442.19	
40065122	sl101 orient	2,391	155.42	
40065122	stats	754	3.77	
40065122	wat maple	458	27.94	
40065122	wat on earth	826	74.34	
40065122	weal	16,260	1,154.46	news letter
40065122	weal highschools	896	63.62	news letter
<b>Total =</b>		<b>504,381</b>	<b>773,450.78</b>	

CE	Continuing Education
CR	Campus Rec
dist ed	Distance Education
IIQP	Institute for Improvement in Quality Productivity
WEAL	Waterloo Engineering Alumni Letter
ODAA	Office of Development and Alumni Affairs

# **Appendix F**

**COURIER MAIL**

**Central Stores: Courier Mail Weights (April 2003)**

**Table 7: Courier Weight Projections**

Recorded Weights	Week 1		Week 2		Week 3		Week 4		Week 5		Totals		Percentages	
	# of Pkgs	Kg	# of Pkgs	Kg	# of Pkgs	Kg	# of Pkgs	Kg	# of Pkgs	Kg	# of Pkgs	Kg	# of Pkgs	Weight
<b>0.25</b>	19	4.8	81	20.3	36	9.0	49	12.3	29	7.3	214	53.5	62%	21%
<b>0.50</b>	8	4.0	18	9.0	6	3.0	30	15.0	4	2.0	66	33.0	19%	13%
<b>1.00</b>	2	2.0	8	8.0	12	12.0	6	6.0	6	6.0	34	34.0	10%	14%
<b>1.50</b>	0	0.0	0	0.0	2	3.0	4	6.0	0	0.0	6	9.0	2%	4%
<b>2.00</b>	2	4.0	2	4.0	1	2.0	2	4.0	2	4.0	9	18.0	3%	7%
<b>2.50</b>	0	0.0	0	0.0	0	0.0	1	2.5	0	0.0	1	2.5	0%	1%
<b>3.00</b>	0	0.0	3	9.0	1	3.0	1	3.0	0	0.0	5	15.0	1%	6%
<b>4.00</b>	1	4.0	1	4.0	3	12.0	0	0.0	0	0.0	5	20.0	1%	8%
<b>7.00</b>	0	0.0	0	0.0	0	0.0	1	7.0	0	0.0	1	7.0	0%	3%
<b>12.00</b>	0	0.0	0	0.0	0	0.0	0	0.0	1	12.0	1	12.0	0%	5%
<b>14.00</b>	0	0.0	0	0.0	0	0.0	1	14.0	0	0.0	1	14.0	0%	6%
<b>33.00</b>	0	0.0	0	0.0	0	0.0	1	33.0	0	0.0	1	33.0	0%	13%
<b>Yearly Projections</b>											344	251.0	100%	100%
											4,128	3,012.0		

# **Appendix G**

**“GO” ENVELOPE MAIL**

**Registrar’s Office: “GO” Envelope Mail Weights (Feb 2005)**

**Table 8:** Estimated Number of Offers Sent Out from Registrar’s Office (Jan-Dec 2004)

	<b>Offers</b>
International	1,000
Out of Province (OOP)	2,000
<b>Total</b>	<b>20,612</b>

**Table 9:** Total Weight for “GO” Envelopes (Jan-Dec 2004)

	Weight (g)/piece	# of Pieces		Total Weight (kg)	
		Ontario	Total	Ontario	Total
Math					35,756
Arts	200	5,000	6,739	1,000	
Other	100	9,000		900	
<b>Total</b>				<b>2,656</b>	

# **Appendix H**

## **CONTACTS**

## List of Contacts

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- James (Jim) Robinson
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- Joel Norris
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### **Alumni Office:**

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