

CAPITAL REGIONAL DISTRICT SOLID WASTE STREAM COMPOSITION STUDY 2004-2005

FINAL REPORT



PREPARED FOR: CAPITAL REGIONAL DISTRICT

PREPARED BY: SPERLING HANSEN ASSOCIATES

PRJ04050

May 2005



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- Landfill Services
- Land Reclamation
- Corporate Management
- Groundwater Hydrogeology



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-

May 24, 2005

PRJ04050

Mr. Tom Watkins
Environmental Services Department
Capital Regional District
625 Fisgard Street
P.O. Box 1000
Victoria, B.C.
V8W 2S6

Dear Mr. Watkins

Re: Summary of Solid Waste Composition Study.

We are pleased to submit to you our final report summarizing the results of the two sampling rounds of the waste composition study conducted at the Hartland Landfill.

We have enjoyed working with the CRD on this the study, and we believe that the information in this report will help the CRD in its efforts to improve it recycling and waste diversion programs.

Yours truly,
SPERLING HANSEN ASSOCIATES INC.

David Kvick M.Sc.
Environmental Scientist

Executive Summary

Since adopting the 50% waste reduction goal in 1991, the Capital Regional District (CRD) has commissioned three studies to assess the composition of waste being landfilled at the Hartland Landfill. A fourth study was begun by Sperling Hansen Associates (SHA) in 2004.

Objectives of the study included determining the overall waste composition by material type, characterizing the waste by generation sector (residential, ICI and DLC), reviewing trends from different areas of the Regional District and assessing the amount of household hazardous waste in the waste stream.

This report was prepared to summarize the results from the two sampling periods that occurred at the landfill in November 2004 and in April 2005. It was determined that 100 samples could be analyzed during each of the two four-week sampling periods. The samples were broken down into different components to target specific waste loads entering the landfill. The components included residential, apartments, other specific waste generators, Industrial / Commercial / Institutional (ICI) and Demolition / Land Clearing (DLC). In total, 204 samples were analyzed, with 103 samples from the residential waste stream, 87 samples from the ICI waste stream and 14 samples from the DLC waste stream.

The total weight of sampled loads during the two periods was 1,222,398 kg and the total weight of the sorted materials was 90,966 kg, representing approximately 0.17 % of the waste stream. Of the overall waste stream, the top four components are Organic Waste (30.2 %), Paper and Paperboard (15.8 %), Plastics (13.8 %) and Wood and Wood Products (9.6 %).

Comparing the overall waste stream results from the 2004-2005 study with the results from the 2001 study shows that the per capita waste disposal rate of three of the four main items (mentioned above) has increased, while organic waste and construction / demolition waste have gone down.

A breakdown of the waste by sector shows that the primary components of each sector are Organic Waste for residential and ICI, 37.4 % and 26.5 % respectively, and Wood and Wood Products for the DLC sector.

For this study more waste type categories were added to assess household hazardous waste entering the landfill. Household hazardous waste represents 1.14 % of the total waste stream, or 1,716 tonnes per year. The four most common components of this waste were “Empty metal paint / stain cans and lids”, “Empty lubricating oil containers“, “Other empty aerosol cans” and “Batteries-dry cells”.

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1. INTRODUCTION

1.1 GENERAL BACKGROUND

Since adopting the 50% waste reduction goal in 1991, the Capital Regional District (CRD) has commissioned three studies to analyze the waste composition in the Regional District. Two studies were completed by Cameron Advisory Services in 1990 and 1996, and a third study was completed by Sperling Hansen Associates (SHA) in 2001. The studies have provided valuable benchmark data and analysis for evaluating the success of the solid waste management programs. In October 2004 the CRD contracted Sperling Hansen Associates to conduct a fourth solid waste composition analysis at Hartland Landfill for the year 2004 and 2005. This final report provides data and analysis for the the two sampling rounds that occurred in November 2004 and in April 2005.

1.2 OBJECTIVES

In the competitive proposal call, the CRD highlighted the following objectives for this study:

- To determine the overall composition of the residual solid waste stream being deposited at Hartland Landfill by material type (sorted into 13 primary and 98 secondary categories).
- To provide the portion of residual solid waste being received from each of three basic waste generation sectors, namely the residential, industrial / commercial / institutional (ICI) and demolition / land-clearing / construction waste (DLC) sources.
- To characterize the residual waste composition by primary and secondary category in each of the three basic waste generation sectors.
- To profile the residual waste composition produced by apartments and condominiums in the Capital Regional District. The results of the analysis will be compared to collection of recyclable materials from selected apartment or condominiums buildings.
- To profile the residual waste composition produced from four residential areas also serviced by blue box recycling programs. Each of the four routes was pre-selected by the CRD within the four core communities. The results of the analysis will be compared to disposal rates from blue box collection programs along the same routes.
- To produce a specific profile of household hazardous waste (HHW) being disposed of at Hartland Landfill through the general refuse.

In addition to the above goals, it was the intent of this study to utilize, where practical, the waste sorting methodology outlined in the Canadian Council of the Ministers of the Environment (CCME) guide titled “Recommended Waste Characterization Methodology for Direct Waste Analysis Studies in Canada”.

2. METHODOLOGY

2.1 STAFF, EQUIPMENT AND WORK DAYS

The sorting team consisted of a six-person crew for each of the two sampling periods. The crew was made up of CRD Landfill and Environmental Services temporary staff and included:

- Mr. Joe Pacheco
- Ms. Debbie Foster
- Ms. Cathy Ferreira
- Bill MacPherson
- Mr. John McWilliams
- Mr. Russ Donison (team leader)
- Mr. Darcy Norbury
- Rod Kemermans



Photo 2-1. Sorting Crew and CRD Project Coordinator Tom Watkins at the start of the fall 2004 sampling period.

Sorting staff orientation and training was held on the first day of the two sampling periods. General methodology and health & safety training were provided by SHA staff and additional safety awareness training was provided by Ms. Laraine Fowler, the CRD's Health and Safety Coordinator.

Equipment that was utilized during the sorting program included:

- Safety Equipment (first aid kit, portable CB radio on the Hartland Landfill frequency, portable eyewash, fire extinguisher).
- Protective Equipment (safety boots, Tyvek® overalls, rubber aprons, inner cotton or latex gloves, outer puncture resistant rubber gloves, dust masks and respirators, safety glasses, high visibility vests).
- Large capacity beam scale.
- High-resolution electronic scale complete with power generator.
- 0.9 by 1.8 metre (3'x 6') sorting tables (5).
- 6.0 by 9.0 metre (20'x 30') tent to cover work area.
- Various sorting containers (120 L plastic totes, 70 L garbage cans, 50 L blue boxes).
- Rakes, brooms, shovels, scoops and utility knives for opening bags and sorting through materials.
- Backhoe with three way front bucket.

2.2 SAMPLING CATEGORIES

Samples were sorted in accordance with the CCME classification system, with the exception of the household hazardous waste (HHW) categories. As mentioned previously, the CRD wanted to develop a more detailed profile for the hazardous waste being disposed of at Hartland Landfill (than would be generated using the CCME classification system), and therefore additional hazardous waste secondary categories were added. The resulting 13 Primary and 98 Secondary sorting classes are presented in Table 2-2.

2.3 SAMPLING METHODOLOGY

To establish seasonal variability of the waste stream, the sampling program was split into two sampling periods, the first occurring from November 8th to December 3rd 2004, and the second from April 4th, to April 29th 2005.

The objective for the study was to produce solid waste stream composition profiles for the entire waste stream entering the Hartland Landfill, for selected residential routes, for selected apartment and condominium buildings, and for ICI generators that were specified by the CRD. Experience from previous waste composition studies indicated that with a five to six person sorting crew, it would be possible to complete 100 samples during a four-week period.

Out of the 100 targeted samples, 20 samples were designated for the special study of apartment and condominiums, 10 samples for selected ICI generators, and 16 samples designated for the selected residential routes, which left 54 samples which were distributed throughout the entire waste stream (residential, ICI and DLC) entering the Hartland Landfill (see Table 2-1).

Table 2-1. Distribution of samples per sorting period.

| Category | Number of Samples |
|--|--------------------------|
| Residential samples from pre-selected residential routes. | 16 |
| Residential samples from pre-selected apartment buildings. | 20 |
| Residential samples based on tonnage to the landfill | 14 |
| ICI samples from pre-selected waste generators | 10 |
| ICI samples based on tonnage to the landfill | 34 |
| DLC samples based on tonnage to the landfill | 6 |
| Total | 100 |

Based on discussions with CRD staff and an evaluation of the scale data, an assumption was made that approximately 50 % of the waste received at the site comes from the residential sector, and the remaining 50 % comes from the ICI and the DLC sectors.

In order to obtain the desired number of samples from each of the service areas, the generation sectors, and the special study areas, a list of targeted vehicles was prepared prior to commencement of each sampling period (see Table 2-3 and Table 2-4). The schedules were periodically updated when new information was obtained throughout the course of the project.

The lists were developed using scale data provided by the CRD, which provided a breakdown of waste haulers using the Hartland Landfill, and personal communication with said haulers, which provided details on the actual sources and collection areas. The scale data was first sorted by hauler to find out which haulers bring in the majority of the refuse to the site and to find out the correct number of samples from each waste generation sector. The scale data was then sorted by hauler as well as by origin of the refuse in order to create a list of which haulers bring in the most amount of refuse from each region. Scale data from the three months prior to each sorting period was used to create the two sample distributions (see Table 2-3 and Table 2-4).

Whenever a target vehicle was identified by Mr. Donison (team leader), the vehicle was directed to unload at a designated area to the side of the active face. Large or bulky items contained in the load were then removed from the load, while the remaining refuse was mixed using the excavator bucket of the backhoe to create a homogenized mixture. A representative sample weighing approximately 125 Kg was then extracted from the homogenized mixture using the three-way front bucket and delivered to the sorting table (see Photo 2-2). The details of the load, including the total load weight and the approximate weight of the oversized materials, were recorded on a sample data sheet (see Appendix A).

Collection and delivery of the loads from targeted apartments, condominiums and ICI generators that were part of the special study were contracted out to the companies that normally service the requested buildings or businesses.



Photo 2-2. Loader with Three-Way Front Bucket Unloading a Sample.

Table 2-2 Waste Sorting Categories

| Primary Category | Secondary Category |
|-------------------------------|---|
| Paper & Paperboard | Newsprint (including flyers) |
| | Magazines |
| | Corrugated cardboard |
| | Waxed corrugated cardboard |
| | Boxboard |
| | Telephone books |
| | Books |
| | Fine paper (writing, computer, office) |
| | Tissue paper, paper towels, napkins |
| | Feminine Hygiene Products (sanitary napkins, tampons) |
| | Gabletop Cartons – Milk |
| | Gabletop Cartons – Juice and Other |
| | Aseptic boxes – Milk |
| | Aseptic boxes – Juice and Other |
| | Brown kraft paper, including bags |
| | Paper Cups |
| Other paper | |
| Glass | Beverage Containers |
| | Food Containers |
| | Other Glass Containers |
| | Other Glass (plate, mirrors, light bulbs) |
| Ferrous Metals | Beverage Containers |
| | Food Containers |
| | Large metal appliances (white goods) |
| | Other ferrous metals |
| Non-Ferrous Metals | Beverage Containers |
| | Food Containers |
| | Aluminium trays & foil |
| | Other non-ferrous metal |
| Plastics | PET beverage containers |
| | PET food trays |
| | PET – other |
| | HDPE milk jugs |
| | HDPE other beverage containers |
| | Other HDPE jugs and bottles |
| | Dairy and dairy related tubs and lids |
| | PVC (#3) |
| | Polypropylene (#5) |
| | Polystyrene (#6) |
| | Crates, pails and drums (> 25L) |
| | Other rigid plastic items (toys, lawn furniture, etc) |
| | Stretch wrap & film |
| | Plastic grocery bags |
| | Other plastic bags |
| | Garbage bags |
| Other plastics | |

| | |
|---|--|
| Organic Wastes | Food waste |
| | Yard waste |
| | Animal Faeces |
| | Other organic waste |
| Wood and Wood Products | Pallets/skids |
| | Wooden shingles |
| | Wood Furniture |
| | Other Wood - Clean |
| | Other Wood - Contaminated (painted, finished, treated) |
| Construction/Demolition Materials | Drywall |
| | Asphalt shingles |
| | Carpet and underlay |
| | Masonry (bricks, blocks, concrete, ceramic) |
| | Rock/sand/dirt |
| | Other C/D wastes |
| Textiles | Clothing |
| | Footwear |
| | Other textiles |
| Rubber | Vehicle tires |
| | Other rubber products |
| Hazardous Wastes | Fluorescent lighting |
| | Batteries - Automotive (lead-acid) |
| | Batteries - Dry cell, alkaline, button cell, other household batteries |
| | Batteries - Rechargeable (Ni-Cd) |
| | Lubricating (motor, transmission) oil, including containers |
| | Automotive oil filters |
| | Empty lubricating oil containers |
| | Paint - Latex, including containers |
| | Paint - Oil-based, including containers |
| | Paint in aerosol cans |
| | Paint - Automotive, industrial (not subject to product stewardship) |
| | Empty metal paint/stain cans & lids (incl. cans with dried paint) |
| | Empty plastic paint/stain cans & lids (incl. cans with dried paint) |
| | Empty aerosol paint cans |
| | Solvents, including containers |
| | Empty solvent containers |
| | Pesticides, including containers |
| | Empty pesticide containers |
| | Pharmaceuticals, including containers |
| | Needles & Sharps |
| Other empty aerosol cans (not applicable to above categories) | |
| Other hazardous waste (record description) | |
| Composite Products | Disposable diapers |
| | Computers (CPU) |
| | Computer monitors |
| | Other computer equipment (keyboards, mice, printers, etc.) |
| | Televisions |
| | Other Consumer Electronics |
| | Small Appliances |
| | Furniture |
| Other composites | |
| Other | Cat litter |
| | Non-distinct fines |
| | Other wastes |

Table 2-3 Sampling Distribution (Phase 1)

RESIDENTIAL

| AREA | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES | HAULER |
|------------------|--|------------------------|--------------------------|
| North Saanich | 0.84 | - | |
| Sidney | 0.88 | - | |
| Central Saanich | 1.77 | 1 | Ron's Disposal |
| Saanich | 8.51 | 4 | District of Saanich |
| Victoria | 4.67 | 2 | City of Victoria |
| Oak Bay | 1.86 | 1 | District of Oak Bay |
| Esquimalt | 1.15 | 1 | Township of Esquimalt |
| View Royal | 0.56 | - | |
| Colwood/Langford | 4.52 | 1 | Alpine Disposal |
| | | 1 | Alpine Disposal |
| Sooke | 2.26 | 1 | Sooke Garbage Collection |
| Transfer Station | 6.60 (mixed) | 2 | On-site |
| Tot | | 14 | |

SPECIAL RESIDENTIAL

| STUDY | AREA | NUMBER OF SAMPLES | HAULER |
|------------------------|-----------|-------------------|--------|
| Neighbourhood | Oak Bay | 4 | N/A |
| | | | |
| | | | |
| | Esquimalt | 4 | N/A |
| | | | |
| | | | |
| | Victoria | 4 | N/A |
| | | | |
| | | | |
| | Saanich | 4 | N/A |
| | | | |
| Apartment/Condominiums | Victoria | 12 | N/A |
| | | | |
| | Saanich | 4 | N/A |
| | | | |
| | Esquimalt | 2 | N/A |
| | | | |
| | Other CRD | 2 | N/A |
| Tot | | 36 | |

ICI COLLECTION (FRONT LOAD)

| HAULER | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES | AREA |
|-----------------------------|--|------------------------|-----------------------------|
| BFI Front End | 15.3 | 2 | Victoria, Oak Bay |
| | | 3 | Victoria, Esquimalt |
| | | 3 | Victoria, Saanich Peninsula |
| Canadian Waste Front End | 14.1 | 4 | Victoria |
| | | 3 | Saanich |
| | | 2 | Saanich, Langford, Sidney |
| Alpine Disposal | 11.2 | 1 | Langford |
| | | 1 | " |
| | | 1 | " |
| | | 1 | Victoria |
| | | 1 | " |
| | | 1 | " |
| | | 1 | Saanich |
| Rons Disposal | 10.2 | 4 | Victoria |
| | | 2 | Sidney |
| Hartland Bins | 6.5 | 4 | |
| CRD selected ICI Generators | | 10 | |
| Tot | | 44 | |

DLC COLLECTION

| HAULER | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES |
|---------------------------------|--|------------------------|
| Parker Johnston | 2.0 | 2 |
| Ralmax | 1.7 | 2 |
| Disposal Container Rental | 1.3 | 1 |
| DL's Trucking and Bins | 1.0 | 1 |
| BFI Roll-Off | 1.0 | |
| MacNutt Enterprises | 0.6 | |
| Sam the Roofer | 0.2 | |
| Sundial Flooring | 0.2 | |
| Hourigans Carpets and Linos | 0.1 | |
| Longview Roofing | 0.1 | |
| Peninsula Landscape | 0.1 | |
| Shelby Roofing | 0.1 | |
| Victoria Roofing and Insulation | 0.1 | |
| District of Saanich -Yard | 0.1 | |
| Tot | | 6 |

Table 2-4 Sampling Distribution (Phase 2)

RESIDENTIAL

| AREA | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES | HAULER |
|------------------|--|------------------------|--------------------------|
| North Saanich | | - | |
| Sidney | | 1 | |
| Central Saanich | | 1 | Ron's Disposal |
| Saanich | | 5 | District of Saanich |
| Victoria | | 3 | City of Victoria |
| Oak Bay | | 1 | District of Oak Bay |
| Esquimalt | | 1 | Township of Esquimalt |
| View Royal | | - | |
| Colwood/Langford | | 2 | Alpine Disposal |
| | | 1 | Alpine Disposal |
| Sooke | | 2 | Sooke Garbage Collection |
| Transfer Station | (mixed) | 3 | On-site |
| Tot | | 20 | |

SPECIAL RESIDENTIAL

| STUDY | AREA | NUMBER OF SAMPLES | HAULER |
|------------------------|-----------|-------------------|--------|
| Neighbourhood | Oak Bay | 2 | N/A |
| | | | |
| | | | |
| | Esquimalt | 2 | N/A |
| | | | |
| | | | |
| | Victoria | 4 | N/A |
| | | | |
| | | | |
| | Saanich | 2 | N/A |
| | | | |
| | | | |
| Apartment/Condominiums | Victoria | 12 | N/A |
| | | | |
| | Saanich | 2 | N/A |
| | | | |
| | Esquimalt | 4 | N/A |
| | | | |
| | Other CRD | 2 | N/A |
| Tot | | 30 | |

ICI COLLECTION (FRONT LOAD)

| HAULER | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES | AREA |
|-----------------------------|--|------------------------|-----------------------------|
| BFI Front End | | 2 | Victoria, Oak Bay |
| | | 3 | Victoria, Esquimalt |
| | | 3 | Victoria, Saanich Peninsula |
| Canadian Waste Front End | | 4 | Victoria |
| | | 3 | Saanich |
| | | 2 | Saanich, Langford, Sidney |
| Alpine Disposal | | 1 | Langford |
| | | 1 | " |
| | | 1 | " |
| | | 1 | Victoria |
| | | 1 | " |
| | | 1 | " |
| | | 1 | Saanich |
| Rons Disposal | | 4 | Victoria |
| | | 2 | Sidney |
| Hartland Bins | | 4 | |
| CRD selected ICI Generators | | 10 | |
| Tot | | 44 | |

DLC COLLECTION

| HAULER | FRACTION OF TOTAL WASTE RECEIVED AT LANDFILL (%) | REC. NUMBER OF SAMPLES |
|---------------------------------|--|------------------------|
| Parker Johnston | 2.0 | 2 |
| Disposal Container Rental | 1.7 | 2 |
| Ralmax | 1.4 | 2 |
| DL's Trucking and Bins | 1.2 | 1 |
| BFI Roll-Off | 1.2 | 1 |
| MacNutt Enterprises | 0.9 | |
| HF Demolition | 0.2 | |
| Sundial Flooring | 0.2 | |
| Hourigans Carpets and Linos | 0.1 | |
| Shelby Roofing | 0.1 | |
| Victoria Roofing and Insulation | 0.1 | |
| District of Saanich -Yard | 0.1 | |
| | | |
| | | |
| | | |
| Tot | | 8 |

The ultimate approach, which proved to be very successful, consisted of sampling all materials directly into the 98 secondary categories. The keys to the success of this approach included:

- Assigning two staff members to the job of opening the bags, removing the more prominent (food waste, plastic bags) or bulky wood waste items, and pushing the remaining materials further up the table for additional sorting – see Photo 2-3.
- Designating specific categories (e.g. rigid plastics, textiles) to one staff member and having that person organize the respective bins. As the remaining material was pushed down the table, each individual removed the items that fell within each category.



Photo 2-3. Sorting Load from a Dentist’s Office.

Once the sort was complete, the material in each secondary class was weighed and recorded. Weights were entered into the master form for each sample (See Appendix A). The contents of each bin were then discarded into a 40-yd³ bin for future disposal at the active face. All containers and sorting tables were then carefully cleaned up in preparation for the next sample.

Typically, five samples were processed each working day. Samples from the residential waste stream typically took longer to sort, while samples of commercial refuse were easier to process because they were more homogeneous. Visual sorts were conducted on loads that consisted of primarily one material (eg. asphalt/wood shingles), or of a load with oversized and easily discernable materials.

Completed forms were periodically faxed to SHA’s office and the data was entered into Excel spreadsheets by Nathalie Maurer, SHA’s Junior Environmental Engineer. Special care was taken to ensure that the oversized or bulky items encountered in each load were taken into account.

3. WASTE SORTING RESULTS

3.1 SAMPLE AND SORTED WEIGHTS

There are two ways of reporting the results of the waste sort program, based on sample weight and based on sorted weight. The sample weight is a measure of the quantity of material that was dumped at the specified location near the active face and was visually inspected by the sorting crew. The sorted weight is a measure of the quantity of material that was extracted from the sample material by the backhoe and sorted into the 98 secondary categories.

During the two sampling periods, 204 sample loads were diverted to the designated tipping area with a total weight of 1,22,398 kg (see Table 3-1); this represents 4.36 % of the total waste accepted at the site during the course of the sampling period. From this total, 25,453 kg of material was extracted from the loads and manually sorted into the 98 categories, while 65,513 kg of material was visually sorted; this represents 0.05 % and 0.12 % respectively (0.17 % combined) of the total waste accepted at the site during the course of the sampling period. Visual sorts were conducted on loads that consisted of primarily one material (eg. asphalt/wood shingles), or of a series of oversized and easily discernable materials.

Table 3-1. Total sample and sorted weight during both sampling periods.

| | Total weight to landfill during sampling periods (kg) | Total weight of sampled loads (kg) | Portion of waste stream sampled (%) | Total weight sorted (kg) | Portion of sample loads sorted (%) | Portion of waste stream sorted (%) |
|---------------------|---|------------------------------------|-------------------------------------|--------------------------|------------------------------------|------------------------------------|
| Manual Sort (N=190) | 28,043,970 | 1,156,885 | 4.13 | 25,453 | 2.2 | 0.05 |
| Visual Sort (N=14) | 28,043,970 | 65,513 | 0.23 | 65,513 | 100.0 | 0.12 |
| Combined (N=204) | 28,043,970 | 1,222,398 | 4.36 | 90,966 | 7.4 | 0.17 |

Garbage collection companies work on very tight schedules and only have time to accommodate deliveries of samples on days when they have specific trucks and drivers available, which made it difficult to obtain the desired number of samples for the apartment and condominium study. On a number of occasions, the delivery trucks had mechanical problems leading to re-scheduling of the deliveries. The only times they could re-schedule the deliveries were for when the sorting crew was not working, which lead to cancellation of a number of samples. Table 3-2 and Table 3-3 show the targeted and obtained number of samples for the two sampling rounds.

Table 3-2. Targeted and obtained number of samples phase 1 (fall 2004).

| Category | Targeted Number of Samples | Obtained Number of Samples |
|--|----------------------------|----------------------------|
| Residential samples from pre-selected residential routes. | 16 | 4 |
| Residential samples from pre-selected apartment buildings. | 20 | 14 |
| Residential samples based on tonnage to the landfill | 14 | 33 |
| ICI samples from pre-selected waste generators | 10 | 7 |
| ICI samples based on tonnage to the landfill | 34 | 39 |
| DLC samples based on tonnage to the landfill | 6 | 6 |
| Total | 100 | 103 |

Table 3-3. Targeted and obtained number of samples phase 2 (spring 2005).

| Category | Targeted Number of Samples | Obtained Number of Samples |
|--|----------------------------|----------------------------|
| Residential samples from pre-selected residential routes. | 10 | 8 |
| Residential samples from pre-selected apartment buildings. | 20 | 15 |
| Residential samples based on tonnage to the landfill | 20 | 29 |
| ICI samples from pre-selected waste generators | 7 | 5 |
| ICI samples based on tonnage to the landfill | 35 | 36 |
| DLC samples based on tonnage to the landfill | 8 | 8 |
| Total | 100 | 101 |

3.2 STATISTICAL DATA EVALUATION

3.2.1 Statistical Analysis for Normalcy

Prior to applying the study results to the entire waste stream, a statistical analysis was completed to determine the normalcy of said results. Normalcy is determined through a comparison of the actual distribution of the data to an ideal Gaussian distribution.

When conducting a statistical analysis, the first three parameters that are traditionally calculated are the mean, the standard deviation (SD), and the coefficient of variation (COV). These are the base values from which normalcy is determined, but do not actually prove normalcy. The mean is the average of the data. The SD is a measure of variability subject to the value of the mean; the significance of the SD is that if the data follows a bell shaped Gaussian distribution, then 68% of the values lie within one SD of the mean (on either side) and 95% of the values lie within two SD of the mean. The problem with the SD is that, because it is subject to the value of the mean, the larger the mean the larger the possible SD (which can ultimately be misleading). The COV is simply the standard deviation divided by the mean; what the COV provides is a clear indication of the degree of variability expressed as a percent.

To assess the actual normalcy, the Kolmogorov-Smirnov (KS) test was used. The KS test quantifies the discrepancy between the distribution of the data and an ideal Gaussian distribution (the KS-distance), with larger values denoting larger discrepancies. The test then indicates the probability that the discrepancy for a randomly selected sample of the same size that does meet normalcy requirements (follows Gaussian distribution) would be larger than the KS-distance, with the results being referred to as the P-value. Given the sample size within this composition study (N=203), a P-value in excess of 0.05 indicates the data passed the normality test.

The results of the Normalcy testing for each of the primary categories are summarized in Table 3-4. The results indicate that the only categories that were found to meet the normalcy requirements were “Organic Waste” and “Paper and Paper Products”. What this means is that, for all of the other categories, care should be taken when inferring the study results to the entire waste stream, especially if the data is to be compared to historic or future results to map trends (i.e. used as an indication of effectiveness of recycling programs, etc.). The occurrence of the other waste components in the waste stream were too inconsistent for those categories to meet normality requirements.

3.3 OVERALL WASTE COMPOSITION

Although used as the primary means of reporting results in past studies, waste composition data expressed in terms of “percentage of waste stream” does not lend itself to tracking changes in waste generation and waste composition. This is because diversion of one particular waste stream (e.g. glass beverage containers) results in a drop in the percentage of glass and a corresponding increase in the percentages of all other material categories. To address this problem, we report the sort results in three ways (see Table 3-5 and Appendix B (Table B-2)):

- 1) Composition (percentage),
- 2) Total Waste disposal (tonnes/year), and
- 3) Per Capita Waste generation (kg/person/day).

Table 3-4. Normalcy Test for the Primary Categories

| Waste Category | Mean (%) N=204 | S.D (%) | Coefficient of Variation (%) | KS-Distance | P-Value | Passing normality test |
|--------------------------------------|-------------------|---------|------------------------------|-------------|---------|------------------------|
| Organic Waste | 30.2 | 16.7 | 55 | 0.07 | >0.1 | Yes |
| Paper and Paperboard | 15.8 | 8.6 | 54 | 0.08 | >0.1 | Yes |
| Plastics | 13.8 | 13.7 | 67 | 0.17 | <0.0001 | No |
| Wood and Wood Products | 9.6 | 9.6 | 206 | 0.31 | <0.0001 | No |
| Composite Products | 7.6 | 7.2 | 95 | 0.15 | 0.0003 | No |
| Construction and Demolition Material | 6.3 | 15.8 | 253 | 0.35 | <0.0001 | No |
| Textiles | 4.7 | 4.1 | 88 | 0.13 | 0.0017 | No |
| Other | 4.6 | 4.7 | 100 | 0.16 | <0.0001 | No |
| Ferrous Metal | 2.9 | 4.5 | 155 | 0.26 | <0.0001 | No |
| Glass | 2.0 | 2.2 | 109 | 0.18 | <0.0001 | No |
| Hazardous Waste | 1.1 | 2.4 | 209 | 0.32 | <0.0001 | No |
| Non-Ferrous Metal | 0.9 | 0.9 | 101 | 0.18 | <0.0001 | No |
| Rubber | 0.5 | 1.6 | 294 | 0.37 | <0.0001 | No |
| Total | 100.0% | | | | | |

Table 3-5. Overall Waste Composition

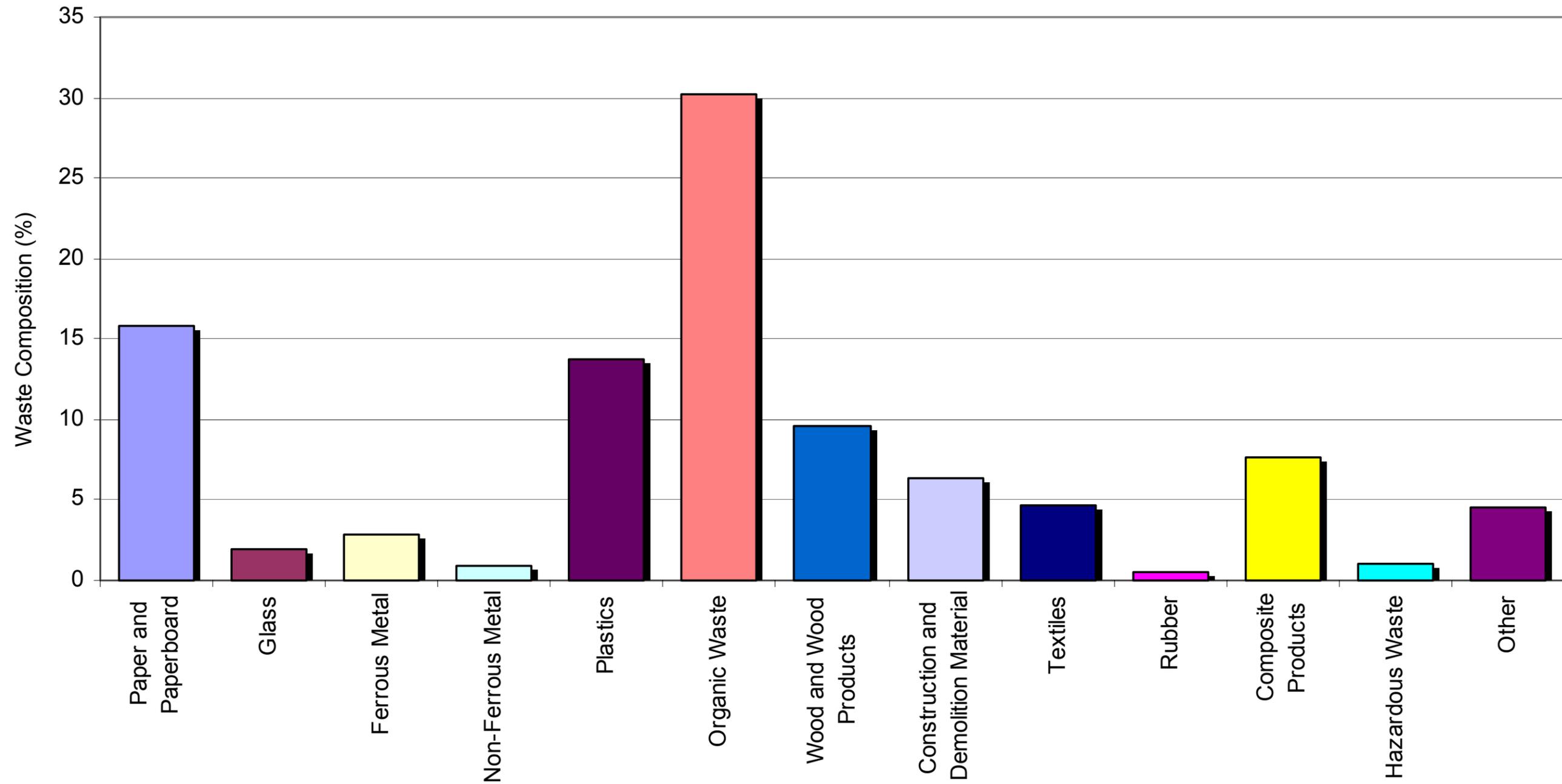
| Waste Category | Composition (%) | Total Waste Disposal Rate (tonnes/year to landfill) | Per Capita Waste Generation (kg/person/year) |
|--------------------------------------|-----------------|---|--|
| Organic Waste | 30.2 | 45,333 | 129.7 |
| Paper and Paperboard | 15.8 | 23,695 | 67.8 |
| Plastics | 13.8 | 20,631 | 59.0 |
| Wood and Wood Products | 9.6 | 14,376 | 41.1 |
| Composite Products | 7.6 | 11,411 | 32.6 |
| Construction and Demolition Material | 6.3 | 9,374 | 26.9 |
| Textiles | 4.7 | 7,005 | 20.0 |
| Other | 4.6 | 6,970 | 19.9 |
| Ferrous Metal | 2.9 | 4,401 | 12.6 |
| Glass | 2.0 | 3,039 | 8.7 |
| Hazardous Waste | 1.1 | 1,716 | 4.9 |
| Non-Ferrous Metal | 0.9 | 1,359 | 3.9 |
| Rubber | 0.5 | 818 | 2.3 |
| Total | 100.0% | 150,128 t | 429.4 |

To calculate the waste disposal rate for each category, the sum of the year 2004 scale data (150,128 tonnes of waste landfilled) for the Hartland Landfill was multiplied by the composition (percentage) data from the waste sort. To calculate the waste generation rate, the respective disposal rates were divided by the 2004 population for the region (349,638 persons), as provided by CRD Regional Information Services.

Please note that the data in Table 3-5 and Appendix B (Table B-2), with the exception of the data for “Organic Waste” and “Paper and Paper Products”, are highly variable (based on the results of the normalcy test discussed above) and should be assessed with caution.

In the above table, the categories are listed in order of decreasing weight. “Organic Waste” was the most common category of solid waste encountered during the waste sort, accounting for one third of all residuals. Second was Paper and Paper Products”, representing approximately 16% of the total waste stream. Third were “Plastics”, representing about 14%. Fourth was “Wood and Wood Products” at 10%. The remaining waste categories represented 30% of the waste stream.

In terms of the waste disposal rates, each person within the Regional District was responsible for 429 kg of landfilled waste in 2004. Included in this total was 130 kg of “Organic Waste”, 68 kg of “Paper and Paper Products”, 59 kg of “Plastics” and 41 kg of “Wood and Wood Products”. A detailed breakdown of each major waste category into subcategories is presented in Appendix B (Table B-1). Figure 3-1 shows the overall waste composition for the primary categories presented in graphical form and Figure 3-2 and Figure 3-3 show the overall waste composition for the secondary categories in graphical form.

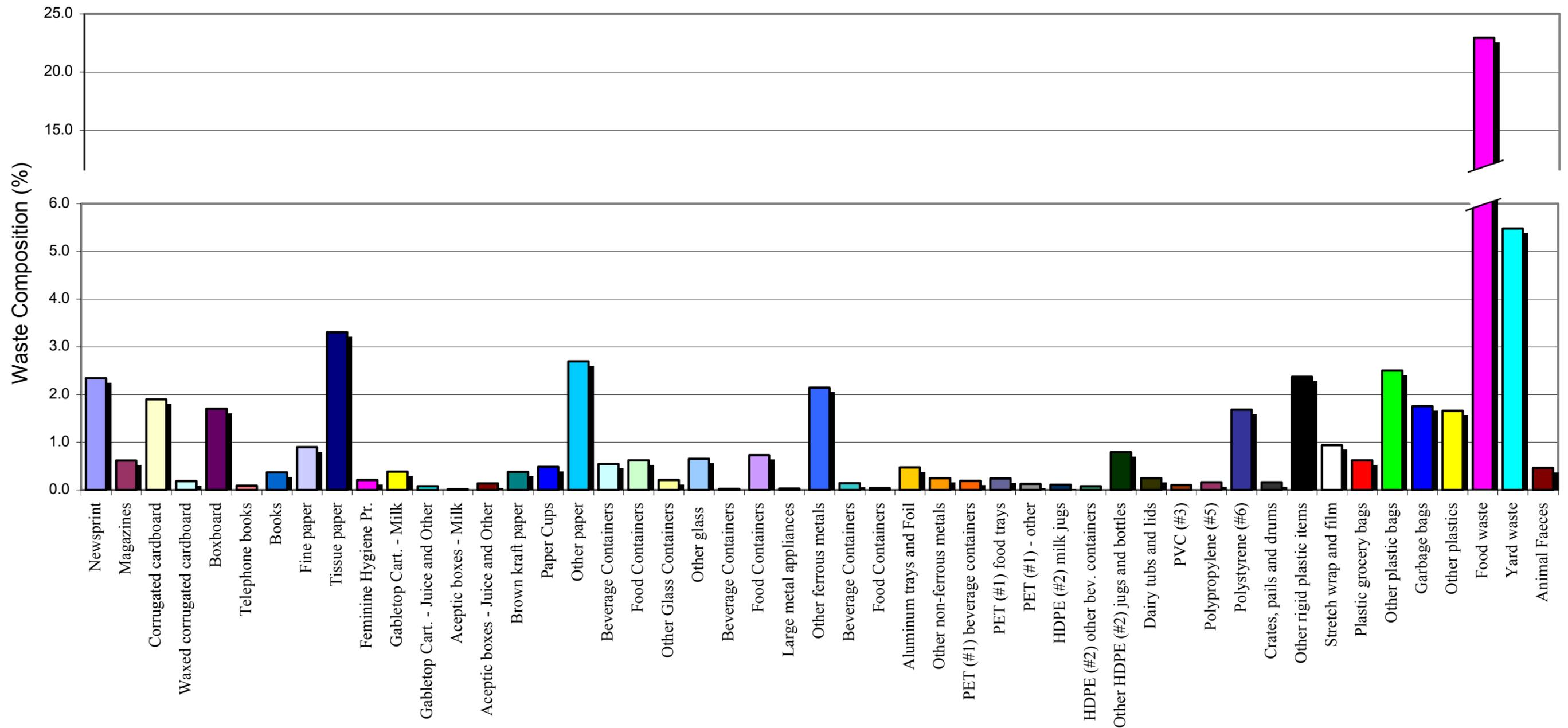


Project No.: PRJ04050
 Drawn By: DK
 Reviewed By: DK
 Date: 20 May 2005
 Filename: Figure.3.1.ppt



Waste Composition Primary Waste Categories
Capital Regional District
Waste Stream Composition Study

Figure
3-1

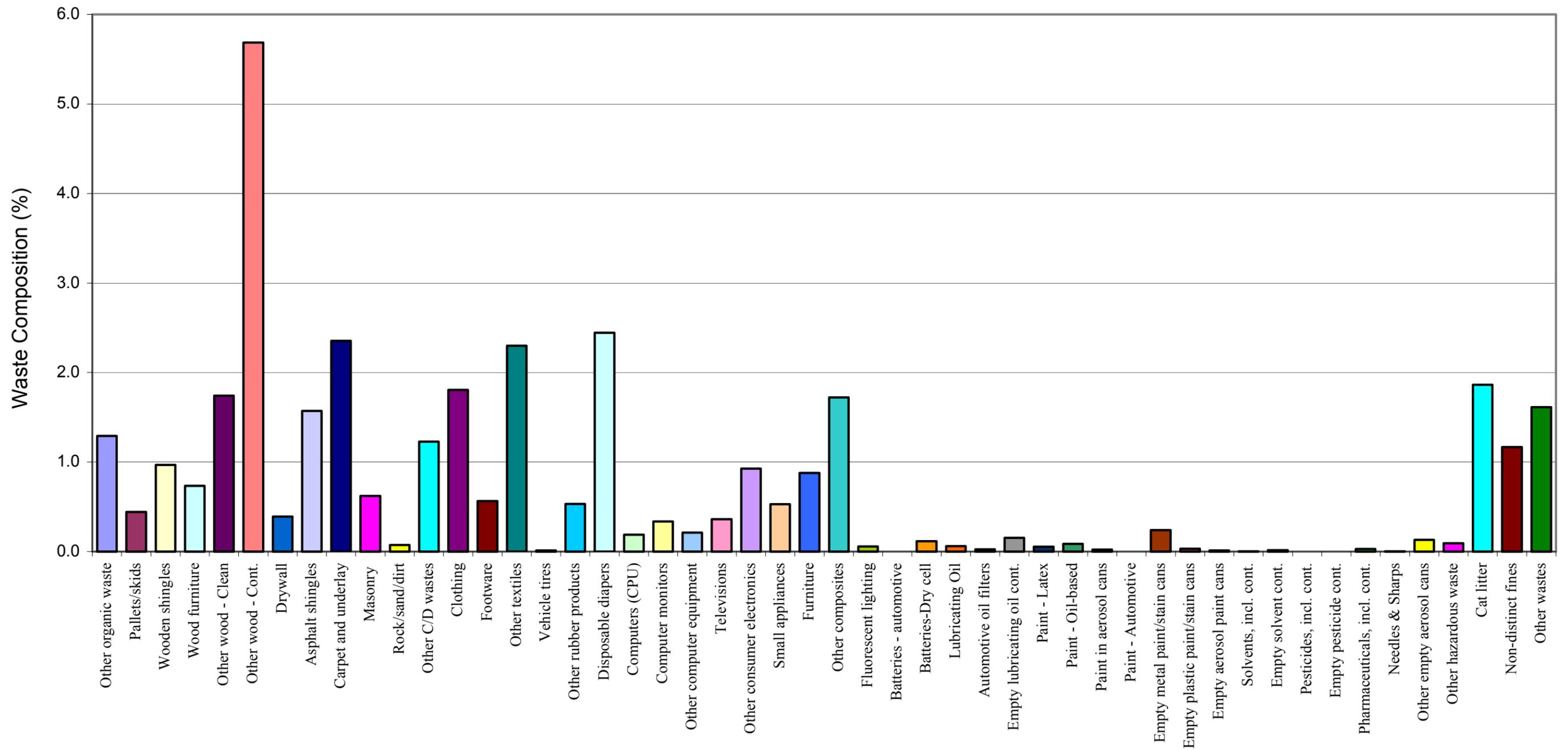


Project No.: PRJ04050
 Drawn By: DK
 Reviewed By: DK
 Date: 20 May 2005
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Waste Composition Secondary Categories (Cont. on Figure 3-3)
Capital Regional District
Waste Stream Composition Study

Figure
3-2



Project No.: PRJ04050
 Drawn By: DK
 Reviewed By: DK
 Date: 20 May 2005
 Filename: Figure.3.3.ppt



Waste Composition Secondary Categories (Continued)
Capital Regional District
Waste Stream Composition Study

Figure
3-3

3.4 SEASONAL VARIATION

Table 3-6 shows the waste composition for the two sorting periods as well as the combined waste composition. As can be seen in the table, there were relatively small differences between the two sorting periods. The categories that had the largest differences between the fall and the spring sorting periods were: “Organic Waste” (decreased 3.4%), “Wood and Wood Products” (decreased 2.7%), “Plastics” (increased 2.0%), and “Composite Products” (increased 2.0%). It should be noted that these small differences fall within the normal variation between samples. None of the categories had differences that were statistically significant.

Table 3-6. Comparison between the fall and the spring sampling rounds.

| Waste Category | Phase 1 Mean (%) N=103 | Phase 2 Mean (%) N=101 | Total Mean (%) N=204 |
|-----------------------------|-------------------------------------|-------------------------------------|-----------------------------------|
| Organic Waste | 31.8 | 28.4 | 30.2 |
| Paper and Paperboard | 15.4 | 16.1 | 15.8 |
| Plastics | 12.8 | 14.8 | 13.8 |
| Wood and Wood Products | 10.9 | 8.2 | 9.6 |
| Composite Products | 8.6 | 6.6 | 7.6 |
| Construction and Demolition | 5.6 | 7.0 | 6.3 |
| Textiles | 4.3 | 5.1 | 4.7 |
| Other | 3.9 | 5.3 | 4.6 |
| Ferrous Metal | 2.3 | 3.6 | 2.9 |
| Glass | 1.7 | 2.3 | 2.0 |
| Hazardous Waste | 1.3 | 1.0 | 1.1 |
| Non-Ferrous Metal | 0.8 | 1.1 | 0.9 |
| Rubber | 0.6 | 0.5 | 0.5 |
| Total | 100.0% | 100.0% | 100.0% |

3.5 COMPARISON OF THE 2001 AND THE 2004 WASTE COMPOSITION STUDIES.

Table 3-7 shows a comparison between the primary categories from the 1996, 2001, and the 2004 studies. The category with the biggest change between 2001 and 2004 was “Other Waste” which increased from 2,590 tonnes per year, to 6,970 tonnes per year. Even though there was a statistically significant difference between the two results, the results should be viewed with caution since the significance test requires that the samples follow a “normal” distribution, and this category does not. As was mentioned in section 3.2.1, the only categories that followed a “normal” distribution were “Organic Waste” and “Paper and Paper Products”. Therefore, a comparison between any other categories must be viewed with caution. The increased weight in the “Other Waste” category may, in part, be attributed to the differences in sorting techniques. Items such as sawdust or small bits of food, as examples, may have been sorted into its respective category during the 2001 study, while they were categorized as “Other Waste” in the 2004 study. The differences between the other categories were not large enough to be statistically significant in terms of annual tonnages. However, the decrease in the “Organic Waste” category was statistically significant when compared as a percentage rather than as annual tonnage. The increase in the total annual disposal rate from 136,654 tonnes per year in

2001, to 150,128 tonnes per year in 2004 increased each category's annual disposal rate by enough to "hide" the difference seen in the percentage.

The increase in the Hazardous Waste category even though not significant, can be attributed to the fact that the 2004 study had 21 categories while the 2001 study only had 7. As an example, the sub-category "Empty Metal Paint/Stain Cans and Lids" would have been accounted for in the metal category during the 2001 study, while it was included in the Hazardous Waste category during the 2004 study. Table 3-8 shows the historical changes in the waste disposal rates based on kilogram per person and year.

Table 3-7. Comparison of 1996, 2001 and 2004 Waste Disposal Rates (tonnes/year).

| Waste Category | 1996 Study | 1996 Study Adjusted | 2001 Study | 2004 Study | Difference 2001-2004 |
|--------------------------------------|---------------------------|----------------------------|---------------------------|--------------------------|-----------------------------|
| | Mean (T/year) N=222 | Mean (T/year) N=222 | Mean (T/year) N=210 | Men (T/year) N=204 | (T/year) |
| Organic Waste | 35,779 | 37,613 | 46,248 | 45,333 | -915 |
| Paper and Paperboard | 29,915 | 31,448 | 21,417 | 23,695 | +2,278 |
| Plastics | 18,795 | 19,758 | 18,471 | 20,631 | +2,160 |
| Wood and Wood Products | 10,719 | 11,268 | 12,549 | 14,376 | +1,827 |
| Construction and Demolition Material | 9,695 | 10,192 | 11,457 | 9,374 | -2,083 |
| Composite Products | 9,128 | 9,596 | 8,462 | 11,411 | +2,949 |
| Textiles | 4,495 | 4,725 | 5,215 | 7,005 | +1,790 |
| Ferrous Metal | 3,955 | 4,158 | 4,419 | 4,401 | -18 |
| Glass | 3,430 | 3,606 | 3,160 | 3,039 | -121 |
| Other | 10,483 | 11,020 | 2,590 | 6,970 | +4,380 |
| Rubber | 290 | 305 | 1,184 | 818 | -366 |
| Non-Ferrous Metal | 1,093 | 1,149 | 1,003 | 1,359 | +356 |
| Hazardous Waste | 526 | 552 | 480 | 1716 | +1,236 |
| Total | 138,303 | 145,390 | 136,654 | 150,128 | +13,474 |

**Data found to meet normalcy requirements in each of the reports are bolded.*

Table 3-8. Comparison of 2001 and 2004 Waste Disposal Rates (kg/person/year).

| Waste Category | Overall Waste generation 2001 (kg/pers/year) | Overall Waste generation 2004 (kg/pers/year) | Difference Waste generation 2001-2004 (kg/pers/year) |
|---|---|---|---|
| Organic Waste | 134.9 | 136.7 | -5.2 |
| Paper and Paperboard | 62.5 | 65.9 | +5.3 |
| Plastics | 53.9 | 54.9 | +5.1 |
| Wood and Wood Products | 36.6 | 46.8 | +4.5 |
| Composite Products | 24.7 | 36.9 | +7.9 |
| Construction and Demolition Material | 33.4 | 24.2 | -6.5 |
| Textiles | 15.2 | 18.3 | +4.8 |
| Other | 7.6 | 16.8 | +12.3 |
| Ferrous Metal | 12.9 | 10.0 | -0.3 |
| Glass | 9.2 | 7.4 | -0.5 |
| Hazardous Waste | 1.4 | 5.8 | +3.5 |
| Non-Ferrous Metal | 2.9 | 3.2 | +1.0 |
| Rubber | 3.5 | 2.4 | -1.2 |
| Total | 398.7 | 429.4 | 30.7 |

4. WASTE GENERATION BY SECTOR

The objective of this chapter is to report the portion of residual solid waste being received from each of three basic waste generation sectors, namely the residential, industrial / commercial / institutional (ICI) and demolition / land-clearing / construction waste (DLC) sources, and to characterize the waste from each sector.

4.1 WASTE COMPOSITION BY SECTOR

During the sampling program, the sampling schedule was arranged such that, among other things, the percentage of samples collected from each sector matched the generation breakdown that had been determined in the evaluation of the scale data. For example, out of the 204 samples that were evaluated in the two sampling periods, 103 were to be from the residential sector, 87 from the ICI sector, and 14 from the DLC sector.

Table 4-1 and Appendix B (Table B-2) present the typical waste composition (reported as percent of the total sample) from each of the major waste generation sectors, as well as combined results for the entire waste stream.

Since the waste collection companies collect waste from both residential clients and from commercial clients during the same route, a number of samples came from loads containing refuse obtained from both sectors. The sector designation for these samples had to be determined by assessing the contents of the samples. During the two sampling rounds, eleven out of the 204 samples were considered to consist of a mixture of residential and ICI refuse. The occurrence of components such as diapers, hygiene articles, construction materials, etc. were used to “re-label” these samples to an appropriate category.

Table 4-1 Waste Composition by Sector.

| Waste Category | Residential Mean (%) N=103 | ICI Mean (%) N=87 | DLC Mean (%) N=14 | Total Mean (%) N=204 |
|--------------------------------------|---|--------------------------------|--------------------------------|-----------------------------------|
| Organic Waste | 37.36 | 26.46 | 0.66 | 30.20 |
| Paper and Paperboard | 16.24 | 17.59 | 1.20 | 15.78 |
| Plastics | 14.16 | 15.29 | 1.09 | 13.74 |
| Wood and Wood Products | 3.29 | 10.11 | 52.51 | 9.58 |
| Composite Products | 7.70 | 8.40 | 1.91 | 7.60 |
| Construction and Demolition Material | 2.32 | 5.98 | 36.78 | 6.24 |
| Textiles | 5.55 | 4.28 | 0.56 | 4.67 |
| Other | 6.24 | 3.36 | 0.88 | 4.64 |
| Ferrous Metal | 2.68 | 3.03 | 4.20 | 2.93 |
| Glass | 2.41 | 1.88 | 0.06 | 2.02 |
| Hazardous Waste | 0.77 | 1.76 | 0.06 | 1.14 |
| Non-Ferrous Metal | 1.02 | 0.91 | 0.08 | 0.91 |
| Rubber | 0.27 | 0.96 | 0.00 | 0.54 |
| Total (%) | 100.0 | 100.0 | 100.0 | 100.0 |

In general, waste from the residential and ICI sectors is relatively similar, with almost identical distribution in 8 out of the 13 primary waste categories. However, the following observations were noted when comparing the results from the two sectors:

- Significantly more wood waste originates from the ICI sector especially treated (stained, painted or pressure treated) wood.
- There is less “Organic Waste”, in particular food waste from the ICI sector.
- More “Construction and Demolition Waste” especially carpet and carpet underlay, as well as more “Other Construction and Demolition Waste” comes from the ICI sector;
- There is more “Hazardous Waste Products” from the ICI sector. Subcategories that were noticeable different were fluorescent lighting products, empty oil containers, and empty metal paint/stain cans and lids. These products are most likely from small construction sites and automobile service facilities.

DLC waste on the other hand is quite unique to waste from the other two sectors, with almost 90% of the refuse material falling in the “Wood and Wood Products” (52%), and in the “Construction and Demolition Material” (37%) categories. Primary subcategories include contaminated wood (28%), asphalt shingles (22%), wooden shingles (14%), carpet and underlay (13%), and other clean wood (10%).

5. SPECIAL STUDIES

5.1 APARTMENT AND CONDOMINIUM STUDY

R.A. Malatest & Associates Ltd. recommended in the report “*Sampling for Apartment Study*” that in order to form a reliable picture of the waste stream created from apartments and condominiums in the Victoria area, a total of 20 buildings should be sampled with the distribution shown in Table 5-1. Since the waste composition study consisted of two sorting periods, the same sample distribution was applied to both sorting periods. The sampled apartment buildings were selected from a database provided by the CRD. As shown in Table 5-2 and in Table 5-3 it was not possible to collect samples from all recommended buildings, since the waste collection companies that serviced a number of the selected buildings had numerous mechanical problems with their delivery trucks during the project. Despite the difficulties of obtaining the suggested 20 samples per sorting period, it was possible to collect a total of 14 samples during the fall 2004 period, and a total of 15 samples during the spring 2005 sorting period.

The summary of the results of the waste sorts for the apartment and condominium study are provided in Table 5-4 and detailed results can be found in Appendix C (Table C-1). Since 22 out of the 29 samples were from the Victoria area and the remaining 7 samples were divided into 4 samples from Oak Bay, 2 samples from Saanich and only one sample from Esquimalt, it is impossible to draw any significant conclusions about regional differences in the waste composition. However, the combined results from the 29 apartment samples are very useful when comparing the waste composition from multi-family dwellings to the single family neighbourhood study results.

As can be seen in Table 5-4, there were only minor differences in the waste composition between single family dwellings and that of multi-family dwellings. However, it appears that the single family dwellings produce less “Paper and Paper Products” and more “Plastics” compared to the multi-family dwellings. Even though the actual differences were not great, they were statistically significant. It should be noted that only the “Paper and Paper Products” category was classified as having “normal” distribution which is a requirement for the type of statistical test that was performed.

Table 5-1. Apartment sample distribution as proposed by R.A. Malatest & Associates Ltd.

| Area | 5 to 9 units | 10 to 49 units | 50 and more units |
|------------------|-------------------|---------------------|--------------------|
| CRD Total | 1 building | 10 buildings | 9 buildings |
| Victoria | 1 | 6 | 5 |
| Saanich | | 2 | 2 |
| Esquimalt | | 1 | 1 |
| Oak Bay | | - | - |
| Other CRD | | 1 | 1 |

Table 5-2. Completed sample distribution phase 1.

| Area | 5 to 9 units | 10 to 49 units | 50 and more units |
|------------------|-------------------------|---------------------------|------------------------------|
| CRD Total | 1 building | 6 buildings | 7 buildings |
| Victoria | 1 | 5 | 5 |
| Saanich | - | - | 1 |
| Esquimalt | - | - | - |
| Oak Bay | - | 1 | 1 |
| Other CRD | - | - | - |

Table 5-3. Completed sample distribution phase 2.

| Area | 5 to 9 units | 10 to 49 units | 50 and more units |
|------------------|-------------------------|---------------------------|------------------------------|
| CRD Total | 1 building | 7 buildings | 7 buildings |
| Victoria | 1 | 5 | 5 |
| Saanich | - | - | 1 |
| Esquimalt | - | 1 | - |
| Oak Bay | - | 1 | 1 |
| Other CRD | - | - | - |

Table 5-4. Composition of the waste stream from apartments and single family dwellings.

| Waste Category | Victoria | Saanich | Oak Bay | Esquimalt | Total Apartments | Single Family |
|--------------------------------------|------------------|-----------------|-----------------|-----------------|------------------|------------------|
| | Mean (%) N=22 | Mean (%) N=2 | Mean (%) N=4 | Mean (%) N=1 | Mean (%) N=29 | Mean (%) N=12 |
| Organic Waste | 36.27 | 48.22 | 37.42 | 35.46 | 37.22 | 37.20 |
| Paper and Paperboard | 18.39 | 16.79 | 20.78 | 18.63 | 18.61 | 13.98 |
| Plastics | 13.12 | 15.11 | 18.09 | 10.94 | 13.87 | 19.50 |
| Composite Products | 7.08 | 0.31 | 6.20 | 3.86 | 6.38 | 6.25 |
| Other | 6.65 | 2.98 | 4.54 | 14.57 | 6.38 | 4.68 |
| Textiles | 4.81 | 1.10 | 5.53 | 2.00 | 4.56 | 6.70 |
| Glass | 3.45 | 2.44 | 3.49 | 2.66 | 3.36 | 1.96 |
| Ferrous Metal | 2.89 | 2.09 | 2.20 | 8.12 | 2.92 | 2.70 |
| Wood and Wood Products | 3.08 | 0.00 | 0.00 | 0.00 | 2.34 | 3.08 |
| Construction and Demolition Material | 2.91 | 7.49 | 0.38 | 0.84 | 2.80 | 1.77 |
| Non-Ferrous Metal | 0.91 | 1.44 | 0.90 | 2.70 | 1.01 | 1.00 |
| Hazardous Waste | 0.37 | 1.92 | 0.46 | 0.21 | 0.48 | 0.80 |
| Rubber | 0.07 | 0.11 | 0.01 | 0.01 | 0.06 | 0.41 |
| Total (%) | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

5.2 RECYCLABLE MATERIAL

The recyclable materials were collected from five apartment buildings, four neighborhood routes and from one of the selected ICI generators. Table E-1a and E1b in Appendix E shows the composition of the recyclable materials that Alpine Disposal collected from three of the selected apartment buildings and from one of the selected ICI generators on November 26, 2004 and on April 26, 2005. Tables E-2a, E-3, E-4, E-5, E-6 and E-7 show the composition of the recyclable materials that were brought to Metro Materials from two apartment buildings, and from the four neighborhood routes in the fall of 2004. Table E-2b shows the composition of the recyclable materials that were collected from the District of Saanich neighbourhood study route on April 25, 2005. The recyclable materials that were brought to Metro Materials in April 2005 from the other three neighbourhood study routes could not be sorted and weighed as planned due to an incident at Metro Materials. The data will be used by the CRD together with the waste composition data to calculate the aggregate disposal and recycling rates for apartments and condominiums in the Victoria area. The data from Alpine Disposal, Metro Materials and BFI was not presented in a combined table since the three companies used slightly different material categories.

5.3 NEIGHBOURHOOD STUDY

In order to create a waste composition profile of the waste disposed from four residential areas also serviced by blue box recycling programs, four routes were pre-selected by the CRD within the four core communities, and individual samples were collected by the respective collection firms and brought directly to the landfill for sampling. One sample was collected from each selected neighborhood route during the first sorting period, and during the second sampling round 4 samples were collected from the Victoria route, 2 from the Saanich route, 1 from the Esquimalt route and 1 from the Oak Bay route. The results from these samples together with data from curbside recycling for the same collection routes will be used by the CDR to calculate the overall disposal and recycling rates for these neighborhoods. The details of the waste sorts for the neighborhood study are provided in Appendix C (Table C-2).

5.4 SPECIAL ICI STUDY

One of the objectives for this waste composition study was to obtain information about the occurrence of HHW in refuse from a selected number of ICI waste generators. The CRD provided SHA with a list of eight businesses for sampling. One of the requested businesses (a photo lab) was removed from the list since this company shared garbage collection with a number of neighbouring businesses, which meant that it would not be possible to interpret the origins of the waste. The waste disposal practices and handling of HHW at these businesses were reviewed in the fall of 2004 by the CRD. Each sample was labeled ICI-1 to ICI-7 in order not to reveal the business identity.

With only one sample taken from each business during each of the two sampling rounds, it is difficult to draw to any significant conclusions from the results. As can be seen in Table D1 (Appendix D), the occurrence of Household Hazardous Waste varied greatly between the selected ICI waste generators, as well as between the two different samples collected from the same ICI waste generator. This is as expected since the type of businesses are very different ranging from: an academic institution, a hospital, a dental clinic, a laboratory, a gas station, and an asphalt plant. The most frequently encountered HHW products were: Fluorescent Lighting Tubes (4 samples), Empty Lubricating Oil Containers (4 samples) and Batteries – Dry Cell (4 samples) and Other Empty Aerosol Cans (4 samples). The two samples collected from a chemistry and biology department at an academic institution in Victoria contained virtually no HHW at all (only 30 grams of “batteries – dry cell”). It appears that these businesses and institutions are doing a good job of keeping HHW out of the waste stream. The average percentage of HHW for the entire ICI sector (87 samples) was 1.76%, while the total percentage of HHW from the selected ICI waste generators ranged from 0% up to 14.08%. The extremely high value of 14.08% can be traced to one single load that had a large number of empty lubricating oil containers. The detailed results of the waste composition of these samples can be seen in Appendix D (Table D-1).

5.5 HOUSEHOLD HAZARDOUS WASTE IN THE OVERALL WASTE STREAM.

One of the objectives of this waste composition study was to improve the understanding of how much and what types of household hazardous waste (HHW) are being disposed of at the Hartland Landfill from within the general waste stream. The number of HHW categories was increased from seven categories in the 2001 study to encompass 21 categories in this study.

As can be seen in Table 5-4, the eight highest components of HHW waste are “Empty metal paint/stain cans and lids” (361 tonnes/year), “Empty lubricating oil containers” (232 tonnes/year), “Other empty aerosol cans” (197 tonnes/year), “Batteries-Dry cell” (174 tonnes/year), “Other hazardous waste” (139 tonnes/year), “Paint – Oil Based, including container” (132 tonnes/year), “Lubricating oils, including container” (89 tonnes/year) and “Fluorescent lighting” (88 tonnes/year).

The occurrence of these products was very sporadic, resulting in extremely high variability. The coefficient of variability (C.O.V) for these products ranged from 139 % for “Other empty aerosol cans” to 1,022% for “Batteries-automotive (lead acid)” and “Solvents, including container”. The results should therefore be used as indicators rather than “hard facts”.

Table 5-6 and 5-7 show examples of some of the HHW products found during the sorting process. Many of the items were empty or partially empty containers, but some of the products were more or less full. One of the oddest items found was a crate (9.8 kg) of shot gun shells. Since the majority of the weight of the shells comes from the lead pellets, it was added to the non-ferrous metal category rather than to the HHW category.

Products such as paints, solvents and pesticides that were recovered during the waste sorting process were placed into tub skids. These products will be further reviewed by the organization (Product Care Association) that is responsible for recycling and collection of these products. Lubricating oils, filters and oil containers were also placed in tub skids after they had been weighed. These products will be disposed of or recycled where feasible through the Hartland landfill recycling depot.

Table 5-5. Household Hazardous Waste occurrence and disposal rate for entire waste stream.

| Cat. Nr. | Category Description | Percent Mean (%) | Disposal Rate Mean (tonnes/year) |
|-----------------|--|-------------------------|---|
| 12:1 | Fluorescent lighting | 0.059 | 87.9 |
| 12:2 | Batteries - automotive (lead acid) | 0.000 | 0.3 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household batt. | 0.116 | 174.3 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.059 | 89.2 |
| 12:5 | Automotive oil filters | 0.026 | 39.6 |
| 12:6 | Empty lubricating oil containers | 0.155 | 232.2 |
| 12:7 | Paint - Latex, including containers | 0.056 | 84.2 |
| 12:8 | Paint - Oil-based, including containers | 0.088 | 132.2 |
| 12:9 | Paint in aerosol cans | 0.022 | 33.8 |
| 12:10 | Paint - Automotive, industrial | 0.000 | 0.0 |
| 12:11 | Empty metal paint/stain cans & lids | 0.241 | 361.1 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.032 | 47.5 |
| 12:13 | Empty aerosol paint cans | 0.014 | 21.1 |
| 12:14 | Solvents, including containers | 0.002 | 3.1 |
| 12:15 | Empty solvent containers | 0.016 | 24.0 |
| 12:16 | Pesticides, including containers | 0.001 | 0.8 |
| 12:17 | Empty pesticide containers | 0.000 | 0.0 |
| 12:18 | Pharmaceuticals, including containers | 0.029 | 43.2 |
| 12:19 | Needles & Sharps | 0.004 | 6.5 |
| 12:20 | Other empty aerosol cans | 0.131 | 197.2 |
| 12:21 | Other hazardous waste | 0.092 | 138.8 |
| | Total for Category | 1.34 | 1,716 |

Table 5-6. Household Hazardous Waste encountered during the sorting process (fall 2004).

| Sample | Type | Weight (kg) |
|--------|--|-------------|
| 1-3 | Unknown (Likely some sort of resin) | 4.60 |
| 1-3 | Wood Preservative | 1.50 |
| 1-3 | WD-40 | 0.28 |
| 2-1 | Automotive Grease Tube | 0.08 |
| 3-5 | Cleaning Products (Vim) | 1.90 |
| 3-5 | Body Filler | 0.75 |
| 4-3 | Latex Paint | 3.40 |
| 4-3 | Automotive Grease Tube | 0.85 |
| 5-4 | 2 Containers with fuel type liquids | 0.80 |
| 5-5 | 4 Small Propane Tanks | 1.80 |
| 9-1 | Camping Fuel | 0.42 |
| 9-3 | Contact Cement Spray | 0.31 |
| 10-1 | Photo Developer | 1.10 |
| 11-2 | Power Steering Fluid | 0.35 |
| 11-2 | Power Steering Fluid, Insecticide Soap, Raid, Turtle Wax | 1.90 |
| 19-3 | Pipe Joint Cement | 0.32 |

Table 5-7. Household Hazardous Waste encountered during the sorting process (spring 2005).

| Sample | Type | Weight (kg) |
|--------|---|-------------|
| 1-3 | Construction Adhesive | 0.24 |
| 1-4 | Aerosol Paint (1/2 full) | 0.40 |
| 4-2 | Oil based paint (1/4 full) | 0.20 |
| 5-1 | Oil based paint (3/4 full) | 0.84 |
| 5-3 | Lubricating oil (3/4 full) | 2.60 |
| 6-1 | Bear Spray (full) | 0.35 |
| 9-1 | Paint Thinner (1/4 full) | 0.22 |
| 10-2 | Automotive Oil Filters (2) | 1.20 |
| 13-5 | ABS Cement (1/8 full) | 0.08 |
| 15-3 | Aerosol Spray Paint (1/2 full) | 0.29 |
| 15-4 | Misto-Van Cleaner (1/2 full), Drain Bann (1/2 full) | 1.40 |
| 16-3 | Lubricating Oil (1 full, 1 1/2 full) | 2.20 |
| 16-3 | Turpentine (1 full 1 L bottle) | 0.96 |
| 18-1 | Lubricating Oil (1/3 full) | 0.42 |
| 18-1 | Brake Fluid (full) | 0.40 |
| 19-3 | Water Proofing Cream (1/4 full) | 0.23 |

6. SUMMARY AND CONCLUSIONS

This study provides valuable benchmark data and analysis for evaluating the success of the solid waste management programs and can be used as a valuable tool when planning for future waste reduction programs not only in the CRD, but also in other municipalities in BC.

The most frequently encountered waste component was “Organic Waste” accounting for one third of all residuals. Second was Paper and Paper Products”, representing approximately 16% of the total waste stream. Third were “Plastics”, representing about 14%. Fourth was “Wood and Wood Products” at 10%. The remaining waste categories represented 30% of the waste stream.

In terms of the waste disposal rates, each person within the Regional District was responsible for 429 kg of landfilled waste in 2004. Included in this total was 130 kg of “Organic Waste”, 68 kg of “Paper and Paper Products”, 59 kg of “Plastics” and 41 kg of “Wood and Wood Products”.

The category with the biggest change between the 2001 and 2004 studies was “Other Waste” which increased from 2,590 tonnes per year, to 6,970 tonnes per year. The increased weight in the “Other Waste” category may, in part, be attributed to the differences in sorting techniques. The differences between the other categories were not large enough to be statistically significant in terms of annual tonnages. However, the decrease in the “Organic Waste” category was statistically significant when compared as a percentage rather than as annual tonnage.

A slight increase in the Hazardous Waste category was noted. The increase was not large enough to be statistically significant, and the difference can partly be attributed to the fact that the 2004 study had 21 categories while the 2001 study only had 7. As an example, the sub-category “Empty Metal Paint/Stain Cans and Lids” would have been accounted for in the metal category during the 2001 study, while it was included in the Hazardous Waste category during the 2004 study.

In general, waste from the residential and ICI sectors is relatively similar, with almost identical distribution in 8 out of the 13 primary waste categories. The ICI sector generates significantly more wood waste, especially treated wood compared to the residential sector. Also, there is less “Organic Waste”, in particular food waste from the ICI sector. There is more “Hazardous Waste Products” from the ICI sector. Subcategories that were noticeable different were fluorescent lighting products, empty oil containers, and empty metal paint/stain cans and lids.

DLC waste on the other hand is quite unique to waste from the other two sectors, with almost 90% of the refuse material falling in the “Wood and Wood Products” (52%), and in the “Construction and Demolition Material” (37%) categories.

There were only minor differences in the waste composition between single family dwellings and that of multi-family dwellings, but it appears that the single family dwellings produce less “Paper and Paper Products” and more “Plastics” compared to the multi-family dwellings.

In the general waste stream, the eight most frequently encountered components of HHW waste are “Empty metal paint/stain cans and lids” (361 tonnes/year), “Empty lubricating oil containers” (232 tonnes/year), “Other empty aerosol cans” (197 tonnes/year), “Batteries-Dry cell” (174 tonnes/year),

“Other hazardous waste” (139 tonnes/year), “Paint – Oil Based, including container” (132 tonnes/year), “Lubricating oils, including container” (89 tonnes/year) and “Fluorescent lighting” (88 tonnes/year).

7. LIMITATIONS

The waste composition analysis of solid waste residuals at Hartland Landfill has been prepared by Sperling Hansen Associates (SHA) on behalf of the Capital Regional District in accordance with generally accepted engineering practices. The report is based on 204 waste composition samples collected and analyzed by CRD staff over the course of four weeks in fall of 2004, and during 4 weeks in the spring of 2005. The report documents our findings and conclusions based on this data.

The report is intended solely for the use of the Capital Regional District. SHA does not accept any responsibility for other uses of the material contained herein.

The report contains intellectual property developed and owned by SHA that has been made available to the Capital Regional District for exclusive use in charting the course of their solid waste management program. Copying of this intellectual property for other purposes is not permitted.

The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to SHA during the course of this project. Should additional new data become available in the future, SHA reserves the right to update the findings of this report and modify the conclusions and recommendations drawn, as required.

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Reviewed by:



Todd Baker P.Eng.
Senior Environmental Engineer

APPENDICES

APPENDIX A
Sample Sheets

SAMPLE LOAD DATA SHEET

| | |
|--|--------------------|
| <u>General Information</u> | Sample ID #: _____ |
| Date: _____ | Time: _____ |
| Weather Conditions: _____ | |
| Hauler: _____ Truck Number: _____ License: _____ | |
| MSW <input type="checkbox"/> ICI <input type="checkbox"/> DLC <input type="checkbox"/> Details: _____ | |
| North Saanich <input type="checkbox"/> Sidney <input type="checkbox"/> Central Saanich <input type="checkbox"/> Saanich <input type="checkbox"/> | |
| Victoria <input type="checkbox"/> Oak Bay <input type="checkbox"/> Esquimalt <input type="checkbox"/> View Royal <input type="checkbox"/> Colwood <input type="checkbox"/> | |
| Metchosin <input type="checkbox"/> Sooke <input type="checkbox"/> Hartland <input type="checkbox"/> Other: _____ | |

| | | |
|-------------------|-----------------------------------|--|
| <u>Scale Data</u> | Total Weight (Inbound): _____ kg | |
| | Total Weight (Outbound): _____ kg | |
| | Load Weight (In-out): _____ kg | |

| | |
|--|------------------|
| <u>Oversized Materials</u> | |
| Descriptor 1: _____ | Weight: _____ kg |
| Descriptor 2: _____ | Weight: _____ kg |
| Descriptor 3: _____ | Weight: _____ kg |
| Descriptor 4: _____ | Weight: _____ kg |
| Descriptor 5: _____ | Weight: _____ kg |
| <u>Excess Moisture</u> | |
| Volume: _____ m ³ (approximate) | |
| Details: _____ | |
| <u>Sample Material Description</u> | |
| _____ | |
| _____ | |

| | |
|-------------------------------|-------------|
| <u>Signatures</u> | |
| Sample taken by: _____ | Date: _____ |
| Data sheet received by: _____ | Date: _____ |

Filling out the “Sample Load Data Sheet”

GENERAL INFORMATION

Sample ID # - The identification number for the respective sample. Numbering to include sample round (1 or 2) and sample number (1 through 100).
E.G. Sample ID #: 1-12 (for sample 12, sampling round 1).

Date - Date the sample arrived at the working face.

Time - Time the sample arrived at the working face.

Weather Conditions - Brief description of weather at the time the load was processed. Include details on temperature, cloud cover, level of precipitation.

Hauler - Name of hauler.

Truck Number – Identification number for the truck.

License # - License plate number for the truck.

Residential/ICI(Industrial/Commercial/Institutional)/DLC – specify what type of garbage is included within the load. May be that load contains both. Mark proportion of waste “type” if the load is a mix of ICI and Res.

Details – add whatever relevant details are available for the load, such as collection area, major sources (DND/University), etc.

Mark off which areas the waste came from. May be from more than one area.

SCALE DATA

Obtain the inbound and outbound weights of the vehicle from the scale operator.

OVERSIZED MATERIALS

(This section applies if there is a large volume of particular material in a load. The material should be separated out and weight independently or estimated visually).

Descriptor: description of the material – try to follow the subcategory descriptors.

Weight: independent weight of the specific material.

EXCESS MOISTURE

(If large volumes of moisture are noted when the load is being dumped, try to estimate the volume of water. This may be the case if a bin has been sitting out open for a while).

SAMPLE MATERIAL DESCRIPTION

(Add general comments on how thorough the load was mixed when the sample was drawn. Also add general descriptors of the load, if something stands out)

SIGNATURE

The person that collected the sample from the hauler should sign the sample sheet.

ID #: _____

| Secondary Category number & Descriptor | | Tare Weight (kg) | Sample Weight (kg) | Material Weight (kg) |
|--|---|------------------|--------------------|----------------------|
| Category 1 - Paper & Paperboard | | | | |
| 1:1 | Newsprint (including flyers) | | | |
| 1:2 | Magazines | | | |
| 1:3 | Corrugated cardboard | | | |
| 1:4 | Waxed corrugated cardboard | | | |
| 1:5 | Boxboard | | | |
| 1:6 | Telephone books | | | |
| 1:7 | Books | | | |
| 1:8 | Fine paper (writing, computer, office) | | | |
| 1:9 | Tissue paper, paper towels, napkins | | | |
| 1:10 | Feminine Hygiene Products (sanitary napkins, tampons) | | | |
| 1:11 | Gabletop Cartons - Milk | | | |
| 1:12 | Gabletop Cartons - Juice & Other | | | |
| 1:13 | Aceptic boxes - Milk | | | |
| 1:14 | Aceptic boxes - Juice & Other | | | |
| 1:15 | Brown kraft paper, including bags | | | |
| 1:16 | Paper Cups | | | |
| 1:17 | Other paper | | | |
| Total Category Weight (kg) | | | | |
| Category 2 - Glass | | | | |
| 2:1 | Beverage Containers | | | |
| 2:2 | Food Containers | | | |
| 2:3 | Other Glass Containers | | | |
| 2:4 | Other glass (plate, mirrors, light bulbs) | | | |
| Total Category Weight (kg) | | | | |
| Category 3 - Ferrous Metals | | | | |
| 3:1 | Beverage Containers | | | |
| 3:2 | Food Containers | | | |
| 3:3 | Large metal appliances (white goods) | | | |
| 3:4 | Other ferrous metals | | | |
| Total Category Weight (kg) | | | | |
| Category 4 - Non-ferrous Metals | | | | |
| 4:1 | Beverage Containers | | | |
| 4:2 | Food Containers | | | |
| 4:3 | Aluminum trays & foil | | | |
| 4:4 | Other non-ferrous metals | | | |
| Total Category Weight (kg) | | | | |

| Secondary Category number & Descriptor | | Tare Weight (kg) | Sample Weight (kg) | Material Weight (kg) |
|--|--|------------------|--------------------|----------------------|
| Category 5 - Plastics | | | | |
| 5:1 | PET (#1) beverage containers | | | |
| 5:2 | PET (#1) food trays | | | |
| 5:3 | PET (#1) - other | | | |
| 5:4 | HDPE (#2) milk jugs | | | |
| 5:5 | HDPE (#2) other beverage containers | | | |
| 5:6 | Other HDPE (#2) jugs & bottles | | | |
| 5:7 | Dairy & dairy related tubs & lids | | | |
| 5:8 | PVC (#3) | | | |
| 5:9 | Polypropylene (#5) | | | |
| 5:10 | Polystyrene (#6) | | | |
| 5:11 | Crates, pails & drums (> 25L) | | | |
| 5:12 | Other rigid plastic items (toys, lawn furniture, etc.) | | | |
| 5:13 | Stretch wrap & film | | | |
| 5:14 | Plastic grocery bags | | | |
| 5:15 | Other plastic bags | | | |
| 5:16 | Garbage bags | | | |
| 5:17 | Other plastics | | | |
| Total Category Weight (kg) | | | | |
| Category 6 - Organic Waste | | | | |
| 6:1 | Food waste | | | |
| 6:2 | Yard waste | | | |
| 6:3 | Animal Faeces | | | |
| 6:4 | Other organic waste | | | |
| Total Category Weight (kg) | | | | |

| Secondary Category number & Descriptor | | Tare Weight (kg) | Sample Weight (kg) | Material Weight (kg) |
|--|--|------------------|--------------------|----------------------|
| Category 7 - Wood & Wood Products | | | | |
| 7:1 | Pallets/skids | | | |
| 7:2 | Wooden shingles | | | |
| 7:3 | Wood furniture | | | |
| 7:4 | Other wood - Clean | | | |
| 7:5 | Other wood - Contaminated (painted, finished, treated) | | | |
| Total Category Weight (kg) | | | | |
| Category 8 - Construction/Demolition Material | | | | |
| 8:1 | Drywall | | | |
| 8:2 | Asphalt shingles | | | |
| 8:3 | Carpet & underlay | | | |
| 8:4 | Masonry (bricks, blocks, concrete, ceramic) | | | |
| 8:5 | Rock/sand/dirt | | | |
| 8:6 | Other C/D wastes | | | |
| Total Category Weight (kg) | | | | |
| Category 9 - Textiles | | | | |
| 9:1 | Clothing | | | |
| 9:2 | Footware | | | |
| 9:3 | Other textiles | | | |
| Total Category Weight (kg) | | | | |
| Category 10 - Rubber | | | | |
| 10:1 | Vehicle tires | | | |
| 10:2 | Other rubber products | | | |
| Total Category Weight (kg) | | | | |
| Category 11 - Composite Products | | | | |
| 11:1 | Disposable diapers | | | |
| 11:2 | Computers (CPU) | | | |
| 11:3 | Computer monitors | | | |
| 11:4 | Other computer equipment (keyboards, mice, printers, etc.) | | | |
| 11:5 | Televisions | | | |
| 11:6 | Other consumer electronics | | | |
| 11:7 | Small appliances | | | |
| 11:8 | Furniture | | | |
| 11:9 | Other composites | | | |
| Total Category Weight (kg) | | | | |

| Secondary Category number & Descriptor | | Tare Weight (kg) | Sample Weight (kg) | Material Weight (kg) |
|--|--|------------------|--------------------|----------------------|
| Category 12 - Hazardous Wastes | | | | |
| 12:1 | Fluorescent lighting | | | |
| 12:2 | Batteries - automotive (lead acid) | | | |
| 12:3 | Batteries - Dry cell, alkaline, button cell, other household batt. | | | |
| 12:4 | Lubricating (motor, transmission) oil, including containers | | | |
| 12:5 | Automotive oil filters | | | |
| 12:6 | Empty lubricating oil containers | | | |
| 12:7 | Paint - Latex, including containers | | | |
| 12:8 | Paint - Oil-based, including containers | | | |
| 12:9 | Paint in aerosol cans | | | |
| 12:10 | Paint - Automotive, industrial (not subject to product steward..) | | | |
| 12:11 | Empty metal paint/stain cans & lids (inc. cans with dried paint) | | | |
| 12:12 | Empty plastic paint/stain cans & lids (inc. cans with dried paint) | | | |
| 12:13 | Empty aerosol paint cans | | | |
| 12:14 | Solvents, including containers | | | |
| 12:15 | Empty solvent containers | | | |
| 12:16 | Pesticides, including containers | | | |
| 12:17 | Empty pesticide containers | | | |
| 12:18 | Pharmaceuticals, including containers | | | |
| 12:19 | Needles & Sharps | | | |
| 12:20 | Other empty aerosol cans (not applicable to above categories) | | | |
| 12:21 | Other hazardous waste (record description) | | | |
| Total Category Weight (kg) | | | | |
| Category 13 - Other | | | | |
| 13:1 | Cat litter | | | |
| 13:2 | Non-distinct fines | | | |
| 13:3 | Other wastes | | | |
| Total Category Weight (kg) | | | | |
| Total Sample Weight (kg) | | | | |

| | |
|-------------------------|----------------------|
| Start Day: _____ | Finished Day: _____ |
| Start Time: _____ | Finished Time: _____ |
| Data Recorded By: _____ | |
| Reviewed By: _____ | |

APPENDIX B
Detailed Result Tables
Waste Composition

Table B-1. Waste Composition during each sampling round.

| | | Phase 1 | | | Phase 2 | | | Combined | | |
|--|--|----------------------|--------------|---------------|----------------------|-------------|---------------|----------------------|-------------|---------------|
| | | Mean (%) N=103 | S.D. (%) | C.O.V. (%) | Mean (%) N=101 | S.D. (%) | C.O.V. (%) | Mean (%) N=204 | S.D. (%) | C.O.V. (%) |
| Category 1 - Paper and Paperboard | | | | | | | | | | |
| 1:1 | Newsprint (including flyers) | 2.80 | 3.29 | 117.5 | 1.87 | 1.86 | 99.3 | 2.34 | 2.71 | 115.9 |
| 1:2 | Magazines | 0.54 | 0.70 | 128.8 | 0.69 | 1.70 | 245.5 | 0.62 | 1.30 | 210.2 |
| 1:3 | Corrugated cardboard | 1.93 | 2.04 | 105.9 | 1.87 | 1.60 | 85.3 | 1.90 | 1.83 | 96.4 |
| 1:4 | Waxed corrugated cardboard | 0.17 | 0.65 | 371.8 | 0.20 | 0.59 | 297.6 | 0.19 | 0.62 | 332.0 |
| 1:5 | Boxboard | 1.53 | 1.01 | 66.2 | 1.88 | 1.33 | 71.0 | 1.70 | 1.19 | 70.1 |
| 1:6 | Telephone books | 0.04 | 0.19 | 515.8 | 0.14 | 0.73 | 515.8 | 0.09 | 0.53 | 600.0 |
| 1:7 | Books | 0.20 | 0.58 | 290.3 | 0.54 | 1.23 | 225.9 | 0.37 | 0.97 | 262.3 |
| 1:8 | Fine paper (writing, computer, office) | 0.59 | 1.04 | 176.4 | 1.21 | 1.70 | 140.5 | 0.90 | 1.44 | 160.2 |
| 1:9 | Tissue paper, paper towels, napkins | 3.02 | 3.13 | 103.9 | 3.60 | 4.15 | 115.3 | 3.31 | 3.68 | 111.2 |
| 1:10 | Feminine Hygiene Products | 0.25 | 0.54 | 213.0 | 0.16 | 0.41 | 253.5 | 0.21 | 0.48 | 231.3 |
| 1:11 | Gabletop Cartons - Milk | 0.39 | 0.41 | 103.2 | 0.37 | 0.35 | 95.0 | 0.38 | 0.38 | 99.3 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.10 | 0.24 | 247.5 | 0.07 | 0.14 | 218.3 | 0.08 | 0.20 | 242.9 |
| 1:13 | Aceptic boxes - Milk | 0.02 | 0.06 | 253.1 | 0.02 | 0.04 | 254.3 | 0.02 | 0.05 | 254.9 |
| 1:14 | Aceptic boxes - Juice and Other | 0.14 | 0.27 | 196.9 | 0.13 | 0.14 | 108.7 | 0.13 | 0.22 | 161.1 |
| 1:15 | Brown kraft paper, including bags | 0.36 | 0.34 | 94.7 | 0.40 | 0.37 | 92.3 | 0.38 | 0.35 | 93.4 |
| 1:16 | Paper Cups | 0.47 | 0.71 | 152.8 | 0.50 | 0.70 | 140.5 | 0.48 | 0.70 | 146.2 |
| 1:17 | Other paper | 2.92 | 2.06 | 70.5 | 2.46 | 2.14 | 86.8 | 2.69 | 2.11 | 78.2 |
| Category 1 - Paper and Paperboard | | 15.46 | 8.20 | 53.1 | 16.11 | 8.94 | 55.4 | 15.78 | 8.56 | 54.2 |
| Category 2 - Glass | | | | | | | | | | |
| 2:1 | Beverage Containers | 0.59 | 1.52 | 256.1 | 0.49 | 0.76 | 154.8 | 0.54 | 1.20 | 222.1 |
| 2:2 | Food Containers | 0.49 | 0.60 | 121.7 | 0.76 | 0.82 | 107.9 | 0.62 | 0.72 | 116.5 |
| 2:3 | Other Glass Containers | 0.31 | 0.53 | 169.2 | 0.11 | 0.85 | 808.2 | 0.21 | 0.71 | 339.5 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 0.34 | 1.48 | 435.9 | 0.97 | 1.39 | 143.8 | 0.65 | 1.47 | 225.5 |
| Category 2 - Glass | | 1.74 | 2.27 | 130.6 | 2.32 | 2.11 | 91.2 | 2.02 | 2.21 | 109.0 |
| Category 3 - Ferrous Metals | | | | | | | | | | |
| 3:1 | Beverage Containers | 0.03 | 0.14 | 510.5 | 0.03 | 0.19 | 720.0 | 0.03 | 0.17 | 614.7 |
| 3:2 | Food Containers | 0.78 | 0.83 | 106.5 | 0.68 | 0.56 | 81.6 | 0.73 | 0.71 | 96.8 |
| 3:3 | Large metal appliances (white goods) | 0.02 | 0.10 | 644.5 | 0.05 | 0.49 | 1005.0 | 0.03 | 0.35 | 1094.6 |
| 3:4 | Other ferrous metals | 1.50 | 2.16 | 144.3 | 2.80 | 6.00 | 214.2 | 2.14 | 4.53 | 211.3 |
| Category 3 - Ferrous Metals | | 2.32 | 2.37 | 102.2 | 3.56 | 5.96 | 167.5 | 2.93 | 4.55 | 155.2 |
| Category 4 - Non-ferrous Metals | | | | | | | | | | |
| 4:1 | Beverage Containers | 0.18 | 0.70 | 388.8 | 0.10 | 0.11 | 109.5 | 0.14 | 0.50 | 356.2 |
| 4:2 | Food Containers | 0.001 | 0.01 | 1014.9 | 0.10 | 0.18 | 182.1 | 0.05 | 0.14 | 326.1 |
| 4:3 | Aluminum trays and Foil | 0.41 | 0.39 | 96.8 | 0.54 | 0.84 | 155.8 | 0.47 | 0.65 | 138.6 |
| 4:4 | Other non-ferrous metals | 0.17 | 0.36 | 210.6 | 0.33 | 0.54 | 165.2 | 0.25 | 0.46 | 186.9 |
| Category 4 - Non-ferrous Metals | | 0.76 | 0.84 | 110.6 | 1.07 | 0.99 | 92.9 | 0.91 | 0.92 | 102.0 |
| Category 5 - Plastics | | | | | | | | | | |
| 5:1 | PET (#1) beverage containers | 0.20 | 0.26 | 127.7 | 0.19 | 0.27 | 145.7 | 0.19 | 0.26 | 136.1 |
| 5:2 | PET (#1) food trays | 0.17 | 0.22 | 125.0 | 0.31 | 0.25 | 81.6 | 0.24 | 0.25 | 101.5 |
| 5:3 | PET (#1) - other | 0.12 | 0.18 | 142.1 | 0.13 | 0.16 | 121.2 | 0.13 | 0.17 | 131.3 |
| 5:4 | HDPE (#2) milk jugs | 0.08 | 0.13 | 149.3 | 0.13 | 0.19 | 144.2 | 0.11 | 0.16 | 150.6 |
| 5:5 | HDPE (#2) other beverage containers | 0.04 | 0.20 | 509.3 | 0.12 | 0.34 | 275.0 | 0.08 | 0.28 | 346.5 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.74 | 1.00 | 135.1 | 0.84 | 0.69 | 82.9 | 0.79 | 0.86 | 109.3 |
| 5:7 | Dairy and dairy related tubs and lids | 0.22 | 0.17 | 77.9 | 0.27 | 0.24 | 89.2 | 0.24 | 0.21 | 85.1 |
| 5:8 | PVC (#3) | 0.07 | 0.24 | 343.3 | 0.14 | 0.49 | 354.1 | 0.10 | 0.39 | 371.0 |
| 5:9 | Polypropylene (#5) | 0.13 | 0.17 | 136.4 | 0.20 | 0.29 | 145.7 | 0.16 | 0.24 | 147.9 |
| 5:10 | Polystyrene (#6) | 1.04 | 0.82 | 78.5 | 2.33 | 1.74 | 74.8 | 1.68 | 1.50 | 89.3 |
| 5:11 | Crates, pails and drums (> 25L) | 0.04 | 0.34 | 821.5 | 0.28 | 0.83 | 292.9 | 0.16 | 0.64 | 398.2 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 2.81 | 10.12 | 360.4 | 1.92 | 2.94 | 152.6 | 2.37 | 7.48 | 315.5 |
| 5:13 | Stretch wrap and film | 1.30 | 1.20 | 92.5 | 0.57 | 1.03 | 181.6 | 0.94 | 1.18 | 125.5 |
| 5:14 | Plastic grocery bags | 0.79 | 0.79 | 100.2 | 0.46 | 0.40 | 88.6 | 0.62 | 0.65 | 104.1 |
| 5:15 | Other plastic bags | 1.84 | 1.70 | 92.3 | 3.18 | 2.21 | 69.4 | 2.50 | 2.07 | 82.9 |
| 5:16 | Garbage bags | 1.52 | 1.26 | 83.2 | 2.00 | 1.34 | 67.1 | 1.76 | 1.32 | 75.2 |
| 5:17 | Other plastics | 1.62 | 2.08 | 128.0 | 1.70 | 1.62 | 95.5 | 1.66 | 1.86 | 112.1 |
| Category 5 - Plastics | | 12.74 | 10.81 | 84.9 | 14.77 | 7.00 | 47.4 | 13.74 | 9.16 | 66.7 |

| | | Phase 1 | | | Phase 2 | | | Combined | | |
|--|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | | Mean (%) | S.D. (%) | C.O.V. (%) | Mean (%) | S.D. (%) | C.O.V. (%) | Mean (%) | S.D. (%) | C.O.V. (%) |
| Category 6 - Organic Waste | | | | | | | | | | |
| 6:1 | Food waste | 23.77 | 15.01 | 63.1 | 22.13 | 13.10 | 59.2 | 22.96 | 14.08 | 61.3 |
| 6:2 | Yard waste | 6.36 | 8.05 | 126.6 | 4.59 | 6.27 | 136.8 | 5.48 | 7.26 | 132.5 |
| 6:3 | Animal Faeces | 0.44 | 1.51 | 340.5 | 0.48 | 1.32 | 276.6 | 0.46 | 1.42 | 307.6 |
| 6:4 | Other organic waste | 1.42 | 6.83 | 481.8 | 1.17 | 1.67 | 142.9 | 1.29 | 4.98 | 385.1 |
| Category 6 - Organic Waste | | 31.99 | 17.86 | 55.8 | 28.36 | 15.36 | 54.2 | 30.19 | 16.73 | 55.4 |
| Category 7 - Wood and Wood Products | | | | | | | | | | |
| 7:1 | Pallets/skids | 0.64 | 2.64 | 410.9 | 0.24 | 0.80 | 335.7 | 0.44 | 1.97 | 444.1 |
| 7:2 | Wooden shingles | 0.96 | 9.75 | 1014.9 | 0.98 | 9.84 | 1005.0 | 0.97 | 9.77 | 1007.5 |
| 7:3 | Wood furniture | 1.12 | 3.60 | 320.6 | 0.34 | 1.90 | 560.6 | 0.73 | 2.90 | 395.5 |
| 7:4 | Other wood - Clean | 2.15 | 10.28 | 477.8 | 1.32 | 5.19 | 391.6 | 1.74 | 8.16 | 468.2 |
| 7:5 | Other wood - Contaminated | 6.06 | 14.80 | 244.2 | 5.30 | 12.68 | 239.2 | 5.69 | 13.77 | 242.1 |
| Category 7 - Wood and Wood Products | | 10.94 | 20.82 | 190.3 | 8.18 | 18.52 | 226.3 | 9.58 | 19.71 | 205.9 |
| Category 8 - Construction/Demolition Material | | | | | | | | | | |
| 8:1 | Drywall | 0.41 | 2.07 | 498.4 | 0.37 | 1.17 | 320.2 | 0.39 | 1.68 | 430.2 |
| 8:2 | Asphalt shingles | 1.92 | 13.74 | 714.1 | 1.21 | 9.95 | 819.9 | 1.57 | 11.99 | 762.6 |
| 8:3 | Carpet and underlay | 1.55 | 4.20 | 271.3 | 3.18 | 12.85 | 404.0 | 2.36 | 9.53 | 404.7 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.40 | 2.01 | 503.0 | 0.85 | 2.73 | 319.9 | 0.62 | 2.39 | 384.2 |
| | Rock/sand/dirt | 0.00 | - | - | 0.15 | 0.87 | 588.4 | 0.07 | 0.62 | 840.2 |
| 8:5 | Other C/D wastes | 1.25 | 3.38 | 269.2 | 1.20 | 3.40 | 281.9 | 1.23 | 3.38 | 274.7 |
| Category 8 - Construction/Demolition Material | | 5.54 | 14.92 | 269.4 | 6.97 | 16.75 | 240.5 | 6.24 | 15.83 | 253.5 |
| Category 9 - Textiles | | | | | | | | | | |
| 9:1 | Clothing | 1.55 | 2.32 | 149.2 | 2.06 | 2.11 | 102.6 | 1.80 | 2.23 | 123.5 |
| 9:2 | Footware | 0.59 | 1.93 | 325.6 | 0.53 | 0.86 | 161.6 | 0.56 | 1.50 | 265.9 |
| 9:3 | Other textiles | 2.05 | 2.47 | 120.5 | 2.56 | 2.29 | 89.5 | 2.30 | 2.39 | 103.8 |
| Category 9 - Textiles | | 4.19 | 4.32 | 103.1 | 5.15 | 3.84 | 74.7 | 4.67 | 4.11 | 88.1 |
| Category 10 - Rubber | | | | | | | | | | |
| 10:1 | Vehicle tires | 0.004 | 0.02 | 619.8 | 0.02 | 0.19 | 918.9 | 0.01 | 0.14 | 1120.2 |
| 10:2 | Other rubber products | 0.56 | 1.73 | 309.4 | 0.51 | 1.43 | 282.9 | 0.53 | 1.58 | 297.6 |
| Category 10 - Rubber | | 0.56 | 1.73 | 307.4 | 0.53 | 1.47 | 278.4 | 0.54 | 1.60 | 293.8 |
| Category 11 - Composite Products | | | | | | | | | | |
| 11:1 | Disposable diapers | 2.35 | 3.35 | 142.7 | 2.54 | 3.71 | 146.2 | 2.44 | 3.53 | 144.4 |
| 11:2 | Computers (CPU) | 0.09 | 0.67 | 705.2 | 0.29 | 1.30 | 450.5 | 0.19 | 1.03 | 541.3 |
| 11:3 | Computer monitors | 0.49 | 1.92 | 388.1 | 0.18 | 1.07 | 606.1 | 0.34 | 1.56 | 463.4 |
| 11:4 | Other computer equipment | 0.31 | 1.48 | 474.4 | 0.11 | 0.56 | 523.6 | 0.21 | 1.13 | 534.6 |
| 11:5 | Televisions | 0.59 | 2.89 | 490.2 | 0.13 | 0.77 | 594.2 | 0.36 | 2.13 | 588.9 |
| 11:6 | Other consumer electronics | 0.65 | 2.18 | 336.4 | 1.21 | 2.94 | 242.7 | 0.93 | 2.60 | 279.8 |
| 11:7 | Small appliances | 0.91 | 2.03 | 223.9 | 0.15 | 0.58 | 394.2 | 0.53 | 1.54 | 290.9 |
| 11:8 | Furniture | 0.85 | 2.59 | 304.8 | 0.91 | 2.85 | 313.0 | 0.88 | 2.71 | 308.6 |
| 11:9 | Other composites | 2.31 | 4.15 | 179.7 | 1.12 | 1.64 | 145.9 | 1.72 | 3.21 | 186.6 |
| Category 11 - Composite Products | | 8.55 | 8.02 | 93.8 | 6.63 | 6.26 | 94.4 | 7.60 | 7.25 | 95.4 |

| | | Phase 1 | | | Phase 2 | | | Combined | | |
|---------------------------------------|--|---------------|-------------|---------------|---------------|-------------|---------------|---------------|-------------|---------------|
| | | Mean (%) | S.D. (%) | C.O.V. (%) | Mean (%) | S.D. (%) | C.O.V. (%) | Mean (%) | S.D. (%) | C.O.V. (%) |
| Category 12 - Hazardous Wastes | | | | | | | | | | |
| 12:1 | Fluorescent lighting | 0.107 | 0.48 | 444.8 | 0.01 | 0.06 | 596.0 | 0.059 | 0.34 | 584.8 |
| 12:2 | Batteries - automotive (lead acid) | 0.0002 | 0.002 | 1014.9 | 0.0001 | 0.001 | 1005.0 | 0.000 | 0.00 | 1022.0 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household batt. | 0.097 | 0.16 | 162.2 | 0.14 | 0.33 | 240.7 | 0.116 | 0.26 | 220.4 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.021 | 0.14 | 662.1 | 0.10 | 0.53 | 534.1 | 0.059 | 0.38 | 647.3 |
| 12:5 | Automotive oil filters | 0.012 | 0.10 | 839.3 | 0.04 | 0.16 | 380.8 | 0.026 | 0.13 | 498.5 |
| 12:6 | Empty lubricating oil containers | 0.076 | 0.45 | 599.3 | 0.24 | 1.46 | 618.8 | 0.155 | 1.07 | 694.3 |
| 12:7 | Paint - Latex, including containers | 0.050 | 0.27 | 535.7 | 0.06 | 0.35 | 562.8 | 0.056 | 0.31 | 554.4 |
| 12:8 | Paint - Oil-based, including containers | 0.111 | 0.64 | 574.0 | 0.06 | 0.48 | 743.3 | 0.088 | 0.56 | 640.7 |
| 12:9 | Paint in aerosol cans | 0.027 | 0.22 | 807.7 | 0.02 | 0.07 | 424.8 | 0.022 | 0.16 | 747.9 |
| 12:10 | Paint - Automotive, industrial | 0.000 | - | - | 0.00 | - | - | 0.000 | - | - |
| 12:11 | Empty metal paint/stain cans & lids | 0.382 | 2.41 | 631.3 | 0.10 | 0.36 | 377.5 | 0.241 | 1.74 | 721.8 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.059 | 0.32 | 531.7 | 0.003 | 0.03 | 1005.0 | 0.032 | 0.23 | 717.3 |
| 12:13 | Empty aerosol paint cans | 0.013 | 0.04 | 325.2 | 0.02 | 0.06 | 385.7 | 0.014 | 0.05 | 362.2 |
| 12:14 | Solvents, including containers | 0.002 | 0.02 | 1014.9 | 0.002 | 0.02 | 1005.0 | 0.002 | 0.02 | 1018.3 |
| 12:15 | Empty solvent containers | 0.026 | 0.13 | 498.2 | 0.01 | 0.06 | 1005.0 | 0.016 | 0.10 | 632.0 |
| 12:16 | Pesticides, including containers | 0.000 | 0.00 | 1014.9 | 0.001 | 0.01 | 1005.0 | 0.001 | 0.01 | 1009.3 |
| 12:17 | Empty pesticide containers | 0.000 | - | - | 0.00 | - | - | 0.000 | - | - |
| 12:18 | Pharmaceuticals, including containers | 0.016 | 0.08 | 491.6 | 0.04 | 0.14 | 337.4 | 0.029 | 0.11 | 397.7 |
| 12:19 | Needles & Sharps | 0.005 | 0.02 | 456.1 | 0.00 | 0.02 | 470.1 | 0.004 | 0.02 | 466.1 |
| 12:20 | Other empty aerosol cans | 0.121 | 0.17 | 138.5 | 0.14 | 0.20 | 139.2 | 0.131 | 0.18 | 139.2 |
| 12:21 | Other hazardous waste | 0.138 | 0.62 | 448.2 | 0.05 | 0.16 | 339.7 | 0.092 | 0.45 | 491.7 |
| Category 12 - Hazardous Wastes | | 1.26 | 2.78 | 220.4 | 1.02 | 1.90 | 185.9 | 1.14 | 2.38 | 208.5 |
| Category 13 - Other | | | | | | | | | | |
| 13:1 | Cat litter | 1.51 | 2.59 | 171.7 | 2.23 | 4.39 | 197.4 | 1.86 | 3.61 | 193.5 |
| 13:2 | Non-distinct fines | 1.63 | 2.26 | 138.5 | 0.70 | 1.92 | 275.8 | 1.17 | 2.14 | 183.6 |
| 13:3 | Other wastes | 0.82 | 1.79 | 218.5 | 2.42 | 2.19 | 90.5 | 1.61 | 2.15 | 133.3 |
| Category 13 - Other | | 3.96 | 3.54 | 89.4 | 5.34 | 5.50 | 102.9 | 4.64 | 4.65 | 100.2 |
| Total (%) | | 100.00 | | | 100.00 | | | 100.00 | | |

Table B-2. Overall Waste Composition, waste generation and waste disposal rates. Waste generation and disposal rates are based on a service population of 349,638, and a total of 150,128 tonnes of waste disposed of at the landfill in 2004. (Sample P1 1-3 removed)

| | | Waste Composition (Percentage) | | | Waste Generation (kg/pers/year) | Waste Disposal (tonnes/year) |
|--|--|-----------------------------------|-------------|--------------|------------------------------------|---------------------------------|
| | | Mean N=204 | S.D. | C.O.V. | Mean N=204 | Mean N=204 |
| Category 1 - Paper and Paperboard | | | | | | |
| 1:1 | Newsprint (including flyers) | 2.34 | 2.71 | 115.9 | 10.04 | 3,511 |
| 1:2 | Magazines | 0.62 | 1.30 | 210.2 | 2.65 | 926 |
| 1:3 | Corrugated cardboard | 1.90 | 1.83 | 96.4 | 8.15 | 2,850 |
| 1:4 | Waxed corrugated cardboard | 0.19 | 0.62 | 332.0 | 0.80 | 280 |
| 1:5 | Boxboard | 1.70 | 1.19 | 70.1 | 7.30 | 2,553 |
| 1:6 | Telephone books | 0.09 | 0.53 | 600.0 | 0.38 | 133 |
| 1:7 | Books | 0.37 | 0.97 | 262.3 | 1.59 | 557 |
| 1:8 | Fine paper (writing, computer, office) | 0.90 | 1.44 | 160.2 | 3.85 | 1,346 |
| 1:9 | Tissue paper, paper towels, napkins | 3.31 | 3.68 | 111.2 | 14.20 | 4,963 |
| 1:10 | Feminine Hygiene Products | 0.21 | 0.48 | 231.3 | 0.90 | 313 |
| 1:11 | Gabletop Cartons - Milk | 0.38 | 0.38 | 99.3 | 1.64 | 573 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.08 | 0.20 | 242.9 | 0.35 | 121 |
| 1:13 | Aceptic boxes - Milk | 0.02 | 0.05 | 254.9 | 0.09 | 30 |
| 1:14 | Aceptic boxes - Juice and Other | 0.13 | 0.22 | 161.1 | 0.58 | 202 |
| 1:15 | Brown kraft paper, including bags | 0.38 | 0.35 | 93.4 | 1.63 | 569 |
| 1:16 | Paper Cups | 0.48 | 0.70 | 146.2 | 2.07 | 724 |
| 1:17 | Other paper | 2.69 | 2.11 | 78.2 | 11.57 | 4,045 |
| Category 1 - Paper and Paperboard | | 15.78 | 8.56 | 54.2 | 67.77 | 23,695 |
| Category 2 - Glass | | | | | | |
| 2:1 | Beverage Containers | 0.54 | 1.20 | 222.1 | 2.33 | 814 |
| 2:2 | Food Containers | 0.62 | 0.72 | 116.5 | 2.67 | 934 |
| 2:3 | Other Glass Containers | 0.21 | 0.71 | 339.5 | 0.90 | 316 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 0.65 | 1.47 | 225.5 | 2.79 | 975 |
| Category 2 - Glass | | 2.02 | 2.21 | 109.0 | 8.69 | 3,039 |
| Category 3 - Ferrous Metals | | | | | | |
| 3:1 | Beverage Containers | 0.03 | 0.17 | 614.7 | 0.12 | 40 |
| 3:2 | Food Containers | 0.73 | 0.71 | 96.8 | 3.14 | 1,096 |
| 3:3 | Large metal appliances (white goods) | 0.03 | 0.35 | 1094.6 | 0.14 | 49 |
| 3:4 | Other ferrous metals | 2.14 | 4.53 | 211.3 | 9.20 | 3,216 |
| Category 3 - Ferrous Metals | | 2.93 | 4.55 | 155.2 | 12.59 | 4,401 |
| Category 4 - Non-ferrous Metals | | | | | | |
| 4:1 | Beverage Containers | 0.14 | 0.50 | 356.2 | 0.61 | 213 |
| 4:2 | Food Containers | 0.044 | 0.14 | 326.1 | 0.19 | 66 |
| 4:3 | Aluminum trays and Foil | 0.47 | 0.65 | 138.6 | 2.03 | 709 |
| 4:4 | Other non-ferrous metals | 0.25 | 0.46 | 186.9 | 1.06 | 372 |
| Category 4 - Non-ferrous Metals | | 0.91 | 0.92 | 102.0 | 3.89 | 1,359 |
| Category 5 - Plastics | | | | | | |
| 5:1 | PET (#1) beverage containers | 0.19 | 0.26 | 136.1 | 0.83 | 292 |
| 5:2 | PET (#1) food trays | 0.24 | 0.25 | 101.5 | 1.04 | 364 |
| 5:3 | PET (#1) - other | 0.13 | 0.17 | 131.3 | 0.55 | 193 |
| 5:4 | HDPE (#2) milk jugs | 0.11 | 0.16 | 150.6 | 0.47 | 163 |
| 5:5 | HDPE (#2) other beverage containers | 0.08 | 0.28 | 346.5 | 0.35 | 121 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.79 | 0.86 | 109.3 | 3.38 | 1,183 |
| 5:7 | Dairy and dairy related tubs and lids | 0.24 | 0.21 | 85.1 | 1.05 | 368 |
| 5:8 | PVC (#3) | 0.10 | 0.39 | 371.0 | 0.45 | 157 |
| 5:9 | Polypropylene (#5) | 0.16 | 0.24 | 147.9 | 0.70 | 245 |
| 5:10 | Polystyrene (#6) | 1.68 | 1.50 | 89.3 | 7.21 | 2,522 |
| 5:11 | Crates, pails and drums (> 25L) | 0.16 | 0.64 | 398.2 | 0.69 | 241 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 2.37 | 7.48 | 315.5 | 10.18 | 3,559 |
| 5:13 | Stretch wrap and film | 0.94 | 1.18 | 125.5 | 4.03 | 1,409 |
| 5:14 | Plastic grocery bags | 0.62 | 0.65 | 104.1 | 2.67 | 934 |
| 5:15 | Other plastic bags | 2.50 | 2.07 | 82.9 | 10.74 | 3,755 |
| 5:16 | Garbage bags | 1.76 | 1.32 | 75.2 | 7.54 | 2,636 |
| 5:17 | Other plastics | 1.66 | 1.86 | 112.1 | 7.12 | 2,490 |
| Category 5 - Plastics | | 13.74 | 9.16 | 66.7 | 59.01 | 20,631 |

| | | Waste Composition (Percentage) | | | Waste Generation (kg/pers/year) | Waste Disposal (tonnes/year) |
|--|--|-----------------------------------|--------------|--------------|------------------------------------|---------------------------------|
| | | Mean | S.D. | C.O.V. | Mean | Mean |
| Category 6 - Organic Waste | | | | | | |
| 6:1 | Food waste | 22.96 | 14.08 | 61.3 | 98.59 | 34,471 |
| 6:2 | Yard waste | 5.48 | 7.26 | 132.5 | 23.53 | 8,228 |
| 6:3 | Animal Faeces | 0.46 | 1.42 | 307.6 | 1.98 | 692 |
| 6:4 | Other organic waste | 1.29 | 4.98 | 385.1 | 5.55 | 1,942 |
| Category 6 - Organic Waste | | 30.20 | 16.73 | 55.4 | 129.66 | 45,333 |
| Category 7 - Wood and Wood Products | | | | | | |
| 7:1 | Pallets/skids | 0.44 | 1.97 | 444.1 | 1.90 | 665 |
| 7:2 | Wooden shingles | 0.97 | 9.77 | 1007.5 | 4.16 | 1,456 |
| 7:3 | Wood furniture | 0.73 | 2.90 | 395.5 | 3.15 | 1,103 |
| 7:4 | Other wood - Clean | 1.74 | 8.16 | 468.2 | 7.48 | 2,616 |
| 7:5 | Other wood - Contaminated | 5.69 | 13.77 | 242.1 | 24.42 | 8,536 |
| Category 7 - Wood and Wood Products | | 9.58 | 19.71 | 205.9 | 41.12 | 14,376 |
| Category 8 - Construction/Demolition Material | | | | | | |
| 8:1 | Drywall | 0.39 | 1.68 | 430.2 | 1.68 | 587 |
| 8:2 | Asphalt shingles | 1.57 | 11.99 | 762.6 | 6.75 | 2,360 |
| 8:3 | Carpet and underlay | 2.36 | 9.53 | 404.7 | 10.11 | 3,536 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.62 | 2.39 | 384.2 | 2.68 | 936 |
| | Rock/sand/dirt | 0.07 | 0.62 | 840.2 | 0.32 | 110 |
| 8:5 | Other C/D wastes | 1.23 | 3.38 | 274.7 | 5.28 | 1,846 |
| Category 8 - Construction/Demolition Material | | 6.24 | 15.83 | 253.5 | 26.81 | 9,374 |
| Category 9 - Textiles | | | | | | |
| 9:1 | Clothing | 1.80 | 2.23 | 123.5 | 7.75 | 2,709 |
| 9:2 | Footware | 0.56 | 1.50 | 265.9 | 2.42 | 845 |
| 9:3 | Other textiles | 2.30 | 2.39 | 103.8 | 9.87 | 3,451 |
| Category 9 - Textiles | | 4.67 | 4.11 | 88.1 | 20.04 | 7,005 |
| Category 10 - Rubber | | | | | | |
| 10:1 | Vehicle tires | 0.012 | 0.14 | 1120.2 | 0.05 | 18 |
| 10:2 | Other rubber products | 0.53 | 1.58 | 297.6 | 2.29 | 799 |
| Category 10 - Rubber | | 0.54 | 1.60 | 293.8 | 2.34 | 818 |
| Category 11 - Composite Products | | | | | | |
| 11:1 | Disposable diapers | 2.44 | 3.53 | 144.4 | 10.49 | 3,667 |
| 11:2 | Computers (CPU) | 0.19 | 1.03 | 541.3 | 0.82 | 286 |
| 11:3 | Computer monitors | 0.34 | 1.56 | 463.4 | 1.45 | 506 |
| 11:4 | Other computer equipment | 0.21 | 1.13 | 534.6 | 0.91 | 317 |
| 11:5 | Televisions | 0.36 | 2.13 | 588.9 | 1.55 | 543 |
| 11:6 | Other consumer electronics | 0.93 | 2.60 | 279.8 | 3.98 | 1,393 |
| 11:7 | Small appliances | 0.53 | 1.54 | 290.9 | 2.28 | 796 |
| 11:8 | Furniture | 0.88 | 2.71 | 308.6 | 3.77 | 1,318 |
| 11:9 | Other composites | 1.72 | 3.21 | 186.6 | 7.39 | 2,584 |
| Category 11 - Composite Products | | 7.60 | 7.25 | 95.4 | 32.64 | 11,411 |

| | | Waste Composition (Percentage) | | | Waste Generation (kg/pers/year) | Waste Disposal (tonnes/year) |
|---------------------------------------|---|-----------------------------------|-------------|--------------|------------------------------------|---------------------------------|
| | | Mean | S.D. | C.O.V. | Mean | Mean |
| Category 12 - Hazardous Wastes | | | | | | |
| 12:1 | Fluorescent lighting | 0.059 | 0.34 | 584.8 | 0.25 | 87.9 |
| 12:2 | Batteries - automotive (lead acid) | 0.0002 | 0.002 | 1022.0 | 0.001 | 0.3 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household | 0.116 | 0.26 | 220.4 | 0.50 | 174.3 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.059 | 0.38 | 647.3 | 0.26 | 89.2 |
| 12:5 | Automotive oil filters | 0.026 | 0.13 | 498.5 | 0.11 | 39.6 |
| 12:6 | Empty lubricating oil containers | 0.155 | 1.07 | 694.3 | 0.66 | 232.2 |
| 12:7 | Paint - Latex, including containers | 0.056 | 0.31 | 554.4 | 0.24 | 84.2 |
| 12:8 | Paint - Oil-based, including containers | 0.088 | 0.56 | 640.7 | 0.38 | 132.2 |
| 12:9 | Paint in aerosol cans | 0.022 | 0.16 | 747.9 | 0.09 | 32.8 |
| 12:10 | Paint - Automotive, industrial | 0.000 | - | - | 0.00 | 0.0 |
| 12:11 | Empty metal paint/stain cans & lids | 0.241 | 1.74 | 721.8 | 1.03 | 361.1 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.032 | 0.23 | 717.3 | 0.14 | 47.5 |
| 12:13 | Empty aerosol paint cans | 0.014 | 0.05 | 362.2 | 0.06 | 21.1 |
| 12:14 | Solvents, including containers | 0.002 | 0.02 | 1018.3 | 0.01 | 3.1 |
| 12:15 | Empty solvent containers | 0.016 | 0.10 | 632.0 | 0.07 | 24.0 |
| 12:16 | Pesticides, including containers | 0.001 | 0.01 | 1009.3 | 0.00 | 0.8 |
| 12:17 | Empty pesticide containers | 0.000 | - | - | 0.00 | 0.0 |
| 12:18 | Pharmaceuticals, including containers | 0.029 | 0.11 | 397.7 | 0.12 | 43.2 |
| 12:19 | Needles & Sharps | 0.004 | 0.02 | 466.1 | 0.02 | 6.5 |
| 12:20 | Other empty aerosol cans | 0.131 | 0.18 | 139.2 | 0.56 | 197.2 |
| 12:21 | Other hazardous waste | 0.092 | 0.45 | 491.7 | 0.40 | 138.8 |
| Category 12 - Hazardous Wastes | | 1.14 | 2.38 | 208.5 | 4.91 | 1,716 |
| Category 13 - Other | | | | | | |
| 13:1 | Cat litter | 1.86 | 3.61 | 193.5 | 8.00 | 2,799 |
| 13:2 | Non-distinct fines | 1.17 | 2.14 | 183.6 | 5.01 | 1,751 |
| 13:3 | Other wastes | 1.61 | 2.15 | 133.3 | 6.92 | 2,420 |
| Category 13 - Other | | 4.64 | 4.65 | 100.2 | 19.94 | 6,970 |
| Total (%) | | 100.00 | | | 429.38 | 150,128 |

Table B-3. Waste Composition by Sector

| | | Residential | ICI | DLC | Total |
|--|--|--------------------|--------------|-------------|--------------|
| | | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) |
| | | N=103 | N=87 | N=14 | N=204 |
| Category 1 - Paper and Paperboard | | | | | |
| 1:1 | Newsprint (including flyers) | 2.47 | 2.55 | 0.05 | 2.34 |
| 1:2 | Magazines | 0.67 | 0.65 | 0.02 | 0.62 |
| 1:3 | Corrugated cardboard | 1.77 | 2.32 | 0.26 | 1.90 |
| 1:4 | Waxed corrugated cardboard | 0.06 | 0.36 | 0.00 | 0.19 |
| 1:5 | Boxboard | 2.05 | 1.54 | 0.13 | 1.70 |
| 1:6 | Telephone books | 0.14 | 0.04 | 0.00 | 0.09 |
| 1:7 | Books | 0.29 | 0.53 | 0.00 | 0.37 |
| 1:8 | Fine paper (writing, computer, office) | 0.75 | 1.21 | 0.008 | 0.90 |
| 1:9 | Tissue paper, paper towels, napkins | 3.21 | 3.94 | 0.12 | 3.31 |
| 1:10 | Feminine Hygiene Products | 0.34 | 0.09 | 0.003 | 0.21 |
| 1:11 | Gabletop Cartons - Milk | 0.55 | 0.24 | 0.00 | 0.38 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.09 | 0.08 | 0.00 | 0.08 |
| 1:13 | Aceptic boxes - Milk | 0.03 | 0.01 | 0.00 | 0.02 |
| 1:14 | Aceptic boxes - Juice and Other | 0.15 | 0.14 | 0.04 | 0.13 |
| 1:15 | Brown kraft paper, including bags | 0.43 | 0.38 | 0.03 | 0.38 |
| 1:16 | Paper Cups | 0.35 | 0.71 | 0.07 | 0.48 |
| 1:17 | Other paper | 2.89 | 2.82 | 0.47 | 2.69 |
| Category 1 - Paper and Paperboard | | 16.24 | 17.59 | 1.20 | 15.78 |
| Category 2 - Glass | | | | | |
| 2:1 | Beverage Containers | 0.62 | 0.53 | 0.04 | 0.54 |
| 2:2 | Food Containers | 0.85 | 0.46 | 0.01 | 0.62 |
| 2:3 | Other Glass Containers | 0.23 | 0.22 | 0.00 | 0.21 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 0.72 | 0.67 | 0.01 | 0.65 |
| Category 2 - Glass | | 2.41 | 1.88 | 0.06 | 2.02 |
| Category 3 - Ferrous Metals | | | | | |
| 3:1 | Beverage Containers | 0.04 | 0.02 | 0.00 | 0.03 |
| 3:2 | Food Containers | 0.98 | 0.55 | 0.01 | 0.73 |
| 3:3 | Large metal appliances (white goods) | 0.06 | 0.01 | 0.00 | 0.03 |
| 3:4 | Other ferrous metals | 1.60 | 2.45 | 4.19 | 2.14 |
| Category 3 - Ferrous Metals | | 2.68 | 3.03 | 4.20 | 2.93 |
| Category 4 - Non-ferrous Metals | | | | | |
| 4:1 | Beverage Containers | 0.12 | 0.19 | 0.02 | 0.14 |
| 4:2 | Food Containers | 0.062 | 0.030 | 0.00 | 0.04 |
| 4:3 | Aluminum trays and Foil | 0.57 | 0.42 | 0.01 | 0.47 |
| 4:4 | Other non-ferrous metals | 0.26 | 0.27 | 0.05 | 0.25 |
| Category 4 - Non-ferrous Metals | | 1.02 | 0.91 | 0.08 | 0.91 |
| Category 5 - Plastics | | | | | |
| 5:1 | PET (#1) beverage containers | 0.20 | 0.22 | 0.02 | 0.19 |
| 5:2 | PET (#1) food trays | 0.36 | 0.14 | 0.01 | 0.24 |
| 5:3 | PET (#1) - other | 0.18 | 0.08 | 0.01 | 0.13 |
| 5:4 | HDPE (#2) milk jugs | 0.14 | 0.09 | 0.00 | 0.11 |
| 5:5 | HDPE (#2) other beverage containers | 0.06 | 0.11 | 0.01 | 0.08 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.79 | 0.92 | 0.00 | 0.79 |
| 5:7 | Dairy and dairy related tubs and lids | 0.33 | 0.18 | 0.01 | 0.24 |
| 5:8 | PVC (#3) | 0.11 | 0.11 | 0.03 | 0.10 |
| 5:9 | Polypropylene (#5) | 0.22 | 0.12 | 0.00 | 0.16 |
| 5:10 | Polystyrene (#6) | 1.92 | 1.63 | 0.24 | 1.68 |
| 5:11 | Crates, pails and drums (> 25L) | 0.11 | 0.22 | 0.16 | 0.16 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 1.67 | 3.58 | 0.07 | 2.37 |
| 5:13 | Stretch wrap and film | 0.83 | 1.18 | 0.21 | 0.94 |
| 5:14 | Plastic grocery bags | 0.93 | 0.36 | 0.00 | 0.62 |
| 5:15 | Other plastic bags | 3.09 | 2.20 | 0.06 | 2.50 |
| 5:16 | Garbage bags | 1.60 | 2.20 | 0.13 | 1.76 |
| 5:17 | Other plastics | 1.61 | 1.96 | 0.12 | 1.66 |
| Category 5 - Plastics | | 14.16 | 15.29 | 1.09 | 13.74 |

| | | Residential | ICI | DLC | Total |
|--|--|--------------------|--------------|--------------|--------------|
| | | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) |
| Category 6 - Organic Waste | | | | | |
| 6:1 | Food waste | 28.99 | 19.46 | 0.36 | 22.96 |
| 6:2 | Yard waste | 6.43 | 5.20 | 0.26 | 5.48 |
| 6:3 | Animal Faeces | 0.66 | 0.30 | 0.003 | 0.46 |
| 6:4 | Other organic waste | 1.29 | 1.50 | 0.04 | 1.29 |
| Category 6 - Organic Waste | | 37.36 | 26.46 | 0.66 | 30.20 |
| Category 7 - Wood and Wood Products | | | | | |
| 7:1 | Pallets/skids | 0.07 | 0.90 | 0.31 | 0.44 |
| 7:2 | Wooden shingles | 0.00 | 0.00 | 14.13 | 0.97 |
| 7:3 | Wood furniture | 0.50 | 1.13 | 0.00 | 0.73 |
| 7:4 | Other wood - Clean | 0.54 | 1.84 | 10.01 | 1.74 |
| 7:5 | Other wood - Contaminated | 2.18 | 6.24 | 28.06 | 5.69 |
| Category 7 - Wood and Wood Products | | 3.29 | 10.11 | 52.51 | 9.58 |
| Category 8 - Construction/Demolition Material | | | | | |
| 8:1 | Drywall | 0.23 | 0.63 | 0.14 | 0.39 |
| 8:2 | Asphalt shingles | 0.11 | 0.07 | 21.67 | 1.57 |
| 8:3 | Carpet and underlay | 0.71 | 2.62 | 12.84 | 2.36 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.56 | 0.68 | 0.76 | 0.62 |
| | Rock/sand/dirt | 0.03 | 0.04 | 0.56 | 0.07 |
| 8:5 | Other C/D wastes | 0.68 | 1.94 | 0.82 | 1.23 |
| Category 8 - Construction/Demolition Material | | 2.32 | 5.98 | 36.78 | 6.24 |
| Category 9 - Textiles | | | | | |
| 9:1 | Clothing | 2.16 | 1.63 | 0.25 | 1.80 |
| 9:2 | Footware | 0.82 | 0.34 | 0.05 | 0.56 |
| 9:2 | Other textiles | 2.56 | 2.31 | 0.26 | 2.30 |
| Category 9 - Textiles | | 5.55 | 4.28 | 0.56 | 4.67 |
| Category 10 - Rubber | | | | | |
| 10:1 | Vehicle tires | 0.002 | 0.03 | 0.00 | 0.012 |
| 10:2 | Other rubber products | 0.26 | 0.94 | 0.003 | 0.53 |
| Category 10 - Rubber | | 0.27 | 0.96 | 0.00 | 0.54 |
| Category 11 - Composite Products | | | | | |
| 11:1 | Disposable diapers | 3.42 | 1.66 | 0.11 | 2.44 |
| 11:2 | Computers (CPU) | 0.15 | 0.27 | 0.00 | 0.19 |
| 11:3 | Computer monitors | 0.42 | 0.30 | 0.00 | 0.34 |
| 11:4 | Other computer equipment | 0.20 | 0.26 | 0.00 | 0.21 |
| 11:5 | Televisions | 0.25 | 0.55 | 0.00 | 0.36 |
| 11:6 | Other consumer electronics | 0.88 | 1.11 | 0.12 | 0.93 |
| 11:7 | Small appliances | 0.23 | 0.96 | 0.05 | 0.53 |
| 11:8 | Furniture | 0.69 | 0.98 | 1.61 | 0.88 |
| 11:9 | Other composites | 1.46 | 2.31 | 0.02 | 1.72 |
| Category 11 - Composite Products | | 7.70 | 8.40 | 1.91 | 7.60 |

| | | Residential | ICI | DLC | Total |
|---------------------------------------|---|--------------------|---------------|---------------|---------------|
| | | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) |
| Category 12 - Hazardous Wastes | | | | | |
| 12:1 | Fluorescent lighting | 0.004 | 0.133 | 0.000 | 0.059 |
| 12:2 | Batteries - automotive (lead acid) | 0.0002 | 0.0002 | 0.0000 | 0.0002 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household batt | 0.138 | 0.106 | 0.017 | 0.116 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.022 | 0.113 | 0.000 | 0.059 |
| 12:5 | Automotive oil filters | 0.028 | 0.029 | 0.000 | 0.026 |
| 12:6 | Empty lubricating oil containers | 0.029 | 0.328 | 0.000 | 0.155 |
| 12:7 | Paint - Latex, including containers | 0.027 | 0.099 | 0.000 | 0.056 |
| 12:8 | Paint - Oil-based, including containers | 0.091 | 0.098 | 0.000 | 0.088 |
| 12:9 | Paint in aerosol cans | 0.013 | 0.036 | 0.000 | 0.022 |
| 12:10 | Paint - Automotive, industrial | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:11 | Empty metal paint/stain cans & lids | 0.050 | 0.501 | 0.023 | 0.241 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.022 | 0.049 | 0.000 | 0.032 |
| 12:13 | Empty aerosol paint cans | 0.008 | 0.023 | 0.000 | 0.014 |
| 12:14 | Solvents, including containers | 0.000 | 0.005 | 0.000 | 0.002 |
| 12:15 | Empty solvent containers | 0.004 | 0.032 | 0.000 | 0.016 |
| 12:16 | Pesticides, including containers | 0.000 | 0.001 | 0.000 | 0.001 |
| 12:17 | Empty pesticide containers | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:18 | Pharmaceuticals, including containers | 0.033 | 0.028 | 0.000 | 0.029 |
| 12:19 | Needles & Sharps | 0.003 | 0.007 | 0.000 | 0.004 |
| 12:20 | Other empty aerosol cans | 0.176 | 0.097 | 0.019 | 0.131 |
| 12:21 | Other hazardous waste | 0.121 | 0.073 | 0.000 | 0.092 |
| Category 12 - Hazardous Wastes | | 0.77 | 1.76 | 0.06 | 1.14 |
| Category 13 - Other | | | | | |
| 13:1 | Cat litter | 3.02 | 0.75 | 0.26 | 1.86 |
| 13:2 | Non-distinct fines | 1.22 | 1.29 | 0.0025 | 1.17 |
| 13:3 | Other wastes | 2.00 | 1.32 | 0.62 | 1.61 |
| Category 13 - Other | | 6.24 | 3.36 | 0.88 | 4.64 |
| Total (%) | | 100.00 | 100.00 | 100.00 | 100.00 |

APPENDIX C
Detailed Result Tables
Apartment and Condominium Study

Table C-1. Apartment and Condominium Study - Waste Composition

| | | Victoria | Saanich | Oak Bay | Esquimalt | Total |
|--|--|-----------------|----------------|----------------|------------------|--------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| | | N=22 | N=2 | N=4 | N=1 | N=29 |
| Category 1 - Paper and Paperboard | | | | | | |
| 1:1 | Newsprint (including flyers) | 3.55 | 3.84 | 5.39 | 3.51 | 3.82 |
| 1:2 | Magazines | 1.32 | 0.09 | 0.36 | 0.27 | 1.07 |
| 1:3 | Corrugated cardboard | 1.55 | 1.10 | 0.79 | 2.00 | 1.43 |
| 1:4 | Waxed corrugated cardboard | 0.12 | 0.00 | 0.00 | 0.00 | 0.09 |
| 1:5 | Boxboard | 2.34 | 1.81 | 2.45 | 2.99 | 2.34 |
| 1:6 | Telephone books | 0.43 | 0.00 | 0.30 | 0.00 | 0.37 |
| 1:7 | Books | 0.48 | 0.00 | 0.00 | 0.00 | 0.36 |
| 1:8 | Fine paper (writing, computer, office) | 0.83 | 0.36 | 0.31 | 6.39 | 0.92 |
| 1:9 | Tissue paper, paper towels, napkins | 2.83 | 5.49 | 5.24 | 1.38 | 3.30 |
| 1:10 | Feminine Hygiene Products | 0.28 | 0.80 | 1.12 | 0.13 | 0.43 |
| 1:11 | Gabletop Cartons - Milk | 0.58 | 0.00 | 0.79 | 0.33 | 0.56 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.09 | 0.84 | 0.12 | 0.11 | 0.15 |
| 1:13 | Aceptic boxes - Milk | 0.05 | 0.00 | 0.01 | 0.00 | 0.04 |
| 1:14 | Aceptic boxes - Juice and Other | 0.14 | 0.23 | 0.02 | 0.05 | 0.13 |
| 1:15 | Brown kraft paper, including bags | 0.41 | 0.22 | 0.85 | 0.67 | 0.47 |
| 1:16 | Paper Cups | 0.29 | 0.14 | 0.66 | 0.07 | 0.32 |
| 1:17 | Other paper | 3.07 | 1.87 | 2.38 | 0.73 | 2.81 |
| Category 1 - Paper and Paperboard | | 18.39 | 16.79 | 20.78 | 18.63 | 18.61 |
| Category 2 - Glass | | | | | | |
| 2:1 | Beverage Containers | 1.16 | 0.26 | 1.20 | 0.00 | 1.06 |
| 2:2 | Food Containers | 1.22 | 1.58 | 0.71 | 1.53 | 1.18 |
| 2:3 | Other Glass Containers | 0.18 | 0.51 | 0.11 | 0.00 | 0.18 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 0.90 | 0.10 | 1.48 | 1.13 | 0.93 |
| Category 2 - Glass | | 3.45 | 2.44 | 3.49 | 2.66 | 3.36 |
| Category 3 - Ferrous Metals | | | | | | |
| 3:1 | Beverage Containers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3:2 | Food Containers | 1.17 | 1.19 | 1.89 | 1.13 | 1.27 |
| 3:3 | Large metal appliances (white goods) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3:4 | Other ferrous metals | 1.71 | 0.90 | 0.30 | 6.99 | 1.65 |
| Category 3 - Ferrous Metals | | 2.89 | 2.09 | 2.20 | 8.12 | 2.92 |
| Category 4 - Non-ferrous Metals | | | | | | |
| 4:1 | Beverage Containers | 0.18 | 0.04 | 0.06 | 0.23 | 0.16 |
| 4:2 | Food Containers | 0.118 | 0.000 | 0.180 | 0.067 | 0.117 |
| 4:3 | Aluminum trays and Foil | 0.51 | 0.81 | 0.66 | 0.88 | 0.56 |
| 4:4 | Other non-ferrous metals | 0.11 | 0.58 | 0.00 | 1.53 | 0.18 |
| Category 4 - Non-ferrous Metals | | 0.91 | 1.44 | 0.90 | 2.70 | 1.01 |
| Category 5 - Plastics | | | | | | |
| 5:1 | PET (#1) beverage containers | 0.17 | 0.17 | 0.16 | 0.60 | 0.19 |
| 5:2 | PET (#1) food trays | 0.36 | 0.44 | 0.13 | 0.33 | 0.33 |
| 5:3 | PET (#1) - other | 0.15 | 0.62 | 0.17 | 0.00 | 0.18 |
| 5:4 | HDPE (#2) milk jugs | 0.21 | 0.14 | 0.13 | 0.20 | 0.19 |
| 5:5 | HDPE (#2) other beverage containers | 0.15 | 0.00 | 0.02 | 0.00 | 0.11 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.72 | 0.79 | 0.79 | 0.33 | 0.72 |
| 5:7 | Dairy and dairy related tubs and lids | 0.40 | 0.78 | 0.24 | 0.33 | 0.40 |
| 5:8 | PVC (#3) | 0.03 | 0.00 | 0.00 | 0.00 | 0.03 |
| 5:9 | Polypropylene (#5) | 0.21 | 0.43 | 0.14 | 0.00 | 0.21 |
| 5:10 | Polystyrene (#6) | 1.96 | 2.61 | 3.18 | 2.66 | 2.20 |
| 5:11 | Crates, pails and drums (> 25L) | 0.19 | 0.00 | 0.00 | 0.00 | 0.14 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 1.15 | 0.59 | 1.20 | 0.20 | 1.09 |
| 5:13 | Stretch wrap and film | 0.61 | 1.34 | 2.07 | 0.00 | 0.84 |
| 5:14 | Plastic grocery bags | 1.10 | 2.12 | 1.68 | 0.43 | 1.22 |
| 5:15 | Other plastic bags | 2.71 | 2.74 | 3.33 | 3.19 | 2.81 |
| 5:16 | Garbage bags | 1.33 | 0.60 | 2.67 | 2.00 | 1.49 |
| 5:17 | Other plastics | 1.67 | 1.74 | 2.17 | 0.67 | 1.71 |
| Category 5 - Plastics | | 13.12 | 15.11 | 18.09 | 10.94 | 13.87 |

| | | Victoria | Saanich | Oak Bay | Esquimalt | Total |
|--|--|-----------------|----------------|----------------|------------------|--------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| Category 6 - Organic Waste | | | | | | |
| 6:1 | Food waste | 32.57 | 45.79 | 33.83 | 25.62 | 33.42 |
| 6:2 | Yard waste | 2.34 | 2.26 | 3.17 | 0.27 | 2.38 |
| 6:3 | Animal Faeces | 0.33 | 0.16 | 0.00 | 0.33 | 0.27 |
| 6:4 | Other organic waste | 1.03 | 0.00 | 0.41 | 9.25 | 1.16 |
| Category 6 - Organic Waste | | 36.27 | 48.22 | 37.42 | 35.46 | 37.22 |
| Category 7 - Wood and Wood Products | | | | | | |
| 7:1 | Pallets/skids | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:2 | Wooden shingles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:3 | Wood furniture | 0.98 | 0.00 | 0.00 | 0.00 | 0.74 |
| 7:4 | Other wood - Clean | 0.14 | 0.00 | 0.00 | 0.00 | 0.10 |
| 7:5 | Other wood - Contaminated | 1.96 | 0.00 | 0.00 | 0.00 | 1.49 |
| Category 7 - Wood and Wood Products | | 3.08 | 0.00 | 0.00 | 0.00 | 2.34 |
| Category 8 - Construction/Demolition Material | | | | | | |
| 8:1 | Drywall | 0.31 | 0.00 | 0.00 | 0.84 | 0.26 |
| 8:2 | Asphalt shingles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:3 | Carpet and underlay | 1.08 | 0.00 | 0.00 | 0.00 | 0.82 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.62 | 7.49 | 0.38 | 0.00 | 1.04 |
| | Rock/sand/dirt | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:5 | Other C/D wastes | 0.90 | 0.00 | 0.00 | 0.00 | 0.68 |
| Category 8 - Construction/Demolition Material | | 2.91 | 7.49 | 0.38 | 0.84 | 2.80 |
| Category 9 - Textiles | | | | | | |
| 9:1 | Clothing | 2.05 | 0.41 | 0.25 | 0.04 | 1.62 |
| 9:2 | Footwear | 0.72 | 0.00 | 4.73 | 0.00 | 1.20 |
| 9:2 | Other textiles | 2.05 | 0.69 | 0.55 | 1.96 | 1.74 |
| Category 9 - Textiles | | 4.81 | 1.10 | 5.53 | 2.00 | 4.56 |
| Category 10 - Rubber | | | | | | |
| 10:1 | Vehicle tires | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10:2 | Other rubber products | 0.07 | 0.11 | 0.01 | 0.01 | 0.06 |
| Category 10 - Rubber | | 0.07 | 0.11 | 0.01 | 0.01 | 0.06 |
| Category 11 - Composite Products | | | | | | |
| 11:1 | Disposable diapers | 2.64 | 0.00 | 0.68 | 2.46 | 2.18 |
| 11:2 | Computers (CPU) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:3 | Computer monitors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:4 | Other computer equipment | 0.06 | 0.00 | 0.00 | 0.00 | 0.05 |
| 11:5 | Televisions | 0.97 | 0.00 | 0.00 | 0.00 | 0.73 |
| 11:6 | Other consumer electronics | 1.38 | 0.00 | 4.18 | 0.00 | 1.62 |
| 11:7 | Small appliances | 0.05 | 0.00 | 0.00 | 0.00 | 0.04 |
| 11:8 | Furniture | 0.83 | 0.00 | 0.00 | 0.00 | 0.63 |
| 11:9 | Other composites | 1.15 | 0.31 | 1.33 | 1.40 | 1.12 |
| Category 11 - Composite Products | | 7.08 | 0.31 | 6.20 | 3.86 | 6.38 |

| | | Victoria | Saanich | Oak Bay | Esquimalt | Total |
|---------------------------------------|---|-----------------|----------------|----------------|------------------|---------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| Category 12 - Hazardous Wastes | | | | | | |
| 12:1 | Fluorescent lighting | 0.006 | 0.141 | 0.000 | 0.000 | 0.014 |
| 12:2 | Batteries - automotive (lead acid) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household batt | 0.119 | 0.072 | 0.345 | 0.067 | 0.145 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:5 | Automotive oil filters | 0.013 | 0.000 | 0.000 | 0.000 | 0.010 |
| 12:6 | Empty lubricating oil containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:7 | Paint - Latex, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:8 | Paint - Oil-based, including containers | 0.012 | 0.000 | 0.000 | 0.000 | 0.009 |
| 12:9 | Paint in aerosol cans | 0.011 | 0.000 | 0.039 | 0.000 | 0.014 |
| 12:10 | Paint - Automotive, industrial | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:11 | Empty metal paint/stain cans & lids | 0.023 | 0.000 | 0.000 | 0.000 | 0.017 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:13 | Empty aerosol paint cans | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:14 | Solvents, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:15 | Empty solvent containers | 0.000 | 0.217 | 0.000 | 0.000 | 0.015 |
| 12:16 | Pesticides, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:17 | Empty pesticide containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:18 | Pharmaceuticals, including containers | 0.030 | 0.000 | 0.002 | 0.000 | 0.023 |
| 12:19 | Needles & Sharps | 0.004 | 0.000 | 0.000 | 0.000 | 0.003 |
| 12:20 | Other empty aerosol cans | 0.118 | 0.431 | 0.008 | 0.146 | 0.126 |
| 12:21 | Other hazardous waste | 0.035 | 1.060 | 0.065 | 0.000 | 0.109 |
| Category 12 - Hazardous Wastes | | 0.37 | 1.92 | 0.46 | 0.21 | 0.48 |
| Category 13 - Other | | | | | | |
| 13:1 | Cat litter | 2.64 | 0.00 | 1.90 | 11.58 | 2.66 |
| 13:2 | Non-distinct fines | 1.84 | 0.00 | 0.00 | 2.99 | 1.50 |
| 13:3 | Other wastes | 2.17 | 2.98 | 2.64 | 0.00 | 2.22 |
| Category 13 - Other | | 6.65 | 2.98 | 4.54 | 14.57 | 6.38 |
| Total (%) | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Table C-2. Neighbourhood Study - Waste Composition

| | | Victoria | Saanich | Esquimalt | Oak Bay | Total |
|--|--|-----------------|----------------|------------------|----------------|--------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| | | N=5 | N=3 | N=2 | N=2 | N=12 |
| Category 1 - Paper and Paperboard | | | | | | |
| 1:1 | Newsprint (including flyers) | 2.02 | 1.01 | 1.98 | 0.45 | 1.50 |
| 1:2 | Magazines | 0.17 | 0.42 | 0.00 | 0.32 | 0.23 |
| 1:3 | Corrugated cardboard | 1.83 | 0.88 | 1.23 | 1.72 | 1.48 |
| 1:4 | Waxed corrugated cardboard | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:5 | Boxboard | 1.65 | 1.43 | 1.49 | 1.54 | 1.55 |
| 1:6 | Telephone books | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:7 | Books | 0.01 | 0.02 | 0.00 | 0.00 | 0.01 |
| 1:8 | Fine paper (writing, computer, office) | 0.49 | 0.62 | 0.69 | 0.41 | 0.54 |
| 1:9 | Tissue paper, paper towels, napkins | 2.98 | 5.66 | 5.27 | 3.17 | 4.06 |
| 1:10 | Feminine Hygiene Products | 0.07 | 0.29 | 0.26 | 0.58 | 0.24 |
| 1:11 | Gabletop Cartons - Milk | 0.37 | 0.90 | 0.53 | 1.11 | 0.65 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.16 | 0.06 | 0.00 | 0.07 | 0.09 |
| 1:13 | Aceptic boxes - Milk | 0.04 | 0.00 | 0.06 | 0.05 | 0.03 |
| 1:14 | Aceptic boxes - Juice and Other | 0.15 | 0.32 | 0.08 | 0.41 | 0.23 |
| 1:15 | Brown kraft paper, including bags | 0.33 | 0.77 | 0.42 | 0.68 | 0.51 |
| 1:16 | Paper Cups | 0.34 | 0.17 | 0.27 | 0.39 | 0.29 |
| 1:17 | Other paper | 1.56 | 2.87 | 3.84 | 3.28 | 2.56 |
| Category 1 - Paper and Paperboard | | 12.16 | 15.42 | 16.13 | 14.19 | 13.98 |
| Category 2 - Glass | | | | | | |
| 2:1 | Beverage Containers | 0.16 | 0.51 | 0.00 | 2.08 | 0.54 |
| 2:2 | Food Containers | 0.35 | 0.71 | 0.43 | 1.38 | 0.63 |
| 2:3 | Other Glass Containers | 0.00 | 0.00 | 0.18 | 0.00 | 0.03 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 1.03 | 0.87 | 0.44 | 0.27 | 0.76 |
| Category 2 - Glass | | 1.53 | 2.09 | 1.05 | 3.72 | 1.96 |
| Category 3 - Ferrous Metals | | | | | | |
| 3:1 | Beverage Containers | 0.05 | 0.00 | 0.00 | 0.00 | 0.02 |
| 3:2 | Food Containers | 1.11 | 1.04 | 0.23 | 0.70 | 0.88 |
| 3:3 | Large metal appliances (white goods) | 0.00 | 0.00 | 0.35 | 0.00 | 0.06 |
| 3:4 | Other ferrous metals | 2.38 | 1.11 | 2.13 | 0.70 | 1.74 |
| Category 3 - Ferrous Metals | | 3.53 | 2.16 | 2.71 | 1.39 | 2.70 |
| Category 4 - Non-ferrous Metals | | | | | | |
| 4:1 | Beverage Containers | 0.11 | 0.05 | 0.10 | 0.08 | 0.09 |
| 4:2 | Food Containers | 0.034 | 0.111 | 0.019 | 0.153 | 0.071 |
| 4:3 | Aluminum trays and Foil | 0.48 | 0.99 | 0.73 | 0.77 | 0.70 |
| 4:4 | Other non-ferrous metals | 0.34 | 0.00 | 0.00 | 0.00 | 0.14 |
| Category 4 - Non-ferrous Metals | | 0.97 | 1.15 | 0.84 | 1.00 | 1.00 |
| Category 5 - Plastics | | | | | | |
| 5:1 | PET (#1) beverage containers | 0.22 | 0.21 | 0.26 | 0.25 | 0.23 |
| 5:2 | PET (#1) food trays | 0.39 | 0.68 | 0.88 | 0.31 | 0.53 |
| 5:3 | PET (#1) - other | 0.16 | 0.18 | 0.52 | 0.15 | 0.23 |
| 5:4 | HDPE (#2) milk jugs | 0.09 | 0.08 | 0.06 | 0.11 | 0.09 |
| 5:5 | HDPE (#2) other beverage containers | 0.05 | 0.00 | 0.06 | 0.04 | 0.04 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.61 | 1.25 | 0.90 | 0.56 | 0.81 |
| 5:7 | Dairy and dairy related tubs and lids | 0.24 | 0.33 | 0.27 | 0.41 | 0.30 |
| 5:8 | PVC (#3) | 1.28 | 0.15 | 0.05 | 0.00 | 0.58 |
| 5:9 | Polypropylene (#5) | 0.11 | 0.16 | 0.93 | 0.15 | 0.27 |
| 5:10 | Polystyrene (#6) | 2.17 | 3.13 | 1.67 | 2.36 | 2.36 |
| 5:11 | Crates, pails and drums (> 25L) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 6.19 | 2.41 | 1.04 | 1.34 | 3.58 |
| 5:13 | Stretch wrap and film | 0.88 | 1.33 | 0.63 | 0.93 | 0.96 |
| 5:14 | Plastic grocery bags | 0.53 | 0.90 | 0.97 | 1.17 | 0.80 |
| 5:15 | Other plastic bags | 3.84 | 5.82 | 4.21 | 5.49 | 4.67 |
| 5:16 | Garbage bags | 1.59 | 1.88 | 1.97 | 1.67 | 1.74 |
| 5:17 | Other plastics | 3.97 | 1.45 | 0.73 | 1.15 | 2.33 |
| Category 5 - Plastics | | 22.32 | 19.98 | 15.16 | 16.10 | 19.50 |

| | | Victoria | Saanich | Esquimalt | Oak Bay | Total |
|--|--|-----------------|----------------|------------------|----------------|--------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| Category 6 - Organic Waste | | | | | | |
| 6:1 | Food waste | 24.72 | 31.58 | 32.36 | 31.55 | 28.85 |
| 6:2 | Yard waste | 8.91 | 1.74 | 4.27 | 1.62 | 5.13 |
| 6:3 | Animal Faeces | 0.59 | 1.11 | 4.51 | 0.62 | 1.38 |
| 6:4 | Other organic waste | 1.38 | 2.57 | 0.85 | 2.86 | 1.84 |
| Category 6 - Organic Waste | | 35.61 | 37.01 | 41.99 | 36.66 | 37.20 |
| Category 7 - Wood and Wood Products | | | | | | |
| 7:1 | Pallets/skids | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:2 | Wooden shingles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:3 | Wood furniture | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:4 | Other wood - Clean | 1.45 | 0.00 | 0.00 | 0.00 | 0.60 |
| 7:5 | Other wood - Contaminated | 4.65 | 1.14 | 0.74 | 0.75 | 2.47 |
| Category 7 - Wood and Wood Products | | 6.10 | 1.14 | 0.74 | 0.75 | 3.08 |
| Category 8 - Construction/Demolition Material | | | | | | |
| 8:1 | Drywall | 0.15 | 0.00 | 0.00 | 0.44 | 0.13 |
| 8:2 | Asphalt shingles | 0.46 | 0.00 | 0.00 | 0.00 | 0.19 |
| 8:3 | Carpet and underlay | 0.85 | 1.46 | 0.00 | 0.00 | 0.72 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.37 | 1.06 | 0.00 | 0.00 | 0.42 |
| | Rock/sand/dirt | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:5 | Other C/D wastes | 0.66 | 0.11 | 0.00 | 0.00 | 0.30 |
| Category 8 - Construction/Demolition Material | | 2.49 | 2.62 | 0.00 | 0.44 | 1.77 |
| Category 9 - Textiles | | | | | | |
| 9:1 | Clothing | 1.23 | 1.57 | 4.61 | 4.50 | 2.42 |
| 9:2 | Footware | 0.76 | 0.38 | 0.38 | 0.94 | 0.63 |
| 9:2 | Other textiles | 3.72 | 3.93 | 2.02 | 4.66 | 3.65 |
| Category 9 - Textiles | | 5.70 | 5.88 | 7.01 | 10.11 | 6.70 |
| Category 10 - Rubber | | | | | | |
| 10:1 | Vehicle tires | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10:2 | Other rubber products | 0.41 | 0.89 | 0.08 | 0.02 | 0.41 |
| Category 10 - Rubber | | 0.41 | 0.89 | 0.08 | 0.02 | 0.41 |
| Category 11 - Composite Products | | | | | | |
| 11:1 | Disposable diapers | 2.67 | 0.94 | 6.80 | 9.78 | 4.11 |
| 11:2 | Computers (CPU) | 0.00 | 0.00 | 0.00 | 2.40 | 0.40 |
| 11:3 | Computer monitors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:4 | Other computer equipment | 0.00 | 1.07 | 0.00 | 0.00 | 0.27 |
| 11:5 | Televisions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:6 | Other consumer electronics | 0.15 | 0.12 | 0.57 | 0.00 | 0.19 |
| 11:7 | Small appliances | 0.21 | 0.26 | 0.32 | 0.48 | 0.28 |
| 11:8 | Furniture | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:9 | Other composites | 1.16 | 1.17 | 0.81 | 0.51 | 1.00 |
| Category 11 - Composite Products | | 4.19 | 3.57 | 8.49 | 13.16 | 6.25 |

| | | Victoria | Saanich | Esquimalt | Oak Bay | Total |
|---------------------------------------|---|-----------------|----------------|------------------|----------------|---------------|
| | | Mean | Mean | Mean | Mean | Mean |
| | | (%) | (%) | (%) | (%) | (%) |
| Category 12 - Hazardous Wastes | | | | | | |
| 12:1 | Fluorescent lighting | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:2 | Batteries - automotive (lead acid) | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household batt | 0.047 | 0.160 | 0.177 | 0.108 | 0.107 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.011 | 0.000 | 0.000 | 0.000 | 0.005 |
| 12:5 | Automotive oil filters | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:6 | Empty lubricating oil containers | 0.014 | 0.054 | 0.027 | 0.000 | 0.024 |
| 12:7 | Paint - Latex, including containers | 0.067 | 0.128 | 0.000 | 0.000 | 0.060 |
| 12:8 | Paint - Oil-based, including containers | 0.012 | 0.562 | 0.000 | 0.000 | 0.146 |
| 12:9 | Paint in aerosol cans | 0.047 | 0.000 | 0.000 | 0.000 | 0.020 |
| 12:10 | Paint - Automotive, industrial | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:11 | Empty metal paint/stain cans & lids | 0.000 | 0.000 | 0.217 | 0.000 | 0.036 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.000 | 0.110 | 0.000 | 0.000 | 0.027 |
| 12:13 | Empty aerosol paint cans | 0.064 | 0.051 | 0.000 | 0.000 | 0.040 |
| 12:14 | Solvents, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:15 | Empty solvent containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:16 | Pesticides, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:17 | Empty pesticide containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:18 | Pharmaceuticals, including containers | 0.168 | 0.023 | 0.020 | 0.135 | 0.102 |
| 12:19 | Needles & Sharps | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 |
| 12:20 | Other empty aerosol cans | 0.170 | 0.187 | 0.263 | 0.198 | 0.194 |
| 12:21 | Other hazardous waste | 0.000 | 0.156 | 0.000 | 0.000 | 0.039 |
| Category 12 - Hazardous Wastes | | 0.60 | 1.43 | 0.70 | 0.44 | 0.80 |
| Category 13 - Other | | | | | | |
| 13:1 | Cat litter | 2.07 | 4.72 | 2.26 | 0.30 | 2.47 |
| 13:2 | Non-distinct fines | 1.10 | 0.00 | 1.02 | 0.00 | 0.63 |
| 13:3 | Other wastes | 1.22 | 1.95 | 1.82 | 1.71 | 1.58 |
| Category 13 - Other | | 4.39 | 6.67 | 5.10 | 2.01 | 4.68 |
| Total (%) | | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

APPENDIX D
Detailed Result Tables
Special ICI Study

Table D-1. Special ICI Study - Waste Composition

| Client Sample Number Sorting Season | | ICI-1 | | ICI-2 | | ICI-3 | ICI-4 | ICI-5 | | ICI-6 | | ICI-7 | |
|---|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|
| | | 11-3 | 15-1 | 11-4 | 10-3 | 14-2 | 15-2 | 16-4 | 18-1 | 17-3 | 12-3 | 18-2 | 12-2 |
| | | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Spring | Fall | Spring | Fall | Spring |
| | | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| | | N=1 | N=1 | N=1 |
| Category 1 - Paper and Paperboard | | | | | | | | | | | | | |
| 1:1 | Newsprint (including flyers) | 1.19 | 1.56 | 1.74 | 3.12 | 17.15 | 2.38 | 1.50 | 2.27 | 6.21 | 3.73 | 0.05 | 0.38 |
| 1:2 | Magazines | 0.00 | 12.71 | 0.00 | 0.34 | 1.78 | 1.12 | 0.00 | 0.00 | 0.00 | 0.40 | 0.03 | 0.00 |
| 1:3 | Corrugated cardboard | 1.25 | 0.92 | 6.13 | 2.71 | 0.96 | 0.62 | 1.65 | 2.47 | 4.25 | 3.42 | 0.03 | 1.78 |
| 1:4 | Waxed corrugated cardboard | 0.00 | 1.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:5 | Boxboard | 1.98 | 0.89 | 1.33 | 1.78 | 0.89 | 4.67 | 3.87 | 5.25 | 1.43 | 1.25 | 0.15 | 0.18 |
| 1:6 | Telephone books | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:7 | Books | 0.00 | 5.36 | 0.00 | 0.00 | 0.25 | 0.00 | 0.00 | 1.98 | 1.49 | 0.00 | 0.00 | 0.00 |
| 1:8 | Fine paper (writing, computer, office) | 3.27 | 5.65 | 0.93 | 0.93 | 0.46 | 1.49 | 0.00 | 3.89 | 1.20 | 7.86 | 0.13 | 1.90 |
| 1:9 | Tissue paper, paper towels, napkins | 8.82 | 9.40 | 3.95 | 5.16 | 2.47 | 12.84 | 2.34 | 6.35 | 25.36 | 24.45 | 5.90 | 29.10 |
| 1:10 | Feminine Hygiene Products | 0.00 | 0.00 | 0.07 | 0.00 | 0.20 | 0.00 | 0.00 | 0.02 | 0.02 | 0.00 | 0.05 | 0.00 |
| 1:11 | Gabletop Cartons - Milk | 0.24 | 0.18 | 0.00 | 0.42 | 0.17 | 0.19 | 0.41 | 0.19 | 0.40 | 0.27 | 0.20 | 0.43 |
| 1:12 | Gabletop Cartons - Juice and Other | 0.00 | 0.00 | 0.22 | 0.12 | 0.00 | 0.00 | 0.00 | 0.11 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:13 | Aceptic boxes - Milk | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1:14 | Aceptic boxes - Juice and Other | 0.01 | 0.07 | 0.04 | 0.17 | 1.79 | 0.02 | 0.26 | 0.12 | 0.13 | 0.51 | 0.04 | 0.12 |
| 1:15 | Brown kraft paper, including bags | 0.63 | 0.21 | 0.12 | 0.36 | 0.25 | 0.88 | 0.18 | 0.25 | 0.13 | 0.00 | 0.16 | 0.61 |
| 1:16 | Paper Cups | 0.28 | 0.14 | 0.35 | 0.93 | 0.05 | 4.35 | 1.20 | 2.04 | 1.73 | 1.92 | 0.62 | 2.63 |
| 1:17 | Other paper | 2.84 | 1.95 | 1.67 | 2.12 | 1.73 | 3.61 | 10.05 | 10.31 | 9.41 | 1.76 | 0.44 | 2.14 |
| Category 1 - Paper and Paperboard | | 20.51 | 41.00 | 16.56 | 18.16 | 28.16 | 32.17 | 21.47 | 35.25 | 51.76 | 45.56 | 7.80 | 39.28 |
| Category 2 - Glass | | | | | | | | | | | | | |
| 2:1 | Beverage Containers | 0.00 | 0.00 | 1.77 | 0.00 | 0.00 | 1.93 | 1.57 | 2.84 | 0.00 | 1.68 | 0.17 | 0.50 |
| 2:2 | Food Containers | 0.00 | 0.00 | 0.22 | 3.48 | 0.65 | 0.00 | 0.00 | 0.26 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2:3 | Other Glass Containers | 0.00 | 8.49 | 2.82 | 0.00 | 0.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2:4 | Other glass (plate, mirrors, light bulbs) | 13.59 | 4.01 | 0.00 | 0.00 | 0.00 | 0.27 | 2.72 | 1.05 | 0.00 | 0.33 | 0.07 | 0.00 |
| Category 2 - Glass | | 13.59 | 12.49 | 4.80 | 3.48 | 1.20 | 2.20 | 4.28 | 3.89 | 0.26 | 2.01 | 0.24 | 0.50 |
| Category 3 - Ferrous Metals | | | | | | | | | | | | | |
| 3:1 | Beverage Containers | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.28 | 0.00 | 0.00 | 0.00 |
| 3:2 | Food Containers | 0.38 | 0.18 | 0.28 | 0.59 | 1.08 | 0.00 | 0.41 | 0.00 | 0.52 | 0.00 | 0.00 | 0.31 |
| 3:3 | Large metal appliances (white goods) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3:4 | Other ferrous metals | 0.14 | 3.98 | 1.07 | 3.14 | 1.35 | 0.29 | 8.29 | 11.43 | 0.00 | 0.70 | 0.03 | 5.82 |
| Category 3 - Ferrous Metals | | 0.52 | 4.16 | 1.35 | 3.73 | 2.43 | 0.29 | 8.70 | 11.43 | 0.79 | 0.70 | 0.03 | 6.12 |
| Category 4 - Non-ferrous Metals | | | | | | | | | | | | | |
| 4:1 | Beverage Containers | 0.02 | 0.04 | 0.11 | 0.17 | 0.07 | 0.19 | 0.49 | 0.31 | 0.02 | 0.00 | 0.03 | 0.06 |
| 4:2 | Food Containers | 0.000 | 0.000 | 0.000 | 0.085 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.380 | 0.000 | 0.037 |
| 4:3 | Aluminum trays and Foil | 2.25 | 8.30 | 0.43 | 0.80 | 0.53 | 0.19 | 0.41 | 0.37 | 0.17 | 0.10 | 0.15 | 0.43 |
| 4:4 | Other non-ferrous metals | 0.00 | 0.25 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.86 | 0.00 | 0.00 | 0.85 | 0.00 |
| Category 4 - Non-ferrous Metals | | 2.27 | 8.58 | 0.69 | 1.05 | 0.60 | 0.37 | 0.91 | 1.54 | 0.20 | 0.48 | 1.04 | 0.53 |
| Category 5 - Plastics | | | | | | | | | | | | | |
| 5:1 | PET (#1) beverage containers | 0.00 | 0.00 | 0.46 | 0.34 | 0.02 | 0.61 | 1.71 | 1.66 | 0.00 | 0.00 | 0.06 | 0.12 |
| 5:2 | PET (#1) food trays | 0.10 | 0.11 | 0.40 | 0.08 | 0.12 | 0.12 | 0.00 | 0.19 | 0.29 | 0.00 | 0.07 | 0.18 |
| 5:3 | PET (#1) - other | 0.02 | 0.04 | 0.34 | 0.00 | 0.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.70 | 0.00 | 0.18 |
| 5:4 | HDPE (#2) milk jugs | 0.00 | 0.00 | 0.00 | 0.25 | 0.19 | 0.00 | 0.00 | 0.43 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5:5 | HDPE (#2) other beverage containers | 0.00 | 0.00 | 0.00 | 0.51 | 0.00 | 0.00 | 0.00 | 0.43 | 0.00 | 0.00 | 0.00 | 0.24 |
| 5:6 | Other HDPE (#2) jugs and bottles | 0.00 | 0.21 | 1.32 | 0.59 | 0.35 | 1.78 | 1.14 | 3.40 | 1.07 | 1.36 | 0.10 | 0.31 |
| 5:7 | Dairy and dairy related tubs and lids | 0.10 | 0.14 | 0.06 | 0.34 | 0.41 | 0.25 | 0.00 | 0.05 | 0.29 | 0.05 | 0.07 | 0.43 |
| 5:8 | PVC (#3) | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5:9 | Polypropylene (#5) | 0.08 | 0.07 | 0.03 | 0.00 | 0.20 | 0.15 | 0.00 | 0.00 | 0.14 | 0.00 | 0.05 | 0.31 |
| 5:10 | Polystyrene (#6) | 0.55 | 2.20 | 1.92 | 3.05 | 0.87 | 4.11 | 1.48 | 2.59 | 0.69 | 2.39 | 0.87 | 7.01 |
| 5:11 | Crates, pails and drums (> 25L) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.19 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5:12 | Other rigid plastic items (toys, lawn furniture) | 0.72 | 0.39 | 1.51 | 1.44 | 0.28 | 5.90 | 1.05 | 1.05 | 1.19 | 1.14 | 0.96 | 6.80 |
| 5:13 | Stretch wrap and film | 2.84 | 1.35 | 0.68 | 0.51 | 0.29 | 2.74 | 0.82 | 0.37 | 0.92 | 0.76 | 0.17 | 0.37 |
| 5:14 | Plastic grocery bags | 0.15 | 0.09 | 0.82 | 0.12 | 0.73 | 0.39 | 0.00 | 0.02 | 0.05 | 1.00 | 0.05 | 1.25 |
| 5:15 | Other plastic bags | 0.62 | 1.07 | 0.81 | 1.02 | 1.01 | 2.49 | 0.66 | 2.35 | 1.15 | 2.39 | 0.66 | 3.06 |
| 5:16 | Garbage bags | 2.15 | 2.70 | 1.61 | 4.07 | 1.35 | 9.46 | 0.00 | 2.22 | 3.21 | 6.18 | 1.27 | 4.65 |
| 5:17 | Other plastics | 2.77 | 1.78 | 0.00 | 9.84 | 0.63 | 9.08 | 1.48 | 3.21 | 8.26 | 2.49 | 1.49 | 2.82 |
| Category 5 - Plastics | | 10.13 | 10.14 | 10.64 | 22.17 | 6.50 | 37.06 | 8.36 | 23.16 | 17.24 | 18.46 | 5.81 | 27.73 |

| Client Sample Number Sorting Season | | ICI-1 | | ICI-2 | | ICI-3 | ICI-4 | ICI-5 | | ICI-6 | | ICI-7 | |
|--|--|--------------|-------------|--------------|--------------|--------------|--------------|--------------|-------------|--------------|--------------|--------------|--------------|
| | | 11-3 | 15-1 | 11-4 | 10-3 | 14-2 | 15-2 | 16-4 | 18-1 | 17-3 | 12-3 | 18-2 | 12-2 |
| | | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Spring | Fall | Spring | Fall | Spring |
| | | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) |
| Category 6 - Organic Waste | | | | | | | | | | | | | |
| 6:1 | Food waste | 6.27 | 6.36 | 18.43 | 11.79 | 30.30 | 11.01 | 5.36 | 6.98 | 6.25 | 14.26 | 13.05 | 15.37 |
| 6:2 | Yard waste | 0.00 | 0.00 | 0.00 | 0.51 | 1.73 | 0.75 | 37.41 | 0.37 | 1.26 | 0.00 | 0.00 | 0.61 |
| 6:3 | Animal Faeces | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.06 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6:4 | Other organic waste | 0.00 | 3.44 | 0.00 | 0.00 | 0.72 | 0.00 | 0.00 | 0.56 | 0.00 | 0.00 | 66.18 | 1.78 |
| Category 6 - Organic Waste | | 6.27 | 9.80 | 18.43 | 12.30 | 32.76 | 12.70 | 42.77 | 7.97 | 7.51 | 14.26 | 79.22 | 17.76 |
| Category 7 - Wood and Wood Products | | | | | | | | | | | | | |
| 7:1 | Pallets/skids | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:2 | Wooden shingles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:3 | Wood furniture | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7:4 | Other wood - Clean | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.10 |
| 7:5 | Other wood - Contaminated | 5.27 | 0.00 | 1.67 | 3.22 | 0.00 | 0.00 | 0.00 | 1.98 | 0.00 | 0.00 | 0.00 | 0.00 |
| Category 7 - Wood and Wood Products | | 5.27 | 0.00 | 1.67 | 3.22 | 0.00 | 0.00 | 0.00 | 1.98 | 0.00 | 0.00 | 0.00 | 1.10 |
| Category 8 - Construction/Demolition Material | | | | | | | | | | | | | |
| 8:1 | Drywall | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.03 | 0.00 |
| 8:2 | Asphalt shingles | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:3 | Carpet and underlay | 0.00 | 0.99 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:4 | Masonry (Bricks, blocks, concrete, ceramics) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.49 | 0.00 | 0.00 |
| | Rock/sand/dirt | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8:5 | Other C/D wastes | 0.00 | 0.25 | 19.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Category 8 - Construction/Demolition Material | | 0.00 | 1.24 | 19.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.49 | 0.03 | 0.00 |
| Category 9 - Textiles | | | | | | | | | | | | | |
| 9:1 | Clothing | 0.23 | 0.00 | 1.51 | 7.68 | 0.42 | 0.00 | 0.00 | 0.78 | 0.00 | 0.00 | 0.00 | 0.16 |
| 9:2 | Footwear | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 9:2 | Other textiles | 0.00 | 6.83 | 11.41 | 13.14 | 0.64 | 1.39 | 0.36 | 0.52 | 0.00 | 1.63 | 0.16 | 0.20 |
| Category 9 - Textiles | | 0.23 | 6.83 | 12.92 | 20.83 | 1.06 | 1.39 | 0.36 | 1.30 | 0.00 | 1.63 | 0.16 | 0.36 |
| Category 10 - Rubber | | | | | | | | | | | | | |
| 10:1 | Vehicle tires | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10:2 | Other rubber products | 1.32 | 2.10 | 2.30 | 0.05 | 0.05 | 5.98 | 4.14 | 2.16 | 15.55 | 12.20 | 1.10 | 5.33 |
| Category 10 - Rubber | | 1.32 | 2.10 | 2.30 | 0.05 | 0.05 | 5.98 | 4.14 | 2.16 | 15.55 | 12.20 | 1.10 | 5.33 |
| Category 11 - Composite Products | | | | | | | | | | | | | |
| 11:1 | Disposable diapers | 0.00 | 0.00 | 0.84 | 0.00 | 9.06 | 2.75 | 0.00 | 0.43 | 0.20 | 0.00 | 0.00 | 0.00 |
| 11:2 | Computers (CPU) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:3 | Computer monitors | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:4 | Other computer equipment | 1.53 | 0.00 | 0.00 | 0.00 | 9.64 | 0.00 | 0.00 | 0.15 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:5 | Televisions | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:6 | Other consumer electronics | 0.00 | 0.00 | 2.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:7 | Small appliances | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.74 | 0.00 |
| 11:8 | Furniture | 0.00 | 2.13 | 0.00 | 0.00 | 5.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 11:9 | Other composites | 33.76 | 0.14 | 3.28 | 0.00 | 0.00 | 0.62 | 3.63 | 1.42 | 4.47 | 1.19 | 1.75 | 0.00 |
| Category 11 - Composite Products | | 35.28 | 2.27 | 6.23 | 0.00 | 23.94 | 3.37 | 3.63 | 2.00 | 4.67 | 1.19 | 2.49 | 0.00 |

| Client Sample Number Sorting Season | ICI-1 | | ICI-2 | | ICI-3 | ICI-4 | ICI-5 | | ICI-6 | | ICI-7 | | |
|---|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| | 11-3 | 15-1 | 11-4 | 10-3 | 14-2 | 15-2 | 16-4 | 18-1 | 17-3 | 12-3 | 18-2 | 12-2 | |
| | Fall | Spring | Fall | Spring | Fall | Fall | Fall | Spring | Fall | Spring | Fall | Spring | |
| | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | (%) | |
| Category 12 - Hazardous Wastes | | | | | | | | | | | | | |
| 12:1 | Fluorescent lighting | 2.911 | 0.000 | 1.456 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.778 | 0.434 | 0.000 | 0.000 |
| 12:2 | Batteries - automotive (lead acid) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:3 | Batteries-Dry cell, alkaline, button cell, other household | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.025 | 0.023 | 0.000 | 0.013 | 0.000 |
| 12:4 | Lubricating (motor, transmission) oil, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.519 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:5 | Automotive oil filters | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.568 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:6 | Empty lubricating oil containers | 0.000 | 0.000 | 0.056 | 14.077 | 0.000 | 0.000 | 4.450 | 1.853 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:7 | Paint - Latex, including containers | 0.000 | 0.000 | 0.743 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:8 | Paint - Oil-based, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:9 | Paint in aerosol cans | 0.000 | 0.000 | 0.248 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:10 | Paint - Automotive, industrial | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:11 | Empty metal paint/stain cans & lids | 0.000 | 0.000 | 1.734 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:12 | Empty plastic paint/stain cans & lids | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:13 | Empty aerosol paint cans | 0.000 | 0.000 | 0.192 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:14 | Solvents, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:15 | Empty solvent containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.564 | 0.000 | 0.000 |
| 12:16 | Pesticides, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:17 | Empty pesticide containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:18 | Pharmaceuticals, including containers | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 12:19 | Needles & Sharps | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.162 | 0.000 | 0.000 | 0.034 | 0.011 | 0.000 | 0.000 |
| 12:20 | Other empty aerosol cans | 0.062 | 0.000 | 0.000 | 0.000 | 0.434 | 0.000 | 0.939 | 0.000 | 0.184 | 0.000 | 0.000 | 0.000 |
| 12:21 | Other hazardous waste | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.494 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Category 12 - Hazardous Wastes | | 2.97 | 0.00 | 4.44 | 14.08 | 0.43 | 0.16 | 5.39 | 3.46 | 2.02 | 1.01 | 0.01 | 0.00 |
| Category 13 - Other | | | | | | | | | | | | | |
| 13:1 | Cat litter | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 13:2 | Non-distinct fines | 0.00 | 0.00 | 0.00 | 0.00 | 1.13 | 4.29 | 0.00 | 0.00 | 0.00 | 0.00 | 1.73 | 0.00 |
| 13:3 | Other wastes | 1.63 | 1.39 | 0.55 | 0.93 | 1.71 | 0.00 | 0.00 | 5.87 | 0.00 | 0.00 | 0.33 | 1.29 |
| Category 13 - Other | | 1.63 | 1.39 | 0.55 | 0.93 | 2.84 | 4.29 | 0.00 | 5.87 | 0.00 | 0.00 | 2.05 | 1.29 |
| Total (%) | | 100.00 |

APPENDIX E
Result Tables
Collected Recyclables

Table E-1a. Recyclable materials collected by Alpine Disposal from three apartment buildings and from one of the selected ICI generators (Fairfield Shell) fall 2004.

| Address | City | ONP (kg) | OCC/Boxboard (kg) | Paper (kg) | Garbage (kg) | Glass (kg) | Plastic (kg) | Tin (kg) |
|----------------------------------|----------|----------|-------------------|------------|--------------|------------|--------------|----------|
| 1465 Fort Street | Victoria | 30 | 4 | 4 | 2 | 10 | 5 | 5 |
| 2500 Quadra | Victoria | 28 | 12 | 9 | 6 | 22 | 7 | 8 |
| 215 Oswego | Victoria | 41 | 13 | 6 | 2 | 17 | 5 | 7 |
| 1090 Fairfield (Fairfield Shell) | Victoria | - | 37 | - | - | - | - | - |

Table E-1b. Recyclable materials collected by Alpine Disposal from three apartment buildings and from one of the selected ICI generators (Fairfield Shell) spring 2005.

| Address | City | ONP (kg) | OCC/Boxboard (kg) | Paper (kg) | Garbage (kg) | Glass (kg) | Plastic (kg) | Tin (kg) |
|----------------------------------|----------|----------|-------------------|------------|--------------|------------|--------------|----------|
| 1465 Fort Street | Victoria | 105 | 15 | 20 | - | 20 | 10 | 10 |
| 2500 Quadra | Victoria | 70 | 20 | 20 | - | 20 | 5 | 5 |
| 215 Oswego | Victoria | 80 | 10 | 20 | - | 30 | 5 | 10 |
| 1090 Fairfield (Fairfield Shell) | Victoria | - | 25 | - | - | - | - | - |

Table E-2a. Recyclable materials sorted by Metro Materials in Victoria.

CRD Curbside Waste Composition Study
 1-Dec-04
 District of Saanich residential curbside recyclables
 Collected by Canadian Waste Systems

| FIBRE | Tonnes | % |
|------------------------|---------------|----------|
| OCC | 0.27 | 5.8% |
| MWP | 1.977 | 42.8% |
| ONP | 2.321 | 50.2% |
| Pizza Boxes | 0.013 | 0.3% |
| Outthrows (Containers) | 0.032 | 0.7% |
| Waste | 0.007 | 0.2% |
| | 4.62 | |

| CONTAINERS | Tonnes | % |
|-----------------------|---------------|----------|
| PET - Mixed | #1 0.037 | 4.1% |
| HDPE - Milk Jugs | #2 0.042 | 4.6% |
| HDPE - Color | #2 0.046 | 5.1% |
| PVC | #3 0.006 | 0.7% |
| Polypropylene | #5 0.029 | 3.2% |
| Plastic serving trays | #6 0.002 | 0.2% |
| Plastics | #7 0.004 | 0.4% |
| Mixed Plastic | 0.010 | 1.1% |
| Film (Grocery Bags) | 0.002 | 0.2% |
| Tin | 0.197 | 21.7% |
| Aluminum | 0.003 | 0.3% |
| Glass | 0.401 | 44.2% |
| Aluminum Deposit | 0.002 | 0.2% |
| PET - Deposit | 0.010 | 1.1% |
| Tetra - Deposit | 0.001 | 0.1% |
| Gable - Deposit | 0.005 | 0.6% |
| Bubble Pak | 0.021 | 2.3% |
| Outthrows (Fibre) | 0.017 | 1.9% |
| Waste | 0.073 | 8.0% |
| | 0.908 | |

Table E-2b. Recyclable materials sorted by BFI in Victoria.

CRD Curbside Waste Composition Study
 25-Apr-05
 District of Saanich residential curbside recyclables
 Collected by Canadian Waste Systems

| FIBRE | Tonnes | % |
|------------------------|---------------|----------|
| OCC | 0.54 | 15.2% |
| MWP | 1.33 | 37.5% |
| ONP | 1.576 | 44.4% |
| Pizza Boxes | | 0.0% |
| Outthrows (Containers) | | 0.0% |
| Waste | 0.10 | 2.8% |
| | 3.546 | |

| CONTAINERS | Tonnes | % |
|-------------------|---------------|----------|
| PET - Mixed | #1 | 0.0% |
| HDPE - Opaque | #2 | 0.05 |
| HDPE - Color | #2 | 0.05 |
| Mixed Plastic | | 0.425 |
| Tin | | 0.496 |
| Glass | | 0.952 |
| | 1.973 | |

Table E-3. Recyclable materials sorted by Metro Materials in Victoria.

CRD Curbside Waste Composition Study
 26-Nov-04
 Town of Esquimalt
 Collected by Canadian Waste Systems

| FIBRE | Tonnes | % |
|------------------------|---------------------|---------------|
| OCC | 0.568 | 13.1% |
| MWP | 1.264 | 29.2% |
| ONP | 2.456 | 56.6% |
| Pizza Boxes | 0.014 | 0.3% |
| Outthrows (Containers) | 0.033 | 0.8% |
| Waste | 0.001 | 0.0% |
| | 4.336 tonnes | 100.0% |

| CONTAINERS | Tonnes | % |
|---------------------|---------------------|---------------|
| PET - Mixed | #1 0.024 | 1.8% |
| HDPE - Milk Jugs | #2 0.053 | 4.0% |
| HDPE - Color | #2 0.047 | 3.6% |
| PVC | #3 0.007 | 0.5% |
| Polypropylene | #5 0.023 | 1.7% |
| Styrofoam | 0.003 | 0.2% |
| Plastics | #7 0.001 | 0.1% |
| Mixed Plastic | 0.013 | 1.0% |
| Film (Grocery Bags) | 0.008 | 0.6% |
| Tin | 0.209 | 15.8% |
| Aluminum | 0.003 | 0.2% |
| Glass | 0.243 | 18.4% |
| Aluminum Deposit | 0.002 | 0.2% |
| PET - Deposit | 0.010 | 0.8% |
| Tetra - Deposit | 0.002 | 0.2% |
| Gable - Deposit | 0.007 | 0.5% |
| Bubble Pak | 0.007 | 0.5% |
| Outthrows (Fibre) | 0.657 | 49.8% |
| Waste | | 0.0% |
| | 1.319 tonnes | 100.0% |

Table E-4. Recyclable materials sorted by Metro Materials in Victoria.

CRD Curbside Waste Composition Study
 25-Nov-04
 Town of Esquimalt
 Collected by Canadian Waste Systems

| FIBRE | Tonnes | % |
|------------------------|---------------|----------|
| OCC | 0.125 | 6.0% |
| MWP | 0.83 | 39.5% |
| ONP | 1.103 | 52.5% |
| Pizza Boxes | 0.002 | 0.1% |
| Outthrows (Containers) | 0.038 | 1.8% |
| Waste | 0.002 | 0.1% |
| 2.1 tonnes | | |

| CONTAINERS | Tonnes | % |
|-------------------------|---------------|---------------|
| PET - Mixed | #1 0.19 | 26.8% |
| HDPE - Milk Jugs | #2 0.043 | 6.1% |
| HDPE - Color | #2 0.01 | 1.4% |
| PVC | #3 0.001 | 0.1% |
| Polypropylene | #5 0.016 | 2.3% |
| Styrofoam Serving Trays | 0.005 | 0.7% |
| Plastics | #7 0.012 | 1.7% |
| Mixed Plastic | 0.015 | 2.1% |
| Film (Grocery Bags) | 0.004 | 0.6% |
| Tin | 0.129 | 18.2% |
| Aluminum | 0.002 | 0.3% |
| Glass | 0.217 | 30.6% |
| Aluminum Deposit | 0.001 | 0.1% |
| PET - Deposit | 0.008 | 1.1% |
| Tetra - Deposit | 0.002 | 0.3% |
| Gable - Deposit | | 0.0% |
| Bubble Pak | 0.008 | 1.1% |
| Outthrows (Fibre) | 0.037 | 5.2% |
| Waste | 0.009 | 1.3% |
| 0.709 tonnes | | 100.0% |

Table E-5. Recyclable materials sorted by Metro Materials in Victoria.

CRD Curbside Waste Composition Study
 1-Dec-04
 Town of Esquimalt
 Collected by Oak Bay municipal staff

| FIBRE | Tonnes | % |
|------------------------|---------------------|----------|
| OCC | 0.126 | 2.3% |
| MWP | 1.76 | 32.8% |
| ONP | 3.438 | 64.1% |
| Pizza Boxes | 0.009 | 0.2% |
| Outthrows (Containers) | 0.019 | 0.4% |
| Waste | 0.012 | 0.2% |
| | 5.364 tonnes | |

| CONTAINERS | | Tonnes | % |
|------------------------|----|---------------------|---------------|
| PET - Mixed | #1 | 0.03 | 3.1% |
| HDPE - Milk Jugs | #2 | 0.072 | 7.4% |
| HDPE - Color | #2 | 0.044 | 4.5% |
| PVC | #3 | 0.009 | 0.9% |
| Polypropylene | #5 | 0.039 | 4.0% |
| Stryfoam Serving Trays | | 0.008 | 0.8% |
| Plastics | #7 | 0.003 | 0.3% |
| Mixed Plastic | | 0.009 | 0.9% |
| Film (Grocery Bags) | | 0.003 | 0.3% |
| Tin | | 0.198 | 20.2% |
| Aluminum | | 0.004 | 0.4% |
| Glass | | 0.515 | 52.7% |
| Aluminum Deposit | | 0.003 | 0.3% |
| PET - Deposit | | 0.009 | 0.9% |
| Tetra - Deposit | | 0.001 | 0.1% |
| Gable - Deposit | | 0.001 | 0.1% |
| Bubble Pak | | 0.024 | 2.5% |
| Outthrows (Fibre) | | 0.002 | 0.2% |
| Waste | | 0.004 | 0.4% |
| | | 0.978 tonnes | 100.0% |

Table E-6. Recyclable materials sorted by Metro Materials in Victoria.

CRD Curbside Waste Composition Study
 26-Nov-04
 Town of Esquimalt
 CRD5
 BLFR
 55 Bay Street Victoria?

| FIBRE | | Tonnes | % |
|------------------------|--|---------------------|----------|
| OCC | | 0.013 | 4.5% |
| MWP | | 0.133 | 46.0% |
| ONP | | 0.143 | 49.5% |
| Pizza Boxes | | | 0.0% |
| Outthrows (Containers) | | | 0.0% |
| Waste | | | 0.0% |
| | | 0.289 tonnes | |

| CONTAINERS | | Tonnes | % |
|-------------------------|----|---------------------|---------------|
| PET - Mixed | #1 | 0.009 | 19.1% |
| HDPE - Milk Jugs | #2 | 0.001 | 2.1% |
| HDPE - Color | #2 | 0.015 | 31.9% |
| PVC | #3 | | 0.0% |
| Polypropylene | #5 | | 0.0% |
| Styrofoam Serving Trays | #6 | 0.001 | 2.1% |
| Plastics | #7 | | 0.0% |
| Mixed Plastic | | | 0.0% |
| Film (Grocery Bags) | | | 0.0% |
| Tin | | 0.006 | 12.8% |
| Aluminum | | | 0.0% |
| Glass | | 0.004 | 8.5% |
| Aluminum Deposit | | 0.001 | 2.1% |
| PET - Deposit | | | 0.0% |
| Tetra - Deposit | | | 0.0% |
| Gable - Deposit | | | 0.0% |
| Bubble Pak | | | 0.0% |
| Outthrows (Fibre) | | 0.006 | 12.8% |
| Waste | | 0.004 | 8.5% |
| | | 0.047 tonnes | 100.0% |

Table E-7. Recyclable materials sorted by Metro Materials in Victoria.

CRD Waste Composition Study
 26-Nov-04
 Town of Esquimalt
 Apartment Load: 951 Topaz
 BLFR

| FIBRE | | Tonnes | % |
|------------------------|--|----------------------|----------|
| OCC | | 0.002 | 3.3% |
| MWP | | 0.037 | 61.6% |
| ONP | | 0.021 | 34.9% |
| Pizza Boxes | | 0.0001 | 0.2% |
| Outthrows (Containers) | | | 0.0% |
| Waste | | | 0.0% |
| | | 0.0601 tonnes | |

| CONTAINERS | | Tonnes | % |
|-----------------------|----|---------------------|---------------|
| PET - Mixed | #1 | 0.001 | 2.4% |
| HDPE - Milk Jugs | #2 | 0.002 | 4.9% |
| HDPE - Color | #2 | 0.006 | 14.6% |
| PVC | #3 | | 0.0% |
| Polypropylene | #5 | | 0.0% |
| Plastic serving trays | #6 | | 0.0% |
| Plastics | #7 | | 0.0% |
| Mixed Plastic | | 0.003 | 7.3% |
| Film (Grocery Bags) | | | 0.0% |
| Tin | | 0.007 | 17.1% |
| Aluminum | | | 0.0% |
| Glass | | 0.018 | 43.9% |
| Aluminum Deposit | | | 0.0% |
| PET - Deposit | | | 0.0% |
| Tetra - Deposit | | | 0.0% |
| Gable - Deposit | | | 0.0% |
| Bubble Pak | | | 0.0% |
| Outthrows (Fibre) | | 0.002 | 4.9% |
| Waste | | 0.002 | 4.9% |
| | | 0.041 tonnes | 100.0% |