

DATE: February 28, 2018

FILE: 5380-01

TO: Chair and Directors
Comox Valley Regional District (Comox Strathcona Waste Management Board)

FROM: Russell Dyson
Chief Administrative Officer

Supported by Russell Dyson
Chief Administrative Officer

RE: 2017 Waste composition report

R. Dyson

Purpose

To provide the Comox Strathcona Waste Management Board (CSWM Board) the 2017 waste composition report for waste currently disposed at the Comox Valley Waste Management Centre (CVWMC) and the Campbell River Waste Management Centre (CRWMC).

Recommendation from the Chief Administrative Officer:

This report is for informational purposes only.

Executive Summary

A waste composition audit was completed by AET Group Inc. (AET) to better understand the waste stream compositions being landfilled within the Comox Strathcona Waste Management (CSWM) service. The audit includes only that portion of waste being deposited into a landfill which equates to approximately 50 per cent of the total waste stream. The audit approach includes:

- Waste collection made over a two-week study period in the fall 2017 for waste disposed at the CVWMC and CRWMC.
- Waste classification in two main categories; recyclable and non-divertible, and 56 material categories including food waste, yard waste, plastics, non-recyclable plastics, metals, glass or hazardous waste.

Some of the key findings include:

- Potentially 50 per cent of waste currently disposed of at the CVWMC and CRWMC could have been recycled according to the current recycling programs (assuming organics as a recyclable material) in the CSWM service.
- The largest components of divertible materials are:
 - Food waste (20.2 per cent);
 - Yard waste (4.7 per cent);
 - Paper and paper packaging (8.7 per cent); and
 - Plastic packaging (4.1 per cent).
- The overall composition for all the samples combined can be found in section 3.3 of Appendix A, being the AET 2017 waste composition report.

Limitations of the report:

- Results of the 2017 waste composition report should be considered a snapshot of a specific period in time, and may not accurately reflect conditions across the CSWM service area over time.
- It should be noted that the yard waste percentages could be inflated at the time of year the audit was undertaken (fall 2017).

- In order to account for waste changes over time, additional waste composition audits should be undertaken in the future.

The waste composition report confirms that organics represent a high percentage of the waste stream currently disposed. Considering that the waste being disposed at the CVWMC and CRWMC in 2016 accounted for approximately 51 per cent of the total estimated waste stream, by diverting food and yard waste the CSWM service could increase its total diversion rate up to 60.1 per cent. Similarly, if all the potentially divertible waste had been diverted from the landfills, the total diversion rate would increase to 73 per cent, which is above the Solid Waste Management Plan (SWMP) diversion target of 70 per cent by the year 2020.

The SWMP is designed to achieve a waste diversion rate of over 70 per cent. The waste composition audit identifies materials, both within the recyclables and non-divertible waste streams, which could be further reduced to achieve this diversion rate. This could be achieved by strengthening existing recycling programs and implementing new ones.

The report also provides important information about other divertible materials, such as paper and plastic, that still enter our landfills even though well-established diversion programs are in place. This information helps to further enhance, educate and enforce existing diversion activities.

The 2017 waste composition report is being used as a source of information to review the SWMP, and to establish the amount of food and yard waste available to be processed at the CSWM regional organics composting facility. Further to that, this report as well as future reviews will help the CSWM service analyze and measure the effectiveness of any recycling or diversion strategies within the service area.

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Background/Current Situation

A waste composition audit was completed by AET to better understand the waste stream compositions deposited at each of the two regional landfills (CVWMC and CRWMC), as well as for the CSWM service area as a whole.

A total of 104 samples of approximately 100 kg per sample were audited over a two week period, from September 25th to October 6th 2017. Each sample was identified with a waste collection area and a source category. The waste collection areas are: CVRD Electoral Areas A, B, C, D, Campbell River, CFB Comox, Comox, Courtenay, Cumberland, Royston Improvement District and other unidentified areas. The source categories are: Self-haul, small Industrial, Commercial and Institutional (ICI)/Multifamily, large ICI, Construction and Demolition (C&D) and curbside.

The report presents the data in such a way that allows for comparison between facilities (CVWMC vs. CRWMC), source categories (e.g. curbside vs. Commercial and Institutional), and waste collection areas (e.g. Comox vs. Courtenay).

Waste was classified into two main categories: recyclable and non-divertible (according to the current recycling programs in the CSWM service area) in order to better understand the waste stream compositions at the two regional landfills. Then, it was classified into 56 material categories including food waste, yard waste, plastics, non-recyclable plastics, metals, glass or hazardous waste to be used as a baseline for measuring the effectiveness of current and future recycling or diversion strategies implemented within the service area. The audit considers only the waste entering the landfills for final disposal, not the total waste stream.

The waste composition audit indicates that potentially 50 per cent of waste currently disposed of in landfills could potentially have been recycled. If this had been the case, the 2016 diversion rate of 47 per cent could have been increased up to 73 per cent, which is above the SWMP diversion target of 70 per cent by the year 2020. The largest components of divertible materials are food waste (20.2 per cent), yard waste (4.7 per cent), paper and paper packaging (8.7 per cent), and plastic packaging (4.1 per cent). The overall composition for all the samples combined can be found in section 3.3 of Appendix A, being the AET 2017 waste composition report.

The audit also shows that 50 per cent of waste currently being disposed is waste for which there is not a recycling program in place. The larger components of non-divertible materials are: other waste (11.17 per cent), treated/painted wood (9.18 per cent), non-recyclable plastics (7.40 per cent), textiles (4.46 per cent), other construction and renovation (3.24 per cent), shingles (2.57 per cent), home furnishings (2.39 per cent), rubble/soil (1.82 per cent).

The SWMP is designed to achieve a waste diversion rate of over 70 per cent by increasing the amount of waste recycled. The waste composition audit identifies materials, both within the recyclables and non-divertible waste streams, which could be further reduced to achieve this diversion rate. This could be achieved by strengthening existing recycling programs and implementing new ones. Further education, awareness campaigns, additional and improvement of existing recovery programs, and improvement of the current waste management practices are a few of the measures that could be implemented.

One of the limitations of this audit is that the results represent just the characteristics of the waste received at the facilities during the audited two week period, as waste composition changes over time. Apart from this, given that ICI and household waste are recorded under the same landfill scale record, an estimate has been made on the relative contribution of these types of waste.

It is recommended that the Comox Valley Regional District (CVRD) undertakes waste composition studies at regular intervals, frequencies ranging from annually to every five years, to account for any significant program changes and changes in packaging. Moving forward this audit could be used as a baseline for measuring the effectiveness of current or future recycling or diversion strategies implemented within the service area.

This waste composition report confirms that organics represent a high percentage of the waste stream currently disposed. In 2016, waste disposed at the CVWMC and the CRWMC accounted for 51 per cent of the total estimated waste stream (61,674 tonnes out of 120,319 tonnes). Therefore, the 20.2 per cent of food waste and 4.7 per cent of yard waste disposed at these facilities represent approximately 12.7 per cent of the total estimated waste stream. By diverting this 12.7 per cent of food and yard waste, the CSWM service could increase its diversion rate up to 60.1 per cent, in an effort to meet the SWMP diversion targets of 70 per cent by the year 2020.

The 2017 waste composition report is being used as a source of information to analyze the SWMP, and identify areas of improvement after five years since its approval. Apart from this, the waste

composition report is also being used to establish the amount of food and yard waste available to be processed at the CSWM regional organics composting facility. Further to that, the waste composition report will be used in the future to analyze and measure the effectiveness of any recycling or diversion strategies within the service area.

Policy Analysis

The 2017 waste composition study is one of the strategic priorities established by the board to be completed early 2018 and then presented to the Ministry of Environment and Climate Change Strategy.

Options

This report is presented for information only.

Financial Factors

Moving forward, in order to undertake waste composition audits, a budget provision should be made in an amount of \$65,000 per year.

Legal Factors

In order to examine progress towards regional targets, waste composition studies should be conducted regularly.

Regional Growth Strategy Implications

The current waste composition study establishes the baseline towards achieving the objective identified in the Comox Valley Regional Growth Strategy:

- Objective 5-E: Reduce regional solid waste and improve landfill performance.

This objective is also identified in the Comox Valley Sustainability strategy:

- By 2050: The Comox Valley will use a ‘zero waste’ approach and achieve a 90 per cent diversion of waste from landfills

Intergovernmental Factors

The CVRD works in close relation with the Association of Vancouver Island and Coastal Communities (AVICC) Special Committee on solid waste management on synergies and impacts related to the implementation of recycling programs. Information will be offered to organizations such as the Federation of Canadian Municipalities (FCM). FCM has requested studies and reports for waste composition in order to provide a data base for local governments for diversion initiatives and help guide funding programs from senior levels of government.

The waste composition report will be shared with the AVICC Special Committee on solid waste management and the Ministry of Environment.

Attachments: Appendix A – 2017 Comox Strathcona Waste Management Waste Composition Study, dated November 29, 2017

2017 Comox Strathcona Waste Management Waste Composition Study

Waste Composition Study Report

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EXECUTIVE SUMMARY

Comox Valley Regional District contracted AET Group Inc (AET) to conduct waste composition auditing and reporting on the current waste disposal situation occurring at the Comox Valley Waste Management Centre (CVWMC) and Campbell River Waste Management Centre (CRWMC). The results of the study will establish baseline data that details the overall composition of the waste being disposed of at the two facilities. The composition audits focused on the types of waste produced that are classified as Self Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, Construction/Demolition (CND) and Curbside (Single Family Residential). ICI refers to Industrial, Commercial and Institutional sources. Other material types do enter the facilities but were not targeted as part of the scope of this study, (e.g. yard waste, controlled waste/carcasses, drywall/gypsum, etc.).

A total of one hundred and four (104) inbound vehicle samples of approximately 100 kg per sample were audited over the course of the 2-week audit period. Fifty-one (51) samples were audited at CRWMC and fifty-three (53) samples were audited at CVWMC. All garbage sampled was sorted into 56 material categories. The overall composition of each sample type was analyzed. A summary of the results is listed below.

Campbell River Waste Management Centre (CRWMC)

All Samples Combined

- A total of 51 samples of garbage were audited from all sources;
- Organic material accounted for 30.39% of all garbage samples;
- Other divertible material accounted for 23.58% of all garbage samples;
- Non-divertible (See definition) material accounted for 46.03% of all garbage samples.

Self Haul (Cash Drop)

- A total of 23 samples of garbage were audited from Self Haul (Cash Drop) sources;
- Organic material accounted for 14.75% of the Self Haul garbage;
- Other divertible material accounted for 9.20% of the Self Haul garbage;
- Non-divertible material accounted for 76.06% of the Self Haul garbage.

Small ICI/Multi-Family

- A total of 8 samples of garbage were audited from Small ICI/Multi-Family sources;
- Organic material accounted for 28.97% of the Small ICI/Multi-Family garbage;
- Other divertible material accounted for 30.52% of the Small ICI/Multi-Family garbage;
- Non-divertible material accounted for 40.52% of the Small ICI/Multi-Family garbage.

Large ICI

- A total of 3 samples of garbage were audited from Large ICI sources;
- Organic material accounted for 32.36% of the Large ICI garbage;
- Other divertible material accounted for 29.63% of the Large ICI garbage;
- Non-divertible material accounted for 38.01% of the Large ICI garbage.

CND

- A total of 5 samples of garbage were audited from CND sources;
- Organic material accounted for 0.65% of the CND garbage;
- Other divertible material accounted for 9.74% of the CND garbage;
- Non-divertible material accounted for 89.61% of the CND garbage.

Curbside (Single Family Residential)

- A total of 12 samples of garbage were audited from Curbside (Single Family Residential) sources;
- Organic material accounted for 37.78% of the Curbside garbage;
- Other divertible material accounted for 18.54% of the Curbside garbage;
- Non-divertible material accounted for 43.68% of the Curbside garbage.

Comox Valley Waste Management Centre (CVWMC)

All Samples Combined

- A total of 53 samples of garbage were audited from all sources;
- Organic material accounted for 29.21% of all garbage samples;
- Other divertible material accounted for 21.25% of all garbage samples;
- Non-divertible material accounted for 49.53% of all garbage samples.

Self Haul (Cash Drop)

- A total of 14 samples of garbage were audited from Self Haul (Cash Drop) sources;
- Organic material accounted for 10.47% of the Self Haul garbage;
- Other divertible material accounted for 10.60% of the Self Haul garbage;
- Non-divertible material accounted for 78.93% of the Self Haul garbage.

Small ICI/Multi-Family

- A total of 13 samples of garbage were audited from Small ICI/Multi-Family sources;
- Organic material accounted for 33.26% of the Small ICI/Multi-Family garbage;
- Other divertible material accounted for 29.22% of the Small ICI/Multi-Family garbage;
- Non-divertible material accounted for 37.52% of the Small ICI/Multi-Family garbage.

Large ICI

- A total of 5 samples of garbage were audited from Large ICI sources;
- Organic material accounted for 39.97% of the Large ICI garbage;
- Other divertible material accounted for 27.42% of the Large ICI garbage;
- Non-divertible material accounted for 32.61% of the Large ICI garbage.

CND

- A total of 11 samples of garbage were audited from CND sources;
- Organic material accounted for 1.86% of the CND garbage;
- Other divertible material accounted for 6.08% of the CND garbage;
- Non-divertible material accounted for 92.05% of the CND garbage.

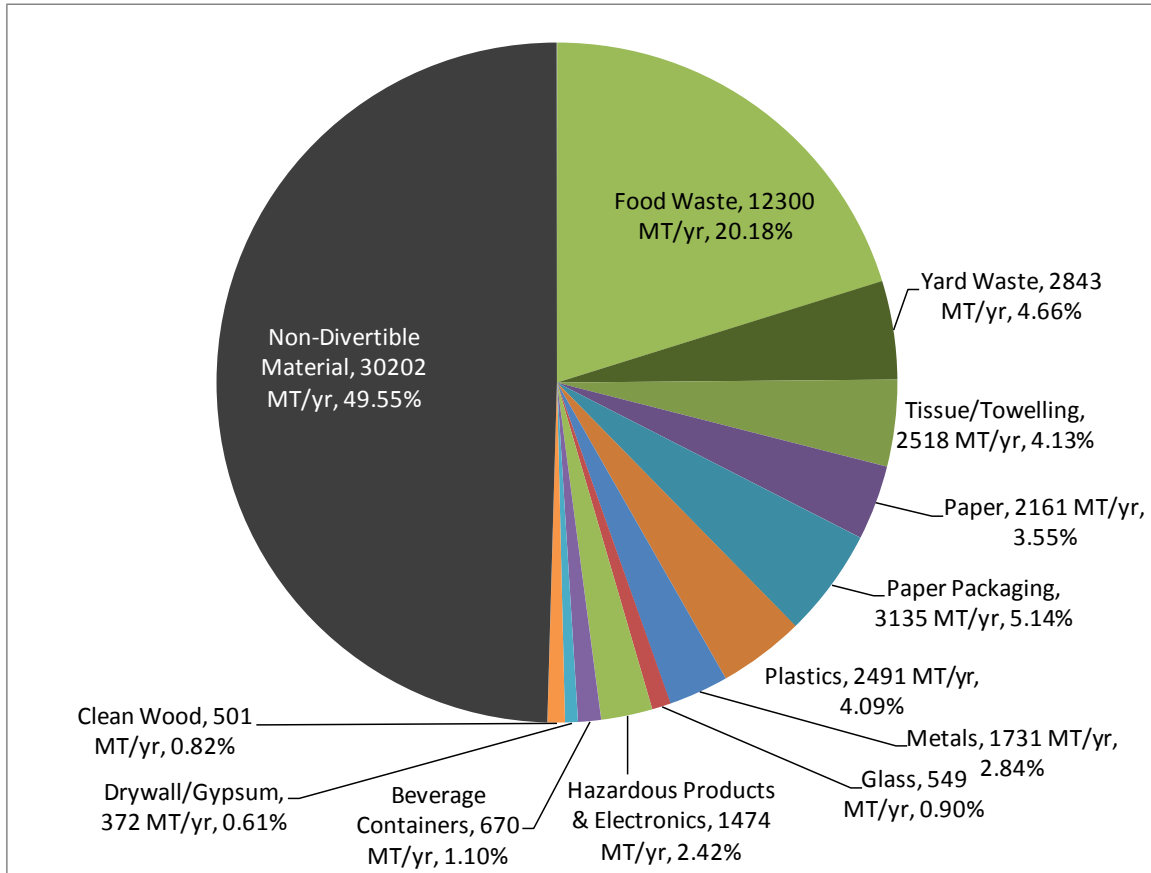
Curbside (Single Family Residential)

- A total of 10 samples of garbage were audited from Curbside (Single Family Residential) sources;
- Organic material accounted for 45.23% of the Curbside garbage;
- Other divertible material accounted for 20.01% of the Curbside garbage;
- Non-divertible material accounted for 34.76% of the Curbside garbage.

CRWMC & CVWMC Combined

All Samples Combined

- A total of 104 samples of garbage were audited from both facilities;
- Organic material accounted for 28.98% of all garbage samples;
- Other divertible material accounted for 21.47% of all garbage samples;
- Non-divertible material accounted for 49.55% of all garbage samples;
- The figure below illustrates the composition of garbage sampled from both facilities.



Composition by Sample Area

- The following table provides an overview of the composition of garbage from the different areas within Comox Valley Regional District. Caution should be used when looking at areas with low sample sizes.

Area	Samples Audited	Non-Divertible Materials	Recyclable Material	Acceptable Organic Material	Total
Electoral Area A	1	31.99%	22.97%	45.04%	100%
Electoral Area B	3	31.31%	19.65%	49.04%	100%
Electoral Area C	7	49.51%	14.83%	35.66%	100%
Electoral Area D	2	42.80%	32.02%	25.18%	100%
Campbell River	29	45.66%	24.41%	29.93%	100%
CFB Comox	3	64.08%	15.80%	20.12%	100%
Comox	14	46.60%	22.36%	31.04%	100%
Courtenay	10	43.05%	26.33%	30.62%	100%
Cumberland	9	77.12%	12.45%	10.44%	100%
Royston Improvement District	1	36.56%	23.21%	40.22%	100%
Unidentified Source	25	76.34%	10.50%	13.16%	100%

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- Appendix A: Detailed Waste Audit Results
- Appendix B: Waste Audit Category Descriptions
- Appendix C: Visual Auditing Density Conversion Factors

1.0 INTRODUCTION

1.1 Definitions

Construction/Demolition (CND):

Sample type classification containing loads carrying material destined for landfill from construction and demolition projects.

Curbside (Single Family Residential):

Sample type classification containing loads carrying material destined for landfill from single family residential curbside collection sources, otherwise known as household garbage.

Divertible Material:

Material that has a current diversion program in place and could have been captured prior to entering the landfill. This includes items such as recyclable paper, paper packaging, plastics, metals, glass, hazardous products & electronics, organic material (food waste, yard waste & paper tissue/towelling), beverage containers, drywall/gypsum & clean wood.

Garbage Stream:

Material that is collected for disposal rather than diversion. It will include divertible material (recyclable/compostable materials) where the diversion programs are not operating at 100% capture. This material is sometimes referred to as residual waste or landfilled.

Large ICI:

Sample type classification containing loads carrying material destined for landfill from Large ICI sources. This would include garbage originating from hospitals, grocery stores, department stores and schools.

Non-Divertible Material:

Material that does not have a current diversion program in place and is properly disposed of in the landfill.

Organic Material:

Term used when referring to organic material accepted in the Organics Compost Program. Material that falls into this category includes food waste, yard waste and paper tissue/towelling. Food waste and yard waste captured by the curbside organic pilot project is not included as this material is already diverted. The discussion around organic material in this report refers to organic material being placed in the garbage stream and has the potential to be captured.

PPP:

Packaging and Printed Paper materials classified under Recycle BC's Stewardship program.

Small ICI/Multi-Family:

Sample type classification containing loads carrying material destined for landfill from Small ICI/Multi-Family sources. This includes garbage originating from apartment complexes and small businesses.

Self Haul (Cash Drop):

Sample type classification containing loads carrying material destined for landfill from smaller vehicles that would have an unknown source. Self Haul (Cash Drop) loads may be originating from residential sources or small businesses. The vehicles are directed to a drop area where garbage is combined from several vehicles into large roll off bins. Once the bins are full, they are then transported to the tipping face of the landfill.

1.2 Background

Comox Valley Regional District contracted AET Group Inc (AET) to conduct waste composition auditing and reporting on the current waste disposal situation occurring at the Comox Valley Waste Management Centre (CVWMC) and Campbell River Waste Management Centre (CRWMC). The results of the study will establish baseline data that details the overall composition of the waste being disposed of at the two facilities. The composition audits focused on the types of waste produced that are classified as Self Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, Construction/Demolition (CND) and Curbside (Single Family Residential).

1.3 Audit Scope

The scope of the study involved a physical composition audit of inbound garbage entering each of the two facilities (CVWMC & CRWMC). The goal was to obtain an understanding of the composition and amounts of garbage that is currently being landfilled. Audits were completed over a two week sampling period at each location. During the sampling period, a minimum of fifty (50) samples from each facility were taken. The study period took place from September 25th to October 6th, 2017.

2.0 APPROACH AND METHODOLOGY

2.1 Waste Sampling Process

The general audit approach and methodology is based on AET’s extensive experience conducting similar studies, generally accepted audit approaches used in other jurisdictions and audit guidelines (e.g. Canadian Council of Ministers of the Environment Recommended Waste Characterization Methodology, 1999, BC Waste Characterization Tool, 2012).

Landfill records were not available prior to the commencement of the audit so AET auditors selected sample loads at random but ensured that a variety of sources were sampled. Samples

selected were categorized as Self-Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, CND or Curbside (Single Family Residential).

Other material types do enter the facilities but were not targeted as part of the scope of this study, (e.g. yard waste, controlled waste/carcasses, drywall/gypsum, etc.). A total of one hundred and four (104) inbound vehicle samples of approximately 100 kg per sample were audited over the course of the 2-week audit period. Fifty one (51) samples were audited at CRWMC and fifty three (53) samples were audited at CVWMC. A combination of visual and detailed composition audits were completed on loads which contained a significant amount of bulky materials and the results were combined together to gain an overall composition of that particular load. For example, if a CND load came in that consisted largely of construction materials, the auditors would estimate the total volume of the construction material. In many cases, bagged material was extracted from the load and audited in detail to ensure the composition of that load was represented accurately.

The inbound vehicles were selected randomly on a next available basis. For example, at the beginning of the day once the first sample had been obtained that met the sample criteria and sub-sampling had been completed to the desired weight, AET randomly selected from the next available vehicle load that met the sample criteria.

AET and landfill staff worked together to coordinate sample collection. As material entered the waste management facility's inbound scale, the scale house operator determined the source of the material in the vehicle (i.e., Demolition, Mixed Solid Waste, etc.). If the material in the vehicle met the desired material source that was to be sampled from that day, the scale house operator notified AET's onsite Team Leader via radio and the inbound material was delivered to the designated tipping area for sampling.

Collection Logs

Upon arrival of the inbound load, the following data was gathered from the vehicle's driver by AET staff:

- Material Source Verification
- License Plate Number
- Hauling Company (if applicable)
- Vehicle Type (Roll Off - Uncompacted, Cube Van, Front End - Tandem Axle etc.)
- Any observations or anomalies within the load

With the acquired vehicle and material information, AET staff completed a waste collection log sheet for each inbound vehicle sampled. The log sheet included such information as sample number, date, time, material source, license plate number, hauling company, and net weight of load (obtained from the scale house operator at the end of each sampling day) and any additional observations about the sample. It should be noted that CVWMC self-haul (Cash Drop)

samples were pulled from the roll-off bins, which contained combined waste from many smaller vehicle loads.

Material Sorting Process

The detailed composition audits included sample extraction from the loads selected for auditing. After a load tipped in the sorting area, AET staff would extract a representative sample. A sub-sample of approximately 100 kg was randomly collected from each load, weighing the selected material before sorting to ensure that the target weight has been achieved before physically auditing. If a load contained a considerable proportion of large/bulky materials (e.g. furniture, wood, etc.), these materials were noted, but not included in the sub-sample collected for detailed auditing. The proportion of the load attributable to large/bulky items was accounted for in the final analysis of the composition of that load.

All sub-samples were physically sorted and weighed separately (into individually tared bins) into approximately 56 categories (e.g. Newsprint, Recyclable Glass Containers, Clean Wood, Textiles, etc.). The full list of sort categories can be found in Appendix B. AET made every reasonable effort to separate multi-material items and to separate food waste from their packaging. Any bags or containers found to contain highly hazardous materials (e.g. sharps) were set aside, weighed and noted on the waste sort worksheet.

Prior to weighing the sorted material, AET took photos of any substantial or unusual material categories and items found in the samples. All sorted material was weighed for each sample using a digital scale (0.01 kg precision up to 40kg +/- 1% of true weight). Tare weights of the bins used for sorting were verified prior to the audit and checked regularly throughout the study to maintain accuracy. Light materials were weighed directly on the scale. The weight of each individual material category was recorded on a waste sort worksheet. Notes were also made on the worksheet describing the contents of categories labeled “other” (e.g. other plastic would be identified – blister packaging, toothpaste tubes, etc.).

Once all the waste material was classified and weighed, it was disposed of with the assistance of facility staff by pushing material away from sorting area and into the designated tipping area.

Visual/Volumetric Waste Auditing Methodology

The sampling and sorting methodology described above is best suited for waste from sources such as Residential Curbside and most mixed ICI sources. However, loads which contain more bulky waste (e.g. Demolition, junk cleanouts, etc.) are better characterized using a visual volumetric auditing approach.

For loads warranting a visual volumetric approach, the auditor completed a walk around of the entire material pile. During this time, a visual volumetric assessment of the material composition was completed. As inbound loads were visually audited, the percentage of

materials by volume was recorded (e.g. 5% corrugated cardboard, 40% clean wood, etc.). The estimated volumes were later converted into weights based on truck size and fullness, up to date standard material bulk density conversion factors, and the net weight of each individual inbound material load. Conversion factors utilized for the analysis of the visual auditing data can be found in Appendix C.

2.2 Assumptions, Limitations & Calculations

- The audit was conducted over a 2-week period in the fall of 2017, therefore, represents conditions and characteristics of waste received at the facilities during that period of time (i.e. a “snapshot” in time). The composition of waste can change over time (e.g. seasonality).
- The extrapolated tonnages are based on 2016 scale records.
- Some waste types/sources are combined within the landfill scale record keeping system (e.g. ICI & household is tracked as one combined waste type). Given that ICI and household waste composition can be quite different, an estimate was made on the relative contribution that each type of waste makes to the overall tonnage reported. For the purposes of this study, the relative tonnages received during the audit period from the various sectors were used to weight the average composition of waste generated annually. It is assumed that the relative tonnages received during the audit period from the various sectors audited are proportionally representative of ratios over time. For example, the scale tonnage labelled as code 02 ICI & Household includes samples categorized as Self Haul (Cash Drop), Small ICI/Multi-Family & Large ICI. An example of the tonnage calculations can be seen in Table 2.1.

Table 2.1 Example of tonnage calculations used for Self-Haul, Small ICI/Multi-Family & Large ICI for Comox Valley

Load Type	Weight of all samples audited (kg)	Proportion based on sample weight (%)	Calculation: Code 02 ICI & Household tonnage = 12,938,501 kg	Total Tonnage by Load Type(kg)
Self Haul (Cash Drop)	26,270	22.01%	22.01% x 12,938,501 kg	2,848,357
Small ICI/Multi-Family	80,350	67.33%	67.33% x 12,938,501 kg	8,712,047
Large ICI	12,710	10.65%	10.65% x 12,938,501 kg	1,378,097
Total	114,230	100.00%		12,938,501

- Yard waste from the Self Haul (Cash Drop) area may include invasive species which Comox Valley Regional District currently considers to be a non-divertible item.

- Caution should be exercised when looking at large amounts of yard waste present in the Large ICI samples as there were only 3 samples taken at Campbell River Waste Management Centre. In addition, the yard waste could include invasive species.
- The self haul (cash drop) samples audited at the CVWMC were aggregate samples taken from the depot roll-off bins, which contained waste from many vehicles, therefore, the waste composition cannot be attributed on a source by source basis for these samples (e.g. Courtney vs. Electoral Area A, etc.).
- Factors such as compaction, wetness and size of materials can affect the volume density of various materials, which may not always be reflected in the visual audit results, due to the use of standard volume density conversion factors.

2.3 Considerations for Future Audits

It is recommended that the CVRD undertakes waste composition studies at regular intervals over time. Even without implementing any significant program changes, waste characteristics are continually changing (i.e. the “evolving tonne”). For example, changing consumer behaviours (e.g. online shopping, digital media vs. print), changing packaging materials (e.g. laminated stand-up pouches vs. rigid plastic containers), lightweighting of packaging materials (e.g. one PET water bottle today weighs significantly less than one from several years ago), just to name a few. Should budgets permit, consideration should be given to conducting audits at various times throughout a year, in order to capture seasonal variability. Seasonal fluctuations could be influenced by factors such as: kids being in school vs. at home in the summer, tourism, holidays, availability of fresh produce, construction activities, etc. Should conducting seasonal audits not be deemed feasible, future audits should be conducted at the same time of year, in order to remove the seasonal variability factor when comparing results over time.

The frequency of future audits recommended would be dependent on what the data is intended for. Generally, an audit would be warranted before and after any significant program change. Such audits could be narrower in scope to focus on the area of change (e.g. just residential waste, or just Construction waste). The fall 2017 audit was a holistic audit, representing a general baseline of waste disposed of at the facilities from all sources. Concern may be raised when implementing the waste composition results based on the 2 week fall audit period. Additional seasonal audits within the 2017/2018 year are recommended to establish more accurate data that can be used to gauge the success of diversion programs in place and the potential for future changes to the current diversion programs. Although there is no firm guideline on frequency of monitoring audits over time (i.e. audits to observe changes/trends), other jurisdictions’ audit frequencies range from annually to every 5 years.

If the CVRD is interested in exploring waste composition in greater detail on a source/sector level, then there may be opportunity to make changes in how wastes are classified when entered into the scale systems at the waste management centres. For example, wastes

currently classified as material type “02” in the system is ICI & Household waste. It is understood that there might be trucks that come in with mixed loads, however, for analysis purposes, it would be helpful to have dedicated ICI loads tracked separately, for example. For similar reasons, it would also be helpful to have the ability to drill down into the data to isolate large ICI loads (i.e. dedicated roll-off bins & compactors) from small ICI loads (i.e. front end truck with mixed load from various locations).

3.0 RESULTS AND DISCUSSION

Results shown in this section are summarized into primary and secondary categories. Detailed tables by material sub-category are available in Appendix A.

3.1 Campbell River Waste Management Centre (CRWMC)

All samples extracted and audited at CRWMC were classified into Self Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, CND and Curbside (Single Family Residential). Table 3.1 provides an overview on the sample types audited. It should be noted that “Small ICI/Multi-Family” loads refers to front end truck with mixed sources of waste, while “Large ICI” refers to roll-off bins containing waste from presumably one (larger) facility.

Table 3.1 Sample Types Audited at Campbell River Waste Management Centre

Sample Type	Number of Samples Audited
Self Haul (Cash Drop)	23
Small ICI/Multi-Family	8
Large ICI	3
CND	5
Curbside (Single Family Residential)	12
Total	51

3.1.1 Composition of All Material Sampled

The following figures illustrate the overall composition of all sources as well as the individual classifications. Figure 3.1 illustrates the overall composition of all samples audited for the two-week sampling period at CRWMC. The overall tonnage presented includes only waste classified as Municipal Waste by Contract, ICI & Household and Construction Waste. All other waste tonnage received by the facility is not included in the audit results.

Organic material (food waste, yard waste and tissue/towelling) accounted for 30.39%. Other divertible material accounted for 23.58%. Of this, recyclable paper packaging (largely cardboard and boxboard) was the largest contributor to the divertible materials at 6%. Recyclable paper (largely other printed paper and newsprint) also contributed to the divertible materials at 4.48%, respectively. Non-divertible material accounted for 46.03%, of which other waste represented the largest portion, at 11.59%. Materials found and classified as other waste include sanitary waste & diapers, boat tarps, painting supplies, meat pads, blinds, vacuum contents, sweepings, cigarette butts, life jacket, umbrella, foam pad, tent and soap. Table 3.2 below provides details on the composition of the non-divertible materials.

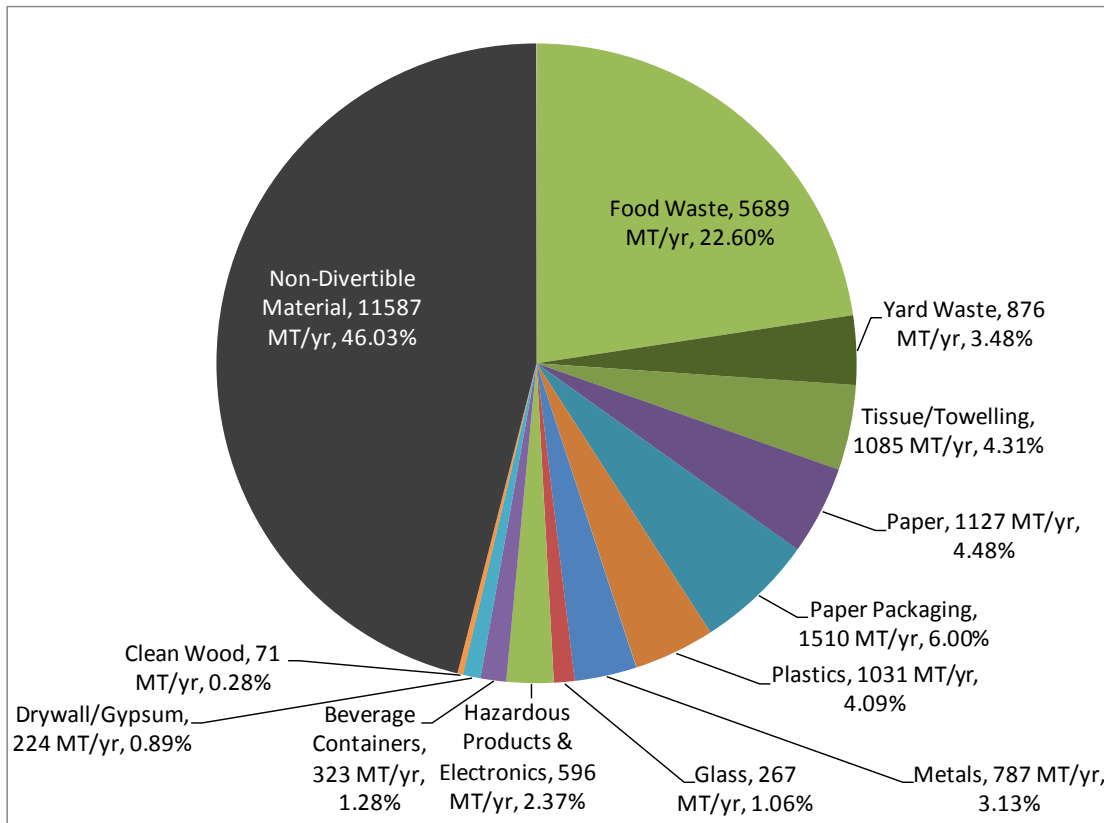


Figure 3.1 CRWMC Composition of all Garbage (Self Haul, Small ICI/Multi-Family, Large ICI, CND & Curbside combined)

Table 3.2 CRWMC Composition of all Garbage (Self Haul, Small ICI/Multi-Family, Large ICI, CND & Curbside combined)

ALL AUDITED SOURCES	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	5,689	22.60%
Yard Waste	876	3.48%
Tissue/Towelling	1,085	4.31%
Paper	1,127	4.48%
Paper Packaging	1,510	6.00%
Plastics	1,031	4.09%
Metals	787	3.13%
Glass	267	1.06%
Hazardous Products & Electronics	596	2.37%
Beverage Containers	323	1.28%
Drywall/Gypsum	224	0.89%
Clean Wood	71	0.28%
Total Divertible Material	13,586	53.97%
Non-Divertible Material		
Non-Recyclable Paper Packaging	239	0.95%
Non-Recyclable Plastics	2,155	8.56%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	162	0.64%
Hot Beverage Capsules/Pods	79	0.31%
Pet Waste	1,171	4.65%
Textiles	1,539	6.11%
Ceramics/Tiling	66	0.26%
Concrete/Masonry	0	0.00%
Carpet	388	1.54%
Shingles	0.6	0.002%
Treated/Painted Wood	1,496	5.94%
Rubber	47	0.19%
Porcelain	90	0.36%
Rubble/Soil	453	1.80%
Other Construction and Renovation	635	2.52%
Other Waste	2,918	11.59%
Bagged Material	53	0.21%
Home Furnishings	76	0.30%
Flooring	20	0.08%
Total Non-Divertible Material	11,587	46.03%
Total All Material	25,173	100.00%

3.1.2 Composition of Self Haul (Cash Drop) Garbage

Figure 3.2 illustrates the composition of Self Haul (Cash Drop) garbage. Non-divertible material accounted for 76.06% of the Self Haul (Cash Drop) garbage. Treated/painted wood represented the largest portion of the Self Haul (Cash Drop) garbage, at 26.48%. Other waste (sweepings, meat pads, sanitary waste & diapers, boat cover, swiffer pads, extension cords, paintings supplies, etc.) and carpet also made notable contributions to the non-divertible material, at 15.14% and 12.53%, respectively. Organic material (food waste, yard waste and tissue/towelling) totalled 14.75%. Other divertible materials (largely recyclable paper packaging, plastics and metals) accounted for 9.20%. Table 3.3 below provides details on the composition of the non-divertible materials.

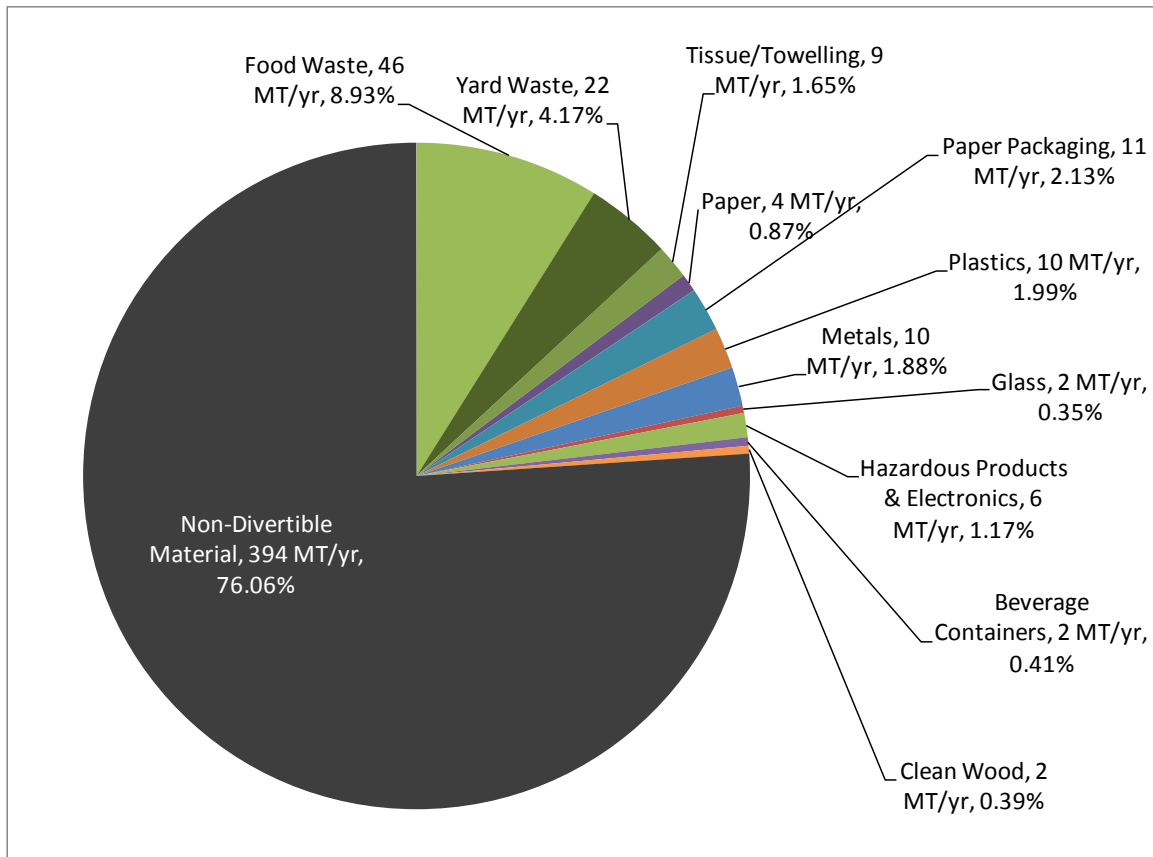


Figure 3.2 CRWMC Composition of Self Haul (Cash Drop) Garbage

Table 3.3 CRWMC Composition of Self Haul (Cash Drop) Garbage

SELF HAUL (CASH DROP)	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	46	8.93%
Yard Waste	22	4.17%
Tissue/Towelling	9	1.65%
Paper	4	0.87%
Paper Packaging	11	2.13%
Plastics	10	1.99%
Metals	10	1.88%
Glass	1.8	0.35%
Hazardous Products & Electronics	6	1.17%
Beverage Containers	2.1	0.41%
Drywall/Gypsum	0	0.00%
Clean Wood	2.0	0.39%
Total Divertible Material	124	23.94%
Non-Divertible Material		
Non-Recyclable Paper Packaging	1.0	0.20%
Non-Recyclable Plastics	27	5.15%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	3	0.65%
Hot Beverage Capsules/Pods	0.1	0.02%
Pet Waste	13	2.60%
Textiles	20	3.84%
Ceramics/Tiling	18	3.47%
Concrete/Masonry	0	0.00%
Carpet	65	12.53%
Shingles	0.8	0.15%
Treated/Painted Wood	137	26.48%
Rubber	0.6	0.11%
Porcelain	0	0.02%
Rubble/Soil	1.6	0.31%
Other Construction and Renovation	2.4	0.47%
Other Waste	78	15.14%
Bagged Material	0	0.00%
Home Furnishings	25	4.79%
Flooring	0.8	0.15%
Total Non-Divertible Material	394	76.06%
Total	519	100.00%

3.1.3 Composition of Small ICI/Multi-Family Garbage

Figure 3.3 illustrates the composition of the Small ICI/Multi-Family garbage. Organic material (food waste, yard waste and tissue/towelling) accounted for a total of 28.97%. Other divertible material represented 30.52% and non-divertible material accounted for 40.52%. Other waste (sweepings, sanitary waste, medical supplies, and filters), non-recyclable plastics and textiles made the largest contributions to the non-divertible material, at 10.05%, 8.95% and 8.71%, respectively. Recyclable paper packaging (largely cardboard, boxboard and polycoat cups) comprised the largest portion of the divertible material, at 8.85%. Recyclable paper (largely other printed paper) and hazardous products & electronics made notable contributions to the divertible material, at 5.76% and 4.76%, respectively. Table 3.4 below provides details on the composition of the non-divertible materials.

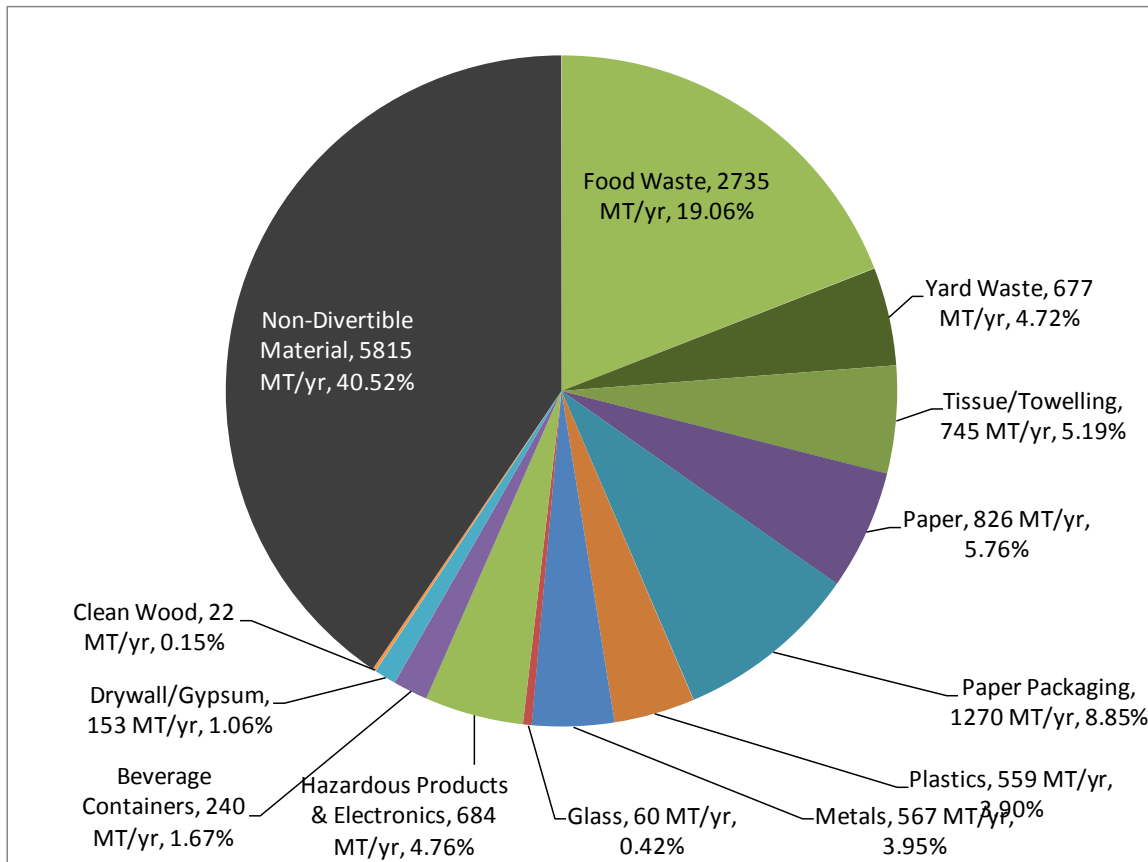


Figure 3.3 CRWMC Composition of Small ICI/Multi-Family Garbage

Table 3.4 CRWMC Composition of Small ICI/Multi-Family Garbage

SMALL ICI/MULTI-FAMILY	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	2,735	19.06%
Yard Waste	677	4.72%
Tissue/Towelling	745	5.19%
Paper	826	5.76%
Paper Packaging	1,270	8.85%
Plastics	559	3.90%
Metals	567	3.95%
Glass	60	0.42%
Hazardous Products & Electronics	684	4.76%
Beverage Containers	240	1.67%
Drywall/Gypsum	153	1.06%
Clean Wood	22	0.15%
Total Divertible Material	8,537	59.48%
Non-Divertible Material		
Non-Recyclable Paper Packaging	70	0.49%
Non-Recyclable Plastics	1,284	8.95%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	74	0.51%
Hot Beverage Capsules/Pods	30	0.21%
Pet Waste	146	1.02%
Textiles	1,250	8.71%
Ceramics/Tiling	0	0.00%
Concrete/Masonry	0	0.00%
Carpet	417	2.90%
Shingles	0	0.00%
Treated/Painted Wood	747	5.21%
Rubber	60	0.42%
Porcelain	47	0.32%
Rubble/Soil	0	0.00%
Other Construction and Renovation	178	1.24%
Other Waste	1,442	10.05%
Bagged Material	0	0.00%
Home Furnishings	70	0.49%
Flooring	0	0.00%
Total Non-Divertible Material	5,815	40.52%
Total	14,351	100.00%

3.1.4 Composition of Large ICI Garbage

Figure 3.4 illustrates the composition of the Large ICI garbage. Organic material accounted for 32.36%. Other divertible material equalled 29.63%. Non-divertible material accounted for 38.01%, of which non-recyclable plastics (wire casings, gloves, utensils, plastic skids, signs, paper towel dispensers, garbage bags and laminated films) represented the largest portion, at 19.49%. Recyclable paper (largely newsprint flyers and inserts), paper packaging (largely corrugated cardboard) and plastics made notable contributions to the divertible material, at 9.78%, 6.88% and 6.49%, respectively. Table 3.5 below provides details on the composition of the non-divertible materials.

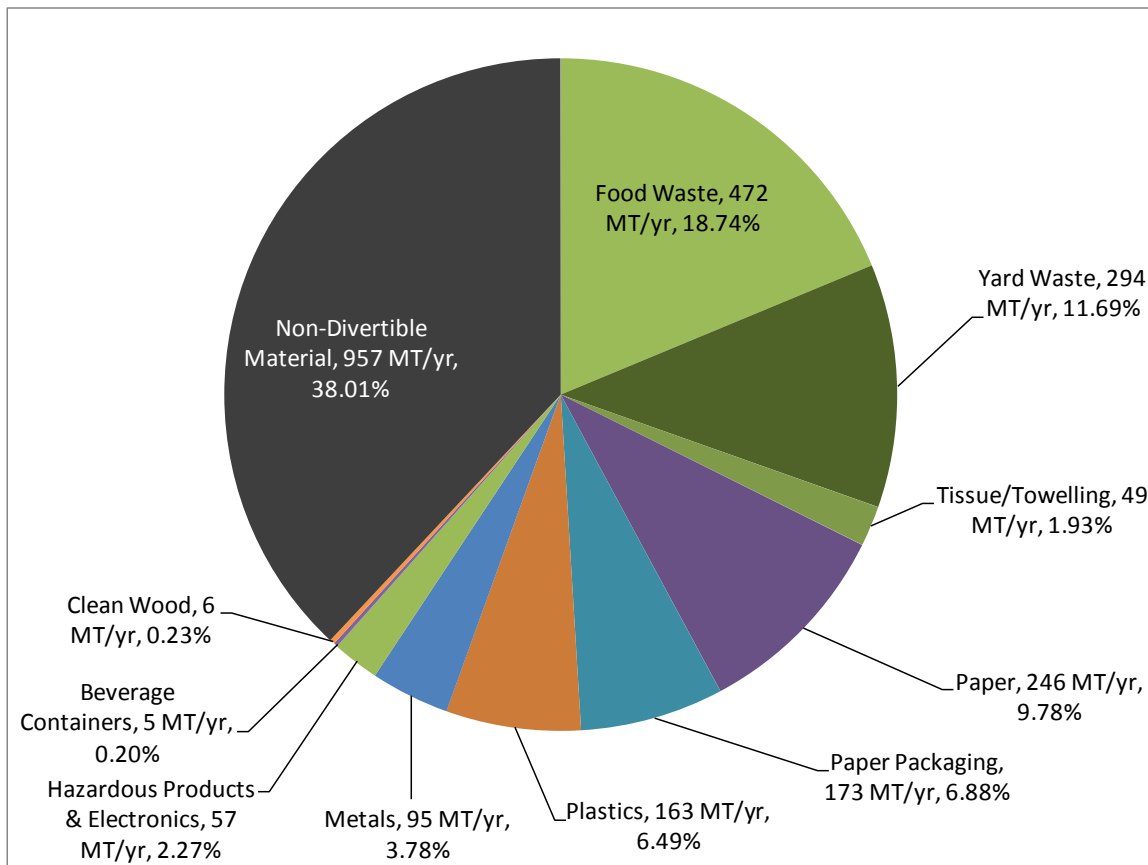


Figure 3.4 CRWMC Composition of Large ICI Garbage

Table 3.5 CRWMC Composition of Large ICI Garbage

LARGE ICI	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	472	18.74%
Yard Waste	294	11.69%
Tissue/Towelling	49	1.93%
Paper	246	9.78%
Paper Packaging	173	6.88%
Plastics	163	6.49%
Metals	95	3.78%
Glass	0	0.00%
Hazardous Products & Electronics	57	2.27%
Beverage Containers	5	0.20%
Drywall/Gypsum	0	0.00%
Clean Wood	6	0.23%
Total Divertible Material	1,561	61.99%
Non-Divertible Material		
Non-Recyclable Paper Packaging	149	5.92%
Non-Recyclable Plastics	491	19.49%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	0	0.00%
Hot Beverage Capsules/Pods	0	0.00%
Pet Waste	0	0.00%
Textiles	15	0.60%
Ceramics/Tiling	0	0.00%
Concrete/Masonry	0	0.00%
Carpet	0	0.00%
Shingles	0	0.00%
Treated/Painted Wood	0	0.00%
Rubber	0.4	0.02%
Porcelain	0	0.00%
Rubble/Soil	47	1.85%
Other Construction and Renovation	106	4.21%
Other Waste	149	5.92%
Bagged Material	0	0.00%
Home Furnishings	0	0.00%
Flooring	0	0.00%
Total Non-Divertible Material	957	38.01%
Total	2,518	100.00%

3.1.5 Composition of Construction & Demolition (CND) Garbage

Figure 3.5 illustrates the composition of the Construction & Demolition (CND) garbage. Non-divertible material accounted for 89.61%. Of that, treated/painted wood comprised 42.48%. Rubble/soil also made a notable contribution, at 20.31%, as shown in Table 3.6. Divertible materials accounted for 9.74%. Recyclable scrap metal, drywall/gypsum and clean wood represented the greatest portions of the divertible material, at 2.62%, 1.61% and 1.92%, respectively. Organic material only amounted to 0.65% of the CND garbage. Table 3.6 below provides details on the composition of the non-divertible materials.

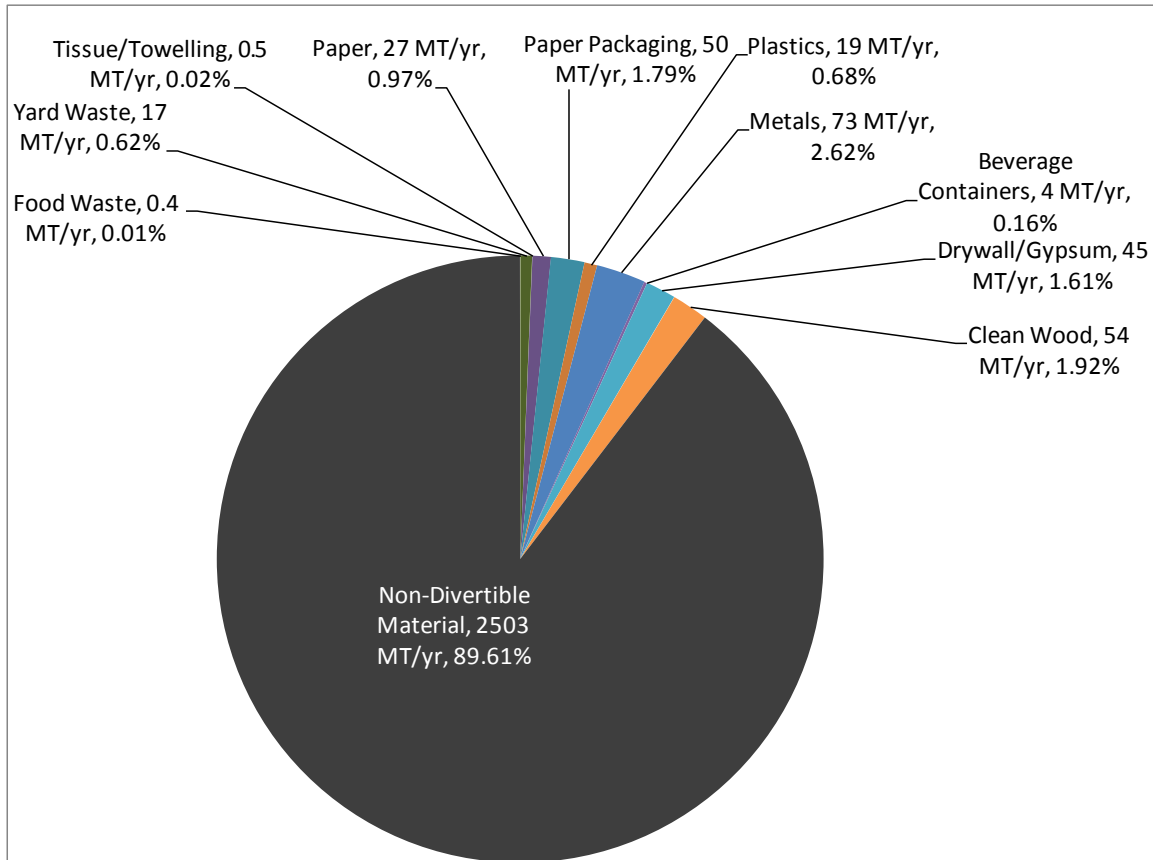


Figure 3.5 CRWMC Composition of CND Garbage

Table 3.6 CRWMC Composition of CND Garbage

CND	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	0	0.01%
Yard Waste	17	0.62%
Tissue/Towelling	0	0.02%
Paper	27	0.97%
Paper Packaging	50	1.79%
Plastics	19	0.68%
Metals	73	2.62%
Glass	0	0.00%
Hazardous Products & Electronics	0	0.00%
Beverage Containers	4	0.16%
Drywall/Gypsum	45	1.61%
Clean Wood	54	1.92%
Total Divertible Material	290	10.39%
Non-Divertible Material		
Non-Recyclable Paper Packaging	0	0.00%
Non-Recyclable Plastics	37	1.31%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	0	0.00%
Hot Beverage Capsules/Pods	0	0.00%
Pet Waste	0	0.00%
Textiles	11	0.38%
Ceramics/Tiling	0	0.00%
Concrete/Masonry	0	0.00%
Carpet	0	0.00%
Shingles	0	0.00%
Treated/Painted Wood	1,187	42.48%
Rubber	2.4	0.09%
Porcelain	78	2.80%
Rubble/Soil	567	20.31%
Other Construction and Renovation	257	9.19%
Other Waste	255	9.12%
Bagged Material	74	2.65%
Home Furnishings	9	0.30%
Flooring	27	0.96%
Total Non-Divertible Material	2,503	89.61%
Total	2,793	100.00%

3.1.6 Composition of Curbside (Single Family Residential) Garbage

Figure 3.6 illustrates the composition of Curbside (Single Family Residential) garbage. Non-divertible material accounted for a total of 43.68%, of which other waste (largely diapers and sanitary items, cigarette butts, sweepings, lint, meat pads) and pet waste represented the largest portion, at 14.55% and 10.20%. Organic material (food waste, yard waste and tissue/towelling) accounted for 37.78%. Remaining divertible material amounted to 18.54%. Recyclable plastics (largely flexible film plastic LDPE & HDPE (packaging), other rigid plastic packaging (accepted PPP), #2 HDPE bottles, jugs and containers and #1 PET thermoform) was the largest contributor to the divertible materials, at 4.60%. Recyclable paper packaging (largely cardboard and boxboard) and recyclable paper (largely other printed paper and newsprint) also made notable contributions to the divertible materials, at 3.86% and 3%, respectively. Table 3.7 below provides details on the composition of the non-divertible materials.

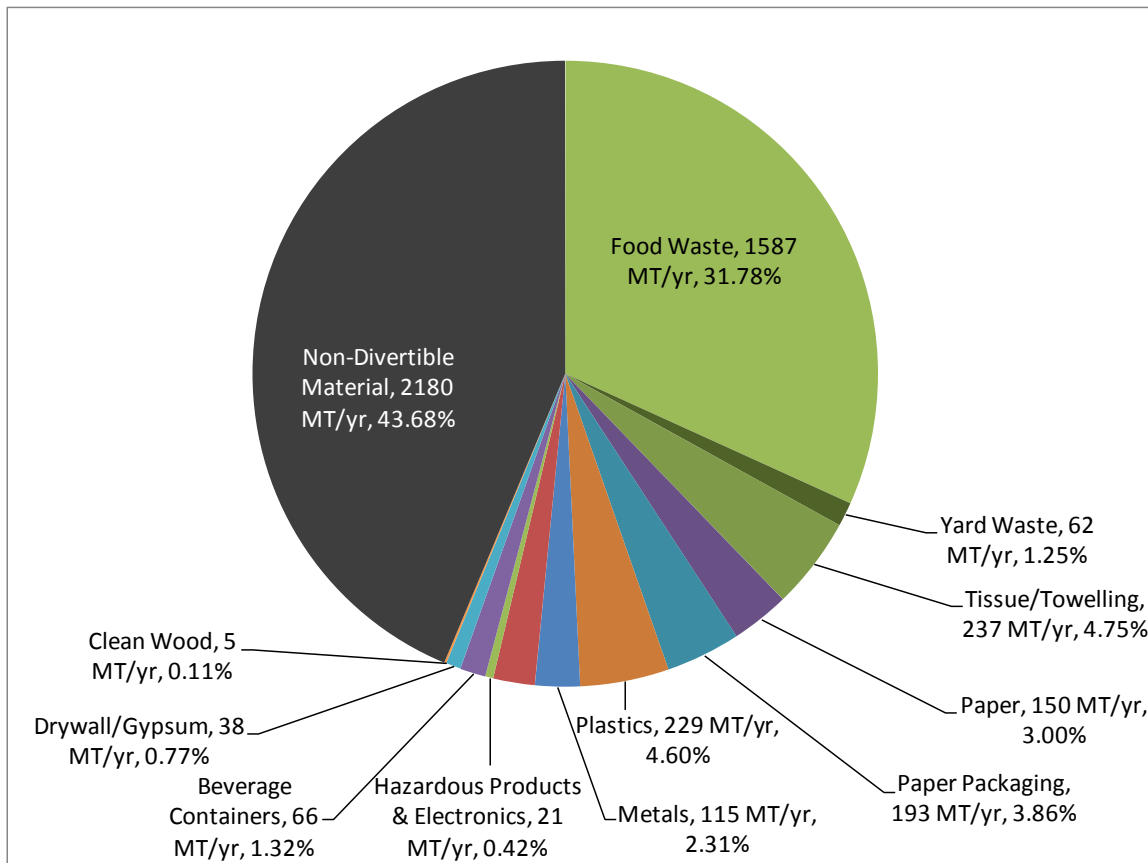


Figure 3.6 CRWMC Composition of Curbside (Single Family Residential) Garbage

Table 3.7 CRWMC Composition of Curbside (Single Family Residential) Garbage

Curbside	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	1,587	31.78%
Yard Waste	62	1.25%
Tissue/Towelling	237	4.75%
Paper	150	3.00%
Paper Packaging	193	3.86%
Plastics	229	4.60%
Metals	115	2.31%
Glass	107	2.15%
Hazardous Products & Electronics	21	0.42%
Beverage Containers	66	1.32%
Drywall/Gypsum	38	0.77%
Clean Wood	5	0.11%
Total Divertible Material	2,812	56.32%
Non-Divertible Material		
Non-Recyclable Paper Packaging	37	0.73%
Non-Recyclable Plastics	385	7.71%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	51	1.02%
Hot Beverage Capsules/Pods	27	0.55%
Pet Waste	509	10.20%
Textiles	281	5.62%
Ceramics/Tiling	25	0.51%
Concrete/Masonry	0	0.00%
Carpet	15	0.31%
Shingles	0	0.00%
Treated/Painted Wood	0	0.00%
Rubber	0	0.00%
Porcelain	0	0.00%
Rubble/Soil	7	0.15%
Other Construction and Renovation	117	2.34%
Other Waste	726	14.55%
Bagged Material	0	0.00%
Home Furnishings	0	0.00%
Flooring	0	0.00%
Total Non-Divertible Material	2,180	43.68%
Total	4,992	100.00%

3.2 Comox Valley Waste Management Centre (CVWMC)

All samples extracted and audited at CVWMC were classified into Self Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, CND and Curbside (Single Family Residential). Table 3.8 provides an overview on the sample types audited.

Table 3.8 Sample Types Audited at Comox Valley Waste Management Centre

Sample Type	Number of Samples Audited
Self Haul (Cash Drop)	14
Small ICI/Multi-Family	13
Large ICI	5
CND	11
Curbside (Single Family Residential)	10
Total	53

3.2.1 Composition of All Material Sampled

The following figures illustrate the overall composition of all sources as well as the individual classifications. Figure 3.7 illustrates the overall composition of all samples audited for the two-week sampling period at CVWMC. The overall tonnage presented includes only waste classified as Municipal Waste by Contract, ICI & Household and Construction Waste. All other waste tonnage received by the facility is not included in the audit results.

Non-divertible material (largely other waste, treated/painted wood, non-recyclable plastics and home furnishings) accounted for 49.53% of the garbage produced from Self Haul, Small ICI/Multi-Family, Large ICI, CND and Curbside sources. The remaining 50.47% consisted of 29.21% organic material (food waste, yard waste & tissue/towelling) and 21.25% other divertible material. Recyclable paper packaging and recyclable plastics made notable contributions to the disposed divertible material, at 4.85% and 4.48%, respectively. Table 3.9 below provides details on the composition of the non-divertible materials.

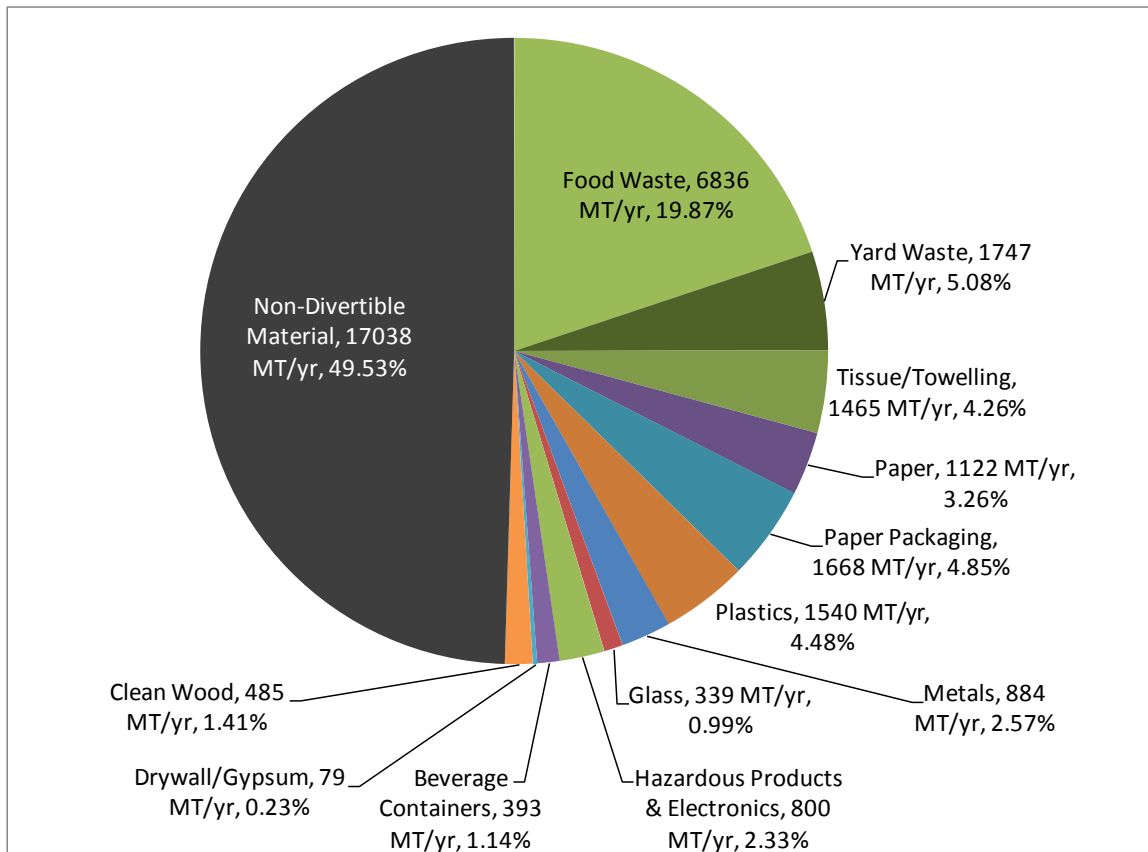


Figure 3.7 CVWMC Composition of all Garbage (Self Haul, Small ICI/Multi-Family, Large ICI, CND & Curbside combined)

Table 3.9 CVWMC Composition of all Garbage (Self Haul, Small ICI/Multi-Family, Large ICI, CND & Curbside combined)

ALL AUDITED SOURCES	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	6,836	19.87%
Yard Waste	1,747	5.08%
Tissue/Towelling	1,465	4.26%
Paper	1,122	3.26%
Paper Packaging	1,668	4.85%
Plastics	1,540	4.48%
Metals	884	2.57%
Glass	339	0.99%
Hazardous Products & Electronics	800	2.33%
Beverage Containers	393	1.14%
Drywall/Gypsum	79	0.23%
Clean Wood	485	1.41%
Total Divertible Material	17,359	50.47%
Non-Divertible Material		
Non-Recyclable Paper Packaging	274	0.80%
Non-Recyclable Plastics	2,459	7.15%
Non-Recyclable Metals	24	0.07%
Non-Recyclable Glass	254	0.74%
Hot Beverage Capsules/Pods	59	0.17%
Pet Waste	360	1.05%
Textiles	1,271	3.70%
Ceramics/Tiling	178	0.52%
Concrete/Masonry	293	0.85%
Carpet	336	0.98%
Shingles	1,041	3.03%
Treated/Painted Wood	2,841	8.26%
Rubber	200	0.58%
Porcelain	15	0.04%
Rubble/Soil	370	1.07%
Other Construction and Renovation	872	2.53%
Other Waste	3,697	10.75%
Bagged Material	0	0.00%
Home Furnishings	2,077	6.04%
Flooring	417	1.21%
Total Non-Divertible Material	17,038	49.53%
Total All Material	34,397	100.00%

3.2.2 Composition of Self Haul (Cash Drop) Garbage

Figure 3.8 illustrates the composition of Self Haul (Cash Drop) garbage. Non-divertible material represented the largest portion of the Self Haul (Cash Drop) garbage, at 78.93%. Home furnishings and treated/painted wood made the largest contributions to the non-divertible material, at 28.91% and 14.95%. Organic material (food waste, yard waste and tissue/towelling) represented 10.47%. Other divertible material (largely clean wood, recyclable metal and recyclable plastics) amounted to 10.60%. Table 3.10 below provides details on the composition of the non-divertible materials.

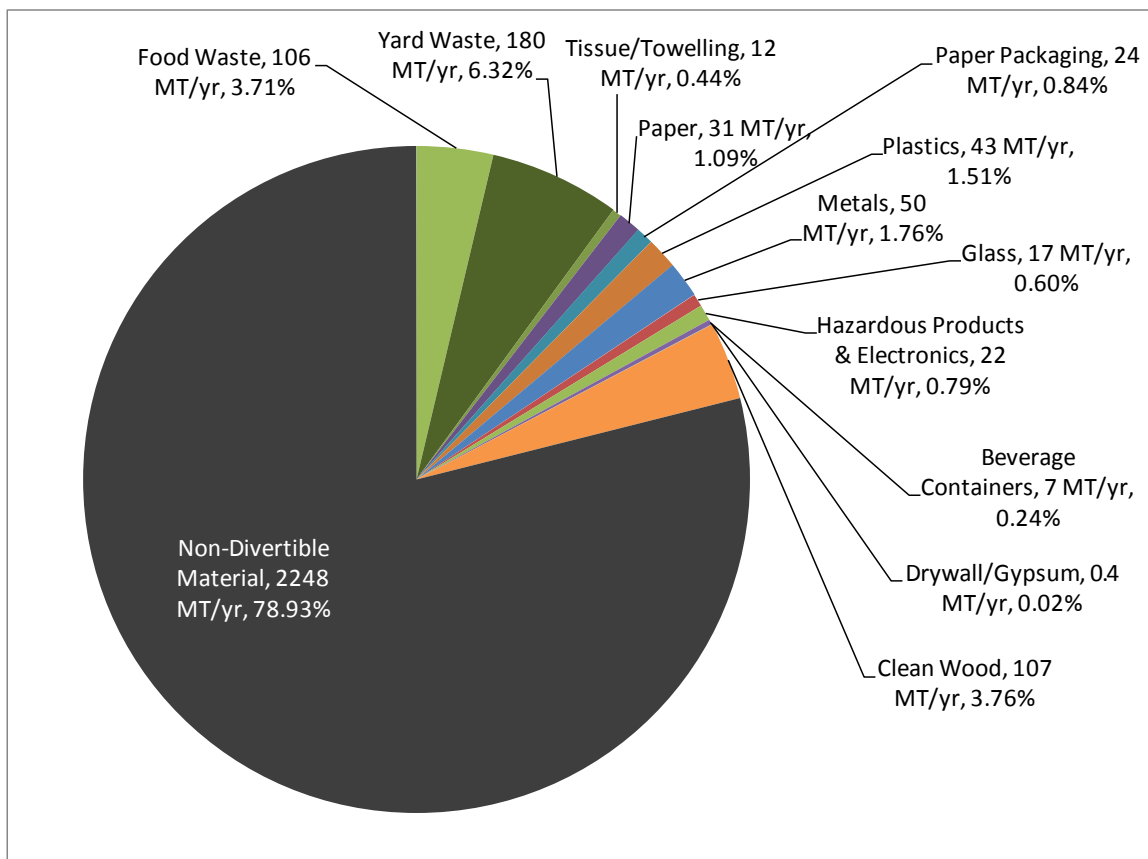


Figure 3.8 CVWMC Composition of Self Haul (Cash Drop) Garbage

Table 3.10 CVWMC Composition of Self Haul (Cash Drop) Garbage

SELF HAUL (CASH DROP)	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	106	3.71%
Yard Waste	180	6.32%
Tissue/Towelling	12	0.44%
Paper	31	1.09%
Paper Packaging	24	0.84%
Plastics	43	1.51%
Metals	50	1.76%
Glass	17	0.60%
Hazardous Products & Electronics	22	0.79%
Beverage Containers	7	0.24%
Drywall/Gypsum	0	0.02%
Clean Wood	107	3.76%
Total Divertible Material	600	21.07%
Non-Divertible Material		
Non-Recyclable Paper Packaging	3	0.11%
Non-Recyclable Plastics	125	4.40%
Non-Recyclable Metals	4	0.14%
Non-Recyclable Glass	24	0.85%
Hot Beverage Capsules/Pods	1	0.02%
Pet Waste	2	0.07%
Textiles	31	1.09%
Ceramics/Tiling	7	0.25%
Concrete/Masonry	27	0.95%
Carpet	87	3.05%
Shingles	110	3.86%
Treated/Painted Wood	426	14.95%
Rubber	44	1.55%
Porcelain	0	0.00%
Rubble/Soil	60	2.11%
Other Construction and Renovation	102	3.60%
Other Waste	171	5.99%
Bagged Material	0	0.00%
Home Furnishings	823	28.91%
Flooring	201	7.04%
Total Non-Divertible Material	2,248	78.93%
Total	2,848	100.00%

3.2.3 Composition of Small ICI/Multi-Family Garbage

Figure 3.9 illustrates the composition of the Small ICI/Multi-Family garbage. Organic material (food waste, yard waste and tissue/towelling) accounted for 33.26% of the Small ICI/Multi-Family garbage. Non-divertible material represented 37.52%, of which other waste (sanitary waste, cigarette butts, binders, medical supplies, meat pads and pillows) represented the largest portion, at 11.50%. The remaining 29.22% consisted of other divertible material. Recyclable paper packaging (largely cardboard, boxboard and polycoat cups) comprised the largest portion of the divertible material, at 7.21%. Recyclable paper (largely mixed fine paper and newsprint) and recyclable plastics (largely flexible film plastic LDPE & HDPE (packaging) and other rigid plastic packaging (accepted PPP)) also made notable contributions to the divertible material, at 5.85% and 5.74%, respectively. Table 3.11 below provides details on the composition of the non-divertible materials.

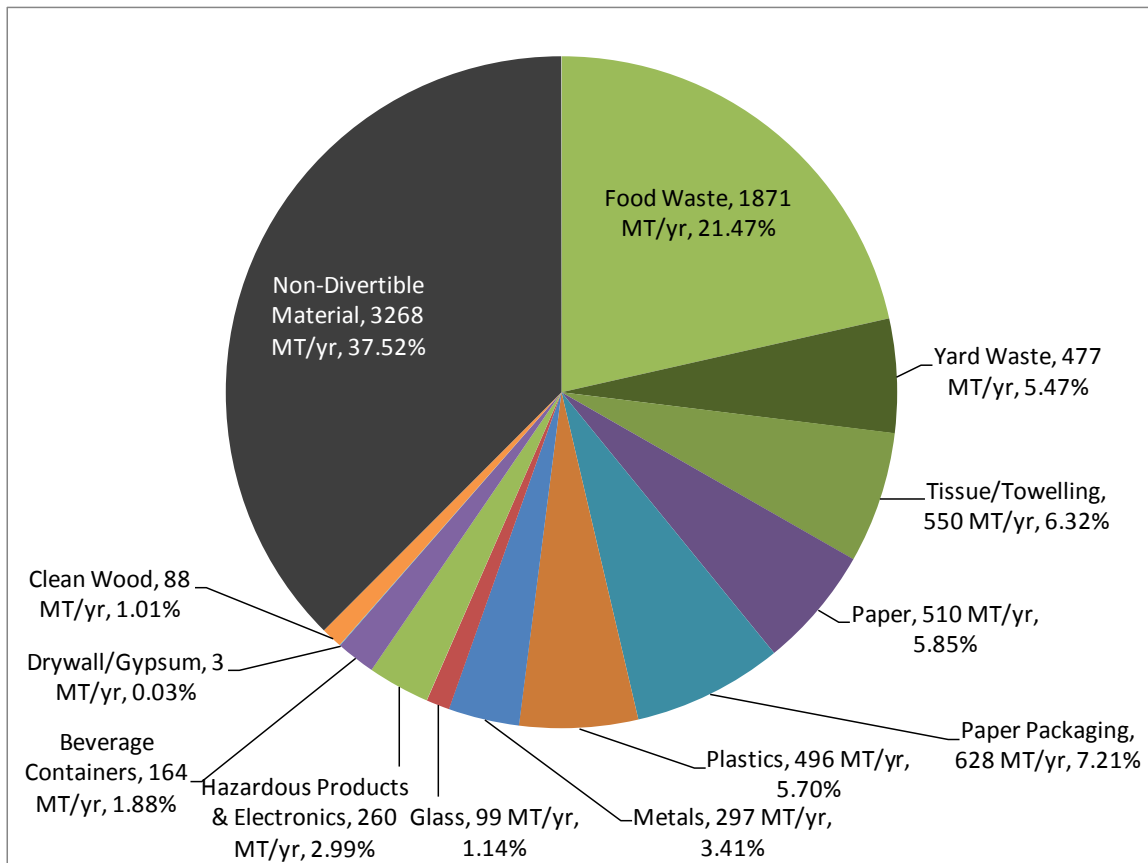


Figure 3.9 CVWMC Composition of Small ICI/Multi-Family Garbage

Table 3.11 CVWMC Composition of Small ICI/Multi-Family Garbage

SMALL ICI/MULTI-FAMILY	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	1,871	21.47%
Yard Waste	477	5.47%
Tissue/Towelling	550	6.32%
Paper	510	5.85%
Paper Packaging	628	7.21%
Plastics	496	5.70%
Metals	297	3.41%
Glass	99	1.14%
Hazardous Products & Electronics	260	2.99%
Beverage Containers	164	1.88%
Drywall/Gypsum	3	0.03%
Clean Wood	88	1.01%
Total Divertible Material	5,444	62.48%
Non-Divertible Material		
Non-Recyclable Paper Packaging	72	0.82%
Non-Recyclable Plastics	846	9.71%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	28	0.32%
Hot Beverage Capsules/Pods	20	0.23%
Pet Waste	118	1.36%
Textiles	540	6.20%
Ceramics/Tiling	35	0.40%
Concrete/Masonry	0	0.00%
Carpet	54	0.62%
Shingles	0	0.00%
Treated/Painted Wood	148	1.69%
Rubber	54	0.62%
Porcelain	9	0.11%
Rubble/Soil	0	0.00%
Other Construction and Renovation	0	0.00%
Other Waste	1,002	11.50%
Bagged Material	0	0.00%
Home Furnishings	297	3.41%
Flooring	46	0.53%
Total Non-Divertible Material	3,268	37.52%
Total	8,712	100.00%

3.2.4 Composition of Large ICI Garbage

Figure 3.10 illustrates the composition of the Large ICI garbage. Organic material (largely food waste) represented the largest portion of the garbage, at 39.97%. Non-divertible material represented 32.61%, of which treated/painted wood represented the largest portion, at 9.55%. Divertible materials accounted for 27.42%. Recyclable paper packaging (largely corrugated cardboard and boxboard) was the largest contributor to the divertible materials generated, at 9.35%. Recyclable plastics (largely other rigid plastic packaging (accepted PPP)) and flexible film plastic – LDPE & HDPE packaging) and hazardous products & electronics (largely electronics, small appliances, batteries and hazardous chemicals/coatings) also made notable contributions to the Large ICI garbage, at 7.10% and 6.13%, respectively. Table 3.12 below provides details on the composition of the non-divertible materials.

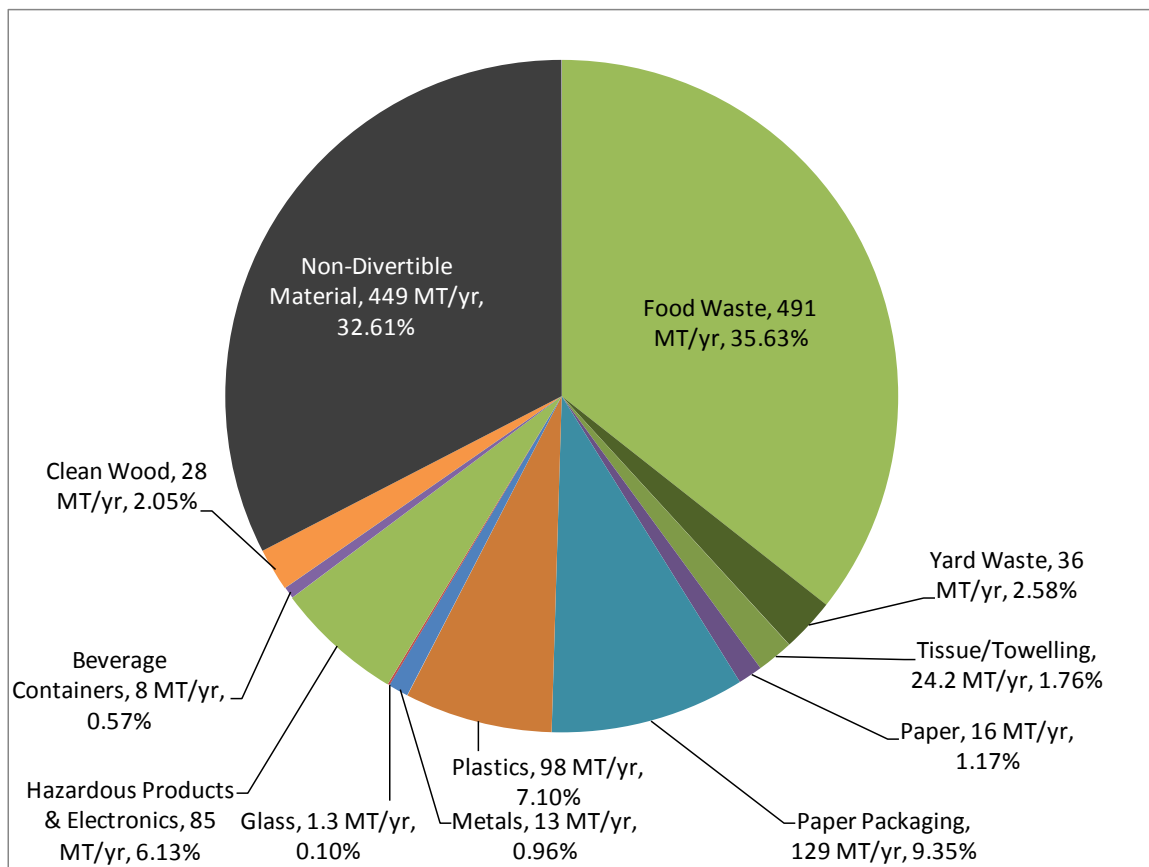


Figure 3.10 CVWMC Composition of Large ICI Garbage

Table 3.12 CVWMC Composition of Large ICI Garbage

LARGE ICI	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	491	35.63%
Yard Waste	36	2.58%
Tissue/Towelling	24	1.76%
Paper	16	1.17%
Paper Packaging	129	9.35%
Plastics	98	7.10%
Metals	13	0.96%
Glass	1.3	0.10%
Hazardous Products & Electronics	85	6.13%
Beverage Containers	8	0.57%
Drywall/Gypsum	0	0.00%
Clean Wood	28	2.05%
Total Divertible Material	929	67.39%
Non-Divertible Material		
Non-Recyclable Paper Packaging	56	4.04%
Non-Recyclable Plastics	99	7.20%
Non-Recyclable Metals	0	0.00%
Non-Recyclable Glass	3	0.23%
Hot Beverage Capsules/Pods	0.7	0.05%
Pet Waste	0	0.00%
Textiles	6	0.41%
Ceramics/Tiling	0	0.00%
Concrete/Masonry	0	0.00%
Carpet	0	0.00%
Shingles	0	0.00%
Treated/Painted Wood	132	9.55%
Rubber	1.1	0.08%
Porcelain	0	0.00%
Rubble/Soil	18	1.28%
Other Construction and Renovation	0	0.00%
Other Waste	76	5.51%
Bagged Material	0	0.00%
Home Furnishings	59	4.26%
Flooring	0	0.00%
Total Non-Divertible Material	449	32.61%
Total	1,378	100.00%

3.2.5 Composition of Construction & Demolition (CND) Garbage

Figure 3.11 illustrates the composition of the Construction & Demolition (CND) garbage. Non-divertible material accounted for a total of 92.05%. Treated/painted wood, shingles and other construction and renovation material made the largest contributions to the miscellaneous material, at 36.01%, 18.54% and 11.92%, respectively. Clean wood made the largest contribution to the divertible materials, at 2.41%. Recyclable paper packaging (largely cardboard and boxboard) and recyclable metal made notable contributions to the divertible material, at 1.17% and 1.07%, respectively. Organic material accounted for a total of 1.86% of the CND garbage. Table 3.13 below provides details on the composition of the non-divertible materials.

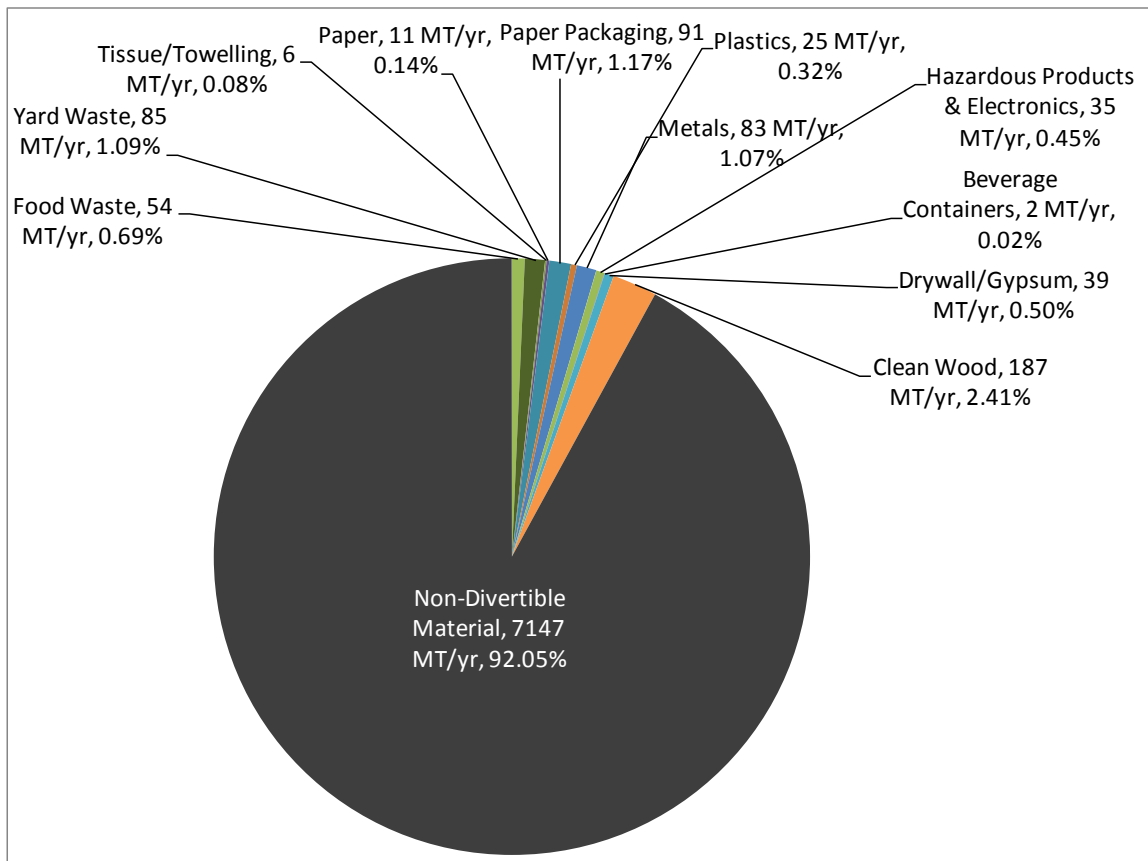


Figure 3.11 CVWMC Composition of CND Garbage

Table 3.13 CVWMC Composition of CND Garbage

CND	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	54	0.69%
Yard Waste	85	1.09%
Tissue/Towelling	6	0.08%
Paper	11	0.14%
Paper Packaging	91	1.17%
Plastics	25	0.32%
Metals	83	1.07%
Glass	0	0.00%
Hazardous Products & Electronics	35	0.45%
Beverage Containers	2	0.02%
Drywall/Gypsum	39	0.50%
Clean Wood	187	2.41%
Total Divertible Material	617	7.95%
Non-Divertible Material		
Non-Recyclable Paper Packaging	0	0.00%
Non-Recyclable Plastics	158	2.03%
Non-Recyclable Metals	24	0.31%
Non-Recyclable Glass	17	0.22%
Hot Beverage Capsules/Pods	0	0.00%
Pet Waste	0	0.00%
Textiles	9	0.12%
Ceramics/Tiling	0	0.00%
Concrete/Masonry	421	5.43%
Carpet	115	1.48%
Shingles	1,439	18.54%
Treated/Painted Wood	2,796	36.01%
Rubber	14	0.18%
Porcelain	0	0.00%
Rubble/Soil	406	5.23%
Other Construction and Renovation	925	11.92%
Other Waste	649	8.36%
Bagged Material	0	0.00%
Home Furnishings	174	2.24%
Flooring	0	0.00%
Total Non-Divertible Material	7,147	92.05%
Total	7,764	100.00%

3.2.6 Composition of Curbside (Single Family Residential) Garbage

Figure 3.12 illustrates the composition of Curbside (Single Family Residential) garbage. Non-divertible material accounted for a total of 34.76%, of which other waste (largely diapers & sanitary waste, sweepings, vacuum contents, personal care products, meat pads, furnace filters and candles) represented the largest portion, at 15.01%. Non-recyclable plastics (largely non-recyclable plastic packaging & plastic laminates and garbage bags) also made a notable contribution to the non-divertible material, at 7.04%. Organic material (food waste, yard waste & tissue/towelling) accounted for 45.23%. Divertible material accounted for 20.01% of the curbside garbage. Recyclable plastics (largely flexible film plastic LDPE & HDPE (packaging), other rigid plastic packaging (accepted PPP), #2 HDPE bottles, jugs and containers and #1 PET bottles & thermoform) made a notable contribution to the divertible waste, at 5.62%. Table 3.14 below provides details on the composition of the non-divertible materials.

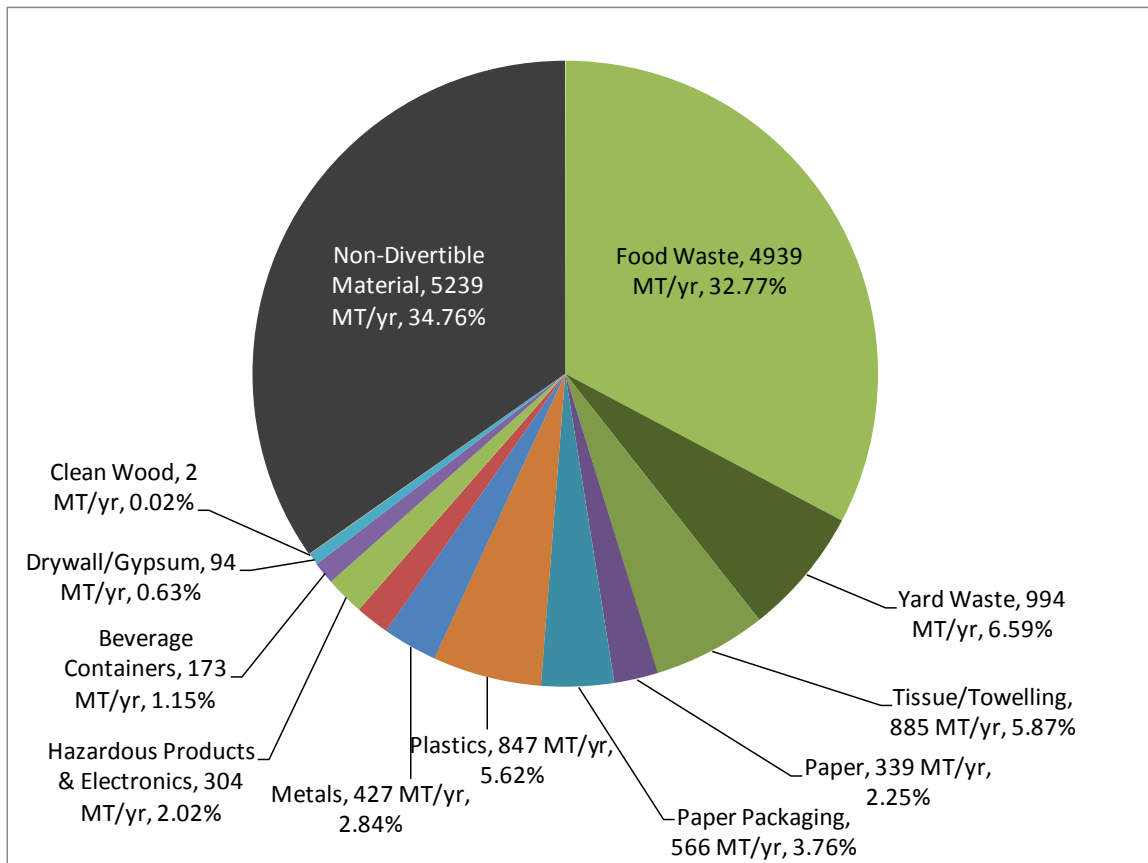


Figure 3.12 CVWMC Composition of Curbside (Single Family Residential) Garbage

Table 3.14 CVWMC Composition of Curbside (Single Family Residential) Garbage

Curbside	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	4,939	32.77%
Yard Waste	994	6.59%
Tissue/Towelling	885	5.87%
Paper	339	2.25%
Paper Packaging	566	3.76%
Plastics	847	5.62%
Metals	427	2.84%
Glass	262	1.74%
Hazardous Products & Electronics	304	2.02%
Beverage Containers	173	1.15%
Drywall/Gypsum	94	0.63%
Clean Wood	2	0.02%
Total Divertible Material	9,833	65.24%
Non-Divertible Material		
Non-Recyclable Paper Packaging	102	0.68%
Non-Recyclable Plastics	1,060	7.04%
Non-Recyclable Metals	5	0.03%
Non-Recyclable Glass	280	1.86%
Hot Beverage Capsules/Pods	45	0.30%
Pet Waste	294	1.95%
Textiles	554	3.68%
Ceramics/Tiling	198	1.32%
Concrete/Masonry	0	0.00%
Carpet	60	0.40%
Shingles	14	0.09%
Treated/Painted Wood	23	0.15%
Rubber	48	0.32%
Porcelain	0	0.00%
Rubble/Soil	0	0.00%
Other Construction and Renovation	285	1.89%
Other Waste	2,262	15.01%
Bagged Material	0	0.00%
Home Furnishings	0	0.00%
Flooring	8	0.05%
Total Non-Divertible Material	5,239	34.76%
Total	15,072	100.00%

3.3 Overview of Waste Composition from CRWMC and CVWMC Combined

Figure 3.13 illustrates the overall composition of garbage from both facilities audited. The composition takes into account Self Haul (Cash Drop), Small ICI/Multi-Family, Large ICI, CND and Curbside (Single Family Residential) sources. Non-divertible material accounted for a total of 49.55%, of which other waste (11.17%), treated/painted wood (9.18%) and non-recyclable plastics (7.40%) made the largest contributions. Organic material (food waste, yard waste & tissue/towelling) accounted for 28.98%. Divertible material accounted for 21.47% of the garbage. Recyclable paper packaging (largely corrugated cardboard and boxboard), recyclable plastics (largely flexible film plastic LDPE & HDPE (packaging), other rigid plastic packaging (accepted PPP), #2 HDPE bottles, jugs and containers and #1 PET bottles & thermoform), and recyclable paper (largely mixed fine paper and newsprint) made notable contributions to the divertible waste, at 5.14%, 4.09% and 3.55%, respectively. Table 3.15 below provides details on the composition of the non-divertible materials.

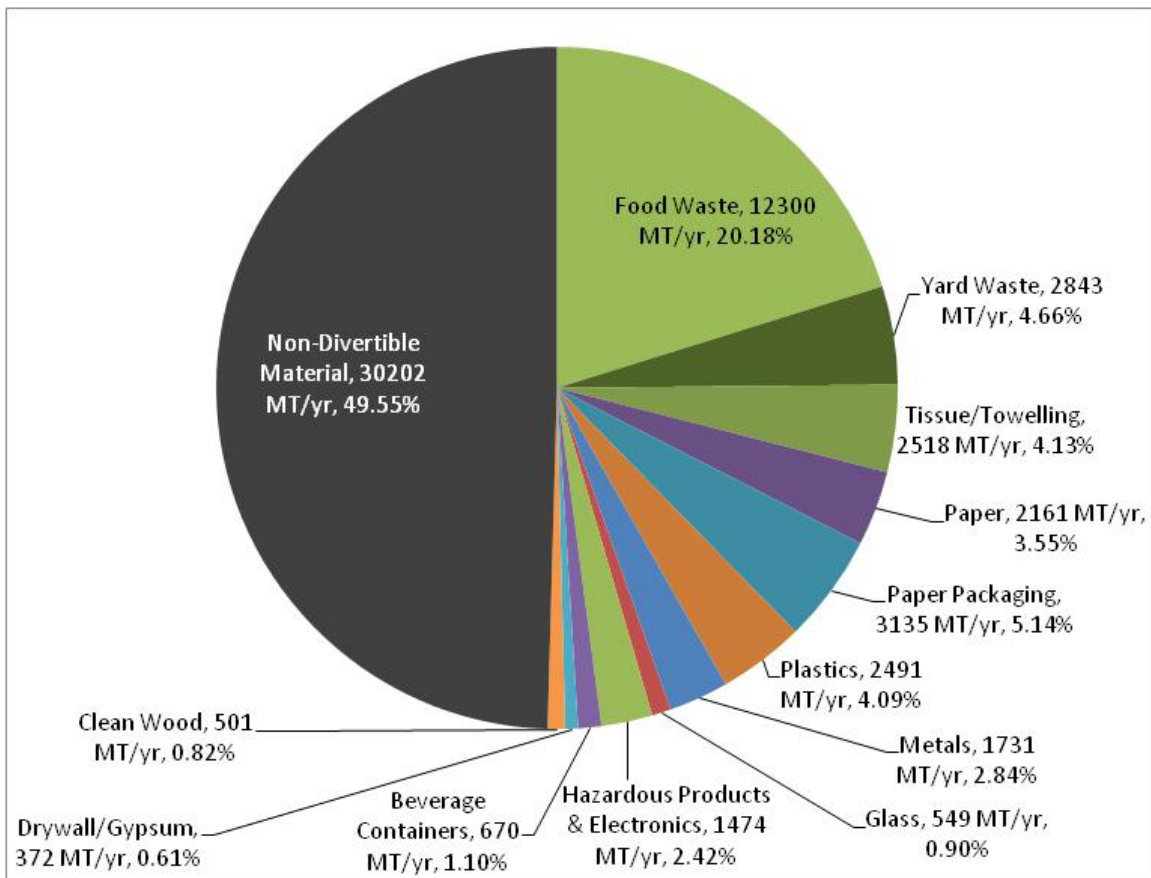


Figure 3.13 Overall Composition of Garbage from All Sources Audited Combined at both Facilities

Table 3.15 Overall Composition of Garbage from All Sources Audited Combined at both Facilities

ALL AUDITED SOURCES	Tonnage (MT/yr)	%
Divertible Material		
Food Waste	12,300	20.18%
Yard Waste	2,843	4.66%
Tissue/Towelling	2,518	4.13%
Paper	2,161	3.55%
Paper Packaging	3,135	5.14%
Plastics	2,491	4.09%
Metals	1,731	2.84%
Glass	549	0.90%
Hazardous Products & Electronics	1,474	2.42%
Beverage Containers	670	1.10%
Drywall/Gypsum	372	0.61%
Clean Wood	501	0.82%
Total Divertible Material	30,746	50.45%
Non-Divertible Material		
Non-Recyclable Paper Packaging	490	0.80%
Non-Recyclable Plastics	4,511	7.40%
Non-Recyclable Metals	33	0.05%
Non-Recyclable Glass	480	0.79%
Hot Beverage Capsules/Pods	123	0.20%
Pet Waste	1,083	1.78%
Textiles	2,717	4.46%
Ceramics/Tiling	284	0.47%
Concrete/Masonry	448	0.74%
Carpet	812	1.33%
Shingles	1,564	2.57%
Treated/Painted Wood	5,595	9.18%
Rubber	225	0.37%
Porcelain	134	0.22%
Rubble/Soil	1,107	1.82%
Other Construction and Renovation	1,973	3.24%
Other Waste	6,810	11.17%
Bagged Material	74	0.12%
Home Furnishings	1,456	2.39%
Flooring	282	0.46%
Total Non-Divertible Material	30,202	49.55%
Total All Material	60,948	100.00%

3.4 Opportunities for Diversion

Table 3.16 provides an overview of the top five divertible materials (i.e. divertible in existing programs) by sample type for both facilities combined. This does not represent materials that are not currently divertible, but could be if new programs were implemented. The percentages represent the proportion of that material within each specific sample type. For example, yard waste represented 6% of the Self Haul (Cash Drop) samples.

Table 3.16 Top 5 Divertible Materials by Sample Type for CVWMC & CRWMC Combined

Sample Type	Ranking	Material Category	Tonnage (kg/yr)	MT/yr	% of Sample Type
Self Haul (Cash Drop)	1	Yard Waste	201,760	201.76	5.99%
	2	Food Waste	151,918	151.92	4.51%
	3	Clean Wood	109,051	109.05	3.24%
	4	Other Steel (non-packaging)	49,510	49.51	1.47%
	5	Hazardous Products & Electronics	28,515	28.51	0.85%
			Total Top 5 Self Haul (Cash Drop)	540,754	540.75
		Total All Self Haul (Cash Drop) Material	3,366,899	3,366.90	100.00%
Small ICI/Multi-Family	1	Food Waste	4,605,649	4,605.65	19.97%
	2	Paper Tissue/Towelling	1,295,801	1,295.80	5.62%
	3	Yard Waste	1,153,252	1,153.25	5.00%
	4	Hazardous Products & Electronics	943,945	943.95	4.09%
	5	Other Printed Paper (Obligated)	831,809	831.81	3.61%
			Total Top 5 Small ICI/Multi-Family	8,830,456	8,830.46
		Total All Small ICI/Multi-Family Material	23,063,475	23,063.48	100.00%
Large ICI	1	Food Waste	962,906	962.91	24.72%
	2	Yard Waste	329,781	329.78	8.46%
	3	Old Corrugated Cardboard	244,875	244.87	6.29%
	4	Newsprint Flyers and Inserts	203,893	203.89	5.23%
	5	Hazardous Products & Electronics	141,554	141.55	3.63%
			Total Top 5 Large ICI	1,883,009	1,883.01
		Total All Large ICI Material	3,895,998	3,896.00	100.00%
CND	1	Clean Wood	240,336	240.34	2.28%
	2	Other Steel (non-packaging)	153,350	153.35	1.45%
	3	Yard Waste	101,988	101.99	0.97%
	4	Old Corrugated Cardboard	99,105	99.10	0.94%
	5	Drywall/Gypsum	83,546	83.55	0.79%
			Total Top 5 CND	678,324	678.32
		Total All CND Material	10,557,919	10,557.92	100.00%
Curbside (Single Family Residential)	1	Food Waste	6,525,415	6,525.42	32.52%
	2	Paper Tissue/Towelling	1,121,959	1,121.96	5.59%
	3	Yard Waste	1,055,984	1,055.98	5.26%
	4	Flexible Film Plastic – LDPE & HDPE (packaging)	444,678	444.68	2.22%
	5	Clear and Coloured Glass containers	369,209	369.21	1.84%
			Total Top 5 Curbside (Single-Family Residential)	9,517,245	9,517.24
		Total All Curbside (Single-Family Residential) Material	20,063,830	20,063.83	100.00%

3.5 Waste Composition by Sample Area

Scale tickets for loads audited were assessed during the data analysis. The location details were noted for each sample audited with the exception of several self haul (cash drop) samples. Table 3.17 below provides the composition data for the different sample areas in Comox Valley Regional District (CVRD). Non-divertible materials (non-divertible under existing programs) are shaded in grey, recyclable materials are shaded in blue, acceptable organics are shaded in green and recyclable miscellaneous are shaded in brown. Samples were selected to gather variety on material type as well as source but it must be noted that a limited number of samples were gathered from some areas (i.e. 1 sample audited from Electoral Area A and Royston Improvement District). Caution should be used when looking at the composition of these areas due to the low sample size. Composition results identified as ‘Unidentified Source’ only includes Self Haul (Cash Drop) samples that did not have a designated source ID.

Table 3.17 Waste Composition by Sample Area

Material Type by Area	Electoral Area A	Electoral Area B	Electoral Area C	Electoral Area D	Campbell River	CFB Comox	Comox	Courtenay	Cumberland	Royston Improvement District	Unidentified Source
	%	%	%	%	%	%	%	%	%	%	%
Non-Recyclable Paper Packaging	0.43%	0.65%	0.71%	0.20%	1.01%	0.03%	0.87%	1.26%	0.15%	0.75%	0.19%
Non-Recyclable Plastics	4.36%	6.20%	7.84%	11.30%	8.60%	15.45%	6.34%	6.81%	4.44%	8.37%	7.27%
Non-Recyclable Metals	0.38%	0.01%	0.00%	0.00%	0.00%	0.00%	0.07%	0.17%	0.00%	0.00%	0.00%
Non-Recyclable Glass	1.09%	0.45%	1.29%	0.00%	0.69%	0.00%	0.26%	0.29%	0.32%	3.85%	1.57%
Hot Beverage Capsules/Pods	0.30%	0.34%	0.16%	0.31%	0.33%	0.16%	0.19%	0.10%	0.07%	0.32%	0.00%
Pet Waste	3.03%	0.75%	1.26%	0.00%	4.77%	0.00%	0.97%	1.50%	0.20%	2.66%	0.56%
Miscellaneous	22.39%	22.91%	38.25%	30.99%	30.25%	48.44%	37.91%	32.91%	71.94%	20.60%	66.74%
Recyclable Paper	6.84%	2.57%	1.67%	10.04%	4.68%	1.99%	4.29%	2.88%	1.30%	1.46%	1.48%
Recyclable Paper Packaging	4.55%	3.62%	3.70%	4.83%	6.10%	9.01%	4.92%	7.22%	1.56%	5.17%	1.39%
Recyclable Plastics	5.43%	4.84%	3.48%	4.74%	4.42%	1.62%	4.79%	5.10%	1.70%	6.08%	2.34%
Recyclable Metals	2.73%	2.43%	2.86%	2.33%	3.12%	1.73%	1.70%	3.47%	2.26%	4.62%	1.64%
Recyclable Glass	3.06%	2.93%	0.65%	0.79%	1.14%	0.42%	0.62%	1.07%	0.30%	1.36%	1.08%
Hazardous Products & Electronics	0.12%	2.10%	1.79%	8.15%	2.30%	0.24%	1.94%	1.92%	4.21%	3.49%	1.47%
Acceptable Organics	45.04%	49.04%	35.66%	25.18%	29.93%	20.12%	31.04%	30.62%	10.44%	40.22%	13.16%
Beverage Containers	0.20%	1.14%	0.68%	1.11%	1.43%	0.21%	1.45%	1.43%	0.26%	1.01%	0.37%
Drywall/Gypsum	0.00%	0.00%	0.00%	0.00%	0.93%	0.00%	0.86%	0.05%	0.00%	0.00%	0.03%
Clean Wood	0.03%	0.03%	0.00%	0.02%	0.29%	0.59%	1.78%	3.18%	0.85%	0.02%	0.70%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Samples Assessed	1	3	7	2	29	3	14	10	9	1	25

*Note: Hazardous Products & Electronics includes items such as electronics, small appliances, batteries, chemicals/coatings.

Figure 3.14 illustrates the simplified composition results by area. This demonstrates the overall composition of non-divertible (under current programs), recyclable and acceptable organic (food waste, yard waste & paper tissue/towelling) materials for each area in CVRD.

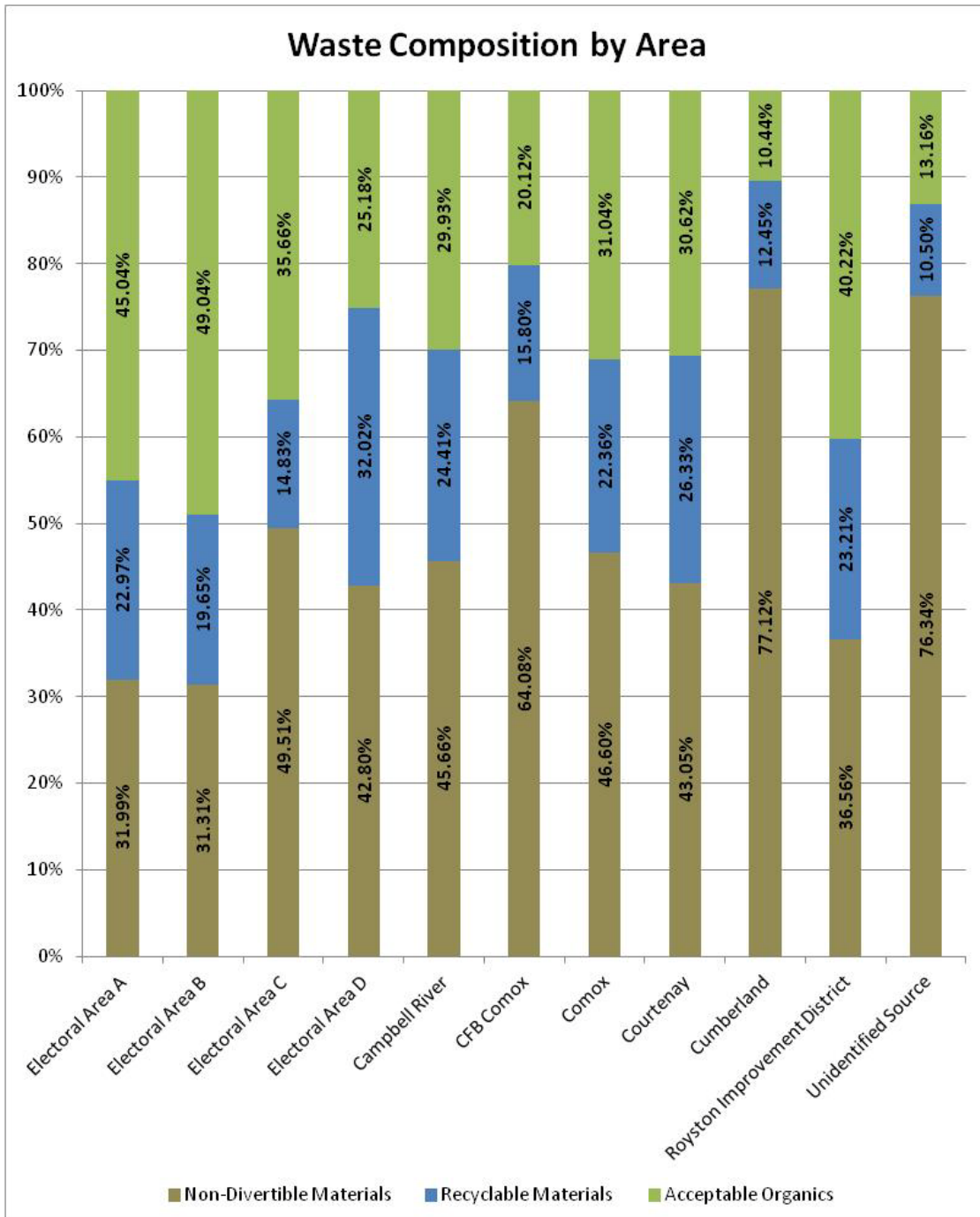


Figure 3.14 Basic Waste Composition by Area

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Disclaimer

AET Group Inc. makes no warranty and assumes no liability for the information contained in this report outlining the waste audit study results. These results reflect measurements made over the two-week study period as described in the methodology. As such, waste generation measurements should be considered snapshots and may not reflect accurately conditions across Comox Valley Regional District over time. These reported generation and composition results more accurately reflect the quantity of each material generated over the study period and have been extrapolated to calculate annual rates based on scale records.

APPENDIX A

CAMPBELL RIVER WASTE MANAGEMENT CENTRE (CRWMC)

DETAILED WASTE AUDIT RESULTS

Campbell River Waste Management Centre - Extrapolated Data

Small IC/Multi-Family										Large IC/IND																					
Sample Number:		25.00		32.00		43.00		49.00		50.00		9.00		15.00		18.00		33.00		38.00		40.00		44.00							
Collection Date (month/day/year):		29/09/2017		02/10/2017		09/10/2017		05/10/2017		05/10/2017		26/09/2017		27/09/2017		28/09/2017		03/10/2017		04/10/2017		04/10/2017		04/10/2017							
Date/Time:		10:10 AM		12:32 PM		11:28 AM		10:11 AM		10:35 AM		10:35 AM		10:55 AM		8:47 AM		9:04 AM		8:36 AM		9:36 AM		9:16 AM							
Lic. Plate		JH 7482		KD 7033		KD 7033		6970 HF		6970 HF		LM 8549		LP 6777		LE 8595		6611 CH		HS 9162		LP 6777		LM 8657							
Vehicle Type:		Front Load		Front Load		Front Load		Front Load		Front Load		Roll Off Bin		Roll Off Compactor		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin							
Type of Load:		Small IC/Multi Family		Small IC/Multi Family		Small IC/Multi Family		Small IC/Multi Family		Small IC/Multi Family		CND		Large IC1		Large IC1		CND		CND		CND		Large IC1							
Net Weight (kg):		7,090.00		8,720.00		9,340.00		8,450.00		8,450.00		1,430.00		1,800.00		7,710.00		2,980.00		4,610.00		2,980.00		1,720.00							
Location Details/Source ID:		E		C		C		E		E		E		E		E		E		E		E		E							
Notes:		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled		Sub-Sampled							
Vehicle Type:		Front Load		Front Load		Front Load		Front Load		Front Load		Front Load		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin		Roll Off Bin					
Location Details/Source ID:		E		C		C		E		E		E		E		E		E		E		E		E		E					
Inbound Sample Type:		Small IC/Multi		Small IC/Multi		Small IC/Multi		Small IC/Multi		Small IC/Multi		Small IC/Multi		Small IC/Multi		Large IC1		Large IC1		Large IC1		Large IC1		Large IC1		Large IC1					
1. PAPER																															
Newsprint	R	0.80	0.75%	52.94	0.39	0.37%	31.99	0.00	0.00%	48.52	0.67	0.61%	51.16	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Newsprint Flyers and Inserts	R	2.28	2.13%	150.87	0.05	0.05%	4.10	0.37	0.36%	19.08	1.23	1.20%	101.15	0.43	0.39%	32.83	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Magazines and Catalogues	R	1.80	1.68%	119.10	0.23	0.22%	18.86	0.00	0.00%	18.86	0.00	0.00%	18.86	0.00	0.00%	18.86	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Directories/Telephone Books	R	2.00	1.87%	132.34	0.00	0.00%	0.00	0.61	0.59%	31.46	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Other Printed Paper (Obligated)	R	8.93	8.33%	590.89	0.31	0.29%	25.43	0.48	0.46%	24.76	4.74	4.61%	389.81	3.91	3.53%	298.57	0.50	0.09%	1.68	1.02	0.88%	68.04	0.00	0.00%	0.00	0.00	0.00	0.00	0.00		
Other Printed Paper (Non-obligated)	R	0.36	0.34%	23.82	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total Recyclable Paper	R	16.17	15.09%	1069.95	0.98	0.92%	80.38	1.46	1.41%	75.30	6.56	6.38%	539.48	5.79	5.23%	442.12	0.50	0.00%	0.00	0.15	0.14%	1052.64	0.00	0.00%	0.00	0.00	0.00	0.00	0.00		
Total Non-Recyclable Paper	R	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Total Paper	R	16.17	15.09%	1069.95	0.98	0.92%	80.38	1.46	1.41%	75.30	6.56	6.38%	539.48	5.79	5.23%	442.12	0.50	0.00%	0.00	0.15	0.14%	1052.64	0.00	0.00%	0.00	0.00	0.00	0.00	0.00		
2. OTHER PAPER PACKAGING																															
Old Corrugated Cardboard	R	5.63	5.25%	372.53	0.60	0.56%	49.21	2.46	2.38%	126.87	2.94	2.86%	241.78	6.60	5.96%	503.98	30.50	2.13%	30.50	4.69	4.38%	78.77	17.46	0.38%	17.46	67.50	2.37%	67.50	28.44	1.07%	
Gable-Top Containers	R	0.02	0.02%	1.32	0.18	0.17%	14.76	0.08	0.08%	10.05	0.15	0.15%	12.34	0.09	0.09%	0.00	0.00	0.00%	0.00	0.13	0.12%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Asseptic Containers	R	0.15	0.14%	9.93	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	1.64	0.06	0.05%	4.58	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Other Polycoast Cans and Containers	R	0.32	0.30%	21.17	0.48	0.45%	39.37	1.56	1.51%	80.46	3.02	2.92%	249.18	2.58	2.33%	197.01	7.74	0.73%	7.74	0.10	0.09%	1.68	1.10	0.95%	3.41	3.59	0.14%	3.59	34.94	1.17%	
Board/Coresh/ Molded Pulp	R	4.22	3.94%	279.23	1.08	1.02%	88.58	2.05	1.98%	105.73	2.31	2.25%	189.97	2.78	2.51%	212.28	4.33	0.30%	4.33	0.83	0.77%	13.94	0.39	0.34%	26.02	64.02	1.39%	64.02	42.94	1.44%	
Paper Laminate Packaging & waxed corrugated cardboard	W	0.45	0.42%	29.78	0.42	0.40%	34.45	0.65	0.63%	33.52	0.14	0.14%	11.51	0.89	0.80%	67.96	0.43	0.03%	0.43	20.25	18.90%	340.11	5.89	5.10%	392.90	0.00	0.00%	0.00	6.67	2.22%	
Total Recyclable Paper Packaging	R	10.34	9.65%	684.19	2.34	2.20%	191.92	6.07	5.86%	313.06	8.45	8.22%	694.91	12.11	10.94%	924.72	42.57	5.75	5.37%	96.58	7.21	6.24%	480.96	81.48	1.77%	81.48	70.91	2.49%	70.91	32.03	1.21%
Total Non-Recyclable Paper Packaging	R	0.45	0.42%	29.78	0.42	0.40%	34.45	0.65	0.63%	33.52	0.14	0.14%	11.51	0.89	0.80%	67.96	0.43	0.03%	0.43	20.25	18.90%	340.11	5.89	5.10%	392.90	0.00	0.00%	0.00	6.67	2.22%	
Total Paper Packaging	R	10.79	10.07%	713.96	2.76	2.60%	226.37	6.72	6.49%	346.58	8.59	8.36%	706.43	13.00	11.75%	992.68	43.00	3.81%	43.00	26.00	24.26%	436.69	81.48	1.77%	81.48	70.91	2.49%	70.91	32.03	1.21%	
3. PLASTIC PACKAGING																															
#1 PET Bottles and Jars	R	0.84	0.78%	55.58	0.26	0.24%	21.32	0.14	0.14%	7.22	0.09	0.09%	7.40	0.20	0.18%	15.27	0.00	0.00%	0.00	0.15	0.14%	2.52	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#1 PET Thermofom	R	0.33	0.31%	21.84	0.52	0.49%	42.65	0.24	0.23%	12.38	0.33	0.32%	27.14	0.45	0.41%	34.36	0.74	0.00%	0.00	0.50	0.47%	8.40	0.85	0.74%	56.70	0.00	0.00%	0.00	0.00	0.00	0.00
#2 HDPE Bottles and Jugs, and Containers (Natural)	R	0.45	0.42%	29.78	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	1.56	1.46%	26.20	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#2 HDPE Bottles and Jugs, and Containers (Coloured)	R	0.31	0.29%	20.51	0.16	0.15%	13.12	0.08	0.08%	4.13	0.18	0.18%	14.80	1.02	0.92%	77.89	0.00	0.00%	0.00	4.08	3.81%	68.53	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00
#5 PP Bottles, Jugs and Jars	R	0.05	0.05%	3.31	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Flexible Film Plastic - LDPE & HDPE (packaging)	R	2.29	2.14%	151.53	1.60	1.50%	131.23	0.82	0.79%	42.29	0.58	0.56%	47.70	0.83	0.75%	63.38	27.20	1.90%	27.20	1.29	1.20%	21.67	5.54	4.79%	369.56	0.00	0.00%	0.00	11.93	0.42%	
Flexible Film Plastic - LDPE & HDPE (non-packaging)	W	2.47	2.31%	163.44	2.03	1.91%	166.49	2.04	1.97%	307.57	3.74	3.64%	307.57	3.03	2.74%	231.37	4.97	0.35%	4.97	2.11	1.97%	35.44	1.44	1.25%	96.06	6.17	0.13%	6.17	10.05	0.38%	
#5 PS - Expanded Polystyrene - White & Coloured	R	0.53	0.49%	35.07	0.37	0.35%	30.35	0.17	0.16%	8.77	0.62	0.62%	5.64	0.43	0.39%	32.83	0.00	0.00%	0.00	0.13	0.12%	2.18	0.14	0.12%	9.24	0.00	0.00%	0.00	0.00	0.00	
Other Rigid Plastic Packaging (accepted PPP)	R	0.48	0.45%	31.76	1.01	0.95%	82.84	0.56	0.54%	28.88	1.63	1.59%	134.05	1.75	1.58%	133.63	6.33	0.44%	6.33	0.70	0.65%	11.76	2.29	1.98%	152.76	0.00	0.00%	0.00	5.80	0.22%	
Other Plastic Packaging, Plastic Laminates and Other Film Plastics (non-packaging/durable)	W	2.74	2.56%	181.30	3.26	3.07%	267.37	2.53	2.48%	78.91	2.85	2.77%	234.38	5.53	5.00%	422.27	62.51	4.37%	62.51	2.55	2.38%	42.83	13.73	11.88%	915.89	6.60	0.14%	6.60	20.40	0.72%	
Total Recyclable Plastics	R	5.28	4.93%	349.37	3.96	3.72%	324.79	1.01	0.94%	103.66	2.34	2.23%	232.73	4.68																	

Campbell River Waste Management Centre - Extrapolated Data

Collection Date (month/day/year):		25/09/2017		28/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017		29/09/2017							
Collection Time (Lic./Plate):		06:00 25/09/2017 BR 3990		11:15:00 AM BR 0941		11:15:00 AM BR 0942		11:15:00 AM BR 0943		11:15:00 AM BR 0944		11:15:00 AM BR 0945		11:15:00 AM BR 0946		11:15:00 AM BR 0947		11:15:00 AM BR 0948		11:15:00 AM BR 0949		11:15:00 AM BR 0950		11:15:00 AM BR 0951		11:15:00 AM BR 0952		11:15:00 AM BR 0953		11:15:00 AM BR 0954		11:15:00 AM BR 0955		11:15:00 AM BR 0956		11:15:00 AM BR 0957							
Vehicle Type:		Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack							
Type of Load:		Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)	Curbide (Single Family)						
Location Details/Source ID:		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E						
Notes:		Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3	Sub-Sampled 1/3						
Vehicle Type:		Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack	Rear Pack					
Location Details/Source ID:		E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E						
Inbound Sample Type:		Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)	Curbide (Single)						
1. PAPER																																											
Newsprint	R	1.40	0.38%	42.16	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00	0.52	0.15%	35.82	0.44	0.41%	0.27	0.08%	0.36	0.10	0.00%	0.00	0.69	0.00	0.00%	0.00	0.69	0.00	0.00%	0.00	0.64	27.65	0.34	0.32%	28.42	0.16	0.16%	13.74	0.15	0.14%	3.91		
Newsprint Flyers and Inserts	R	1.35	1.27%	142.28	0.00	0.00%	0.00	0.00	0.00	0.00%	0.00	0.28	0.38%	23.42	0.41	0.39%	7.69	0.29	0.27%	0.37	0.19	0.15%	6.57	1.50	0.00%	0.00	0.31	0.29%	61.80	0.31	0.43%	12.42	1.24	1.18%	103.85	0.00	0.00%	0.00	0.03	0.03%	0.78		
Magazines and Catalogues	R	0.36	0.34%	37.94	0.00	0.00%	0.00	0.26	0.25%	17.53	0.16%	0.00	0.00	0.87	0.19	0.18%	70.09	0.19	0.44%	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.11	0.11%	0.44	0.00	0.00%	0.00	0.11	0.11%	0.44	0.00	0.00%	0.00	
Directories/Telephone Books	R	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00		
Other Printed Paper (Obligated)	R	3.29	3.11%	346.74	0.63	0.61%	42.46	1.31	1.27%	88.30	1.26	1.25%	86.78	1.62	1.52%	30.16	0.83	0.76%	15.03	2.48	2.36%	101.81	2.39	2.25%	97.17	2.50	2.32%	100.18	1.16	1.10%	96.96	3.49	3.41%	299.61	3.58	3.43%	93.28	3.58	3.43%	93.28	3.58	3.43%	93.28
Other Printed Paper (Non-obligated)	R	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00		
Total Recyclable Paper		5.40	5.10%	569.12	0.63	0.61%	42.46	1.60	1.55%	107.85	2.28	2.26%	157.04	2.47	2.32%	45.99	5.01	4.58%	90.73	2.83	2.70%	116.18	3.91	3.69%	158.97	3.50	3.25%	140.25	2.74	2.61%	229.03	3.76	3.67%	322.79	3.76	3.60%	97.97	3.76	3.60%	97.97			
Total Non-Recyclable Paper		0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.00	0.00	0.00%	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00%	0.00			
Total Paper		5.40	5.10%	569.12	0.63	0.61%	42.46	1.60	1.55%	107.85	2.28	2.26%	157.04	2.47	2.32%	45.99	5.01	4.58%	90.73	2.83	2.70%	116.18	3.91	3.69%	158.97	3.50	3.25%	140.25	2.74	2.61%	229.03	3.76	3.67%	322.79	3.76	3.60%	97.97	3.76	3.60%	97.97			
2. OTHER PAPER PACKAGING																																											
gable-Top Containers	R	2.48	2.34%	261.37	0.77	0.75%	51.90	0.39	0.38%	26.29	1.87	1.86%	128.80	0.46	0.43%	8.56	1.00	0.91%	18.11	0.94	0.90%	38.59	1.04	0.98%	42.28	3.25	3.02%	130.23	0.54	0.51%	45.14	1.67	1.63%	143.37	1.35	1.29%	35.19						
Asphalt Containers	R	0.17	0.16%	17.92	0.00	0.00%	0.00	0.10	0.10%	0.38	0.14	0.14%	0.36	0.35	0.33%	0.24	0.26	0.24%	0.27	0.28%	0.23%	0.23	0.22%	0.23	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%					
Other Polycoat Cans and Containers	R	0.04	0.04%	4.22	0.00	0.00%	0.00	0.00	0.00%	0.00	0.00	0.00	0.00	0.18	0.17%	0.35	0.05	0.05%	0.91	0.00	0.00%	0.00	0.08	0.08%	0.32	0.09	0.08%	3.61	0.04	0.04%	0.00	0.00	0.00%	0.00	0.15	0.14%	3.91						
Boxboard/Cores/Molded Pulp	R	0.58	0.55%	61.13	0.51	0.50%	34.37	0.50	0.49%	33.70	0.39	0.39%	26.86	0.69	0.65%	12.85	0.36	0.33%	6.52	0.61	0.58%	25.04	0.37	0.35%	15.04	1.77	1.67%	70.93	0.20	0.19%	16.72	0.48	0.47%	41.21	0.26	0.25%	6.77						
Paper Laminate Packaging & waxed corrugated cardboard	W	2.04	1.93%	215.00	0.74	0.72%	49.87	1.26	1.22%	84.93	1.42	1.41%	97.80	2.26	2.13%	42.08	2.36	2.16%	42.74	2.67	2.54%	109.61	3.20	3.02%	130.10	4.50	4.18%	180.32	1.03	0.98%	86.09	2.14	2.09%	183.72	2.04	1.95%	53.15						
Total Recyclable Paper Packaging		5.31	5.01%	559.63	2.02	1.96%	136.14	2.25	2.19%	151.66	3.82	3.79%	263.11	3.94	3.71%	73.36	4.13	3.78%	74.80	4.29	4.09%	176.11	4.92	4.64%	200.03	9.89	9.19%	396.30	1.81	1.72%	151.29	4.43	4.33%	380.31	4.17	3.99%	106.65						
Total Non-Recyclable Paper Packaging		0.58	0.55%	61.13	1.01	0.98%	68.07	0.49	0.48%	33.03	0.62	0.62%	42.70	0.68	0.62%	10.80	0.55	0.50%	9.96	0.71	0.68%	29.15	1.02	0.96%	41.47	0.86	0.80%	34.46	0.72	0.64%	56.00	1.16	1.13%	99.58	0.75	0.72%	19.54						
Total Paper Packaging		5.89	5.56%	620.76	3.03	2.94%	204.22	2.74	2.66%	184.69	4.44	4.41%	305.81	4.52	4.25%	84.16	4.68	4.28%	84.76	5.00	4.76%	205.26	5.94	5.60%	241.50	10.75	9.99%	430.76	2.48	2.36%	207.30	5.59	5.46%	479.89	4.92	4.71%	128.20						
3. PLASTIC PACKAGING																																											
#1 PET Bottles and Jars	R	0.31	0.29%	32.67	0.79	0.77%	53.24	0.29	0.28%	19.55	0.00	0.00%	0.00	0.99	0.93%	18.43	0.84	0.77%	15.21	0.93	0.89%	38.18	0.38	0.36%	15.45	0.24	0.22%	9.62	0.25	0.24%	20.90	0.57	0.56%	48.93	0.72	0.69%	18.76						
#1 PET Thermoflex	R	0.27	0.25%	28.46	0.31	0.30%	20.89	0.29	0.28%	19.55	0.00	0.00%	0.00	0.78																													

APPENDIX A
COMOX VALLEY WASTE MANAGEMENT CENTRE (CVWMC)
DETAILED WASTE AUDIT RESULTS

APPENDIX A
COMBINED CRWMC & CVWMC
DETAILED WASTE AUDIT RESULTS

APPENDIX B

WASTE AUDIT CATEGORY DESCRIPTIONS

WASTE AUDIT CATEGORY DESCRIPTIONS

Materials			Category Description
1. PAPER			
1	Newsprint	R	-Daily and weekly newspapers, community newspapers, free newspapers and other newsprint publications. E.g. Globe and Mail, Star, Metro, Auto Trader, Condo Living, Real Estate News.
2	Newsprint Flyers and Inserts	R	-Includes newsprint flyers and advertising distributed to households
3	Magazines and Catalogues	R	- Glossy magazines, catalogues, calendars, annual reports (i.e. stapled or glued)
4	Directories/Telephone Books	R	- Telephone books and other directories such as the Yellow Pages
5	Other Printed Paper (Obligated)	R	- Writing paper, office paper, paper envelopes, calendars (purchased or promotional), bills and statements, ad mail, non-newsprint flyers and advertising and gift cards, non-foil gift wrap, cash register receipts, lottery tickets, posters, promotional postcards, sketch pads, notebooks
6	Other Printed Paper (Non-obligated)	R	- Soft or hard covered books and bound periodicals, reference books, literary and text books, and academic journals
2. OTHER PAPER PACKAGING			
1	Old Corrugated Cardboard	R	- Includes micro-flute corrugated containers, pizza boxes, electronic product boxes such as television and computer boxes, boxes used to direct mail for residential consumers - Kraft paper bags and wrap, grocery or retail bags, potato bags, some pet food bags, including brown, white, and coloured Kraft paper and bags
2	Gable-Top Containers	R	- Polycoat containers with a gable shaped top commonly used for milk and milk substitutes like soy, almond and rice milk, some foods, sugar, molasses etc.
3	Aseptic Containers	R	- Polycoat fibre and foil containers (e.g. Tetra Pak) commonly used for milk and milk substitutes like soy, almond and rice milk, soup, sauces etc.
4	Other Polycoat Cups and Containers	R	Hot and cold beverage containers including coffee cups, soup, chili cups, fountain drink cups, take out ice cream cups, Polycoat ice cream containers (Boxed examples to be placed in boxboard/cores/moulded pulp category), KFC tubs, Paper food bowls
5	Boxboard/Cores/Molded Pulp	R	- Boxboard, paperboard commonly used for cereal boxes, shoe boxes, frozen food boxes, fast food and ice cream boxes, cartons such as fry/onion ring boxes, carrier boxes for soft drink containers - Cores from toilet paper/ towelling/gift wrap, etc. - Molded pulp packaging commonly used for egg cartons, drink trays, other trays, molded pulp flower pots/trays, etc.- Boxboard, paperboard commonly used for cereal boxes, shoe boxes, frozen food boxes, fast food and ice cream boxes, cartons such as fry/onion ring boxes, carrier boxes for soft drink containers
6	Paper Laminate Packaging & waxed corrugated cardboard	W	- Paper with aluminum foil, paper with plastic, multi-layered paper - Includes microwave popcorn bags, some cookie bags, dog food bags, paper granola bar wrappers, laminated paper carry out bags, bags with bonded plastic or foil liners/layers/coatings - waxed corrugated cardboard
3. PLASTIC PACKAGING			
1	#1 PET Bottles and Jars	R	- #1 plastic bottles and jars commonly used for milk and milk substitutes, cooking oil, honey, dish soap, nuts, etc.
2	#1 PET Thermoform	R	- #1 clamshells commonly used for bakery trays; premade fruit and salad packages- #1 egg cartons - #1 trays commonly used for single serve meals; deli and bakery items; house wares and hardware products - # 1 cold drink cups
3	#2 HDPE Bottles and Jugs, and Containers (Natural)	R	- #2 plastic bottles and jugs commonly used for juice concentrate, milk and milk substitutes, laundry soap, shampoo, windshield washer fluid, personal care products, pharmaceuticals, vitamin and supplements containers.
4	#2 HDPE Bottles and Jugs, and Containers (Coloured)	R	- #2 plastic bottles and jugs commonly used for juice concentrate, milk and milk substitutes, laundry soap, shampoo, windshield washer fluid, personal care products, pharmaceuticals, vitamin and supplements containers
5	#5 PP Bottles, Jugs and Jars	R	# 5 plastic bottles includes nutritional supplement drinks, shampoos, etc. (no tubs)
6	Flexible Film Plastic – LDPE & HDPE (packaging)	R	- # 2 HDPE & # 4 LDPE film, dry cleaning bags, bread bags, frozen food bags, milk bags, toilet paper and paper towel over-wrap, lawn seed bags, grocery and retail carry-out bags
7	Flexible Film Plastic – LDPE & HDPE (non-packaging)	W	- Garbage bags, kitchen catchers, Ziploc bags
8	#6 PS - Expanded Polystyrene - White & Coloured	R	- # 6 Foam take-out containers such as drink cups, egg cartons, take-out food clamshells, white packaging foam, coloured meat trays, etc.
9	Other Rigid Plastic Packaging (accepted PPP)	R	- #2, #3, #4, #5, #6 - non-expanded and #7 rigid containers, plant pots and trays, pails, tubs and lids not listed in the above Sorting Sub-Categories. Includes rigid containers without SPI resin code.
10	Other Plastic Packaging, Plastic Laminates and Other Film	W	- Laminated plastic film and bags that are at least 85% plastic (by weight) including chip bags, vacuum sealed bags, cereal liners, candy wraps, pasta bags, boil in a bag, plastic based food pouches - Film plastic other than # 2 HDPE and # 4 LDPE including PLA, PHA, PHB plastic packaging - PE foam packaging - Blister packaging - PS foam peanut packaging - Plastic non-rigid squeeze tubes (laminated or non-laminated) i.e. toothpaste tubes, hand cream tubes.
11	Other Plastics (non-packaging/durable)	W	Plastic durables and non-packaging products including plastic toys, Rubbermaid tubs, baskets, etc.

WASTE AUDIT CATEGORY DESCRIPTIONS

	Materials		Category Description
	4. METAL PACKAGING		
1	Aluminum Food Containers	R	- Aluminum food cans commonly used for sardines and cat food, etc.
2	Aluminum Foil & Foil Trays	R	- Aluminum foil wrap, pie plates, baking trays, etc.
3	Aluminum Aerosol Containers	R	- Aluminum aerosol containers commonly used for hair products, etc.
4	Other Aluminum (non-packaging)	W	- Aluminum siding, baking trays, parts, etc.
5	Steel Food Containers	R	- Steel food cans commonly used for soups, beans, peaches, etc. - Bi-metal and spiral wound cans
6	Steel Aerosol Containers	R	- Empty spray cans commonly used for cooking oil, whipped cream, etc.
7	Empty Paint Containers & Paint Aerosols	R	-Empty steel and plastic paints, stains and coatings containers and aerosols
8	Other Steel (non-packaging)	R	- Non-packaging steel products including baking trays, tools, frying pans, etc.
	5. GLASS PACKAGING		
1	Clear and Coloured Glass containers	R	- Food containers commonly used for pickles, salsa, cosmetics, cooking oil, vinegar, US beverage glass, milk and milk substitutes beverage glass
2	Other Glass (non-packaging)	W	- Dishes, ceramics, window glass
	6. HAZARDOUS PRODUCTS & ELECTRONICS		
1	Hazardous Products & Electronics	R	Products covered under other BC Stewardship Programs. Electronics, batteries, pressurized containers, mercury containing devices (thermostats, lamps), small appliances and power tools, electronic toys. Used oil containers, engine antifreeze containers, obligated pesticides, obligated solvents and flammables (for above materials both empty and with residue material). Paint and Coatings (containers with remaining product only)
	7. HOT BEVERAGE CAPSULES/PODS		
1	All Drink Capsules/Pods	W	all types of coffee pods either emptied or full
	8. ORGANICS		
1	Food Waste	O	All types.
2	Pet Waste	W	Pet feces, litter, bedding etc.
3	Yard Waste	O	Leaves, sticks, flowers, branches, etc.
4	Paper Tissue/Towelling	O	Paper towel, facial tissue
	9. BEVERAGE CONTAINERS ON DEPOSIT		
1	All Beverage Containers on Deposit	R	Aluminum, PET, PVC, PS, Steel (Bi-Metal), Aseptic, Gable-Top, Pouch, Bag in Box, or Glass. Size does not matter
	10. MISCELLANEOUS		
1	Textiles	W	Clothing, mats, drapes, sheets, etc.
2	Ceramics/Tiling	W	Tiles, ceramics, etc.
3	Concrete/Masonry	W	Can be formed or broken up, bricks, etc.
4	Carpet	W	Rolls, pieces, cuttings, may include underlay, etc.
5	Shingles	W	All types
6	Drywall/Gypsum	R	Sheets, pieces, cuttings, etc.
7	Clean Wood	R	All clean wood and wood cut offs/pieces
8	Treated/Painted Wood	W	All treated/painted wood and cut offs/pieces.
9	Rubber	W	Tires, tubing, all types
10	Porcelain	W	Toilets, sinks, fixtures, etc.
11	Rubble/Soil	W	Misc fine debris
12	Other Construction and Renovation	W	Plaster, caulking, insulation, etc. No Wood
13	Other Waste	W	Any materials not included in any categories above
14	Bagged Material	W	Bagged materials unidentified unless opened and physically audited (standard black bag of garbage)
15	Home Furnishings	W	Bulky furniture (desk, chairs, end tables, ottoman, wardrobe, etc)
16	Flooring	W	All flooring materials excluding carpet, carpet underlay, and ceramic tiling

APPENDIX C

VISUAL AUDITING DENSITY CONVERSION FACTORS

Material Categories	kg/yd ³	Conversion Factor Source
Newsprint	202	California Integrated Waste Management Board, data from CalRecovery report (w/Tellus) of 1991, Information from other government sources includes OR & VA Departments of Environmental Quality, NJ Department of Environmental Protection, HI documentation as well as US Navy facility guidance documents and the United States Environmental Protection Agency, National Recycling Coalition, data from 1998
Newsprint Flyers and Inserts	202	California Integrated Waste Management Board, data from CalRecovery report (w/Tellus) of 1991, Information from other government sources includes OR & VA Departments of Environmental Quality, NJ Department of Environmental Protection, HI documentation as well as US Navy facility guidance documents and the United States Environmental Protection Agency, National Recycling Coalition, data from 1998
Magazines and Catalogues	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Directories/Telephone Books	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Other Printed Paper (Obligated)	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Other Printed Paper (Non-obligated)	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Old Corrugated Cardboard	45	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Gable-Top Containers	23	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Aseptic Containers	23	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Other Polycoat Cups and Containers	23	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Boxboard/Cores/Molded Pulp	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Paper Laminate Packaging & waxed corrugated cardboard	165	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
#1 PET Bottles and Jars	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
#1 PET Thermoform	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
#2 HDPE Bottles and Jugs, and Containers (Natural)	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
#2 HDPE Bottles and Jugs, and Containers (Coloured)	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
#5 PP Bottles, Jugs and Jars	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Flexible Film Plastic – LDPE & HDPE (packaging)	16	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016

Material Categories	kg/yd ³	Conversion Factor Source
Flexible Film Plastic – LDPE & HDPE (non-packaging)	16	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
#6 PS - Expanded Polystyrene - White & Coloured	15	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Other Rigid Plastic Packaging (accepted PPP)	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Other Plastic Packaging, Plastic Laminates and Other Film Packaging (not accepted PPP)	16	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Other Plastics (non-packaging/durable)	17	National Recycling Coalition, data from 1998
Aluminum Food Containers	21	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Aluminum Foil & Foil Trays	21	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Aluminum Aerosol Containers	21	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Other Aluminum (non-packaging)	102	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Steel Food Containers	68	California Integrated Waste Management Board, data from CalRecovery report (w/Tellus) of 1991, Information from other government sources includes OR & VA Departments of Environmental Quality, NJ Department of Environmental Protection, HI documentation as well as US Navy facility guidance documents and the United States Environmental Protection Agency, National Recycling Coalition, data from 1998
Steel Aerosol Containers	68	California Integrated Waste Management Board, data from CalRecovery report (w/Tellus) of 1991, Information from other government sources includes OR & VA Departments of Environmental Quality, NJ Department of Environmental Protection, HI documentation as well as US Navy facility guidance documents and the United States Environmental Protection Agency, National Recycling Coalition, data from 1998
Empty Paint Containers & Paint Aerosols	68	California Integrated Waste Management Board, data from CalRecovery report (w/Tellus) of 1991, Information from other government sources includes OR & VA Departments of Environmental Quality, NJ Department of Environmental Protection, HI documentation as well as US Navy facility guidance documents and the United States Environmental Protection Agency, National Recycling Coalition, data from 1998
Other Steel (non-packaging)	102	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Clear and Coloured Glass containers	136	Metro Vancouver DLC Waste Composition Study, 2014, AET Group Inc.
Other Glass (non-packaging)	136	Metro Vancouver DLC Waste Composition Study, 2014, AET Group Inc.
Hazardous Products & Electronics	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
All Drink Capsules/Pods	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee

Material Categories	kg/yd ³	Conversion Factor Source
Food Waste	210	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Pet Waste	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Yard Waste	210	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Paper Tissue/Towelling	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
All Beverage Containers on Deposit	18	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Textiles	68	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Ceramics/Tiling	837	Created an average density rating based on Porcelain weighing approximately 2.403 grams per cubic centimeter or 1.389 ounces per cubic inch.
Concrete/Masonry	391	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Carpet	67	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Shingles	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Drywall/Gypsum	212	Volume to weight conversion factors U.S EPA office of resource conservation and recovery 2016
Clean Wood	119	Environmental Protection Authority of Victoria, Business and Industry Waste Materials Density Data, 2017
Treated/Painted Wood	119	Environmental Protection Authority of Victoria, Business and Industry Waste Materials Density Data, 2017
Rubber	454	Metro Vancouver DLC Waste Composition Study, 2014, AET Group Inc.
Porcelain	837	Created an average density rating based on Porcelain weighing approximately 2.403 grams per cubic centimeter or 1.389 ounces per cubic inch.
Rubble/Soil	454	Metro Vancouver DLC Waste Composition Study, 2014, AET Group Inc.
Other Construction and Renovation	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Other Waste	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Bagged Material	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee
Home Furnishings	182	Metro Vancouver DLC Waste Composition Study, 2014, AET Group Inc.
Flooring	227	DLC Waste Composition Study of the Ecowaste and Vancouver Landfills, 2005, Gartner Lee