

Wheelabrator Millbury, Inc. Waste Characterization Study Report

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Executive Summary

Summary of Results

The Massachusetts Department of Environmental Protection (MADEP) regulations at 310 CMR 19.300 et seq. (Class II Recycling Program) established requirements in order for a Waste-to-Energy (WTE) Facility to qualify to be eligible to sell renewable energy credits (RECs), under the Department of Energy Resources Renewable Energy Portfolio Standards at 225 CMR 15.00. Among the requirements within the Class II Recycling Program was to conduct a Waste Characterization Study (WCS) for each respective Facility during the calendar year 2010, to be conducted in both the winter and fall seasons. The WCS was to be conducted in accordance with the methodology guidance finalized by MADEP on September 22, 2009, and the WCS Protocol prepared by Brown and Caldwell (BC), subsequently approved by MADEP on December 1, 2009.

As stated in the MADEP Waste Characterization Scope and Methodology Guidance (MADEP WCS Guidance), dated September 22, 2009, the goals of the WCS included the following:

1. Characterize the solid waste disposal stream at the Facility,
2. Provide statewide characterization information,
3. Allow MADEP to utilize the information to measure the success of waste reduction efforts,
4. Identify specific materials for increased diversion, and
5. Help guide MADEP policy and program initiatives in solid waste management.

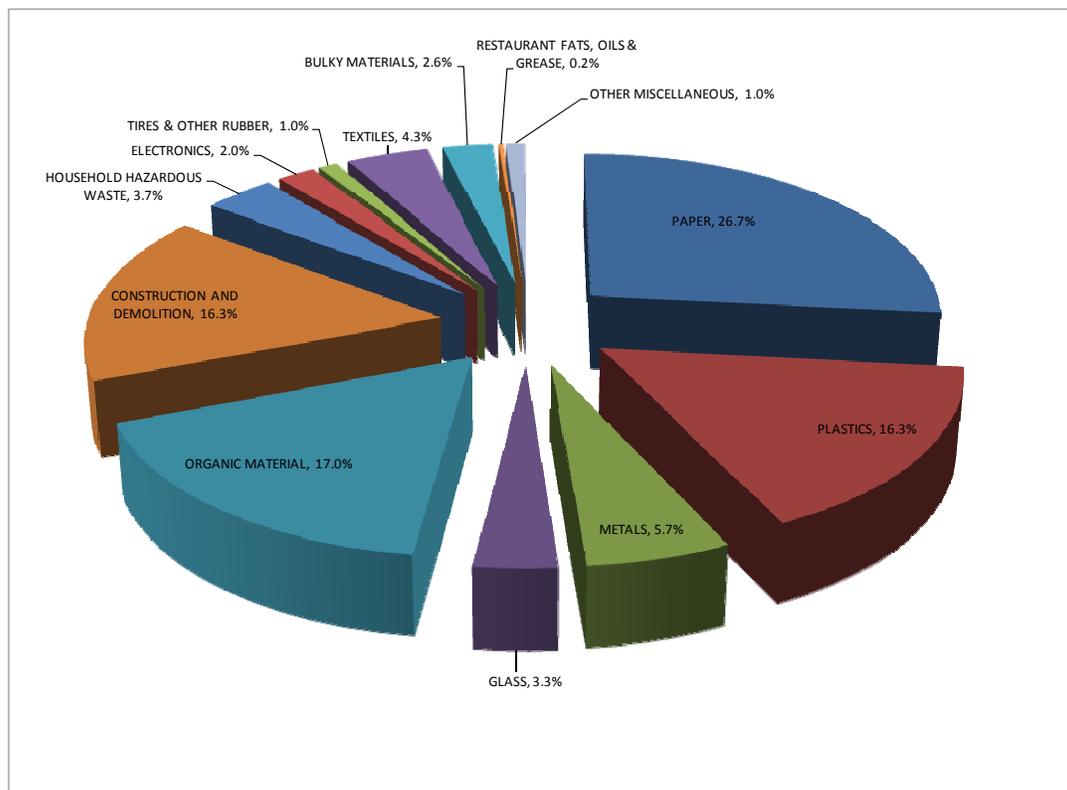
BC was retained by Wheelabrator Millbury, Inc. to develop and implement the WCS by employing manual sorting of representative samples collected from the various sectors of the solid waste stream received at Wheelabrator Millbury, Inc.

The WCS was structured on the methodologies described in ASTM D5321-92, Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste, which is the method required in Section I (Scope), of the MADEP WCS Guidance. The number of samples needed to achieve a 90% confidence level with a 10% precision was found to be 52. The samples were evenly distributed over two seasons in calendar year 2010, as required by MADEP, and obtained in both the spring and fall seasons (26 samples per season). The sample allocation was based upon the cardboard waste component, and selected proportionately between residential and Industrial/Commercial/Institutional (ICI) using the MADEP's data for residential distribution of 46% and ICI of 54%. The first half of the WCS was conducted between February 27 to March 5, 2010, and the second half was conducted between November 8 to November 13, 2010.

The following figure (ES-1) provides a general overview of the waste composition at Wheelabrator Millbury, Inc., (the Facility) during the study periods. Further detail into the breakdown of waste composition for the Facility is provided in Section 3 of this report.

As can be seen from Figure ES-1, during the study period, the overall waste composition at the Facility was mostly comprised of paper at approximately 27%, organic material was approximately 17%, plastics composed 16%, and construction and demolition materials accounted for 16% of the waste stream. The figure depicts the thirteen (13) major waste categories provided in the MADEP WCS Guidance.

Figure ES-1
Overall Waste Composition
Wheelabrator Millbury, Inc.



In addition, Table ES-1 shown below has been provided to supplement Figure ES-1, and provides a summary of the solid waste disposal stream waste characterization for the Facility during the WCS. The numerical categorization is based upon the thirteen (13) major waste categories provided in the MADEP WCS Guidance, and further defines the classification of the waste stream into residential and ICI categories. The percentages expressed in the residential and ICI categories are based upon the Facility scalehouse data for a two week period, and stratified by hauler type. This allocation excluded transfer trailers, which was not included in the WCS.

Table ES-1 Summary of Waste Composition Wheelabrator Millbury, Inc. February 2010 and November 2010			
WASTE CATEGORIES	Residential (40%)	ICI (60%)	Overall Waste Composition
PAPER	11.0%	15.7%	26.7%
PLASTICS	6.0%	10.3%	16.3%
METALS	1.9%	3.8%	5.7%
GLASS	1.1%	2.2%	3.3%
ORGANIC MATERIAL	8.5%	8.5%	17.0%
CONSTRUCTION AND DEMOLITION	5.0%	11.3%	16.3%
HOUSEHOLD HAZARDOUS WASTE	2.0%	1.7%	3.7%
ELECTRONICS	0.8%	1.2%	2.0%
TIRES & OTHER RUBBER	0.4%	0.6%	1.0%
TEXTILES	1.4%	2.9%	4.3%
BULKY MATERIALS	1.3%	1.3%	2.6%
RESTAURANT FATS, OILS & GREASE	0.1%	0.1%	0.2%
OTHER MISCELLANEOUS	0.3%	0.7%	1.0%

Section 1

Introduction

1.1 Background

The Green Communities Act (Chapter 169 of the Acts of 2008) identifies a Waste-to-Energy (WTE) facility in commercial operation prior to December 31, 1997 that uses conventional municipal solid waste technology to generate electricity as a Class II renewable energy generating source if it “operates or contracts for one or more recycling programs approved by the department of environmental protection.” Massachusetts Department of Environmental Protection (MADEP) regulations at 310 CMR 19.300 et seq. (Class II Recycling Program) established further requirements in order to qualify to be eligible to sell renewable energy credits (RECs) under the Department of Energy Resources Renewable Energy Portfolio Standards at 225 CMR 15.00. Among these requirements was to conduct a Waste Characterization Study during the calendar year 2010, and every three years thereafter.

MADEP established a protocol for the WCS that implements ASTM Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste (D 5231-92) Data Collection. In general, the objective of the WCS is to attempt to characterize the solid waste disposal stream at the Facility. The WCS was conducted by Brown and Caldwell (BC) for the Wheelabrator Millbury, Inc. facility during the time periods of February 27-March 5, 2010, and November 8-13, 2010. The WCS was performed in accordance with the Class II Recycling Program, MADEP’s WCS Guidance, and the Facility Class II Recycling Permit issued by MADEP on September 25, 2009 (Transmittal No. X228987).

1.2 Introduction

The Wheelabrator Millbury Inc. facility is located at 331 Southwest Cutoff Road, in Millbury, MA, and initiated operations in 1987. The facility is designed to combust 1,500 tons per day of municipal solid waste (MSW), and consists of two mass-burn, municipal waste combustion units. The facility has an electric generating capacity of 46,000 kilowatts, which is the equivalent of supplying the electrical needs of 57,000 Massachusetts homes. The Wheelabrator Millbury facility currently serve 40 communities, which are described in Table 1-1 below, and are classified as contract communities. Non-contract or "spot market" customers vary daily and also can vary from one year to the next, and comprise the remainder of the solid waste disposal capacity at the facility.

A site locus map has been included as Figure 1-1, and an aerial map has been included as Figure 1-2.

Table 1-1 Wheelabrator Millbury, Inc. Service Area			
Auburn	Hopkinton	Needham	Southborough
Blackstone	Maynard	Newton	Spencer
Dedham	Medfield	Northborough	Sutton
Dover	Medway	Norfolk	Upton
East	Mendon	Mansfield	Walpole
Franklin	Milford	Paxton	Westborough
Grafton	Millbury	Princeton	West Boylston
Holden	Millis	Rutland	Weston
Holliston	Millville	Sherborn	Westwood
Hopedale	Natick	Shrewsbury	Worcester

The WCS was conducted in accordance with the following documents and permit approvals.

- *Wheelabrator Millbury, Inc., Waste Characterization Study Protocol, prepared by Brown and Caldwell, dated October 26, 2009*
- *Permit Modification Approval – Final Decision, Class II Recycling Program, Transmittal No. X228987, dated September 25, 2009*
- *MADEP 2010 Class II Recycling Program, Waste Characterization Scope and Methodology Guidance, dated September 22, 2009*

The WCS was conducted over the course of two seasons in calendar year 2010, and was required to be performed within the timelines of January 15 to March 15 for the spring season, and October 15 to December 15 for the fall season. The study was conducted on the following dates for the Wheelabrator Millbury, Inc. facility:

Spring: February 27 to March 5, 2010

Fall: November 8 to November 13, 2010

The results of the WCS are presented in this report, and are based on the MADEP's WCS guidelines. The following items are presented herein:

1. Final Design: An account of the variation in the sampling period, number and allocation of samples categorized, overall vehicles sampled, loads sampled, and final sort design.
 - Waste composition for each sample load for the spring season is presented in Appendix B and for the fall season is presented in Appendix C.
2. Overall Composition of Waste: A summary account of the overall waste composition of the waste stream measured by the WCS.
 - Table ES-1 and Figure ES-1 provide a summary of the overall composition of the waste stream measured by the WCS for Millbury Facility.
3. Composition by Substream: A summary account of the overall composition of the waste stream measured by the WCS grouped into Residential and ICI sectors is presented in Section 3 of this report.
4. Composition by Haul Type: A summary account of the overall composition of the waste stream measured by the WCS was grouped by the following haul types:

- Roll-off - open top
- Roll-off - closed top
- Roll-off – compactor
- Rear loading packer
- Front loading packer

The results of the composition by haul type is presented in Section 3 of this report.

During the generation of the WCS protocol and discussions with MADEP regarding the WCS, it was decided that transfer trailers would not be sampled and not included in the WCS. Therefore, this report excludes any data related to transfer trailers, as they were not sampled nor included in the WCS.

Section 2

Methodology

The methodology used for the WCS was based upon MADEP guidance established in September 2009, which references the methodology and protocol described in ASTM Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste D5231-92, last revised in 2008. As previously described, sampling and data collection was implemented over the course of two sampling periods in 2010, to account for seasonal variation.

2.1 Allocation of Number of Samples by Haul Type

Statistical experimental design is effective in eliminating known sources of bias, guarding against unknown sources of bias, ensuring that the study provides precise information regarding the responses of interest, and provides an economical design through minimization of wasted resources. All of the MADEP WCS guidelines were considered during the process of the WCS and data interpretation, to ensure quality in the study plan. The number of samples sorted was calculated based on statistical criteria selected by MADEP and calculated according to the ASTM D-532-92 method. The number of samples was determined as a function of the waste components to be sorted, and the desired precision as applied to each component. The MADEP Waste Characterization Scope and guidelines require a 90% confidence level and 10% precision.

Corrugated cardboard required the highest number of samples to meet the MADEP guideline of 90% confidence level and 10% precision. Therefore, to satisfy the statistical requirements, a minimum of 52 samples were selected and sorted at the Facility for the total of both seasons. The total required number was divided equally between both seasons, with 26 samples being conducted in the spring season and 26 during the fall season.

As indicated in the MADEP WCS Guidance, the definition of residential, ICI, and unacceptable waste is as defined below, and was used in determining the source of the incoming waste.

- Residential – vehicles in which 80% or more of the waste is from residential sources (single family or multi-family). Typically these vehicles will include Residential Drop-off Containers (i.e. roll-offs) and rear-load packer trucks.
- ICI – vehicles in which 80% or more of the waste is from ICI sources. Typically these vehicles will include compactor boxes, open top boxes and front-load packers.
- Unacceptable Loads – loads that contain less than 80% of either residential or ICI waste, loads that are more than 50% construction and demolition material, and loads originating from out of state. The number of unacceptable loads should be identified and documented.

Site specific data was also utilized in developing the sampling plan for the Facility. This was accomplished by stratifying the number of samples proportional to the waste tonnage delivered by haul type. Based on the overall number of sample distribution for all three Wheelabrator facilities, the distribution of waste tonnage closely resembled the statewide data in the MADEP Guidance of 46% residential and 54% ICI. However, each individual Facility's stratification varied, and was accounted for in the WCS presented in this report. Table 2.1 presented below illustrates the number of planned and actual sample distribution, by haul type, for the Facility during the WCS, and also indicates for all three Wheelabrator WTE plants.

Table 2-1 Number and Allocation of Samples - Wheelabrator Millbury, Inc.					
Haul Type	Stratified Tonnage Distribution, %	Planned Number of Samples based on Facility Tonnage Distribution	Actual Number of Samples based on Facility Tonnage Distribution	Total Planned Number of Samples for all three WTE Facilities based on 46% Residential and 54% ICI ¹	Total Actual Number of Samples for all three WTE Facilities based on 46% Residential and 54% ICI ¹
Roll-off - open top	22%	11	12	15	15
Roll-off - closed top	0%	0	0	1	1
Roll-off - compactor	1%	1	2	9	11
Rear loading packer	40%	15	16	72	76
Front loading packer	38%	25	25	59	65
Total	100 %	52	55	156	168

Notes: 1. The Facility samples were stratified proportional to the waste tonnage delivered by haul type, and each individual Facility's stratification varied and was accounted for in the WCS. As a whole for all three Wheelabrator facilities, the distribution of waste tonnage closely resembled the statewide data in the MADEP Guidance of 46% residential and 54% ICI.

2.2 Sampling Procedure

In general terms, the sampling procedure consisted of a number of tasks such as load selection, the physical sorting of the sample, and the documentation of the data for each respective sample. These individual items are discussed in the following sections, and as a whole constitute the sampling procedures for the collection of the data.

The waste categories used in the WCS were derived from the MADEP Waste Characterization Scope and Methodology Guidance for the 2010 Class II Recycling Program dated September 22, 2009. The groups consist of sixty-two (62) waste categories for sorting as part of the WCS, of which a description of the composition of the waste component has been provided in Appendix A, which was included as Attachment A of the MADEP Guidance. A weekly sampling period of six (6) days was used for the Facility for both seasons, with the number of vehicles sampled per day proportional to the number of vehicle types, and stratified based on the incoming tonnage to the Facility, based on a review of a two week period of scalehouse data for the Facility.

2.2.1 Load Selection

The types of vehicles sampled were based on the Facility distribution of tonnage by vehicle type. Assigned vehicle types for sampling were selected at random during each day of the sampling period, so as to provide a representative cross-section of the incoming waste stream. The selection of vehicles was conducted in accordance with ASTM test method D5231-92, as required in the MADEP WCS Guidance.

Once a vehicle was identified to be sampled, the driver was interviewed and the information was recorded on a “Driver Questionnaire” sheet. A copy of the driver questionnaire form has been provided in Appendix D. The following information was recorded on the driver questionnaire, and was included for each load sampled:

- Time and Date
- Facility Truck Identification Number
- Hauling company and Truck type
- Truck weight from scale ticket, if available
- Waste type based on driver’s route
- Other miscellaneous information such as precipitation and general route questions

Following the selection of the vehicle to be sampled and completion of the driver questionnaire form, the vehicle was directed to a specific location on the tipping floor where the entire load was deposited. All handling and manipulation of the discharged load was conducted on a clean surface of the tipping floor. Figure 1-3 has been provided as an attachment to this report to supply a general location of the sorting area used at the Facility during the WCS.

2.2.2 Sorting Procedures

Unprocessed solid waste is a heterogeneous mixture of materials. Therefore, care was taken during sample collection and the sorting process in order to obtain a representative sample. Once the vehicle dumped the entire waste load on the tipping floor, the Facility operated front-end loader was used to cut the waste load longitudinally along one entire side of the discharged load. This process was conducted in order to obtain a representative cross-section of the waste material from each respective vehicle load. The mass of material from the waste load on a visual basis, was at least four times the desired weight of the sorting sample (approximately 1,000 lbs.). The waste was then mixed with the front-end loader, coned off to segregate from the active tipping floor traffic, and quartered into four equal piles. As required in ASTM D5231-92, using a random method of selection, one quarter was picked as the sorting sample, which was a minimum of 225 pounds. The sorting sample was chosen randomly to minimize or eliminate biased selections of the sample. The sorting sample was then transferred to the designated sorting area, on a clean, pre-determined area segregated from the active tipping floor for further sorting into appropriate waste categories.

The designated sorting area consisted of a segregated area on the tipping floor, separated from truck traffic, and was located based on the site specific requirements at the Facility. The sorting bins generally consisted of 20-gallon plastic bins, and were located around the sorting area. Waste was separated and placed into each respective category to be weighed and recorded.

After the waste was sorted, weighed, and the amounts recorded, materials that were able to be recycled were placed in a bin or roll-off container for recycling. Some of the items that were recycled at the Facility during the WCS consisting of the following:

- Glass
- Metal
- Single polymer plastics
- Cardboard
- Recyclable Paper

If a large oversized item was discovered in the assigned sample load, (e.g. furniture, large white good, etc.), a visual estimation of its weight and the full vehicle load weight was noted. The percent by weight of the item was then calculated based on the total vehicle load and then added to the total weight of the sample. In addition, if an oversize item composed a large weight percentage of the sorting sample, a notation was added on the field sheet, and the item was weighed and information documented on the field sheet.

2.2.3 Documentation of Sample Data

The process of weighing the sorted waste and documenting the data for each load represented the conclusion of the waste sampling process for each respective load. Each sample, was manually sorted into plastic bins which were labeled according to the 62 categories established by MADEP Guidance.

Containers used for sorting were weighed at the start of each day and the tare weight recorded. At the conclusion of sorting each respective sample, the bins were weighed according to the waste categories and recorded on a field data sheet. The labor crew would place the bins on a digital scale, and the weights recorded on the data sheet by the crew supervisor. At the conclusion of the sorting week at the Facility, the data from the field sheets was entered into spreadsheets for the analysis.

Documentation of each load sampled and the percentage of waste composed in each sample has been included in Appendices B and C. The spring sampling season has been included in Appendix B, while the fall season has been included in Appendix C.

Section 3

Results

3.1 Method of Data Analysis

The lower and upper confidence intervals indicate the likelihood that the population (i.e. the actual composition of the entire waste stream) falls close to the sample mean (i.e. the samples analyzed in the study). The lower and upper bound throughout this report have been calculated at 90 percent level of confidence. This means we can be 90 percent confident that the true fraction of this material in the overall population falls between the lower and upper bound shown. The inverse is also true; that there is a 10 percent chance that the true mean falls outside the intervals. For example, if the mean composition of cardboard in front end loaders was 40 percent, we can be 90 percent confident that the actual fraction of paper in the waste stream falls between 37.7 percent and 42.3 percent.

The results of the WCS for both seasons at the Facility are included in this section. The data obtained during each of the sampling seasons was taken from the field data sheets and input into spreadsheets. Analysis of the data consisted of calculating the mean waste composition, standard deviation, and confidence intervals using the results of the composition of each individual sorted sample.

3.2 Overall Composition of Waste

This section describes the overall composition of waste calculated during the WCS for the Facility. Similar to the material presented in the executive summary, the following bar graph has grouped the waste into the 62 sub-categories, and represents the data obtained during the study periods. As can be seen in Figure 3-1, four main categories constitute approximately 76% of the waste stream incoming to the Facility during the WCS. Paper contained the highest percentage of material at 27%, followed by organic materials at approximately 17%. Plastics represented about 16% of the materials, with C&D materials at approximately 16% of the disposed items in the samples during the WCS.

FIGURE 3-1 OVERALL COMPOSITION OF WASTE - WHEELABRATOR MILLBURY, INC.

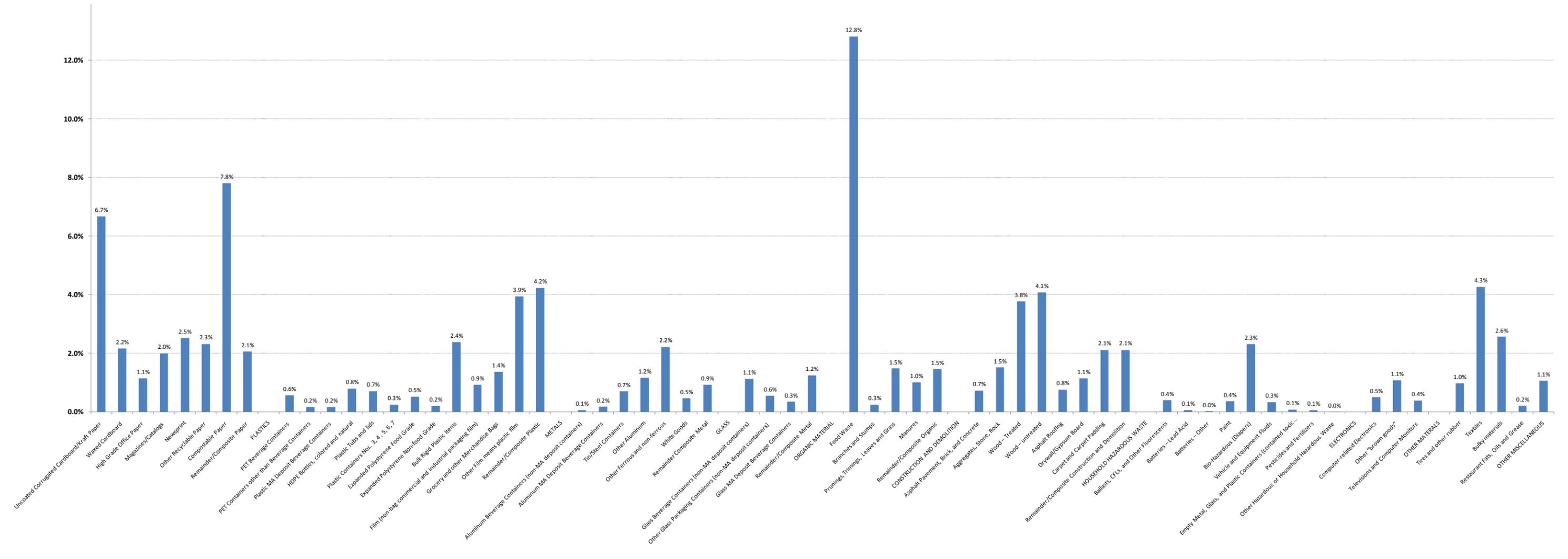


Table 3-1 below presents the data for all 62 waste categories as described in MADEP’s WCS Guidance. The information is based on the data gathered during the WCS at the Facility for 55 samples, during the 2010 study periods.

Table 3-1 Overall Waste Composition at Wheelabrator Millbury, Inc.								
Categories	Residential 40%	ICI 60%	Overall WCS 100%	Categories	Residential 40%	ICI 60%	Overall WCS 100%	
1.0 PAPER			26.7%	5.0 ORGANIC MATERIAL			17.0%	
1.1 Uncoated Corrugated Cardboard/Kraft Paper	1.8%	4.9%	6.7%	5.1 Food Waste	6.2%	6.6%	12.8%	
1.2 Waxed Cardboard	0.9%	1.3%	2.2%	5.2 Branches and Stumps	0.2%	0.1%	0.3%	
1.3 High Grade Office Paper	0.5%	0.7%	1.1%	5.3 Prunings, Trimmings, Leaves and Grass	0.9%	0.6%	1.5%	
1.4 Magazines/Catalogs	0.9%	1.1%	2.0%	5.4 Manures	0.8%	0.2%	1.0%	
1.5 Newsprint	1.1%	1.4%	2.5%	5.5 Remainder/Composite Organic	0.5%	1.0%	1.5%	
1.6 Other Recyclable Paper	1.1%	1.2%	2.3%	6.0 CONSTRUCTION AND DEMOLITION			16.3%	
1.7 Compostable Paper	3.9%	3.9%	7.8%	6.1 Asphalt Pavement, Brick, and Concrete	0.5%	0.2%	0.7%	
1.8 Remainder/Composite Paper	0.8%	1.2%	2.1%	6.2 Aggregates, Stone, Rock	0.3%	1.2%	1.5%	
2.0 PLASTICS			16.3%	6.3 Wood – Treated	1.1%	2.6%	3.8%	
2.1 PET Beverage Containers	0.2%	0.3%	0.6%	6.4 Wood – untreated	1.1%	3.0%	4.1%	
2.2 PET Containers other than Beverage Containers	0.1%	0.1%	0.2%	6.5 Asphalt Roofing	0.2%	0.6%	0.8%	
2.3 Plastic MA Deposit Beverage Containers	0.1%	0.1%	0.2%	6.6 Drywall/Gypsum Board	0.2%	1.0%	1.1%	
2.4 HDPE Bottles, colored and natural	0.3%	0.5%	0.8%	6.7 Carpet and Carpet Padding	1.2%	1.0%	2.1%	
2.5 Plastic Tubs and lids	0.3%	0.4%	0.7%	6.8 Remainder/Composite Construction and Demolition	0.5%	1.6%	2.1%	
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	0.1%	0.1%	0.3%	7.0 HOUSEHOLD HAZARDOUS WASTE			3.7%	
2.7 Expanded Polystyrene Food Grade	0.3%	0.3%	0.5%	7.1 Ballasts, CFLs, and Other Fluorescents	0.3%	0.1%	0.4%	
2.8 Expanded Polystyrene Non-food Grade	0.0%	0.2%	0.2%	7.2 Batteries – Lead Acid	0.1%	0.0%	0.1%	
2.9 Bulk Rigid Plastic Items	1.0%	1.4%	2.4%	7.3 Batteries – Other	0.0%	0.0%	0.0%	
2.10 Film (non-bag commercial and industrial packaging film)	0.2%	0.7%	0.9%	7.4 Paint	0.0%	0.3%	0.4%	
2.11 Grocery and other Merchandise Bags	0.7%	0.6%	1.4%	7.5 Bio-Hazardous (Diapers)	1.3%	1.0%	2.3%	
2.12 Other Film means plastic film	1.6%	2.3%	3.9%	7.6 Vehicle and Equipment Fluids	0.2%	0.1%	0.3%	
2.13 Remainder/Composite Plastic	1.0%	3.2%	4.2%	7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.1%	0.1%	
3.0 METALS			5.7%	7.8 Pesticides and Fertilizers	0.0%	0.1%	0.1%	
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.1%	7.9 Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	
3.2 Aluminum MA Deposit Beverage Containers	0.1%	0.1%	0.2%	8.0 ELECTRONICS			2.0%	
3.3 Tin/Steel Containers	0.3%	0.4%	0.7%	8.1 Computer-related Electronics	0.2%	0.3%	0.5%	
3.4 Other Aluminum	0.2%	0.9%	1.2%	8.2 Other “brown goods”	0.5%	0.6%	1.1%	
3.5 Other Ferrous and non-ferrous	0.6%	1.7%	2.2%	8.3 Televisions and Computer Monitors	0.2%	0.2%	0.4%	
3.6 White Goods	0.3%	0.2%	0.5%	9.0 OTHER MATERIALS			8.0%	
3.7 Remainder Composite Metal	0.4%	0.6%	0.9%	9.1 Tires and other rubber	0.4%	0.6%	1.0%	
4.0 GLASS			3.3%	9.2 Textiles	1.4%	2.9%	4.3%	
4.1 Glass Beverage Containers (non-MA deposit containers)	0.4%	0.7%	1.1%	9.3 Bulky materials	1.3%	1.3%	2.6%	
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.3%	0.2%	0.6%	9.4 Restaurant Fats, Oils and Grease	0.1%	0.1%	0.2%	
4.3 Glass MA Deposit Beverage Containers	0.2%	0.2%	0.3%	10.0 OTHER MISCELLANEOUS	0.3%	0.7%	1.1%	
4.4 Remainder/Composite Metal	0.2%	1.0%	1.2%					

3.3 Composition of Waste by Sampling Season

The waste composition by sampling season was compared, and has been depicted in table 3-2 below. The comparison included 55 vehicles sampled, which composed twenty eight vehicles sampled in the spring and the fall. One sorted vehicle was excluded from the data analysis.

Table 3-2 Composition of Waste by Season																	
Categories	Season 1				Season 2				Categories	Season 1				Season 2			
	Average	At 90 % confidence Level (+/-)	Average	At 90 % confidence Level (+/-)	Average	At 90 % confidence Level (+/-)	Average	At 90 % confidence Level (+/-)		Average	At 90 % confidence Level (+/-)	Average	At 90 % confidence Level (+/-)				
1.0	PAPER								5.0	ORGANIC MATERIAL							
1.1	Uncoated Corrugated Cardboard/Kraft Paper	6.5%	1.4%	5.3%	1.5%	5.1	Food Waste	13.6%	2.6%	12.2%	3.4%						
1.2	Waxed Cardboard	3.3%	0.6%	0.4%	0.3%	5.2	Branches and Stumps	0.2%	0.2%	0.0%	NA						
1.3	High Grade Office Paper	2.3%	1.1%	0.8%	0.4%	5.3	Prunings, Trimmings, Leaves and Grass	1.4%	1.1%	2.3%	1.2%						
1.4	Magazines/Catalogs	3.2%	1.4%	1.2%	0.4%	5.4	Manures	1.0%	0.5%	0.2%	0.2%						
1.5	Newsprint	2.6%	0.8%	2.5%	0.6%	5.5	Remainder/Composite Organic	0.6%	0.4%	2.5%	1.4%						
1.6	Other Recyclable Paper	1.5%	0.6%	5.5%	1.1%	6.0	CONSTRUCTION AND DEMOLITION										
1.7	Compostable Paper	11.6%	1.8%	5.6%	1.1%	6.1	Asphalt Pavement, Brick, and Concrete	0.0%	NA	0.0%	NA						
1.8	Remainder/Composite Paper	3.0%	0.5%	1.8%	0.6%	6.2	Aggregates, Stone, Rock	3.7%	2.5%	0.0%	NA						
2.0	PLASTICS								6.3	Wood – Treated	1.9%	0.9%	3.3%	1.9%			
2.1	PET Beverage Containers	0.7%	0.2%	0.4%	0.1%	6.4	Wood – untreated	1.0%	0.7%	5.8%	3.1%						
2.2	PET Containers other than Beverage containers	0.1%	0.1%	0.1%	0.0%	6.5	Asphalt Roofing	0.4%	0.3%	0.0%	NA						
2.3	Plastic MA Deposit Beverage Containers	0.2%	0.0%	0.0%	0.0%	6.6	Drywall/Gypsum Board	0.4%	0.3%	1.6%	1.4%						
2.4	HDPE Bottles, colored and natural	1.4%	0.2%	1.1%	0.8%	6.7	Carpet and Carpet Padding	0.7%	0.4%	2.5%	1.4%						
2.5	Plastic Tubs and lids	1.3%	0.2%	0.3%	0.1%	6.8	Remainder/Composite Construction and Demolition	0.5%	0.4%	1.7%	1.0%						
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.2%	0.1%	0.1%	0.0%	7.0	HOUSEHOLD HAZARDOUS WASTE										
2.7	Expanded Polystyrene Food Grade	0.7%	0.2%	0.6%	0.3%	7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	NA						
2.8	Expanded Polystyrene Non-food Grade	0.3%	0.1%	0.1%	0.0%	7.2	Batteries – Lead Acid	0.0%	NA	0.0%	NA						
2.9	Bulk Rigid Plastic Items	1.8%	0.6%	3.0%	1.2%	7.3	Batteries – Other	0.0%	0.0%	0.0%	0.0%						
2.10	Film (non-bag commercial and industrial packaging film)	1.6%	0.9%	1.2%	0.7%	7.4	Paint	0.1%	0.1%	0.7%	0.6%						
2.11	Grocery and other Merchandise Bags	2.8%	0.8%	0.3%	0.1%	7.5	Bio-Hazardous (Diapers)	5.5%	1.3%	1.2%	0.4%						
2.12	Other Film means plastic film	8.2%	1.1%	3.2%	1.0%	7.6	Vehicle and Equipment Fluids	0.1%	0.0%	0.0%	NA						
2.13	Remainder/Composite Plastic	3.0%	0.6%	5.3%	3.2%	7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.3%	0.2%	0.2%	0.1%						
3.0	METALS								7.8	Pesticides and Fertilizers	0.2%	0.1%	0.0%	NA			
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.2%	0.2%						
3.2	Aluminum MA Deposit Beverage Containers	0.2%	0.1%	0.2%	0.1%	8.0	ELECTRONICS										
3.3	Tin/Steel Containers	0.8%	0.2%	0.8%	0.2%	8.1	Computer-related Electronics	0.3%	0.3%	0.0%	0.0%						
3.4	Other Aluminum	0.8%	0.4%	0.8%	0.4%	8.2	Other "brown goods"	0.4%	0.2%	2.5%	1.0%						
3.5	Other Ferrous and non-ferrous	1.7%	0.7%	1.7%	0.7%	8.3	Televisions and Computer Monitors	0.4%	0.4%	0.6%	0.7%						
3.6	White Goods	0.0%	NA	0.0%	NA	9.0	OTHER MATERIALS										
3.7	Remainder Composite Metal	0.8%	0.3%	0.8%	0.3%	9.1	Tires and other rubber	0.4%	0.3%	2.5%	1.3%						
4.0	GLASS								9.2	Textiles	4.2%	1.1%	7.0%	2.7%			
4.1	Glass Beverage Containers (non-MA deposit containers)	0.7%	0.3%	1.1%	0.6%	9.3	Bulky materials	0.3%	0.3%	4.5%	2.4%						
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.4%	0.1%	0.3%	0.1%	9.4	Restaurant Fats, Oils and Grease	0.0%	NA	0.0%	NA						
4.3	Glass MA Deposit Beverage Containers	0.3%	0.1%	0.3%	0.2%	10.0	OTHER MISCELLANEOUS										
4.4	Remainder/Composite Metal	0.7%	0.4%	1.1%	0.9%			0.3%	0.2%	2.6%	1.1%						

3.4 Composition of Waste by Substream

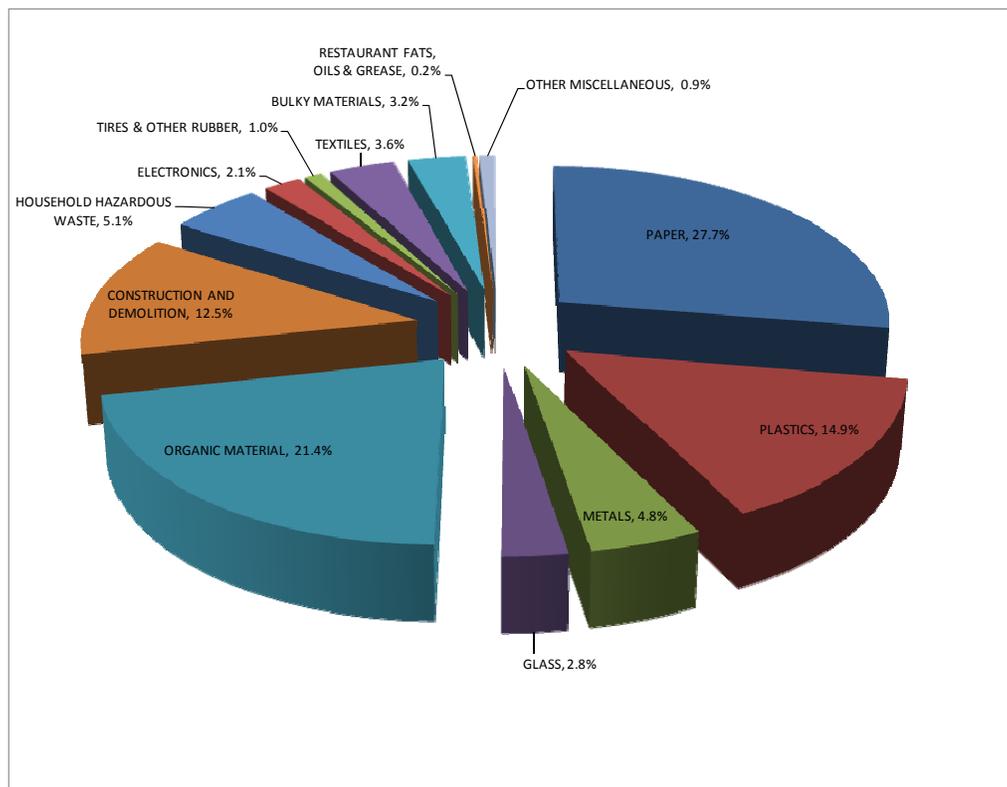
This section provides a summary account of the overall composition of the waste stream encountered at the Facility, during the WCS time periods, grouped into the various sectors of residential and ICI classifications. The residential waste composition presented below was based upon the assumption that all rear loading packers and side loaders are classified as residential waste.

In addition to the previously presented table and figures, the following two figures (3-2 and 3-3) provide further categorization of the waste stream at the Facility, determined from the WCS conducted in 2010. The results for Wheelabrator Millbury indicated that the incoming waste distribution for residential was around 39.8%, and the distribution for ICI was approximately 60.2%.

3.4.1 Residential Sector

Figure 3-2 below indicates the distribution of the residential waste at the Facility, based upon the 55 samples analyzed over the course of both sampling seasons. The figure categorizes the 13 main categories of waste, as described in the MADEP WCS Guidance. Paper comprised the most material in the residential waste stream at 27.7%, and organic material constituted 21% (rounded). Plastics accounted for 15% of materials, while C&D had the fourth largest share of material at approximately 12.5%.

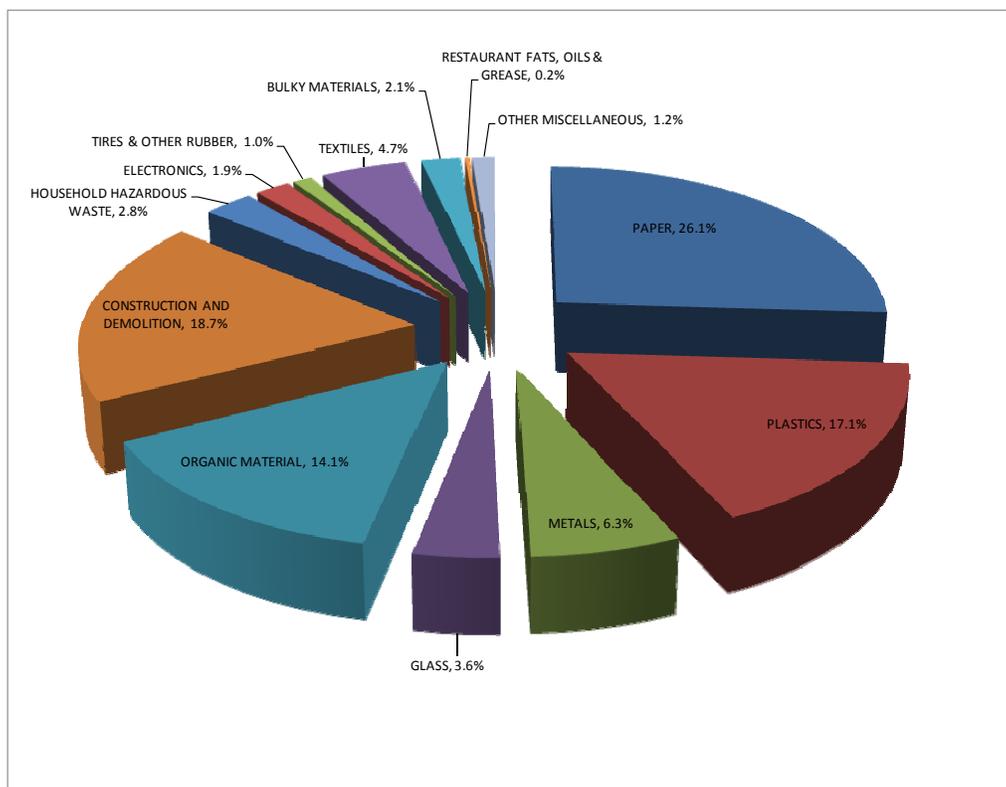
Figure 3-2
Residential Waste Composition
Wheelabrator Millbury, Inc.



3.4.2 ICI Sector

Figure 3-3 below indicates the distribution of the ICI waste at the Facility, based upon the 55 samples analyzed over the course of both sampling seasons. The figure categorizes the 13 main categories of waste, as described in the MADEP WCS Guidance. Paper comprised the most material in the ICI waste stream at 26% (rounded), with C&D constituting approximately 19% of the material. Plastics represented approximately 17% and organic material represented around 14% of the materials found in the ICI waste stream.

Figure 3-3
ICI Waste Composition
Wheelabrator Millbury, Inc.



3.4.3 Unacceptable Loads

Unacceptable loads are defined as loads that contain less than 80% of either residential or ICI waste, loads that are more than 50% construction and demolition material, and loads originating from out of state. During the WCS at the Facility, no out of state loads were identified based upon the vehicles interviewed for sampling.

The driver interview process allowed the WCS crew supervisor to identify any loads that may have contained less than 80% waste of either residential or ICI sectors, and thereby be classified as unacceptable. One roll off open top truck was encountered, which had been randomly chosen to be sampled and the driver interviewed, and the driver indicated that the load was from a residential drop off facility. After the load was deposited on the tipping floor, it was noticed that the load contained more than 50% C&D materials, thereby excluding it from the WCS sampling and classified as “unacceptable”. There were no other loads identified during the WCS that were categorized as unacceptable at the Facility.

3.5 Waste Composition by Haul Type

The following five tables describe the waste composition by haul type, based on the 168 samples sorted during the WCS time period in 2010, for all three Wheelabrator Facilities. By including all vehicles sampled during the study, it allowed for a more accurate calculation of the results instead of limiting the data to one facility, such as for Wheelabrator Millbury, Inc. which consisted of 55 samples. For example, the roll-off compactors would be limited to 2 vehicles.

The summary account of the waste composition by haul type has been categorized by the five vehicles listed in Table 3-2 below. The table below also indicates how many vehicles of each type were sampled during the WCS.

Table 3-3 Number and Allocation of Samples by Vehicle Type Wheelabrator Millbury, Inc.	
Haul Type	Number of Vehicles Sampled
Roll-off - open top	12
Roll-off - closed top	0
Roll-off - compactor	2
Rear loading packer	16
Front loading packer	25
Total	55

Table 3-4 Waste Composition of Roll-off Open Top

Categories		Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level	Categories		Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level
1.0	PAPER	17.1%				5.0	ORGANIC MATERIAL	3.9%			
1.1	Uncoated Corrugated Cardboard/Kraft Paper	5.7%	3.5%	4.2%	7.2%	5.1	Food Waste	2.7%	3.3%	1.3%	4.1%
1.2	Waxed Cardboard	1.6%	2.5%	0.6%	2.7%	5.2	Branches and Stumps	0.4%	1.6%	0.0%	1.1%
1.3	High Grade Office Paper	0.5%	1.1%	0.1%	1.0%	5.3	Prunings, Trimmings, Leaves and Grass	0.0%	0.0%	NA	NA
1.4	Magazines/Catalogs	1.6%	4.3%	0.0%	3.5%	5.4	Manures	0.3%	1.2%	0.0%	0.8%
1.5	Newsprint	1.7%	3.7%	0.2%	3.3%	5.5	Remainder/Composite Organic	0.5%	0.9%	0.1%	0.9%
1.6	Other Recyclable Paper	1.2%	3.1%	0.0%	2.5%	6.0	CONSTRUCTION AND DEMOLITION	29.2%			
1.7	Compostable Paper	2.7%	3.8%	1.1%	4.3%	6.1	Asphalt Pavement, Brick, and Concrete	0.3%	1.3%	0.0%	0.9%
1.8	Remainder/Composite Paper	1.9%	1.7%	1.2%	2.6%	6.2	Aggregates, Stone, Rock	4.0%	13.7%	0.0%	9.9%
2.0	PLASTICS	18.9%				6.3	Wood – Treated	3.8%	6.5%	1.0%	6.6%
2.1	PET Beverage Containers	0.3%	0.7%	0.0%	0.6%	6.4	Wood – untreated	8.8%	12.4%	3.5%	14.0%
2.2	PET Containers other than Beverage containers	0.0%	0.1%	0.0%	0.1%	6.5	Asphalt Roofing	0.8%	3.0%	0.0%	2.1%
2.3	Plastic MA Deposit Beverage Containers	0.1%	0.1%	0.0%	0.2%	6.6	Drywall/Gypsum Board	3.9%	13.0%	0.0%	9.4%
2.4	HDPE Bottles, colored and natural	0.4%	0.6%	0.1%	0.7%	6.7	Carpet and Carpet Padding	1.5%	3.4%	0.1%	2.9%
2.5	Plastic Tubs and lids	0.5%	0.6%	0.2%	0.7%	6.8	Remainder/Composite Construction and Demolition	6.0%	11.5%	1.1%	10.9%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.2%	0.3%	0.0%	0.3%	7.0	HOUSEHOLD HAZARDOUS WASTE	2.2%			
2.7	Expanded Polystyrene Food Grade	0.2%	0.2%	0.1%	0.3%	7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.1%	0.0%	0.1%
2.8	Expanded Polystyrene Non-food Grade	0.4%	1.0%	0.0%	0.9%	7.2	Batteries – Lead Acid	0.0%	0.0%	NA	NA
2.9	Bulk Rigid Plastic Items	2.9%	3.7%	1.3%	4.4%	7.3	Batteries – Other	0.0%	0.0%	0.0%	0.0%
2.10	Film (non-bag commercial and industrial packaging film)	1.4%	3.0%	0.1%	2.7%	7.4	Paint	1.4%	5.4%	0.0%	3.7%
2.11	Grocery and other Merchandise Bags	0.4%	0.6%	0.1%	0.6%	7.5	Bio-Hazardous (Diapers)	0.2%	0.7%	0.0%	0.6%
2.12	Other Film means plastic film	2.8%	2.6%	1.7%	3.9%	7.6	Vehicle and Equipment Fluids	0.1%	0.4%	0.0%	0.3%
2.13	Remainder/Composite Plastic	9.3%	25.3%	0.0%	20.0%	7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.1%	0.2%	0.0%	0.2%
3.0	METALS	10.5%				7.8	Pesticides and Fertilizers	0.3%	1.3%	0.0%	0.9%
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.1%	0.0%	0.0%	7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	NA	NA
3.2	Aluminum MA Deposit Beverage Containers	0.1%	0.2%	0.0%	0.2%	8.0	ELECTRONICS	1.1%			
3.3	Tin/Steel Containers	0.3%	0.4%	0.1%	0.4%	8.1	Computer-related Electronics	0.1%	0.4%	0.0%	0.3%
3.4	Other Aluminum	3.0%	9.9%	0.0%	7.2%	8.2	Other "brown goods"	0.9%	2.5%	0.0%	2.0%
3.5	Other Ferrous and non-ferrous	5.4%	6.8%	2.5%	8.3%	8.3	Televisions and Computer Monitors	0.0%	0.0%	NA	NA
3.6	White Goods	0.3%	1.2%	0.0%	0.8%	9.0	OTHER MATERIALS	10.4%			
3.7	Remainder Composite Metal	1.4%	2.5%	0.4%	2.5%	9.1	Tires and other rubber	1.3%	3.1%	0.0%	2.6%
4.0	GLASS	5.3%				9.2	Textiles	5.7%	5.6%	3.4%	8.1%
4.1	Glass Beverage Containers (non-MA deposit containers)	1.3%	3.6%	0.0%	2.8%	9.3	Bulky materials	3.3%	9.2%	0.0%	7.2%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.2%	0.4%	0.0%	0.3%	9.4	Restaurant Fats, Oils and Grease	0.1%	0.5%	0.0%	0.3%
4.3	Glass MA Deposit Beverage Containers	0.3%	0.6%	0.1%	0.6%	10.0	OTHER MISCELLANEOUS	1.4%	3.7%	0.0%	2.9%
4.4	Remainder/Composite Metal	3.6%	8.5%	0.0%	7.2%						

Table 3-5 below indicates the waste composition of roll-off closed top vehicles for the study period. However, only one roll-off closed top was sampled during the WCS for all three Wheelabrator facilities. Therefore, it would not be feasible to indicate the standard deviation for one sample, therefore only the average composition is shown.

Categories	Average	Categories	Average
1.0 PAPER	4.1%	5.0 ORGANIC MATERIAL	3.6%
1.1 Uncoated Corrugated Cardboard/Kraft Paper	0.2%	5.1 Food Waste	3.6%
1.2 Waxed Cardboard	0.0%	5.2 Branches and Stumps	0.0%
1.3 High Grade Office Paper	0.0%	5.3 Prunings, Trimmings, Leaves and Grass	0.0%
1.4 Magazines/Catalogs	0.2%	5.4 Manures	0.0%
1.5 Newsprint	0.5%	5.5 Remainder/Composite Organic	0.0%
1.6 Other Recyclable Paper	1.2%	6.0 CONSTRUCTION AND DEMOLITION	34.2%
1.7 Compostable Paper	1.5%	6.1 Asphalt Pavement, Brick, and Concrete	0.0%
1.8 Remainder/Composite Paper	0.6%	6.2 Aggregates, Stone, Rock	0.0%
2.0 PLASTICS	20.9%	6.3 Wood – Treated	0.0%
2.1 PET Beverage Containers	0.4%	6.4 Wood – untreated	24.2%
2.2 PET Containers other than Beverage containers	0.1%	6.5 Asphalt Roofing	10.0%
2.3 Plastic MA Deposit Beverage Containers	0.0%	6.6 Drywall/Gypsum Board	0.0%
2.4 HDPE Bottles, colored and natural	0.1%	6.7 Carpet and Carpet Padding	0.0%
2.5 Plastic Tubs and lids	0.1%	6.8 Remainder/Composite Construction and Demolition	0.0%
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	7.0 HOUSEHOLD HAZARDOUS WASTE	7.0%
2.7 Expanded Polystyrene Food Grade	0.1%	7.1 Ballasts, CFLs, and Other Fluorescents	6.9%
2.8 Expanded Polystyrene Non-food Grade	0.0%	7.2 Batteries – Lead Acid	0.0%
2.9 Bulk Rigid Plastic Items	13.0%	7.3 Batteries – Other	0.0%
2.10 Film (non-bag commercial and industrial packaging film)	0.0%	7.4 Paint	0.0%
2.11 Grocery and other Merchandise Bags	0.2%	7.5 Bio-Hazardous (Diapers)	0.0%
2.12 Other Film means plastic film	0.5%	7.6 Vehicle and Equipment Fluids	0.1%
2.13 Remainder/Composite Plastic	6.3%	7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%
3.0 METALS	7.0%	7.8 Pesticides and Fertilizers	0.0%
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.0%	7.9 Other Hazardous or Household Hazardous Waste	0.0%
3.2 Aluminum MA Deposit Beverage Containers	0.0%	8.0 ELECTRONICS	8.9%
3.3 Tin/Steel Containers	0.0%	8.1 Computer-related Electronics	0.0%
3.4 Other Aluminum	0.2%	8.2 Other “brown goods”	0.0%
3.5 Other Ferrous and non-ferrous	0.2%	8.3 Televisions and Computer Monitors	8.9%
3.6 White Goods	6.6%	9.0 OTHER MATERIALS	13.4%
3.7 Remainder Composite Metal	0.0%	9.1 Tires and other rubber	0.0%
4.0 GLASS	0.6%	9.2 Textiles	0.0%
4.1 Glass Beverage Containers (non-MA deposit containers)	0.2%	9.3 Bulky materials	10.5%
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.3%	9.4 Restaurant Fats, Oils and Grease	2.9%
4.3 Glass MA Deposit Beverage Containers	0.1%	10.0 OTHER MISCELLANEOUS	0.3%
4.4 Remainder/Composite Metal	0.0%		

Table 3-6 Waste Composition of Roll-off Compactor

Categories	Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level	Categories	Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level		
1.0	PAPER				5.0	ORGANIC MATERIAL					
	35.4%					17.0%					
1.1	Uncoated Corrugated Cardboard/Kraft Paper	11.6%	9.4%	7.0%	16.3%	5.1	Food Waste	15.7%	12.6%	9.4%	21.9%
1.2	Waxed Cardboard	2.7%	4.3%	0.6%	4.9%	5.2	Branches and Stumps	0.0%	0.0%	NA	NA
1.3	High Grade Office Paper	2.9%	5.2%	0.3%	5.5%	5.3	Prunings, Trimings, Leaves and Grass	0.1%	0.3%	0.0%	0.3%
1.4	Magazines/Catalogs	2.9%	4.4%	0.7%	5.1%	5.4	Manures	0.2%	0.6%	0.0%	0.5%
1.5	Newsprint	2.3%	3.5%	0.6%	4.0%	5.5	Remainder/Composite Organic	1.0%	1.5%	0.2%	1.7%
1.6	Other Recyclable Paper	4.3%	5.6%	1.5%	7.1%	6.0	CONSTRUCTION AND DEMOLITION				
							10.3%				
1.7	Compostable Paper	6.7%	4.4%	4.5%	8.9%	6.1	Asphalt Pavement, Brick, and Concrete	0.1%	0.2%	0.0%	0.2%
1.8	Remainder/Composite Paper	2.0%	3.1%	0.5%	3.5%	6.2	Aggregates, Stone, Rock	1.5%	4.8%	0.0%	3.9%
2.0	PLASTICS				6.3	WOOD - TREATED					
	16.6%					2.2%	4.9%	0.0%	4.7%		
2.1	PET Beverage Containers	0.3%	0.3%	0.2%	0.5%	6.4	Wood - untreated	1.3%	2.5%	0.1%	2.5%
2.2	PET Containers other than Beverage containers	0.1%	0.2%	0.0%	0.2%	6.5	Asphalt Roofing	3.3%	10.9%	0.0%	8.7%
2.3	Plastic MA Deposit Beverage Containers	0.1%	0.2%	0.0%	0.2%	6.6	Drywall/Gypsum Board	0.2%	0.6%	0.0%	0.5%
2.4	HDPE Bottles, colored and natural	0.4%	0.4%	0.2%	0.6%	6.7	Carpet and Carpet Padding	0.3%	1.1%	0.0%	0.9%
2.5	Plastic Tubs and lids	0.4%	0.5%	0.1%	0.6%	6.8	Remainder/Composite Construction and Demolition	1.4%	4.8%	0.0%	3.8%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.4%	0.5%	0.2%	0.7%	7.0	HOUSEHOLD HAZARDOUS WASTE				
							2.8%				
2.7	Expanded Polystyrene Food Grade	1.1%	2.2%	0.0%	2.2%	7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%
2.8	Expanded Polystyrene Non-food Grade	1.0%	3.0%	0.0%	2.5%	7.2	Batteries - Lead Acid	0.0%	0.0%	NA	NA
2.9	Bulk Rigid Plastic Items	1.8%	2.3%	0.6%	2.9%	7.3	Batteries - Other	0.1%	0.2%	0.0%	0.2%
2.10	Film (non-bag commercial and industrial packaging film)	4.1%	6.9%	0.6%	7.5%	7.4	Paint	0.0%	0.1%	0.0%	0.0%
2.11	Grocery and other Merchandise Bags	0.4%	0.7%	0.1%	0.8%	7.5	Bio-Hazardous (Diapers)	1.2%	2.8%	0.0%	2.6%
2.12	Other Film means plastic film	3.5%	3.0%	2.0%	5.0%	7.6	Vehicle and Equipment Fluids	0.4%	1.3%	0.0%	1.0%
2.13	Remainder/Composite Plastic	3.0%	4.3%	0.9%	5.1%	7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	1.1%	2.8%	0.0%	2.4%
3.0	METALS				7.8	PESTICIDES AND FERTILIZERS					
	9.7%					0.0%	0.0%	0.0%	0.0%		
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.1%	0.0%	0.1%	7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	NA	NA
3.2	Aluminum MA Deposit Beverage Containers	0.1%	0.2%	0.0%	0.2%	8.0	ELECTRONICS				
							1.4%				
3.3	Tin/Steel Containers	0.4%	0.4%	0.2%	0.6%	8.1	Computer-related Electronics	0.0%	0.0%	0.0%	0.0%
3.4	Other Aluminum	0.2%	0.3%	0.1%	0.3%	8.2	Other "brown goods"	0.9%	1.7%	0.1%	1.8%
3.5	Other Ferrous and non-ferrous	8.3%	22.9%	0.0%	19.6%	8.3	Televisions and Computer Monitors	0.5%	1.5%	0.0%	1.2%
3.6	White Goods	0.1%	0.4%	0.0%	0.4%	9.0	OTHER MATERIALS				
							3.8%				
3.7	Remainder Composite Metal	0.5%	1.1%	0.0%	1.0%	9.1	Tires and other rubber	0.1%	0.2%	0.0%	0.2%
4.0	GLASS				9.2	TEXTILES					
	2.5%						0.8%	1.3%	0.2%	1.5%	
4.1	Glass Beverage Containers (non-MA deposit containers)	1.3%	1.7%	0.4%	2.1%	9.3	Bulky materials	1.8%	3.9%	0.0%	3.7%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.5%	0.8%	0.1%	0.9%	9.4	Restaurant Fats, Oils and Grease	1.1%	3.5%	0.0%	2.8%
4.3	Glass MA Deposit Beverage Containers	0.3%	0.6%	0.0%	0.6%	10.0	OTHER MISCELLANEOUS				
							0.5%	0.6%	0.2%	0.9%	
4.4	Remainder/Composite Metal	0.4%	0.9%	0.0%	0.9%						

Table 3-7 Waste Composition of Rear Loader

Categories		Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level	Categories		Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level
1.0	PAPER	27.7%				5.0	ORGANIC MATERIAL	21.4%			
1.1	Uncoated Corrugated Cardboard/Kraft Paper	4.6%	5.8%	3.5%	5.7%	5.1	Food Waste	15.5%	8.7%	13.8%	17.1%
1.2	Waxed Cardboard	2.2%	3.0%	1.6%	2.8%	5.2	Branches and Stumps	0.4%	1.9%	0.0%	0.8%
1.3	High Grade Office Paper	1.2%	2.2%	0.8%	1.7%	5.3	Prunings, Trimmings, Leaves and Grass	2.3%	4.6%	1.5%	3.2%
1.4	Magazines/Catalogs	2.2%	2.2%	1.8%	2.7%	5.4	Manures	1.9%	3.8%	1.2%	2.7%
1.5	Newsprint	2.8%	2.4%	2.4%	3.3%	5.5	Remainder/Composite Organic	1.3%	3.7%	0.5%	2.0%
1.6	Other Recyclable Paper	2.7%	3.4%	2.1%	3.4%	6.0	CONSTRUCTION AND DEMOLITION	12.6%			
1.7	Compostable Paper	9.7%	8.1%	8.2%	11.3%	6.1	Asphalt Pavement, Brick, and Concrete	1.2%	3.4%	0.6%	1.9%
1.8	Remainder/Composite Paper	2.1%	2.2%	1.7%	2.5%	6.2	Aggregates, Stone, Rock	0.8%	2.7%	0.2%	1.3%
2.0	PLASTICS	15.0%				6.3	Wood – Treated	2.9%	4.9%	1.9%	3.8%
2.1	PET Beverage Containers	0.6%	0.4%	0.5%	0.7%	6.4	Wood – untreated	2.7%	5.5%	1.6%	3.7%
2.2	PET Containers other than Beverage containers	0.2%	0.2%	0.2%	0.3%	6.5	Asphalt Roofing	0.5%	2.7%	0.0%	1.0%
2.3	Plastic MA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.2%	6.6	Drywall/Gypsum Board	0.4%	2.9%	0.0%	1.0%
2.4	HDPE Bottles, colored and natural	0.7%	0.6%	0.6%	0.8%	6.7	Carpet and Carpet Padding	2.9%	6.2%	1.7%	4.1%
2.5	Plastic Tubs and lids	0.8%	1.1%	0.6%	1.0%	6.8	Remainder/Composite Construction and Demolition	1.2%	4.7%	0.3%	2.1%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.3%	0.3%	0.2%	0.3%	7.0	HOUSEHOLD HAZARDOUS WASTE	5.1%			
2.7	Expanded Polystyrene Food Grade	0.7%	0.6%	0.6%	0.8%	7.1	Ballasts, CFLs, and Other Fluorescents	0.8%	3.2%	0.2%	1.4%
2.8	Expanded Polystyrene Non-food Grade	0.1%	0.1%	0.0%	0.1%	7.2	Batteries – Lead Acid	0.2%	1.1%	0.0%	0.4%
2.9	Bulk Rigid Plastic Items	2.4%	3.5%	1.7%	3.1%	7.3	Batteries – Other	0.0%	0.1%	0.0%	0.0%
2.10	Film (non-bag commercial and industrial packaging film)	0.5%	0.9%	0.3%	0.7%	7.4	Paint	0.1%	0.4%	0.0%	0.2%
2.11	Grocery and other Merchandise Bags	1.9%	2.6%	1.4%	2.4%	7.5	Bio-Hazardous (Diapers)	3.3%	4.1%	2.6%	4.1%
2.12	Other Film means plastic film	4.0%	3.2%	3.4%	4.7%	7.6	Vehicle and Equipment Fluids	0.5%	1.2%	0.3%	0.7%
2.13	Remainder/Composite Plastic	2.6%	2.4%	2.1%	3.0%	7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.1%	0.2%	0.0%	0.1%
3.0	METALS	4.8%				7.8	Pesticides and Fertilizers	0.0%	0.3%	0.0%	0.1%
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.1%	0.1%	0.0%	0.1%	7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.1%	0.0%	0.0%
3.2	Aluminum MA Deposit Beverage Containers	0.2%	0.3%	0.2%	0.3%	8.0	ELECTRONICS	2.1%			
3.3	Tin/Steel Containers	0.9%	1.0%	0.7%	1.1%	8.1	Computer-related Electronics	0.4%	1.8%	0.1%	0.8%
3.4	Other Aluminum	0.6%	0.6%	0.5%	0.7%	8.2	Other "brown goods"	1.2%	2.6%	0.8%	1.7%
3.5	Other Ferrous and non-ferrous	1.4%	4.0%	0.7%	2.2%	8.3	Televisions and Computer Monitors	0.4%	1.6%	0.1%	0.7%
3.6	White Goods	0.7%	2.7%	0.2%	1.2%	9.0	OTHER MATERIALS	7.9%			
3.7	Remainder Composite Metal	0.9%	2.7%	0.4%	1.4%	9.1	Tires and other rubber	1.0%	2.8%	0.4%	1.5%
4.0	GLASS	2.8%				9.2	Textiles	3.6%	3.8%	2.8%	4.3%
4.1	Glass Beverage Containers (non-MA deposit containers)	1.0%	1.3%	0.7%	1.2%	9.3	Bulky materials	3.2%	6.1%	2.0%	4.3%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.8%	1.2%	0.5%	1.0%	9.4	Restaurant Fats, Oils and Grease	0.2%	1.5%	0.0%	0.5%
4.3	Glass MA Deposit Beverage Containers	0.4%	0.6%	0.3%	0.5%	10.0	OTHER MISCELLANEOUS	0.9%	1.2%	0.6%	1.1%
4.4	Remainder/Composite Metal	0.6%	1.8%	0.3%	0.9%						

Table 3-8 Waste Composition of Front Loader

Categories	Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level	Categories	Average	Standard Deviation	Lower Limit at 90% Confidence Level	Upper Limit at 90% Confidence Level
1.0 PAPER	31.0%				5.0 ORGANIC MATERIAL	19.9%			
1.1 Uncoated Corrugated Cardboard/Kraft Paper	9.3%	7.9%	7.7%	11.0%	5.1 Food Waste	15.7%	12.2%	13.2%	18.2%
1.2 Waxed Cardboard	2.4%	2.8%	1.8%	3.0%	5.2 Branches and Stumps	0.0%	0.3%	0.0%	0.1%
1.3 High Grade Office Paper	1.4%	3.1%	0.7%	2.0%	5.3 Prunings, Trimings, Leaves and Grass	1.5%	4.4%	0.6%	2.4%
1.4 Magazines/Catalogs	1.9%	2.9%	1.4%	2.5%	5.4 Manures	0.4%	1.3%	0.2%	0.7%
1.5 Newsprint	2.6%	2.9%	2.0%	3.2%	5.5 Remainder/Composite Organic	2.2%	5.3%	1.1%	3.3%
1.6 Other Recyclable Paper	2.5%	3.2%	1.8%	3.2%	6.0 CONSTRUCTION AND DEMOLITION	12.9%			
1.7 Compostable Paper	8.7%	5.1%	7.7%	9.7%	6.1 Asphalt Pavement, Brick, and Concrete	0.4%	1.7%	0.1%	0.8%
1.8 Remainder/Composite Paper	2.1%	2.2%	1.7%	2.6%	6.2 Aggregates, Stone, Rock	0.9%	4.0%	0.1%	1.7%
2.0 PLASTICS	16.2%				6.3 Wood – Treated	4.8%	7.8%	3.2%	6.4%
2.1 PET Beverage Containers	0.7%	0.6%	0.6%	0.8%	6.4 Wood – untreated	2.9%	5.5%	1.8%	4.0%
2.2 PET Containers other than Beverage containers	0.2%	0.3%	0.1%	0.3%	6.5 Asphalt Roofing	1.0%	5.3%	0.0%	2.1%
2.3 Plastic MA Deposit Beverage Containers	0.2%	0.3%	0.1%	0.3%	6.6 Drywall/Gypsum Board	0.3%	1.3%	0.1%	0.6%
2.4 HDPE Bottles, colored and natural	1.1%	3.0%	0.5%	1.7%	6.7 Carpet and Carpet Padding	1.7%	4.5%	0.8%	2.6%
2.5 Plastic Tubs and lids	0.8%	0.9%	0.6%	1.0%	6.8 Remainder/Composite Construction and Demolition	0.9%	2.3%	0.4%	1.4%
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	0.3%	0.4%	0.2%	0.4%	7.0 HOUSEHOLD HAZARDOUS WASTE	3.1%			
2.7 Expanded Polystyrene Food Grade	0.6%	0.7%	0.4%	0.7%	7.1 Ballasts, CFLs, and Other Fluorescents	0.2%	1.3%	0.0%	0.4%
2.8 Expanded Polystyrene Non-food Grade	0.2%	1.1%	0.0%	0.4%	7.2 Batteries – Lead Acid	0.0%	0.0%	0.0%	0.0%
2.9 Bulk Rigid Plastic Items	2.1%	2.8%	1.5%	2.7%	7.3 Batteries – Other	0.0%	0.1%	0.0%	0.1%
2.10 Film (non-bag commercial and industrial packaging film)	1.0%	1.9%	0.7%	1.4%	7.4 Paint	0.1%	0.3%	0.0%	0.1%
2.11 Grocery and other Merchandise Bags	1.4%	2.1%	1.0%	1.9%	7.5 Bio-Hazardous (Diapers)	2.5%	4.6%	1.5%	3.4%
2.12 Other Film means plastic film	4.5%	3.9%	3.7%	5.3%	7.6 Vehicle and Equipment Fluids	0.3%	1.1%	0.1%	0.5%
2.13 Remainder/Composite Plastic	3.1%	2.7%	2.5%	3.7%	7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.1%	0.2%	0.0%	0.1%
3.0 METALS	3.9%				7.8 Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.1%	0.3%	0.0%	0.2%	7.9 Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%
3.2 Aluminum MA Deposit Beverage Containers	0.2%	0.2%	0.1%	0.2%	8.0 ELECTRONICS	2.4%			
3.3 Tin/Steel Containers	0.8%	0.8%	0.6%	1.0%	8.1 Computer-related Electronics	0.8%	3.8%	0.0%	1.6%
3.4 Other Aluminum	0.7%	1.3%	0.5%	1.0%	8.2 Other “brown goods”	1.0%	2.7%	0.5%	1.6%
3.5 Other Ferrous and non-ferrous	1.1%	2.5%	0.6%	1.7%	8.3 Televisions and Computer Monitors	0.6%	2.9%	0.0%	1.2%
3.6 White Goods	0.3%	1.8%	0.0%	0.7%	9.0 OTHER MATERIALS	6.9%			
3.7 Remainder Composite Metal	0.7%	1.3%	0.4%	0.9%	9.1 Tires and other rubber	0.9%	2.3%	0.4%	1.3%
4.0 GLASS	2.7%				9.2 Textiles	4.3%	4.8%	3.3%	5.2%
4.1 Glass Beverage Containers (non-MA deposit containers)	1.2%	1.8%	0.8%	1.6%	9.3 Bulky materials	1.5%	4.6%	0.6%	2.4%
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.5%	1.4%	0.2%	0.8%	9.4 Restaurant Fats, Oils and Grease	0.3%	1.9%	0.0%	0.6%
4.3 Glass MA Deposit Beverage Containers	0.3%	0.6%	0.2%	0.4%	10.0 OTHER MISCELLANEOUS	1.1%	2.2%	0.7%	1.6%
4.4 Remainder/Composite Metal	0.6%	1.1%	0.4%	0.9%					

3.6 Observations and Analysis

Fractions of Residential & ICI Waste Streams

At this Facility, the residential waste stream was estimated to be approximately 40% of the total. The ICI waste stream was estimated to be approximately 60% of the total. These numbers are in contrast with the MADEP guidance which indicated a statewide average of 46% residential waste and 54% ICI waste. We believe this result is due to geographic location away from urban markets.

Largest Overall Waste Categories

The largest waste categories, for the total waste stream (residential and ICI combined), were as follows:

Waste Category	Fraction of Total Waste Stream
Paper	26.7%
Organic Material	17.0%
Plastics	16.3%
Construction and Demolition	16.3%

The sub-categories, expressed as a fraction of the total waste stream, that contributed the most to these numbers were:

Waste Category	Sub-Categories
Paper	Compostable Paper: 7.8% Uncoated Corrugated Cardboard: 6.7%
Organic Materials	Food Waste: 12.8%
Plastics	Remainder/Composite Plastic: 4.2% Other Film: 3.9% Bulk Rigid Plastic Items: 2.4% Grocery/Merchandise Bags: 1.4%
Construction and Demolition	Wood – Untreated: 4.1% Wood – Treated: 3.8% Carpet/Carpet Padding: 2.1% Remainder/Composite C&D: 2.1%

Largest Residential Waste Categories

The largest residential waste categories, expressed as a fraction of the residential waste stream, were as follows:

Waste Category	Fraction of Residential Waste Stream
Paper	27.7%
Organic Material	21.4%
Plastics	14.9%
Construction and Demolition	12.5%

The sub-categories that contributed the most are reported in the table below. The sub-categories are reported as a fraction of the respective category observed in the residential waste stream.

Waste Category	Sub-Categories
Paper	Compostable Paper: 35% Uncoated Corrugated Cardboard: 16%
Organic Materials	Food Waste: 73%
Plastics	Other Film: 27% Bulk Rigid Plastic Items: 17% Remainder/Composite Plastic: 17%
Construction and Demolition	Carpet/Carpet Padding: 24% Wood – Treated: 22% Wood – Untreated: 22%

Largest ICI Waste Categories

The largest ICI waste categories, expressed as a fraction of the ICI waste stream, were as follows:

Waste Category	Fraction of ICI Waste Stream
Paper	26.1%
Construction and Demolition	18.7%
Plastics	17.8%
Organic Material	14.1%

The sub-categories that contributed the most are reported in the table below. The sub-categories are reported as a fraction of the respective category observed in the ICI waste stream.

Waste Category	Sub-Categories
Paper	Uncoated Corrugated Cardboard: 31% Compostable Paper: 25%
Construction and Demolition	Wood – Untreated: 27% Wood – Treated: 23% Remainder/Composite C&D: 14% Aggregate: 11%
Plastics	Remainder/Composite Plastic: 31% Other Film: 22% Bulk Rigid Plastic Items: 14%
Organic Materials	Food Waste: 78%

Section 4

Limitations

4.1 Report Limitations

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APPENDIX A

Description of Waste Categories

Description of Waste Categories

PAPER

Uncoated Corrugated Cardboard/Kraft Paper means corrugated boxes or paper bags made from Kraft paper. Uncoated Corrugated Cardboard has a wavy center layer and is sandwiched between the two outer layers and does not have any wax coating on the inside or outside. Examples include entire cardboard containers, such as shipping and moving boxes, computer packaging cartons, and sheets and pieces of boxes and cartons. This type does not include chipboard. Examples of Kraft paper include paper grocery bags, un-soiled fast food bags, department store bags, and heavyweight sheets of Kraft packing paper.

Waxed Cardboard means cardboard with wax coating on the inside or outside.

High Grade Office Paper means the type of paper that is free of ground wood fibers; usually sulfite or sulphate paper; includes office printing and writing papers such as white ledger, color ledger, envelopes, and computer printout paper, bond, rag, or stationary grade paper. This subtype does not include fluorescent dyed paper or deep-tone dyed paper such as a goldenrod colored paper.

Magazines/Catalogs means items made of glossy coated paper. This paper is usually slick, smooth to the touch, and reflects light. Examples include glossy magazines, catalogs, brochures, and pamphlets.

Newsprint means the class or kind of paper chiefly used for printing newspapers – i.e. uncoated ground-wood paper.

Other Recyclable Paper means paper, other than the paper mentioned above, which can be recycled. Examples include manila folders, manila envelopes, index cards, white envelopes, notebook paper, carbonless forms, junk mail, chipboard and uncoated paperboard, phone directories, non glossy catalogs, offshore cardboard and deep-toned or fluorescent dyed paper.

Compostable Paper means low grade paper that is not capable of being recycled, as well as food contaminated paper. Examples include paper towels, paper plates, waxed papers, egg cartons, pizza boxes, and tissues.

Remainder/Composite Paper means items made mostly of paper but combined with large amounts of other materials such as plastic, metal, glues, foil, and moisture. Examples include plastic coated corrugated cardboard, cellulose insulation, aseptic packages, polycoated (gable top) cartons, blueprints, sepia, onionskin, foiled lined fast food wrappers, frozen juice containers, carbon paper, self-adhesive notes, soft cover and hardcover books, and photographs.

PLASTICS

PET Beverage Containers (non-MA deposit containers) means clear or colored PET beverage bottles other than MA deposit containers (water, flavored water, juice, sports drinks, etc.). When marked for identification, it bears the number 1 in the center of the triangular recycling symbol and may also bear the letters PETE or PET. A PET container usually has a small dot left from the manufacturing process, not a seam.

PET Containers other than Beverage Containers (which originally contained non-hazardous material) means types of containers such as PET jars, rectangular PET containers used for produce; egg cartons, etc.

Plastic MA Deposit Beverage Containers means plastic beverage containers subject to MA's bottle bill and marked as deposit containers in Massachusetts.

HDPE Bottles, colored and natural, (which originally contained non-hazardous material) means natural and colored HDPE containers. This plastic is usually either cloudy white, allowing light to pass through it (natural) or a solid color, preventing light from passing through it (colored). When marked for identification, it bears the number —2 in the triangular recycling symbol and may also bear the letters — HDPE.

Plastic Tubs and lids (HDPE, PP, etc) Includes yogurt, margarine, sour cream, deli containers, etc. (i.e. injection molded).

Plastic Containers #3-#7 (which originally contained non-hazardous material) means plastic containers made of types of plastic other than HDPE or PET. Items may be made of PVC, PP, or PS. When marked for identification, these items may bear the number 3, 4, 5, 6, or 7 in the triangular recycling symbol. This subtype also includes unmarked plastic containers.

Expanded Polystyrene Food Grade means “Styrofoam” products includes food packaging and finished products made of expanded polystyrene including cups, plates, trays, clamshells, etc.

Expanded Polystyrene Non-food Grade includes non-food packaging and finished products made of expanded polystyrene including packing peanuts and other packaging materials.

Bulk Rigid Plastic Items means plastic objects other than disposable package items. These items are usually made to last for a few months up to many years. These include the plastics used in children toys, furniture, plastic landscape ties, buckets, crates, pallets, sporting goods, etc.

Film (non-bag clean commercial and industrial packaging film) means film plastic used for large-scale packaging or transport packaging. Examples include shrink-wrap, mattress bags, furniture wrap, and film bubble wrap.

Grocery and other Merchandise Bags means plastic shopping bags, used to contain merchandise to transport from the place of purchase, given out by the store with the purchase. Includes dry-cleaning plastic bags intended for one-time use and other plastic film commonly recycled with grocery bags.

Other Film means plastic film Examples include garbage bags and other types of plastic bags (sandwich bags, zipper-resealable bags, produce bags, frozen vegetable bags, newspaper bags), painting tarps, food wrappers such as candy-bar wrappers, mailing pouches, bank bags, X-ray film, metalized film (wine containers and balloons), and plastic food wrap.

Remainder/Composite Plastic means plastic that cannot be put in any other type or subtype. This type includes items made mostly of plastic but combined with other materials. Examples include auto parts made of plastic attached to metal, plastic drinking straws, foam packing blocks (not including expanded polystyrene blocks), plastic strapping, new plastic laminate (e.g., Formica), vinyl, linoleum, plastic lumber, imitation ceramics, handles and knobs, some kitchen ware, plastic string (as used for hay bales), and plastic rigid bubble/foil packaging (as for medications); CD's, and rigid plastic housewares, such as mop buckets, dishes, cups, and cutlery.

METALS

Aluminum Beverage Containers (non-MA deposit containers) means beverage containers made from aluminum other than MA deposit containers.

Aluminum MA Deposit Beverage Containers means metal beverage containers subject to MA's bottle bill and marked as deposit containers in Massachusetts.

Tin/Steel Containers means rigid containers made mainly of steel, such as food and beverage containers. These items will stick to a magnet and may be tin-coated.

Other Aluminum – includes foil, food containers, aerosols (empty), etc.

Other Ferrous and Non-Ferrous means any iron or steel that is magnetic and metal items that are not magnetic (copper, brass, lead, zinc, etc). This subtype does not include "tin/steel containers". Examples include empty or dry paint cans, structural steel beams, boilers, clothes hangers, pipes, some cookware, security bars, scrap ferrous/nonferrous items, and galvanized items such as nails and flashing.

White Goods means appliances that employ electricity, oil, natural gas, or liquefied propane and to preserve or cook food; wash or dry clothing, kitchen utensils, or related items; or to cool or heat air or water. These are primarily encased in metal, and include items such as refrigerators, freezers, stoves, water heaters, propane/compressed tanks, water coolers, dishwashers, clothes dryers,, air conditioners, gas or electric ovens and ranges. White goods do not include microwaves.

Remainder/Composite Metal means metal that cannot be put in any other type. This type includes items made mostly of metal but combined with other materials and items made of both ferrous metal and nonferrous metal combined. Examples include microwaves, bikes, motors, insulated wire, and finished products that contain a mixture of metals, or metals and other materials, whose weight is derived significantly from the metal portion of its construction.

GLASS

Glass Beverage Containers (non-MA deposit containers) includes wine bottles, nonalcoholic beverage containers, liquor bottles, etc.

Other Glass Packaging Containers (non-MA deposit containers) includes glass food and non-food containers such as sauces, jars, perfume containers, etc.

Glass MA Deposit Beverage Containers means glass beverage containers subject to MA's bottle bill and marked as deposit containers in Massachusetts.

Remainder/Composite Glass means glass that cannot be put in any other type. It may include items made mostly of glass but combined with other materials. Examples include Pyrex, Corning ware, crystal, plate glass, window and door glass, ceramics, porcelain, and other glass tableware, mirrors, non-fluorescent light bulbs, auto windshields, laminated glass, or any curved glass.

ORGANIC MATERIALS

Food Waste means food material resulting from the processing, storage, preparation, cooking, handling, or consumption of food. This type includes material from industrial, commercial, or residential sources. Examples include discarded meat scraps, dairy products, eggshells, fruit or vegetable peels, and other food items from homes, stores and restaurants. This type includes apple pomace and other processed residues or material from canneries, wineries or other industrial sources.

Branches and Stumps means trees, stumps, branches, or other wood greater than 1 inch in diameter generated from landscapes, clearing land for commercial or residential development, road construction, agricultural land clearing, storms, or natural disaster.

Prunings, Trimings, Leaves and Grass means plant material, except woody material 1 inch or less in diameter from any public or private landscapes. Examples include branches, prunings, shrubs, leaves, grass clippings, and plants. This subtype does not include woody material greater than 4 inches in diameter.

Manures means manure and soiled bedding materials from domestic, farm, wild, or ranch animals. Examples include manure and soiled bedding from animal production operations, racetracks, riding stables, animal hospitals, laboratories, zoos, nature centers, and other sources.

Remainder/Composite Organic means organic material that cannot be put in any other type or subtype. This type includes items made mostly of organic materials but combined with other materials. Examples include cork, hemp rope, hair, cigarette butts, full vacuum bags, sawdust, and animal feces.

CONSTRUCTION AND DEMOLITION (IN THE MSW STREAM)

Asphalt Pavement, Brick, and Concrete includes asphalt pavement, brick, and concrete from construction activities and demolition of buildings, roads, and bridges and similar sources. Asphalt pavement also includes other black or brown, tar-like material mixed with aggregate and used as a paving material. Brick also includes masonry brick, landscaping or walkway brick. Concrete also includes pieces of building foundations, concrete paving, and cinder blocks.

Aggregates, Stone, Rock includes dirt, non-organic material from construction and landscaping activities. May also include products made predominately from these materials (i.e. granite counters).

Wood – Treated means wood that contains an adhesive, paint, stain, fire retardant, pesticide or preservative.

Wood – Untreated refers to any wood which does not contain an adhesive, paint, stain, fire retardant, pesticide or preservative; includes such items as pallets, skids, spools, packaging materials, bulky wood waste or scraps from newly built wood products. Does not including land clearing debris or yard waste prunings and trimmings.

Asphalt Roofing means composite shingles and other roofing material made with asphalt. Examples include asphalt shingles and attached roofing tar and tar paper.

Drywall/Gypsum Board means interior wall covering made of a sheet of gypsum sandwiched between paper layers. Examples include used or unused, broken or whole sheets of sheetrock, drywall, gypsum board, plasterboard, gypsum board, gyproc, and wallboard.

Carpet and Carpet Padding means flooring applications consisting of various natural or synthetic fibers which maybe bonded to some type of backing material and plastic, foam, felt, or other material used under carpet to provide insulation and padding.

Remainder/Composite Construction and Demolition means construction and demolition material that cannot be put in any other type or subtype. This type may include items from different types combined, which would be very hard to separate.

HOUSEHOLD HAZARDOUS WASTE

Ballasts, CFLs, and Other Fluorescents include ballasts, which are devices that electrically control fluorescent light fixtures and that include a capacitor, CFLs, which are compact fluorescent bulbs,

and other fluorescent lighting, which includes tubular fluorescent lamps, neon lamps, black lights, and other lamps used for sanitation or cosmetic purposes.

Batteries – Lead Acid means lead acid storage batteries most commonly used in vehicles such as cars, trucks, boats, etc.

Batteries – Other means alkaline (including alkaline rechargeable) or household batteries such as AA, AAA, C, D, 4.5 volt, button cell, rechargeable and 9 volt used for flashlights, small appliances, and electronic devices.

Paint means containers with paint in them. Examples include latex paint, oil based paint, and tubes of pigment or fine art paint. This type does not include dried paint, empty paint cans, or empty aerosol containers.

Bio-Hazardous - means discarded animal or human medical/treatment wastes including needles, first aid wastes, diapers and other products which are used in relation to animal or human care. This category does not include cat litter or animal feces.

Vehicle and Equipment Fluids in containers and oil filters means containers with fluids used in vehicles or engines. Examples include antifreeze, oil, and brake fluid. This type does not include empty vehicle and equipment fluid containers. Oil filters include vehicle engine oil filters.

Empty Metal, Glass, and Plastic Containers (that originally contained toxic materials) means all containers that are empty but that at one time contained toxic or hazardous fluids or other materials. Examples include empty antifreeze, oil, or lye containers.

Pesticides and Fertilizers means households and commercial products used to destroy or control organisms, pests or enhance plant growth.

Other Hazardous or Household Hazardous Waste means all household or commercial products characterized as toxic, corrosive, flammable, ignitable, radioactive, poisonous, or reactive.

ELECTRONICS

Computer-related Electronics includes computer CPUs, laptop computers, notebook computers, processors, printers, scanners, keyboards, etc. This category does not include automated typewriters or typesetters, portable handheld calculators, portable digital assistants or other similar devices.

Other “brown goods” includes cell phones, I Pods, PDAs, small electronic appliances such as toasters, telephones, stereos, radios, clocks, hair dryers etc.

Televisions and Computer Monitors means a stand-alone display system containing a CRT or any other type of display primarily intended to receive video programming via broadcast. Examples also include non-CRT units such as plasma and LCD monitors.

OTHER MATERIALS

Tires and other rubber means a continuous solid or pneumatic rubber covering intended for use on any type of vehicle (including bicycles), or trailer to be used in tandem with any type vehicle and other rubber products.

Textiles mean natural or man-made textile materials such as cottons, wools, silk, nylon, polyester. It includes clothing, curtains, towels and other fabric materials.

Bulky Materials means products made from multiple materials and large in size, which are meant for extended use. Includes mattresses, furniture (non-plastic), sinks, toilets, and other non-metal items.

Restaurant Fats, Oils and Grease means any fats, oils and grease generated from the food preparation process.

Other Miscellaneous means any other type of waste not listed in any other sort category.

APPENDIX B

Waste Composition of Sample Loads for Season 1

Table B-1 First Season Waste Composition								
Categories	Front loader 1-1	Front loader 1-2	Roll-off open top. 1-3	Rear loader 1-4	Roll-off open top. 1-5	Roll-off open top. 1-6	Front loader 1-7	
1 PAPER								
1.1 Uncoated Corrugated Cardboard/Kraft Paper	7.1%	12.4%	5.3%	2.4%	7.4%	11.4%	10.3%	
1.2 Waxed Cardboard	3.6%	2.4%	5.4%	4.5%	1.4%	2.6%	7.5%	
1.3 High Grade Office Paper	0.6%	1.5%	0.5%	0.4%	0.8%	2.1%	1.6%	
1.4 Magazines/Catalogs	0.0%	9.5%	16.7%	2.2%	4.1%	2.4%	2.3%	
1.5 Newsprint	7.1%	9.8%	1.6%	3.4%	7.7%	0.3%	0.9%	
1.6 Other Recyclable Paper	0.0%	0.7%	12.0%	2.1%	0.3%	1.2%	1.3%	
1.7 Compostable Paper	20.7%	14.7%	0.4%	29.7%	6.6%	10.6%	20.3%	
1.8 Remainder/Composite Paper	3.2%	1.0%	2.2%	4.8%	2.5%	2.4%	3.0%	
2 PLASTICS								
2.1 PET Beverage Containers	0.6%	0.3%	0.2%	0.6%	0.5%	0.2%	1.3%	
2.2 PET Containers other than Beverage Containers	0.8%	0.0%	0.2%	0.2%	0.0%	0.2%	0.0%	
2.3 Plastic MA Deposit Beverage Containers	0.1%	0.8%	0.0%	0.4%	0.3%	0.2%	0.3%	
2.4 HDPE Bottles, colored and natural	0.9%	0.9%	1.7%	1.0%	1.6%	1.1%	1.2%	
2.5 Plastic Tubs and lids	1.7%	1.2%	1.0%	1.6%	1.0%	1.9%	1.3%	
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	2.6%	0.3%	0.3%	0.5%	0.2%	0.8%	0.0%	
2.7 Expanded Polystyrene Food Grade	0.4%	0.3%	0.0%	0.9%	0.2%	0.4%	0.7%	
2.8 Expanded Polystyrene Non-food Grade	0.5%	0.2%	0.3%	0.0%	0.0%	0.9%	0.0%	
2.9 Bulk Rigid Plastic Items	2.8%	0.5%	1.2%	1.3%	0.2%	2.9%	1.1%	
2.1 Film (non-bag commercial and industrial packaging film)	1.3%	1.4%	0.2%	3.0%	0.3%	0.5%	0.5%	
2.11 Grocery and other Merchandise Bags	3.0%	1.0%	0.3%	1.6%	0.5%	0.3%	0.3%	
2.12 Other Film means plastic film	6.3%	7.6%	1.9%	7.6%	3.3%	3.5%	9.7%	
2.13 Remainder/Composite Plastic	3.4%	2.1%	4.4%	2.2%	4.8%	5.8%	3.3%	
3 METALS								
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3.2 Aluminum MA Deposit Beverage Containers	0.3%	0.4%	0.0%	0.2%	0.3%	0.2%	0.4%	
3.3 Tin/Steel Containers	1.3%	0.6%	1.2%	0.6%	0.6%	1.0%	2.4%	
3.4 Other Aluminum	0.1%	0.2%	0.4%	0.0%	1.1%	0.6%	0.2%	
3.5 Other Ferrous and non-ferrous	0.3%	0.4%	1.5%	0.3%	19.6%	2.6%	1.1%	
3.6 White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3.7 Remainder Composite Metal	0.0%	0.9%	4.0%	0.0%	8.6%	3.2%	0.3%	
4 GLASS								
4.1 Glass Beverage Containers (non-MA deposit containers)	1.2%	0.0%	0.9%	0.6%	1.3%	0.0%	2.0%	
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.0%	0.6%	0.7%	0.5%	0.7%	1.2%	0.8%	
4.3 Glass MA Deposit Beverage Containers	0.9%	0.0%	0.0%	0.4%	0.8%	1.3%	0.5%	
4.4 Remainder/Composite Metal	0.4%	0.3%	6.4%	0.0%	0.0%	1.4%	0.0%	
5 ORGANIC MATERIAL								
5.1 Food Waste	20.6%	3.0%	3.6%	11.4%	6.5%	10.4%	15.1%	
5.2 Branches and Stumps	0.0%	0.0%	0.0%	0.0%	6.1%	0.0%	0.0%	
5.3 Prunings, Trimmings, Leaves and Grass	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
5.4 Manures	0.0%	0.0%	0.0%	4.6%	0.0%	0.0%	0.0%	
5.5 Remainder/Composite Organic	0.0%	5.1%	0.0%	3.1%	0.0%	0.0%	0.0%	
6 CONSTRUCTION AND DEMOLITION								
6.1 Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.2 Aggregates, Stone, Rock	1.4%	0.0%	0.0%	0.0%	2.3%	2.2%	2.9%	
6.3 Wood – Treated	0.0%	3.9%	4.9%	0.3%	0.0%	2.0%	2.6%	
6.4 Wood – untreated	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.5 Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	11.8%	0.0%	
6.6 Drywall/Gypsum Board	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.7 Carpet and Carpet Padding	0.0%	2.2%	6.7%	0.0%	0.0%	0.0%	0.0%	
6.8 Remainder/Compo-site Construction and Demolition	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7 HOUSEHOLD HAZARDOUS WASTE								
7.1 Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	
7.2 Batteries – Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.3 Batteries – Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.4 Paint	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	
7.5 Bio-Hazardous (Diapers)	5.3%	6.7%	0.0%	1.7%	2.8%	0.8%	1.2%	
7.6 Vehicle and Equipment Fluids	0.0%	0.0%	0.3%	0.0%	0.0%	0.3%	0.0%	
7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.1%	0.8%	0.0%	0.3%	0.0%	0.0%	
7.8 Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.9 Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
8 ELECTRONICS								
8.1 Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
8.2 Other "brown goods"	0.0%	0.0%	4.7%	0.2%	0.0%	0.5%	0.0%	
8.3 Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
9 OTHER MATERIALS								
9.1 Tires and other rubber	0.0%	0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	
9.2 Textiles	1.0%	6.9%	7.9%	5.8%	5.5%	8.6%	3.7%	
9.3 Bulky materials	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
9.4 Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
10 OTHER MISCELLANEOUS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Table B-2 First Season Waste Composition								
Categories	Rear loader 1-8	Front loader 1-9	Rear loader 1-10	Roll-off comp. 1-11	Roll-off open top. 1-12	Rear loader 1-13	Front loader 1-14	
1 PAPER								
1.1 Uncoated Corrugated Cardboard/Kraft Paper	4.4%	2.1%	3.4%	12.6%	8.4%	0.9%	2.6%	
1.2 Waxed Cardboard	1.6%	6.5%	3.2%	2.9%	0.0%	4.2%	2.9%	
1.3 High Grade Office Paper	1.0%	1.0%	0.5%	12.0%	3.7%	3.3%	2.3%	
1.4 Magazines/Catalogs	1.6%	3.4%	3.1%	2.9%	0.7%	0.6%	1.5%	
1.5 Newsprint	4.5%	1.5%	0.9%	0.6%	0.8%	1.0%	3.4%	
1.6 Other Recyclable Paper	0.0%	0.5%	1.3%	8.2%	2.6%	0.2%	1.5%	
1.7 Compostable Paper	19.8%	11.1%	9.0%	6.8%	3.3%	16.5%	10.5%	
1.8 Remainder/Composite Paper	4.3%	2.7%	1.4%	0.1%	3.4%	3.8%	3.3%	
2 PLASTICS								
2.1 PET Beverage Containers	1.5%	0.3%	0.5%	0.3%	2.7%	0.3%	1.7%	
2.2 PET Containers other than Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
2.3 Plastic MA Deposit Beverage Containers	0.2%	0.2%	0.2%	0.1%	0.3%	0.1%	0.1%	
2.4 HDPE Bottles, colored and natural	1.6%	1.7%	2.3%	0.7%	0.7%	1.2%	2.7%	
2.5 Plastic Tubs and lids	1.3%	2.6%	1.3%	0.6%	1.0%	2.1%	2.3%	
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	0.5%	0.0%	0.0%	0.2%	0.0%	0.0%	
2.7 Expanded Polystyrene Food Grade	1.5%	0.7%	0.5%	0.1%	0.4%	1.1%	0.6%	
2.8 Expanded Polystyrene Non-food Grade	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	
2.9 Bulk Rigid Plastic Items	0.3%	2.2%	0.0%	1.8%	1.0%	2.0%	1.0%	
2.1 Film (non-bag commercial and industrial packaging film)	5.7%	0.1%	1.6%	23.2%	0.0%	0.1%	1.5%	
2.11 Grocery and other Merchandise Bags	5.0%	2.1%	2.0%	0.1%	0.5%	2.9%	0.9%	
2.12 Other Film means plastic film	15.3%	9.1%	13.3%	0.9%	4.5%	8.4%	4.8%	
2.13 Remainder/Composite Plastic	3.8%	3.4%	4.8%	0.0%	4.0%	2.8%	3.3%	
3 METALS								
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3.2 Aluminum MA Deposit Beverage Containers	0.9%	0.2%	0.1%	0.2%	0.3%	0.2%	0.4%	
3.3 Tin/Steel Containers	0.2%	1.1%	1.9%	0.2%	0.5%	0.6%	0.4%	
3.4 Other Aluminum	2.9%	1.0%	0.5%	0.0%	0.1%	0.5%	6.6%	
3.5 Other Ferrous and non-ferrous	0.0%	1.7%	0.1%	0.0%	7.8%	0.1%	1.2%	
3.6 White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
3.7 Remainder Composite Metal	0.0%	0.0%	0.0%	3.6%	0.0%	0.0%	0.0%	
4 GLASS								
4.1 Glass Beverage Containers (non-MA deposit containers)	1.0%	0.2%	0.8%	0.0%	0.7%	0.0%	0.0%	
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.6%	0.0%	0.7%	0.0%	0.0%	0.0%	0.2%	
4.3 Glass MA Deposit Beverage Containers	0.3%	0.0%	0.0%	0.0%	0.3%	0.2%	0.2%	
4.4 Remainder/Composite Metal	0.0%	1.7%	0.9%	0.0%	0.0%	0.3%	0.0%	
5 ORGANIC MATERIAL								
5.1 Food Waste	11.2%	14.0%	23.3%	0.0%	4.6%	20.0%	15.3%	
5.2 Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
5.3 Prunings, Trimmings, Leaves and Grass	0.0%	0.0%	0.3%	0.0%	0.0%	0.4%	0.3%	
5.4 Manures	0.0%	4.7%	0.5%	0.0%	0.0%	4.4%	0.0%	
5.5 Remainder/Composite Organic	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	
6 CONSTRUCTION AND DEMOLITION								
6.1 Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.2 Aggregates, Stone, Rock	1.7%	2.5%	2.7%	0.0%	0.0%	0.0%	0.0%	
6.3 Wood – Treated	0.0%	0.0%	0.0%	0.6%	19.3%	0.2%	2.6%	
6.4 Wood – untreated	0.3%	0.0%	0.6%	0.6%	23.0%	0.0%	2.2%	
6.5 Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.6 Drywall/Gypsum Board	0.0%	0.0%	0.0%	0.0%	3.3%	0.0%	7.3%	
6.7 Carpet and Carpet Padding	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
6.8 Remainder/Compo-site Construction and Demolition	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7 HOUSEHOLD HAZARDOUS WASTE								
7.1 Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.2 Batteries – Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.3 Batteries – Other	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	
7.4 Paint	0.7%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	
7.5 Bio-Hazardous (Diapers)	3.4%	11.5%	15.3%	0.0%	0.0%	18.4%	4.7%	
7.6 Vehicle and Equipment Fluids	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%	
7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%	
7.8 Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
7.9 Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	
8 ELECTRONICS								
8.1 Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
8.2 Other "brown goods"	0.0%	0.4%	1.0%	0.0%	0.0%	0.0%	0.9%	
8.3 Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
9 OTHER MATERIALS								
9.1 Tires and other rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	8.4%	
9.2 Textiles	2.8%	9.3%	1.5%	0.2%	2.0%	1.6%	1.9%	
9.3 Bulky materials	0.0%	0.0%	0.0%	10.5%	0.0%	0.0%	0.0%	
9.4 Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
10 OTHER MISCELLANEOUS	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Table B-3 First Season Waste Composition

Categories		Front loader 1-15	Rear loader 1-16	Front loader 1-17	Rear loader 1-18	Front loader 1-19	Front loader 1-20	Rear loader 1-21
1	PAPER							
1.1	Uncoated Corrugated Cardboard/Kraft Paper	2.8%	4.8%	11.9%	1.4%	3.9%	5.0%	1.2%
1.2	Waxed Cardboard	2.2%	3.1%	1.3%	3.1%	10.4%	1.3%	3.9%
1.3	High Grade Office Paper	2.4%	0.8%	2.6%	0.4%	1.1%	0.2%	0.3%
1.4	Magazines/Catalogs	0.7%	11.0%	0.6%	2.2%	0.0%	1.5%	1.0%
1.5	Newsprint	1.1%	4.9%	3.1%	1.7%	0.0%	0.3%	2.0%
1.6	Other Recyclable Paper	0.1%	0.0%	3.7%	3.9%	0.0%	1.9%	0.0%
1.7	Compostable Paper	15.8%	12.5%	9.2%	5.5%	18.4%	11.4%	7.7%
1.8	Remainder/Composite Paper	1.6%	2.7%	3.6%	8.0%	4.6%	2.3%	2.5%
2	PLASTICS							
2.1	PET Beverage Containers	0.3%	0.5%	0.9%	0.5%	2.3%	0.7%	0.8%
2.2	PET Containers other than Beverage Containers	0.1%	0.0%	0.0%	0.0%	0.7%	0.2%	0.0%
2.3	Plastic MA Deposit Beverage Containers	0.3%	0.2%	0.1%	0.1%	0.0%	0.4%	0.2%
2.4	HDPE Bottles, colored and natural	1.8%	1.8%	0.8%	1.9%	2.1%	1.2%	1.8%
2.5	Plastic Tubs and lids	2.6%	1.7%	0.9%	0.8%	4.8%	0.4%	0.7%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.3%	0.0%	0.0%	0.0%	0.7%	0.0%	0.2%
2.7	Expanded Polystyrene Food Grade	1.1%	0.8%	1.1%	1.4%	3.9%	0.4%	0.8%
2.8	Expanded Polystyrene Non-food Grade	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.9	Bulk Rigid Plastic Items	0.0%	2.4%	6.4%	0.0%	1.9%	2.2%	0.4%
2.1	Film (non-bag commercial and industrial packaging film)	1.6%	0.7%	1.1%	0.2%	0.0%	0.0%	0.1%
2.11	Grocery and other Merchandise Bags	2.0%	1.9%	0.8%	2.4%	6.4%	1.2%	11.8%
2.12	Other Film means plastic film	11.0%	6.0%	17.7%	12.1%	13.7%	4.2%	10.5%
2.13	Remainder/Composite Plastic	1.6%	1.8%	1.5%	2.6%	6.7%	0.3%	2.1%
3	METALS							
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
3.2	Aluminum MA Deposit Beverage Containers	0.0%	0.2%	0.2%	0.2%	1.0%	0.2%	0.1%
3.3	Tin/Steel Containers	1.8%	0.9%	0.2%	1.4%	0.9%	0.2%	0.5%
3.4	Other Aluminum	1.2%	0.8%	0.2%	0.4%	0.6%	0.3%	0.5%
3.5	Other Ferrous and non-ferrous	1.2%	2.0%	5.2%	0.1%	0.0%	0.3%	0.0%
3.6	White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7	Remainder Composite Metal	0.0%	0.0%	2.9%	0.0%	0.0%	0.0%	0.0%
4	GLASS							
4.1	Glass Beverage Containers (non-MA deposit containers)	0.0%	4.3%	0.0%	0.0%	0.4%	1.1%	0.0%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.9%	1.2%	0.2%	0.3%	0.0%	0.0%	0.4%
4.3	Glass MA Deposit Beverage Containers	0.0%	0.5%	0.0%	0.0%	0.8%	0.0%	0.6%
4.4	Remainder/Composite Metal	0.5%	0.0%	0.0%	0.0%	0.0%	5.7%	0.2%
5	ORGANIC MATERIAL							
5.1	Food Waste	17.2%	11.1%	14.5%	31.5%	4.6%	4.9%	22.3%
5.2	Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3	Prunings, Trimmings, Leaves and Grass	2.6%	6.7%	0.0%	0.2%	0.0%	0.0%	0.0%
5.4	Manures	2.0%	0.5%	0.0%	0.0%	7.9%	0.0%	0.0%
5.5	Remainder/Composite Organic	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
6	CONSTRUCTION AND DEMOLITION							
6.1	Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2	Aggregates, Stone, Rock	0.6%	1.8%	0.0%	0.0%	0.0%	31.8%	0.7%
6.3	Wood – Treated	0.8%	0.1%	0.0%	0.0%	0.0%	1.0%	1.2%
6.4	Wood – untreated	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
6.5	Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6	Drywall/Gypsum Board	0.0%	0.0%	1.2%	0.0%	0.0%	0.0%	0.0%
6.7	Carpet and Carpet Padding	0.8%	1.9%	0.2%	0.0%	0.0%	0.0%	0.8%
6.8	Remainder/Compo-site Construction and Demolition	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	HOUSEHOLD HAZARDOUS WASTE							
7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2	Batteries – Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3	Batteries – Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.4	Paint	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
7.5	Bio-Hazardous (Diapers)	11.4%	4.0%	4.1%	15.5%	0.0%	1.6%	8.1%
7.6	Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
7.8	Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	ELECTRONICS							
8.1	Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	4.4%
8.2	Other "brown goods"	1.8%	0.0%	0.8%	0.0%	0.2%	0.0%	0.0%
8.3	Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	12.4%	0.0%
9	OTHER MATERIALS							
9.1	Tires and other rubber	0.0%	0.0%	1.1%	0.0%	0.0%	0.0%	0.0%
9.2	Textiles	7.5%	5.7%	2.1%	2.2%	2.2%	3.9%	11.5%
9.3	Bulky materials	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9.4	Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	OTHER MISCELLANEOUS	0.0%	0.0%	0.0%	0.0%	0.0%	7.0%	0.0%

Table B-4 First Season Waste Composition

Categories		Front loader 1-22	Roll-off open top. 1-23	Front loader 1-24	Rear loader 1-25	Roll-off open top. 1-26	Front loader 1-27	Front loader 1-28
1	PAPER							
1.1	Uncoated Corrugated Cardboard/Kraft Paper	6.0%	3.4%	14.6%	18.7%	8.5%	7.7%	10.4%
1.2	Waxed Cardboard	3.5%	0.6%	4.4%	1.3%	5.4%	3.3%	2.6%
1.3	High Grade Office Paper	6.1%	1.0%	0.8%	0.0%	0.0%	1.3%	22.5%
1.4	Magazines/Catalogs	2.9%	0.0%	1.2%	0.0%	0.0%	0.8%	18.1%
1.5	Newsprint	1.3%	2.5%	2.9%	0.6%	0.0%	7.8%	2.4%
1.6	Other Recyclable Paper	0.0%	1.0%	0.0%	0.0%	0.0%	0.1%	0.0%
1.7	Compostable Paper	6.4%	10.6%	4.6%	10.9%	4.5%	8.5%	9.8%
1.8	Remainder/Composite Paper	3.9%	2.9%	1.3%	2.0%	1.7%	1.8%	2.6%
2	PLASTICS							
2.1	PET Beverage Containers	0.8%	0.1%	0.0%	0.2%	0.0%	0.5%	0.4%
2.2	PET Containers other than Beverage Containers	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.0%
2.3	Plastic MA Deposit Beverage Containers	0.1%	0.3%	0.2%	0.4%	0.1%	0.1%	0.5%
2.4	HDPE Bottles, colored and natural	2.6%	0.6%	0.4%	1.3%	0.0%	1.4%	0.9%
2.5	Plastic Tubs and lids	1.6%	0.2%	0.3%	0.7%	0.4%	1.3%	0.6%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.7	Expanded Polystyrene Food Grade	0.2%	0.1%	0.3%	0.1%	0.0%	0.4%	0.5%
2.8	Expanded Polystyrene Non-food Grade	1.5%	3.6%	0.0%	0.0%	1.8%	0.0%	0.1%
2.9	Bulk Rigid Plastic Items	2.9%	0.2%	0.5%	2.7%	11.1%	1.6%	1.5%
2.10	Film (non-bag commercial and industrial packaging film)	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
2.11	Grocery and other Merchandise Bags	10.2%	2.3%	6.9%	4.4%	0.8%	2.3%	0.0%
2.12	Other Film means plastic film	17.4%	7.6%	7.6%	5.4%	3.6%	6.0%	5.3%
2.13	Remainder/Composite Plastic	2.5%	1.2%	1.2%	2.0%	11.2%	0.1%	2.1%
3	METALS							
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.2%	0.0%	0.0%	0.0%	0.0%	0.2%	0.1%
3.2	Aluminum MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.3%
3.3	Tin/Steel Containers	0.8%	0.3%	0.3%	0.6%	0.0%	0.6%	0.0%
3.4	Other Aluminum	0.6%	0.3%	0.0%	0.0%	2.2%	1.6%	0.0%
3.5	Other Ferrous and non-ferrous	0.2%	0.1%	0.0%	0.2%	3.9%	3.0%	1.6%
3.6	White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7	Remainder Composite Metal	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4	GLASS							
4.1	Glass Beverage Containers (non-MA deposit containers)	1.4%	1.0%	0.4%	0.0%	0.0%	0.3%	0.7%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.9%	0.2%	0.0%	0.7%	0.0%	0.7%	0.0%
4.3	Glass MA Deposit Beverage Containers	0.1%	0.0%	0.0%	0.3%	0.0%	0.0%	0.8%
4.4	Remainder/Composite Metal	0.9%	0.0%	0.5%	0.4%	0.0%	0.0%	1.7%
5	ORGANIC MATERIAL							
5.1	Food Waste	7.2%	1.0%	45.5%	27.3%	0.0%	3.3%	2.9%
5.2	Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3	Prunings, Trimings, Leaves and Grass	0.0%	0.0%	0.0%	3.9%	0.0%	23.2%	1.4%
5.4	Manures	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.7%
5.5	Remainder/Composite Organic	3.7%	3.0%	0.0%	0.0%	1.4%	0.1%	0.6%
6	CONSTRUCTION AND DEMOLITION							
6.1	Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2	Aggregates, Stone, Rock	0.0%	53.5%	4.4%	0.0%	2.7%	1.8%	2.6%
6.3	Wood - Treated	5.3%	0.0%	0.0%	1.7%	0.3%	7.8%	3.9%
6.4	Wood - untreated	0.0%	0.2%	0.0%	0.0%	0.9%	1.1%	0.4%
6.5	Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6	Drywall/Gypsum Board	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.7	Carpet and Carpet Padding	0.0%	0.0%	0.0%	1.8%	4.3%	0.6%	0.0%
6.8	Remainder/Compo-site Construction and Demolition	0.0%	0.0%	0.0%	0.0%	15.2%	0.0%	0.0%
7	HOUSEHOLD HAZARDOUS WASTE							
7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2	Batteries - Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3	Batteries - Other	0.0%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
7.4	Paint	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
7.5	Bio-Hazardous (Diapers)	2.6%	0.0%	0.0%	10.6%	0.1%	3.7%	0.0%
7.6	Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%
7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.3%
7.8	Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	5.0%	0.0%	0.0%
7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	ELECTRONICS							
8.1	Computer-related Electronics	0.0%	0.6%	0.0%	0.0%	1.4%	0.6%	0.0%
8.2	Other "brown goods"	0.5%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
8.3	Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	OTHER MATERIALS							
9.1	Tires and other rubber	0.2%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%
9.2	Textiles	2.8%	1.5%	1.7%	0.5%	12.1%	5.8%	0.7%
9.3	Bulky materials	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9.4	Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	OTHER MISCELLANEOUS	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

APPENDIX C

Waste Composition of Sample Loads for Season 2

Table C-1 Second Season Waste Composition

Categories	Front Loader 2-01	Roll-Off Open Top 2-02	Front Loader 2-03	Rear Loader 2-04	Roll-Off Open Top 2-05	Front Loader 2-06	Front Loader 2-07
1 PAPER							
1.1 Uncoated Corrugated Cardboard/Kraft Paper	0.3%	0.0%	0.4%	1.3%	6.3%	23.9%	21.4%
1.2 Waxed Cardboard	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
1.3 High Grade Office Paper	0.4%	0.0%	0.1%	0.6%	0.0%	0.1%	1.1%
1.4 Magazines/Catalogs	0.1%	0.0%	1.3%	0.8%	0.0%	0.0%	1.4%
1.5 Newsprint	0.0%	0.0%	7.0%	2.7%	0.0%	0.0%	2.6%
1.6 Other Recyclable Paper	9.2%	0.6%	2.8%	4.7%	0.0%	6.8%	6.0%
1.7 Compostable Paper	15.5%	0.2%	4.1%	5.7%	0.0%	2.9%	11.5%
1.8 Remainder/Composite Paper	1.1%	1.6%	0.3%	0.2%	0.0%	0.8%	0.3%
2 PLASTICS							
2.1 PET Beverage Containers	1.3%	0.1%	0.9%	0.1%	0.0%	0.8%	0.1%
2.2 PET Containers other than Beverage Containers	0.0%	0.0%	0.1%	0.1%	0.0%	0.2%	0.1%
2.3 Plastic MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.4 HDPE Bottles, colored and natural	0.3%	0.0%	0.5%	0.1%	0.0%	0.8%	24.2%
2.5 Plastic Tubs and lids	1.3%	0.0%	0.4%	0.4%	0.0%	0.7%	0.2%
2.6 Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	0.0%	0.3%	0.2%	0.0%	0.1%	0.0%
2.7 Expanded Polystyrene Food Grade	3.0%	0.0%	0.8%	0.3%	0.0%	0.2%	0.0%
2.8 Expanded Polystyrene Non-food Grade	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
2.9 Bulk Rigid Plastic Items	7.8%	0.0%	7.7%	8.6%	0.0%	0.0%	0.0%
2.1 Film (non-bag commercial and industrial packaging film)	0.0%	0.0%	6.1%	0.0%	6.5%	11.6%	3.9%
2.11 Grocery and other Merchandise Bags	0.1%	0.0%	0.0%	0.4%	0.0%	0.3%	0.1%
2.12 Other Film means plastic film	17.5%	0.2%	3.0%	1.6%	0.0%	1.6%	5.7%
2.13 Remainder/Composite Plastic	2.8%	0.1%	8.5%	0.6%	0.0%	1.5%	1.7%
3 METALS							
3.1 Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
3.2 Aluminum MA Deposit Beverage Containers	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%
3.3 Tin/Steel Containers	0.3%	0.0%	0.3%	0.2%	0.0%	0.8%	0.5%
3.4 Other Aluminum	0.1%	0.0%	0.0%	0.3%	38.7%	0.1%	0.0%
3.5 Other Ferrous and non-ferrous	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.6 White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7 Remainder Composite Metal	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4 GLASS							
4.1 Glass Beverage Containers (non-MA deposit containers)	0.1%	14.1%	0.9%	0.0%	0.0%	0.0%	0.8%
4.2 Other Glass Packaging Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%
4.3 Glass MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
4.4 Remainder/Composite Metal	0.0%	0.0%	0.0%	0.0%	30.4%	0.0%	0.3%
5 ORGANIC MATERIAL							
5.1 Food Waste	21.1%	0.0%	11.5%	20.3%	0.0%	13.3%	1.4%
5.2 Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3 Prunings, Trimings, Leaves and Grass	0.0%	0.0%	0.0%	20.4%	0.0%	0.0%	0.0%
5.4 Manures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.5 Remainder/Composite Organic	3.6%	1.9%	0.5%	0.9%	0.0%	0.0%	0.3%
6 CONSTRUCTION AND DEMOLITION							
6.1 Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2 Aggregates, Stone, Rock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3 Wood - Treated	0.0%	2.4%	28.7%	2.1%	0.0%	0.0%	3.5%
6.4 Wood - untreated	0.0%	0.0%	0.0%	0.0%	18.0%	12.8%	0.0%
6.5 Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6 Drywall/Gypsum Board	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%
6.7 Carpet and Carpet Padding	0.0%	0.0%	0.0%	7.2%	0.0%	0.0%	0.0%
6.8 Remainder/Compo-site Construction and Demolition	0.0%	24.0%	0.5%	0.0%	0.0%	0.0%	0.0%
7 HOUSEHOLD HAZARDOUS WASTE							
7.1 Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2 Batteries - Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3 Batteries - Other	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.4 Paint	0.0%	21.0%	0.0%	0.1%	0.0%	0.0%	0.2%
7.5 Bio-Hazardous (Diapers)	0.0%	0.0%	3.3%	2.3%	0.0%	0.2%	0.3%
7.6 Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.7 Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
7.8 Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.9 Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8 ELECTRONICS							
8.1 Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
8.2 Other "brown goods"	0.0%	0.0%	6.4%	0.6%	0.0%	0.0%	0.0%
8.3 Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9 OTHER MATERIALS							
9.1 Tires and other rubber	4.7%	11.2%	1.0%	0.4%	0.0%	1.0%	2.4%
9.2 Textiles	5.4%	8.7%	0.2%	14.9%	0.0%	14.3%	9.0%
9.3 Bulky materials	0.0%	13.7%	0.0%	0.0%	0.0%	0.0%	0.0%
9.4 Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10 OTHER MISCELLANEOUS	3.7%	0.0%	1.6%	1.4%	0.0%	3.3%	0.8%

Table C-2 Second Season Waste Composition

Categories		Rear Loader 2-08	Front Loader 2-09	Front Loader 2-10	Rear Loader 2-11	Front Loader 2-12	Rear Loader 2-13	Front Loader 2-14
1	PAPER							
1.1	Uncoated Corrugated Cardboard/Kraft Paper	3.1%	6.4%	3.0%	0.2%	9.5%	0.1%	3.2%
1.2	Waxed Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.3	High Grade Office Paper	1.6%	0.6%	0.2%	0.0%	0.3%	9.5%	0.1%
1.4	Magazines/Catalogs	5.3%	1.1%	2.2%	4.0%	0.1%	0.6%	0.0%
1.5	Newsprint	6.9%	1.7%	2.0%	6.3%	1.0%	3.5%	0.0%
1.6	Other Recyclable Paper	7.1%	6.0%	6.3%	10.6%	5.4%	1.9%	3.7%
1.7	Compostable Paper	4.3%	2.9%	5.1%	9.8%	4.1%	15.0%	7.7%
1.8	Remainder/Composite Paper	0.9%	3.8%	2.3%	4.4%	1.0%	0.8%	1.9%
2	PLASTICS							
2.1	PET Beverage Containers	0.4%	0.5%	0.5%	0.7%	0.0%	0.4%	0.3%
2.2	PET Containers other than Beverage Containers	0.0%	0.4%	0.1%	0.3%	0.4%	0.1%	0.2%
2.3	Plastic MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.4	HDPE Bottles, colored and natural	0.2%	0.3%	0.6%	1.2%	0.2%	0.3%	0.1%
2.5	Plastic Tubs and lids	0.2%	0.3%	0.5%	0.4%	0.2%	0.1%	0.1%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	0.0%
2.7	Expanded Polystyrene Food Grade	0.5%	0.2%	0.2%	0.8%	0.1%	0.1%	0.6%
2.8	Expanded Polystyrene Non-food Grade	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
2.9	Bulk Rigid Plastic Items	0.0%	0.0%	4.9%	0.0%	0.0%	0.2%	6.1%
2.10	Film (non-bag commercial and industrial packaging film)	0.2%	0.0%	0.1%	0.1%	0.0%	0.2%	0.0%
2.11	Grocery and other Merchandise Bags	0.3%	0.3%	0.4%	0.8%	0.5%	0.3%	0.3%
2.12	Other Film means plastic film	2.2%	2.2%	2.2%	3.0%	1.7%	0.7%	6.8%
2.13	Remainder/Composite Plastic	0.6%	1.1%	8.2%	1.4%	0.5%	7.0%	7.6%
3	METALS							
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.1%	0.0%	0.0%	0.0%	0.0%	0.2%	1.4%
3.2	Aluminum MA Deposit Beverage Containers	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
3.3	Tin/Steel Containers	0.9%	1.2%	0.6%	1.6%	1.2%	1.2%	0.0%
3.4	Other Aluminum	0.1%	0.2%	0.3%	0.5%	0.3%	0.1%	1.2%
3.5	Other Ferrous and non-ferrous	0.0%	0.3%	0.0%	0.0%	0.2%	0.0%	0.0%
3.6	White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7	Remainder Composite Metal	2.9%	1.4%	0.0%	0.0%	0.0%	0.3%	5.9%
4	GLASS							
4.1	Glass Beverage Containers (non-MA deposit containers)	1.0%	0.0%	0.0%	1.0%	1.6%	0.5%	3.3%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.2%	0.2%	1.0%	0.1%	0.0%	0.0%	0.5%
4.3	Glass MA Deposit Beverage Containers	3.2%	0.2%	0.0%	0.2%	0.0%	0.0%	1.0%
4.4	Remainder/Composite Metal	0.0%	0.1%	0.0%	0.2%	0.4%	0.7%	0.0%
5	ORGANIC MATERIAL							
5.1	Food Waste	6.0%	3.1%	9.7%	14.4%	9.6%	11.0%	7.7%
5.2	Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3	Prunings, Trimings, Leaves and Grass	12.3%	0.0%	0.0%	0.2%	7.6%	0.0%	0.0%
5.4	Manures	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	0.0%
5.5	Remainder/Composite Organic	3.1%	0.2%	2.4%	25.9%	2.0%	0.2%	0.3%
6	CONSTRUCTION AND DEMOLITION							
6.1	Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2	Aggregates, Stone, Rock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3	Wood – Treated	0.0%	9.4%	0.3%	0.0%	0.0%	9.4%	6.3%
6.4	Wood – untreated	0.0%	23.7%	0.5%	0.0%	0.0%	0.7%	0.0%
6.5	Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6	Drywall/Gypsum Board	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.7	Carpet and Carpet Padding	8.8%	0.0%	11.5%	0.0%	12.6%	0.0%	0.0%
6.8	Remainder/Compo-site Construction and Demolition	0.0%	3.0%	0.6%	0.0%	0.0%	0.4%	0.0%
7	HOUSEHOLD HAZARDOUS WASTE							
7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2	Batteries – Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3	Batteries – Other	0.0%	0.0%	0.5%	0.1%	0.0%	0.0%	0.0%
7.4	Paint	0.0%	0.0%	2.5%	0.0%	0.0%	0.0%	0.0%
7.5	Bio-Hazardous (Diapers)	0.9%	0.6%	1.9%	4.8%	1.7%	0.8%	0.0%
7.6	Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.7%	1.5%	0.0%	0.0%	1.4%	0.0%
7.8	Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.9	Other Hazardous or Household Hazardous Waste	0.1%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
8	ELECTRONICS							
8.1	Computer-related Electronics	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8.2	Other "brown goods"	6.5%	3.8%	0.0%	0.0%	4.1%	0.0%	0.0%
8.3	Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	19.2%
9	OTHER MATERIALS							
9.1	Tires and other rubber	0.2%	0.0%	3.3%	0.0%	1.5%	15.4%	11.9%
9.2	Textiles	1.3%	10.4%	15.3%	1.6%	22.5%	0.2%	1.4%
9.3	Bulky materials	17.7%	0.0%	8.0%	0.0%	0.0%	15.7%	0.0%
9.4	Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	OTHER MISCELLANEOUS	0.6%	13.4%	1.2%	1.9%	9.3%	0.8%	1.1%

Table C-3 Second Season Waste Composition

Categories		Roll Off Open Top 2-15	Rear Load 2-16	Rear Loader 2-17	Rear Loader 2-18	Roll Off Open Top 2-19	Front Loader 2-20	Front Loader 2-21
1	PAPER							
1.1	Uncoated Corrugated Cardboard/Kraft Paper	5.9%	1.9%	8.8%	1.5%	0.0%	7.0%	17.1%
1.2	Waxed Cardboard	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1.3	High Grade Office Paper	0.0%	0.0%	1.1%	0.6%	0.0%	0.0%	1.5%
1.4	Magazines/Catalogs	0.0%	0.7%	0.0%	0.7%	0.0%	4.7%	4.2%
1.5	Newsprint	0.0%	5.4%	0.0%	3.1%	0.0%	1.3%	0.7%
1.6	Other Recyclable Paper	0.0%	8.1%	4.0%	5.3%	0.0%	4.6%	11.3%
1.7	Compostable Paper	0.0%	11.8%	3.5%	4.8%	0.0%	5.2%	13.7%
1.8	Remainder/Composite Paper	0.0%	1.4%	1.2%	2.3%	0.0%	0.6%	1.6%
2	PLASTICS							
2.1	PET Beverage Containers	0.0%	0.3%	0.2%	0.2%	0.0%	0.7%	1.4%
2.2	PET Containers other than Beverage Containers	0.0%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%
2.3	Plastic MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
2.4	HDPE Bottles, colored and natural	0.0%	0.4%	0.1%	0.1%	0.0%	0.3%	0.4%
2.5	Plastic Tubs and lids	0.0%	0.4%	0.0%	0.5%	0.0%	0.0%	0.0%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%
2.7	Expanded Polystyrene Food Grade	0.0%	1.1%	0.0%	0.4%	0.0%	0.4%	0.3%
2.8	Expanded Polystyrene Non-food Grade	0.0%	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%
2.9	Bulk Rigid Plastic Items	0.0%	3.5%	13.9%	0.0%	0.0%	5.4%	0.0%
2.10	Film (non-bag commercial and industrial packaging film)	10.4%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%
2.11	Grocery and other Merchandise Bags	0.0%	0.9%	0.1%	0.6%	0.0%	0.4%	0.1%
2.12	Other Film means plastic film	0.0%	4.8%	1.3%	2.7%	0.0%	4.5%	3.7%
2.13	Remainder/Composite Plastic	0.0%	1.5%	5.9%	2.4%	100.0%	7.9%	6.5%
3	METALS							
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
3.2	Aluminum MA Deposit Beverage Containers	0.0%	0.1%	0.0%	0.2%	0.0%	0.1%	0.5%
3.3	Tin/Steel Containers	0.0%	0.6%	0.0%	0.7%	0.0%	0.5%	0.0%
3.4	Other Aluminum	0.0%	0.6%	0.0%	0.5%	0.0%	0.0%	7.4%
3.5	Other Ferrous and non-ferrous	19.1%	0.0%	0.0%	1.2%	0.0%	2.0%	0.0%
3.6	White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7	Remainder Composite Metal	0.0%	0.0%	7.5%	1.0%	0.0%	0.1%	0.0%
4	GLASS							
4.1	Glass Beverage Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.0%	0.5%	0.0%	0.8%	0.0%	0.8%	0.0%
4.3	Glass MA Deposit Beverage Containers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4.4	Remainder/Composite Metal	0.0%	0.0%	0.1%	1.9%	0.0%	0.1%	0.0%
5	ORGANIC MATERIAL							
5.1	Food Waste	0.0%	36.6%	2.6%	14.7%	0.0%	22.7%	19.3%
5.2	Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3	Prunings, Trimmings, Leaves and Grass	0.0%	0.0%	0.0%	8.1%	0.0%	0.0%	0.0%
5.4	Manures	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.5	Remainder/Composite Organic	0.0%	4.1%	0.8%	1.0%	0.0%	0.3%	1.1%
6	CONSTRUCTION AND DEMOLITION							
6.1	Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2	Aggregates, Stone, Rock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3	Wood - Treated	17.9%	0.0%	0.0%	4.8%	0.0%	0.0%	0.0%
6.4	Wood - untreated	33.7%	0.0%	23.5%	5.1%	0.0%	1.0%	0.0%
6.5	Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6	Drywall/Gypsum Board	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	4.2%
6.7	Carpet and Carpet Padding	0.0%	0.0%	0.0%	9.5%	0.0%	6.4%	0.0%
6.8	Remainder/Compo-site Construction and Demolition	0.0%	0.0%	3.2%	0.0%	0.0%	7.5%	1.5%
7	HOUSEHOLD HAZARDOUS WASTE							
7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2	Batteries - Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3	Batteries - Other	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%
7.4	Paint	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.5	Bio-Hazardous (Diapers)	0.0%	5.4%	0.0%	1.4%	0.0%	0.2%	0.3%
7.6	Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.7	Empty Metal, Glass, and Plastic Containers (contained toxic materials)	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%
7.8	Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.1%	0.0%	0.1%	0.0%	0.0%	0.0%
8	ELECTRONICS							
8.1	Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%
8.2	Other "brown goods"	0.0%	4.9%	11.5%	7.2%	0.0%	1.9%	0.0%
8.3	Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	OTHER MATERIALS							
9.1	Tires and other rubber	0.0%	0.2%	3.1%	6.1%	0.0%	0.5%	0.3%
9.2	Textiles	0.0%	2.0%	0.0%	8.0%	0.0%	9.0%	0.2%
9.3	Bulky materials	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9.4	Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	OTHER MISCELLANEOUS	13.0%	2.2%	7.1%	1.3%	0.0%	1.2%	0.9%

Table C-4 Second Season Waste Composition

Categories		Front Loader 2-23	Roll Off SC Compactor 2-24	Roll Off Open Top 2-25	Roll Off Open Top 2-26	Rear Loader 2-27	Front Loader 2-28
1	PAPER						
1.1	Uncoated Corrugated Cardboard/Kraft Paper	7.7%	9.6%	3.9%	4.1%	1.0%	6.2%
1.2	Waxed Cardboard	0.0%	14.1%	0.0%	0.0%	0.0%	0.1%
1.3	High Grade Office Paper	0.5%	0.0%	0.0%	0.0%	0.1%	0.6%
1.4	Magazines/Catalogs	1.4%	0.0%	0.0%	0.0%	1.9%	0.6%
1.5	Newsprint	0.8%	2.2%	0.0%	0.0%	9.5%	1.3%
1.6	Other Recyclable Paper	3.6%	6.7%	0.0%	0.2%	19.0%	2.8%
1.7	Compostable Paper	4.4%	2.4%	0.0%	1.0%	2.3%	7.1%
1.8	Remainder/Composite Paper	0.6%	1.0%	0.0%	5.2%	9.7%	1.5%
2	PLASTICS						
2.1	PET Beverage Containers	0.8%	0.2%	0.0%	0.1%	0.4%	0.5%
2.2	PET Containers other than Beverage Containers	0.3%	0.2%	0.0%	0.1%	0.3%	0.1%
2.3	Plastic MA Deposit Beverage Containers	0.2%	0.7%	0.0%	0.0%	0.0%	0.1%
2.4	HDPE Bottles, colored and natural	0.4%	0.0%	0.0%	0.0%	0.5%	1.9%
2.5	Plastic Tubs and lids	0.3%	0.1%	0.0%	0.0%	0.1%	0.6%
2.6	Plastic Containers Nos. 3, 4, 5, 6, 7	0.1%	0.2%	0.0%	0.0%	0.1%	0.2%
2.7	Expanded Polystyrene Food Grade	0.4%	7.4%	0.0%	0.1%	0.0%	0.6%
2.8	Expanded Polystyrene Non-food Grade	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2.9	Bulk Rigid Plastic Items	0.2%	0.0%	4.6%	5.9%	0.0%	6.0%
2.1	Film (non-bag commercial and industrial packaging film)	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
2.11	Grocery and other Merchandise Bags	0.8%	1.1%	0.0%	0.1%	0.2%	0.4%
2.12	Other Film means plastic film	1.9%	10.3%	0.0%	7.4%	1.4%	6.3%
2.13	Remainder/Composite Plastic	1.0%	0.4%	0.0%	0.1%	0.4%	1.7%
3	METALS						
3.1	Aluminum Beverage Containers (non-MA deposit containers)	0.0%	0.2%	0.0%	0.0%	0.3%	0.2%
3.2	Aluminum MA Deposit Beverage Containers	0.4%	0.2%	0.0%	0.6%	0.1%	0.2%
3.3	Tin/Steel Containers	1.5%	0.0%	0.0%	0.0%	0.1%	2.7%
3.4	Other Aluminum	0.2%	0.0%	0.0%	0.0%	0.0%	0.4%
3.5	Other Ferrous and non-ferrous	0.8%	0.0%	9.9%	0.0%	0.0%	0.0%
3.6	White Goods	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3.7	Remainder Composite Metal	0.3%	0.0%	0.0%	0.0%	0.0%	1.6%
4	GLASS						
4.1	Glass Beverage Containers (non-MA deposit containers)	0.7%	1.4%	0.0%	0.0%	0.4%	5.7%
4.2	Other Glass Packaging Containers (non-MA deposit containers)	0.0%	0.0%	0.0%	0.0%	2.2%	0.5%
4.3	Glass MA Deposit Beverage Containers	0.0%	0.2%	0.0%	0.4%	0.0%	0.8%
4.4	Remainder/Composite Metal	0.4%	0.0%	0.0%	0.0%	0.0%	1.2%
5	ORGANIC MATERIAL						
5.1	Food Waste	22.7%	33.4%	0.0%	0.5%	4.3%	39.8%
5.2	Branches and Stumps	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.3	Prunings, Trimmings, Leaves and Grass	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5.4	Manures	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%
5.5	Remainder/Composite Organic	6.1%	3.8%	0.0%	0.3%	0.3%	0.6%
6	CONSTRUCTION AND DEMOLITION						
6.1	Asphalt Pavement, Brick, and Concrete	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.2	Aggregates, Stone, Rock	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.3	Wood - Treated	2.4%	0.4%	9.6%	1.0%	0.0%	0.1%
6.4	Wood - untreated	24.5%	0.0%	6.7%	0.8%	0.0%	0.0%
6.5	Asphalt Roofing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6.6	Drywall/Gypsum Board	0.1%	0.0%	0.0%	50.8%	0.0%	0.0%
6.7	Carpet and Carpet Padding	0.0%	0.0%	11.4%	0.0%	0.0%	0.0%
6.8	Remainder/Compo-site Construction and Demolition	1.0%	0.0%	0.0%	13.8%	0.0%	0.0%
7	HOUSEHOLD HAZARDOUS WASTE						
7.1	Ballasts, CFLs, and Other Fluorescents	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.2	Batteries - Lead Acid	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.3	Batteries - Other	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%
7.4	Paint	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.5	Bio-Hazardous (Diapers)	3.0%	0.2%	0.0%	0.0%	1.3%	1.0%
7.6	Vehicle and Equipment Fluids	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.7	Empty Metal, Glass, & Plastic Containers (contained toxic materials)	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
7.8	Pesticides and Fertilizers	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7.9	Other Hazardous or Household Hazardous Waste	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%
8	ELECTRONICS						
8.1	Computer-related Electronics	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8.2	Other "brown goods"	0.0%	0.0%	9.0%	0.0%	1.0%	3.7%
8.3	Televisions and Computer Monitors	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	OTHER MATERIALS						
9.1	Tires and other rubber	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
9.2	Textiles	8.9%	0.9%	11.0%	0.0%	17.1%	0.6%
9.3	Bulky materials	0.0%	0.0%	33.9%	0.0%	25.0%	0.0%
9.4	Restaurant Fats, Oils and Grease	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	OTHER MISCELLANEOUS						
		1.2%	0.6%	0.0%	7.3%	1.0%	1.5%

APPENDIX D

Driver Questionnaire and Field Data Sheet

APPENDIX E

Permit Approval Class II Recycling Permit

REFERENCES

ASTM D 5231-92 (Reapproved 2008), Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste.

MADEP 2010 Class II Recycling Program, Waste Characterization Scope and Methodology Guidance, September 2009.

Figures
